UNIVERSITY OF ABOUBEKR BELKAID TLEMCEN FACULTY OF TECHNOLOGY DEPARTEMENT OF ARCHITECTURE ACADEMIC YEAR 2024/2025

1st Year Architecture

Subject title: Critical History Of Architecture

Course leader: Ms BENADLA-KDROUSSI Houda Wafâa

CLASSICAL GREEK ARCHITECTURE

L'ARCHITECTURE DE LA GRÈCE CLASSIQUE

LECTURE '

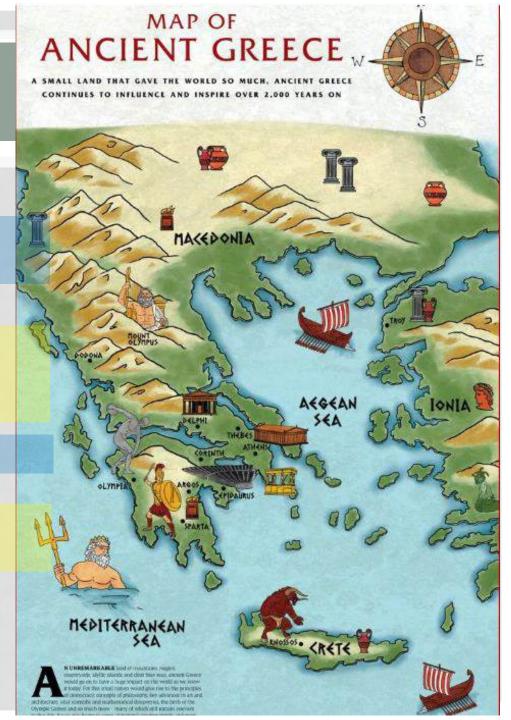
Contexte of ancient Greece/ Geographical situation

Mediterranean coast (the Aegean Sea) favoring trade.

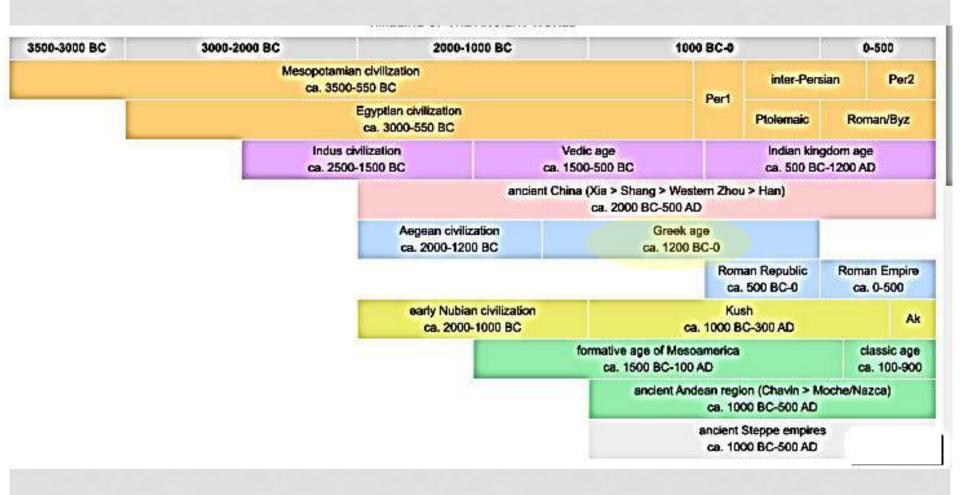
Mountainous nature offering as the only agricultural activity the planting of olive trees

Exclusive production of olive oil

Exchange of olive oil for other products across the sea



Chronological appearance of Greece among the first civilizations



Contexte of ancient Greece/ General landmarks

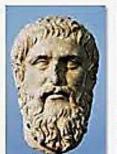
Democraty, justice, assembly of wise men

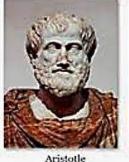
Great advances in science, literature, sports, arts and philosophy...

City-states in permanent conflict and war except for the period of the Olympic games every 4 years

Persian war and Peloponnesian war









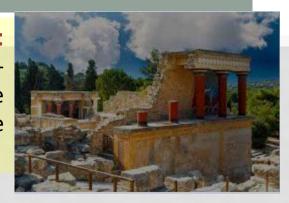




City-states /independence of power and common culture SAMOTHRACIA most famous CHALCIDICE The and powerful city-Mt. Olympus A included states Athens, Sparta, MYSIA THESSALY Thebes, Corinth, CORCYRA Rhodes, Syracuse in LYDIA Sicily, and many LEUCAS TO EUBOEA ITHAC/ others. Each these city-states had phesus CEPHALLEN its own government, ZACYNTHUS its own constitution. its own laws, and MESSENIA sometimes even its own dialect. They LACONIA often were A city-state, also known competition with polis (plural: RHODES poleis), is a sovereign, each other, but they CRETE self-governing entity also shared common (a) that consists of a city cultural and religious its and surrounding elements as Greeks. territory.

Historical timeline Pre-Hellenic civilizations (Minoan and Mycenaean)

Minoan civilization (c. 2000 BCE to 1450 BCE): Minoan architecture is known for its palaces. The most well-known palace is the Palace of Knossos, a labyrinthine complex with courtyards, grand staircases, and multiple stories.

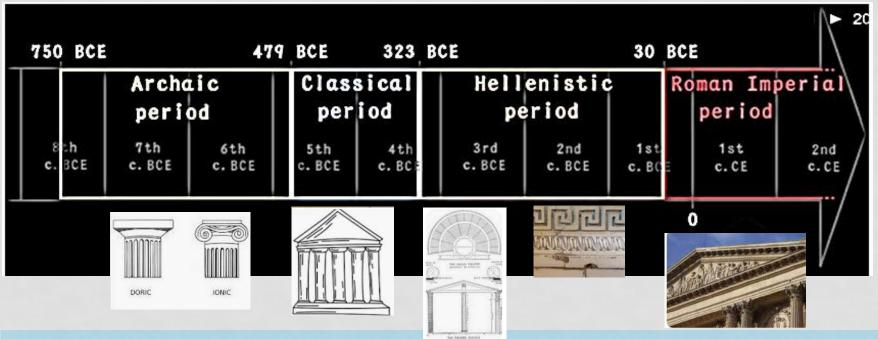




Mycenaean Civilization (c. 1600-1100 BCE): It is known for its fortified palaces, advanced architecture, and the use of Linear B script. The Mycenaeans are often associated with the legendary Trojan War.

Dark Ages (c. 1100-800 BCE): Following the collapse of the Mycenaean civilization, Greece entered a period of decline known as the Dark Ages. It was marked by a loss of writing, trade, and cultural development.

Historical timeline Hellenic civilizations (Greek civilization)



Archaic Period (c. 800-480 BCE): The Archaic period saw the revival of Greek civilization. It was characterized by the emergence of city-states (polis), the spread of Greek colonies, the development of the Greek alphabet, and the rise of a new class of citizens. This period laid the foundation for later developments in Greek culture and politics. The two principal orders in Archaic and Classical Greek architecture are the Doric and the lonic.

The most influents periods; Cassical and Hellenistic periods

Classical Period (c. 480-323 BCE): The Classical period is considered the zenith of ancient Greek civilization. It includes two major sub-periods:

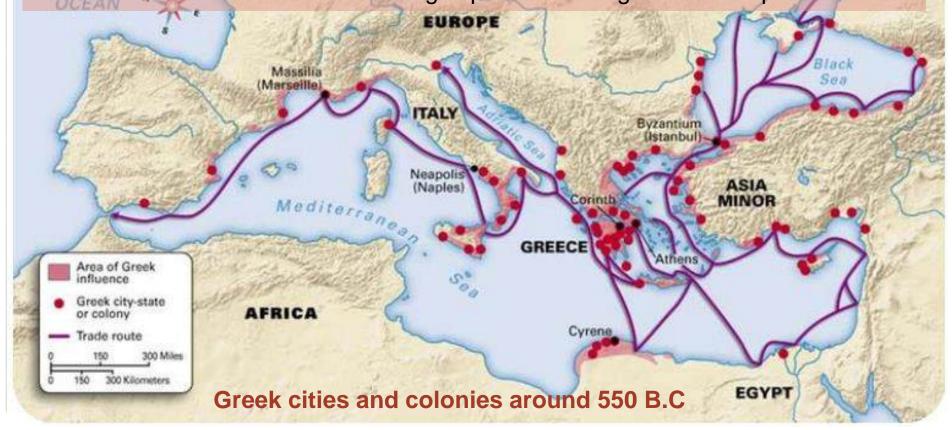
- •The Persian Wars (c. 490-479 BCE): Greece faced invasion by the Persian Empire, leading to a series of conflicts. The Greek city-states, particularly Athens and Sparta, played crucial roles in repelling the Persian threat.
- •The Golden Age of Athens (c. 5th century BCE): Athens, under the leadership of statesmen like Pericles, experienced a cultural and intellectual flourishing. This era produced remarkable achievements in art, philosophy, drama (e.g., the works of Aeschylus, Sophocles, and Euripides), and architecture (e.g., the Parthenon)
- The Peloponnesian War (431-404 BCE): A protracted and destructive conflict between Athens and Sparta, along with their respective allies, which weakened Greek city-states and marked the end of the Golden Age.

Hellenistic Period (c. 323-31 BCE): The Hellenistic era represents the expansion of Greek culture and influence under the reign of Alexander and his successors. Following the conquests of Alexander the Great, Greek culture spread throughout a vast empire, leading to the Hellenistic era. It was marked by the blending of Greek, Egyptian, Persian, and other cultural influences. Greek art, science, and philosophy continued to flourish during this time.

The spread of the civilization in the 5th century B.C

Alexander the Great (king from 336 B.C to 323 B.C), also known as Alexander III of Macedone, conquered a vast empire that stretched from Greece and Egypt in the west to India in the east. This empire included regions like Persia, Anatolia, Egypt, and parts of Central Asia.

Through his conquests, Alexander initiated a period known as the Hellenistic Era. He facilitated the spread of Greek culture, art, and language throughout his empire. This Hellenistic influence had a lasting impact on the regions he conquered.



Historical timeline Fusion in the roman empire

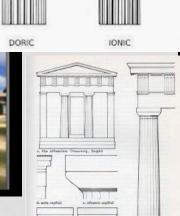
Architecture during the Hellenistic period focused on theatricality and drama; the period also saw increased popularity of the Corinthian order. Architecture in the Greek world during the Hellenistic period developed theatrical tendencies, as had Hellenistic sculpture.

Roman Conquest (2nd century BCE - 1st century CE): Greece was gradually incorporated into the Roman Republic and later the Roman Empire, resulting in the Romanization of Greek culture and the decline of the polis system

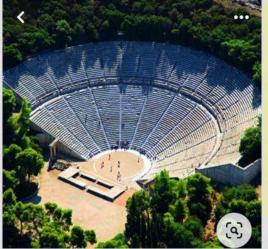
Byzantine Greece (4th century CE - 15th century CE): After the fall of the Roman Empire, the Eastern Roman (Byzantine) Empire retained control of Greece. This period saw the spread of Christianity and the construction of significant Byzantine churches and monasteries.

Architecture Forms in a city-state



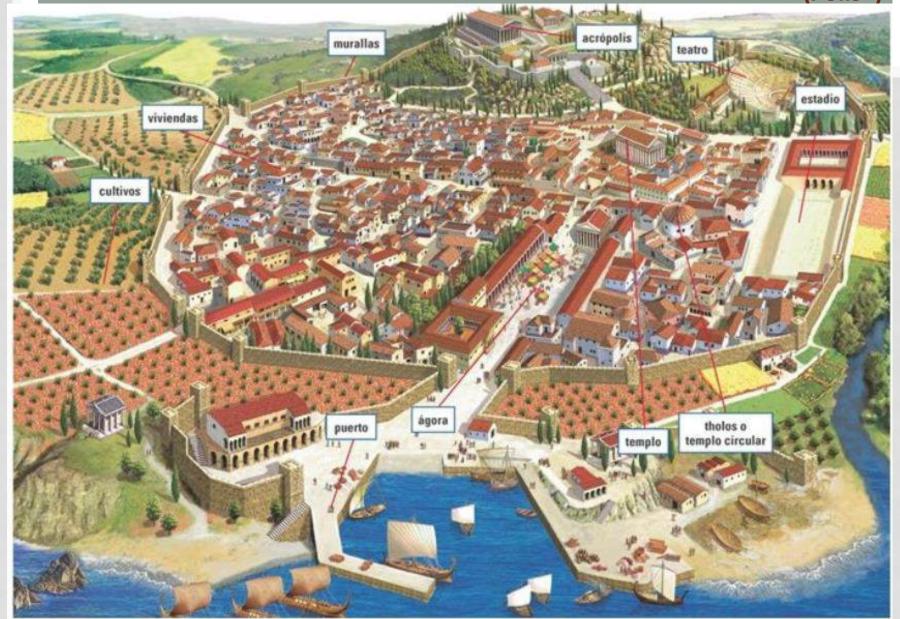






City-states often served cultural and religious centers. They were home to temples, theaters, and other cultural institutions, and they hosted festivals, games, and religious ceremonies that played significant role in the lives of their citizens.

The Greek city (Polis)

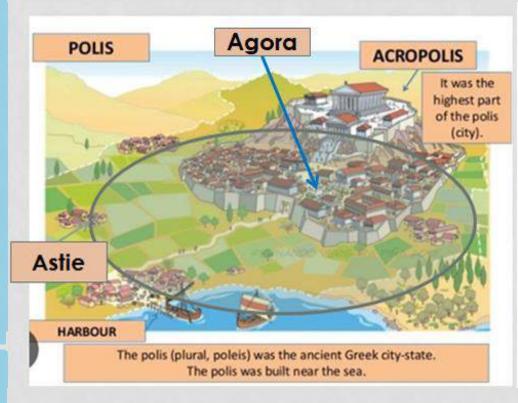


The Acropolis or higher city is a prominent and fortified elevated area within an ancient Greek city, typically featuring important temples, monuments, and administrative buildings. Acropolises were central to the civic and religious life of the city and often served as symbols of its cultural and political identity. The most famous acropolis is the Acropolis of Athens, which includes the iconic Parthenon temple.

The acropolis is also the temenos of the city (it's sacred space).

The Astie or lower city, housed commercial activities, markets, and less prestigious residential areas.

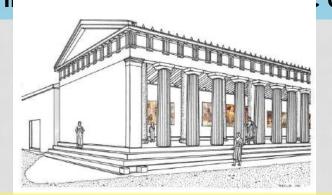
Organization of the Polis Acropolis, Agora, Astie



Organization of the Polis Agora surrounded by Stoa (Stoas)

The Agora is the central public place. The agora was a fundamental feature of Greek urban planning and played a vital role in the civic and social life of these city-states.

Central Gathering Place: The agora was typically located at the heart of a city-state and served as the primary gathering place for its citizens. It was a central hub for social, economic, political, and cultural activities...Open Space, Marketplace, Political Activities, Religious Significance, Monuments and Statues, Cultural Events, Social and Cultural Events

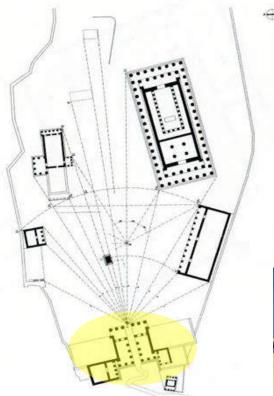


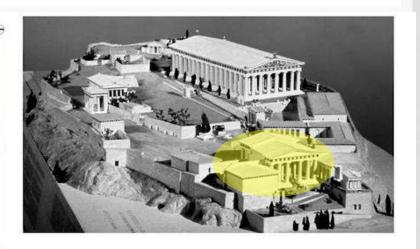
Stoa In some agorai, there were stoas—long, covered colonnades or porticoes—that provided shelter from the sun and rain. These stoas often served as meeting places, and they might also house shops, offices, or galleries.



Organization of the Polis The Propylaea: monumental portico and staircase at the entrance to the acropolis

The Propylaea: constitutes the entrance to the royal dwelling or sanctuary, it is formed by anterior and posterior vestibules, each with a Doric or Ionic colonnade as well as a central porch wall. The triangle of the pediment appears on the facade above the entrance.





Plan and model of the Acropolis in Athens, in the 5th c. BC

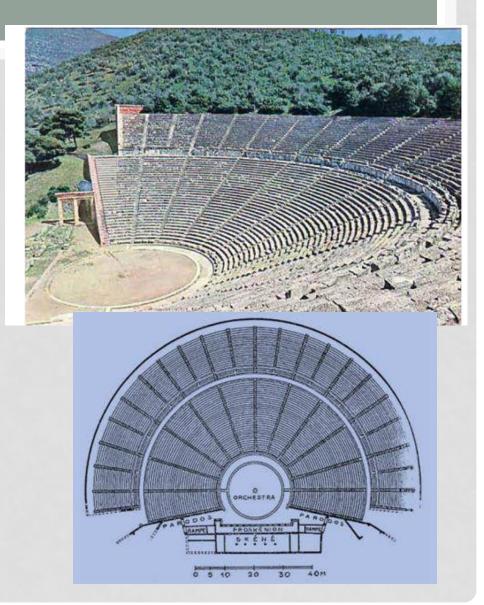


Theater: Greek theaters had a semicircular or circular layout with tiered seating. The audience sat in stone or wooden seats in a steeply ascending arrangement around a central performance area, known as the orchestra.

Theaters were not only venues for entertainment but also places for civic and religious gatherings. Festivals and rituals were often held in conjunction with theatrical performances.

Odeon: Odeons were smaller, roofed structures designed for musical performances, recitations, and other forms of entertainment. Unlike theaters, odeons had a roof, which allowed for year-round use.

Civic Architecture Theater and Odeon



Civic Architecture Gimnasium, Paleastra and Stadium

Gymnasium A gymnasium was a facility for physical exercise and training. It typically featured open courtyards and covered areas for activities like running, jumping, and wrestling. Gymnasia were also centers for education and intellectual pursuits

Palaestra A palestra was a specialized area within a gymnasium for combat sports and wrestling. It included a central sand or dirt surface for training and was often surrounded by colonnades

Stadium A stadium was a venue primarily designed for athletic competitions, particularly foot races. It had a long, rectangular layout with a track for running events, and seating for spectators along the sides. The most famous ancient Greek stadium is the Stadium at Olympia, which hosted the Olympic Games



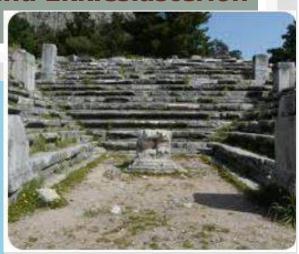


Civic Architecture Bouleterion and Ekklesiasterion

A Greek **Bouleterion** was a public building designed for the meetings and deliberations of the boule (assembly of wise men), a council of citizens responsible for making decisions and proposing legislation in a city-state. It served as an assembly and administrative center for political matters in ancient Greece.

An Ekklesiasterion was a public building for the citizen assembly (Eukklisia).





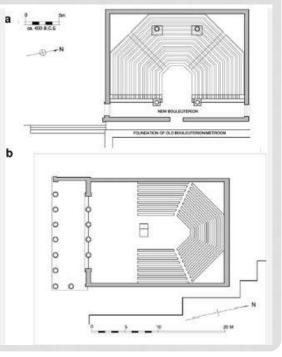


Illustration of civic buildings in the city





The Stadium at **Epidauros**





The <u>Palaestra</u> at Olympia, used for boxing and wrestling

The <u>Theatre of Dionysus</u>, Athens

Greek architecture predominantly used local materials, such as marble, limestone, and wood. These materials were chosen for their availability and durability.

Although, wood would have been the initial material for building and columns.

Marble was the material of choice for civic architecture when other materials were used for domestic architecture.

The roofs were often twosided, made of a wooden frame covered with red tiles.

Architecture Key Principles Materials in Greek architecture



Model of the civic center of the city of Miletus, in Ionia

Structure: Post and lintel system

Structural system in which horizontal beams (lintels) are supported by vertical columns or posts.

The architecture of ancient Greece is of a trabeated or "post and lintel" form. It is composed of upright pillars (posts or columns) supporting horizontal beams (lintels).

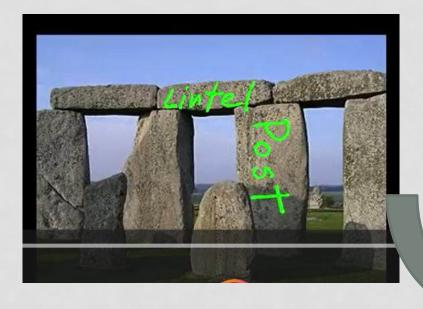
Vaults and arches were not generally

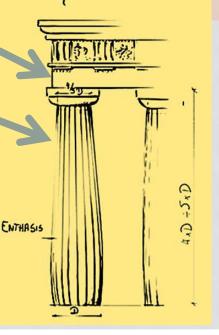
an architrave (une architrave)

used.

(une colonne)

a column





Architecture Key Principles

Structure: Assembling the column drums

The use of iron anchor rods between drums



A technique that helps maintain the cohesion of the column while ensuring its vertical alignment.

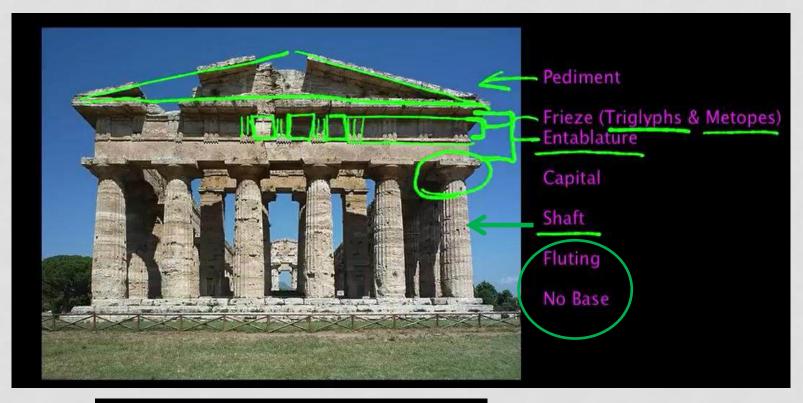
Section de colonne Colonne Barre en fer Iron anchor rods (tige d'ancrage en fer)

Assembling drums

Drums (tambours)

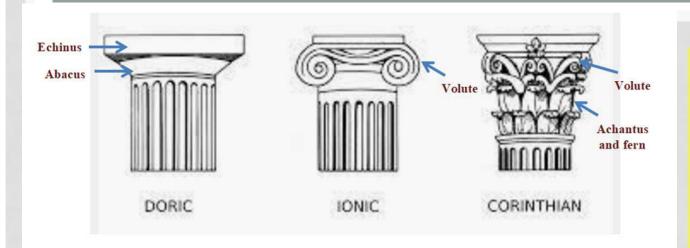
Columns and pediments

Classical buildings are known for the style and ornamentation of their columns and pediments, as well as their precise symmetry and proportions.



Temple of Hera II, Paestum, c. 460 B.C.E. (Greek)

Architecture Key Principles The three Greek order



Doric Order: Characterized by simple, fluted columns with plain capitals and a frieze featuring triglyphs and metopes.

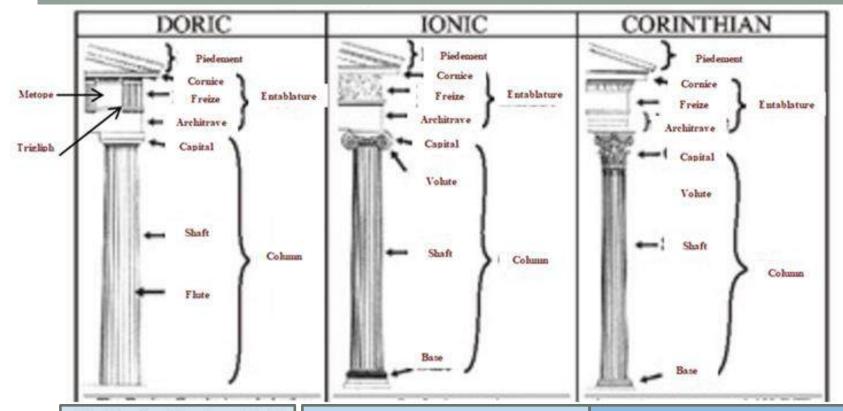
lonic Order: Known for its slender, fluted columns with scroll-shaped capitals and a continuous frieze adorned with decorative elements.

Corinthian Order: Distinguished by elaborate, fluted columns with ornate capitals adorned with acanthus leaves and a decorative frieze.

Columnar Order:

The use of columns is a hallmark of Greek architecture. There are three primary columnar orders in Greek architecture: Doric, lonic, and Corinthian. Each order has its own distinct characteristics, including the shape of columns, capitals, and entablatures.

Architecture Key Principles The three classical Greek orders Chronology of appearance and features



The Dorian Greeks arrived from other areas of Greece around 1150 BCE bringing with them the style Shorter and thicker looking No base, Fluted shaft Considered more masculine

Appearance in Asia Minor (Ionia) during the archaic period In the middle of the 6th century BC Inspired by the Phoenician orders Elegant, sleek, light, decorated It represents the woman Appearance in Corinth around 450 B.C. Characterized by bouquets or rows of acanthus leaves, sometimes superimposed and alternated by volutes, supporting the high corner projections Of the abatement.

It represents the young girl

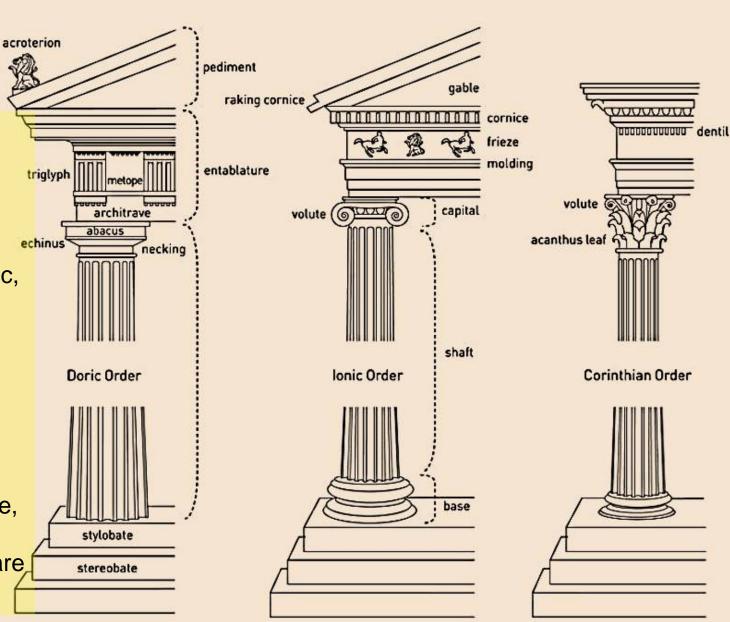
Architecture Key Principles The Greek orders : Elements and details

Diagram of the Classical architectural orders, differentiating between the Doric,

Ionic, and

Corinthian".

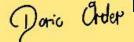
Key parts of
Greek temple
design, such as
the pediment,
entablature, frieze,
capital, column,
shaft, and base are
also identified

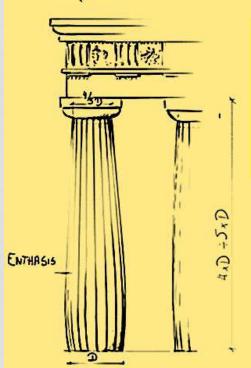


Architecture Key Principles The Doric order / Inspiration and Description

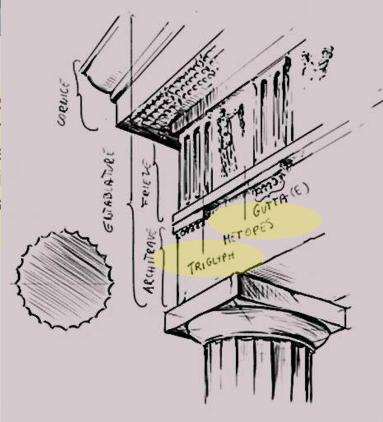
1) L'ondre donique : ll représente l'homme, la force.

Les Grecs constatèrent que le pied mesure le sixième de la taille d'un homme. Ils appliquèrent ce principe à l'ordre dorique, la base de la colonne mesure 1/6e de sa hauteur.





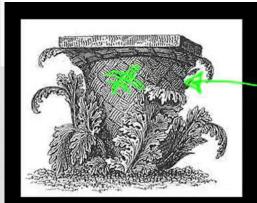
Triglyphs and Metopes: The Doric friez is characterized by alternating triglyph (three vertical bands) and metopε (spaces with decorative reliefs). The repetitive pattern contributes to the sens of rhythm and order in Doric architecture



Architecture Key Principles The Ionic order / Inspiration and Description



Architecture Key Principles Corinthian order / Inspiration and Description



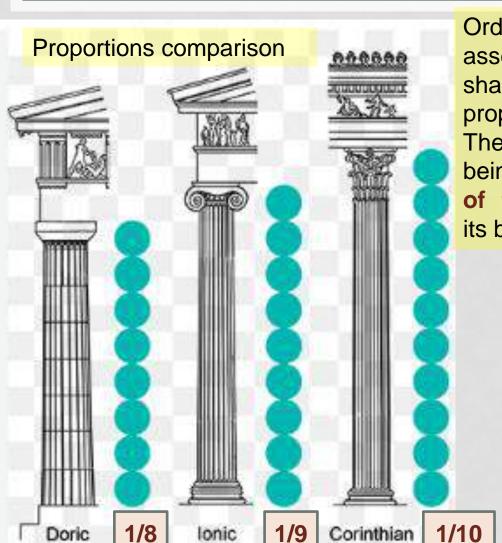
A basket of acantus leaves (Un panier de feuilles d'acanthes)





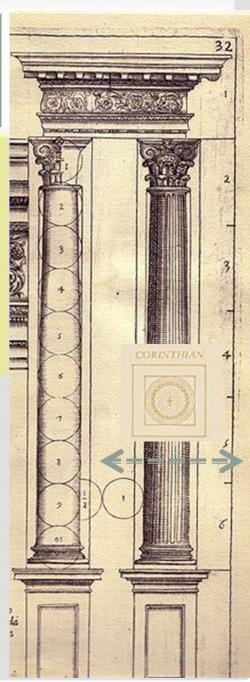


Architecture Key Principles The Greek orders: An order of proportions and aesthetics



Order = a modular assembly of shapes and proportions.

The module used being the section of the column at its base.



Architecture Key Principles Harmonious proportions :The golden rectangle of the Parthenon façade







Phidias, greek architect and sculptor

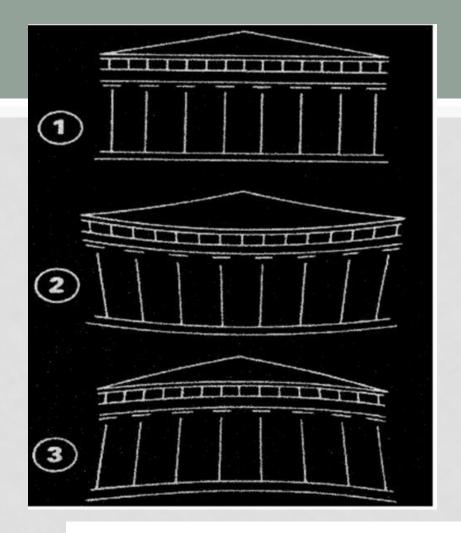
The Parthenon is considered the most beautiful monument of Greek antiquity due to its sculptures and harmonious proportions. It is also, the most imitated example in the architecture of the 18th and 19th centuries. The name Φ , given to the golden ratio in the 18th century, is derived from the name of Phidias, the famous sculptor of the Parthenon.

Architecture Key Principles Optical illusion

Use of Optical illusion in the Parthenon

Optical illusion: Greek optical illusions, also known as optical effects or visual tricks. are visual phenomena that play with the perception of depth, perspective, and proportion in art and architecture. While optical illusions are not exclusive to ancient Greece, Greek artists and architects often used these techniques to create the illusion of balance, symmetry, and harmony in their works





Architecture Key Principles Optical illusion

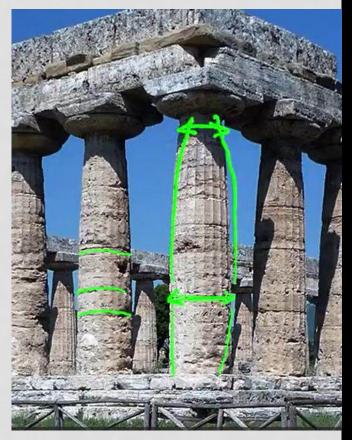
The concern for the perfect perspective

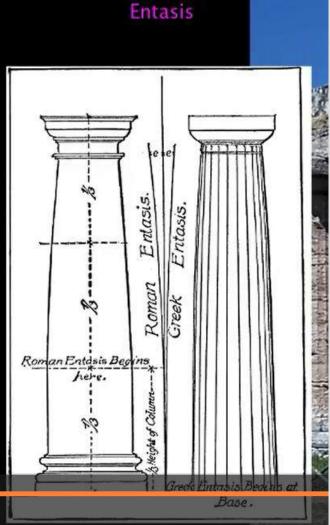
- 1) La représentation du Parthénon telle qu'elle est perçu par le système visuel
- 2) La représentation du Parthénon telle que le système visuel l'aurait perçu si l'édifice ne présentait seulement des lignes droites
- 3) La représentation du Parthénon tel qu'il est réellement construit

Sophisticated geometry/ Use of Entasis

Use of Entasis:

Greek columns often are constructed with a slight swelling or curvature in the middle, a feature known as entasis. This design element creates an optical illusion that makes the columns appear straight when viewed from distance.

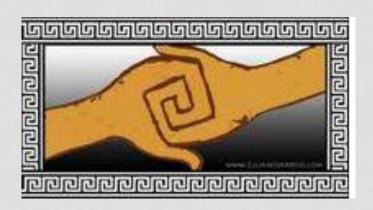




Key principles of Greek architecture Greek ornaments and symbols Meanders (zigzag or Greek), waves and palmettes

The heritage of Greek art is monumental and inseparable from the heritage of Greek architecture. Much influenced at the beginning by Mesopotamian, Egyptian and Cretan art; this art managed to stand out and flourish in the 5th century.

Whatever its field (architecture, sculpture, painting, frescoes, etc.), **Greek art sought aesthetic** perfection through beauty, man was the model and the measure.





Key principles of Greek architecture Greek ornaments and symbols

Meanders (zigzag or Greek), waves and palmettes

Les frises: méandres (zigzag), vagues, palmettes...



Mosaïque au sol



Fresque murale

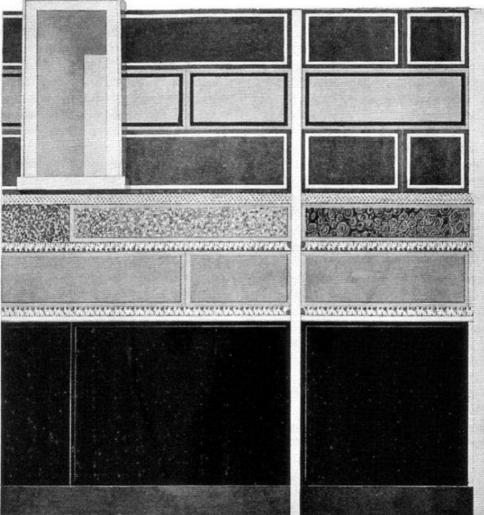
Architecture Key Principles Greek ornaments and symbols Isometric Projection

Isometric Projection: While the Greeks didn't have the same concept of isometric projection modern art, they did use similar principles to create the illusion of threedimensionality in their paintings and designs. Objects were often rendered in a way that gave a sense of depth and spatial relationships.



Mosaic panel decorated with waves and trompe-l'oeil cubes Delos 2nd century BC

Architecture Key Principles Greek ornaments and symbols Isodome



An "isodome", painted stucco decoration imitating a false device. The stucco underlay is scored with incisions for greater adhesion of the next layer



The covering of the "Delian type wall (Delos)" and its rigorous organization borrowed from architecture

Architecture Key Principles Greek ornaments and symbols Illustration

Traces de l'art grec dans la décoration intérieure des maisons d'habitations. Le revêtement de sol en mosaïque

Traces de l'art grec dans la décoration intérieure des maisons d'habitations. Le revêtement de sol en mosaïque. Les colonnes ioniques

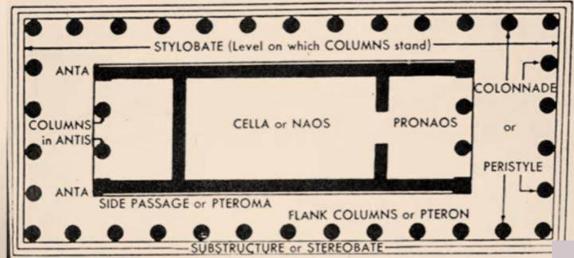


La maison du Lac._ Délos Ile s av. J.-C.



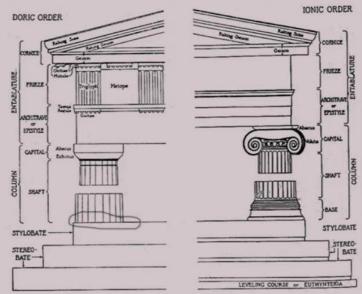
Vestibule de la maison des dauphins avec vue sur la cour Délos II siècle av. J.-C.

The Temple The Model of The Ideal proportions and Harmony



Plan of a Greek Temple

Plan and elevation



Elevation of a Greek Temple

The Temple

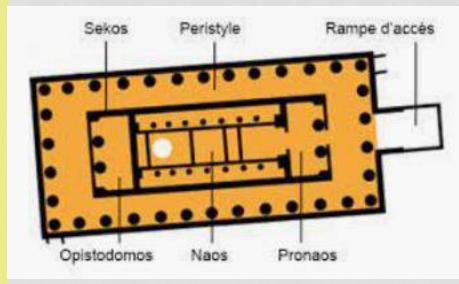
The Model of The Ideal proportions and Harmony A Greek temple is dedicated to the worship of **Examination of the main parts**

a deity and contained its statue.

It is divided into two halves, the sekos, the closed part, surrounded by walls, and the **peristyle**, the open part, fixed by columns.

The closed part of the temple has at its heart the naos or the cella, which houses the statue of the deity.

Behind the naos is sometimes an adyton (space where you cannot enter, or secret room). When the temple is larger, the naos is preceded by a **pronaos** which serves entrance, and behind the naos is a room called the **opisthodomos** (where the offerings and treasures of the city are placed).



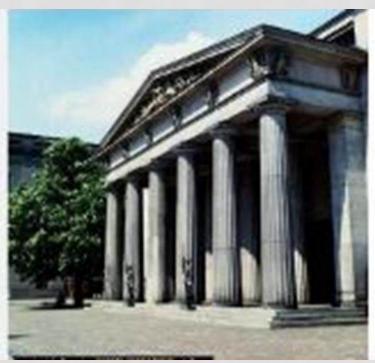
The Temple

The Model of The Ideal proportions and Harmony The Parthenon: The Perfect Model

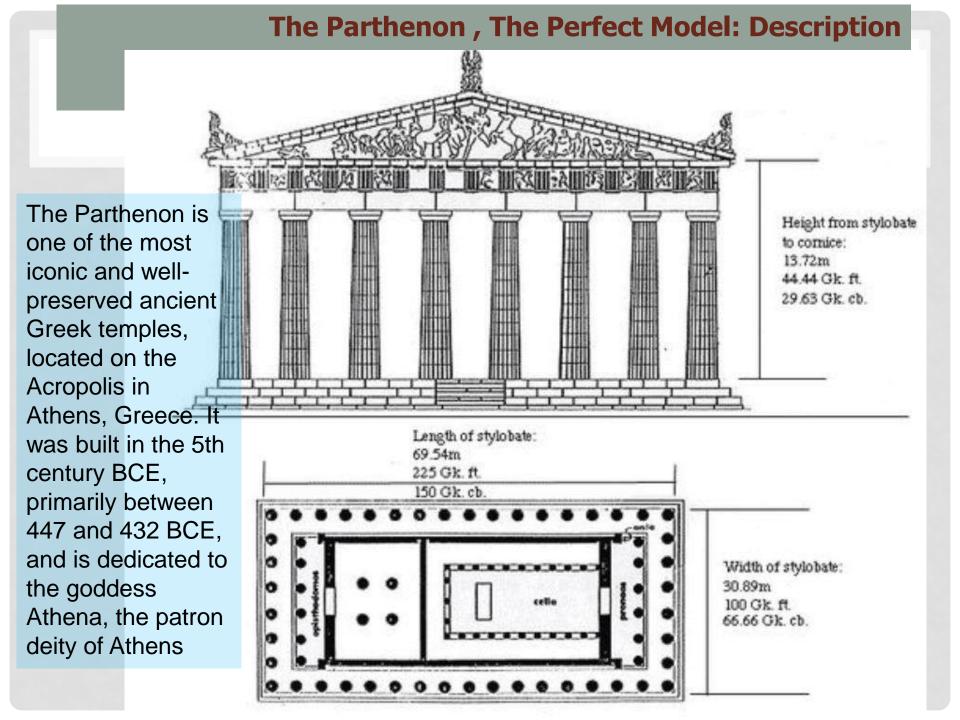
The Parthenon Doric order temple symbol of Western civilization, an example widely reproduced in neo-classical architecture (19th century), throughout Europe and in countries colonized by Europe.



The Parthenon of Athens (restitution) 447 and 432 BCE



Entrance to the courthouse in New York (model inspired by the Parthenon 19th century)

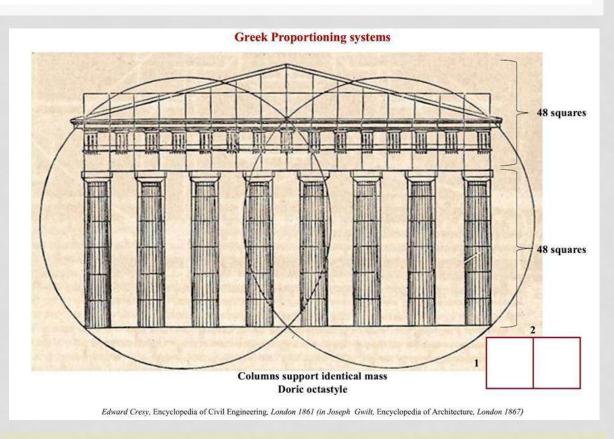


The Temple

The Model of The Ideal Proportions and Harmony The Parthenon: The Perfect Model

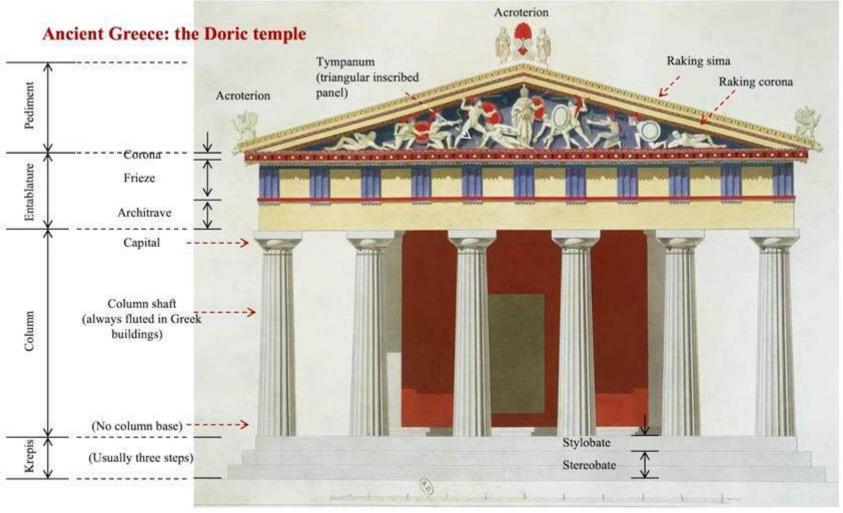
Architectural Style: The Parthenon is a Doric-style temple, characterized by its use of fluted columns, simple, unadorned capitals, and a pediment with triangular gable decorations. It is considered a masterpiece of classical Greek architecture.

Design and Proportions:
The temple is perched on a platform and features a rectangular plan with eight columns on the facades (octastyle) and 17 columns on the sides (hexastyle). The architects Iktinos and Kallikrates designed it with careful attention to mathematical and aesthetic proportions.



Materials: The temple was constructed primarily from Pentelic marble, quarried from Mount Pentelicus near Athens. The use of high-quality marble contributed to the Parthenon's enduring beauty and preservation

The Temple The Model of The Ideal Proportions and Harmony Main parts of temple façade



Polychromy in the Greek Doric temple

Façade of the temple of Aphaia in Aegina

The Templ Model of Ideal proportions

Temple

naos naos (cella) naos (cella) naos pronaos double anta prostyle amphiprostyle tholos anta [posticum] opisthodomos opisthodomos naos (cella) naos (cella) naos (cella) peripteral pseudoperipteral pseudodipteral dipteral

Plans of Ancient Greek Temples

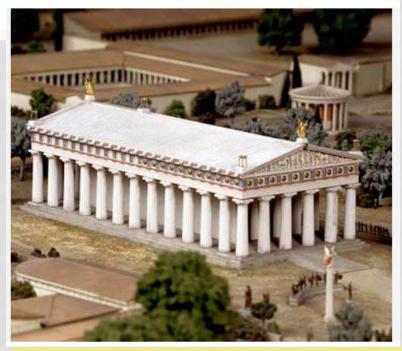
Top: 1. <u>distyle in antis</u>, 2. amphidistyle in antis, 3. tholos, 4. prostyle tetrastyle, 5. amphiprostyle tetrastyle, Bottom: 6. dipteral octastyle, 7. peripteral hexastyle, 8. pseudoperipteral hexastyle, 9. pseudodipteral octastyle

The Temple The Model of The Ideal Proportions and Harmony Other Famous Examples



The Erechtheion temple of the Ionic order built between 421 and 406 BC on the Acropolis of Athens.

The part that differs in the temple is **the famous caryatid podium on the side facade**. It is a portico with six polychrome columns with the figure of a woman.

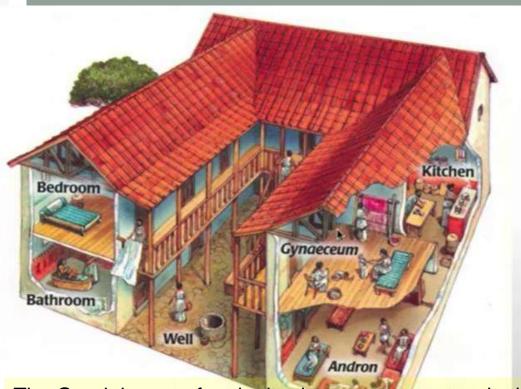


Temple of Zeus at Olympia Built between 466-456 B.C in Doric order.

Length façade=(n x 2)+ 1

« n » number of columns on the width facade

Examination of the domestic architectureThe Greek Houses





The Greek house of antiquity does not present a single model, it ranges from the rudimentary peasant hut built of stone or cob covered with thatch and sometimes without windows to the house of several rooms on two floors articulated around a courtyard also called "the house in megaron".

The 'Megaron' house developed from the Mycenaean Megaron in Bronze Age.



Examination of the domestic architectureThe Oikos_ family home (The typical Greek House)

In a typical Greek house, we found spaces like the andron (men's quarters) and the gyneceum (woomen's quarter), each with its own specific functions and responsibilities. The spaces are organized around a colonnaded courtyard.

The andron was designated for the activities of adult males such as drinking parties or workshops.

The **gyneceum** was a private space where women of the household carried out their daily tasks and socialized with each other.

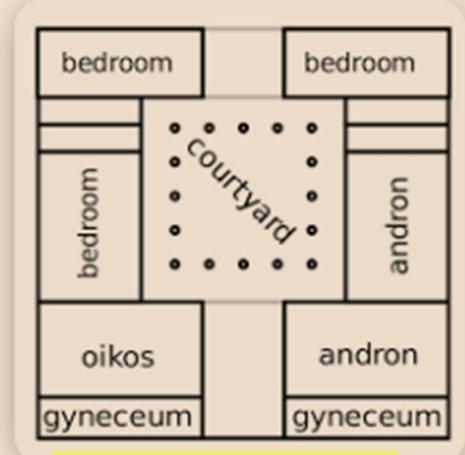


Diagram of the typical Oikos

Examination of the domestic architecture

HOUSES IN ANCIENT GREECE

Ancient Greek homes were usually <u>plain</u> and <u>simple</u>. They were made out of:

- Sun-dried mud bricks
- Foundation of stones.
- Roofs were made of overlapping clay tiles
- Packed mud floors except in the andron it sometimes had tiled floors





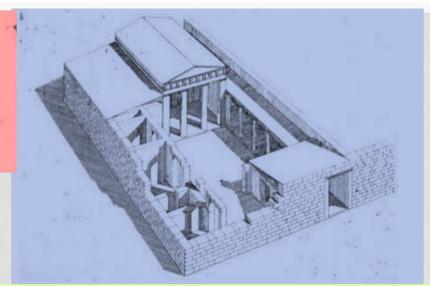


The Greeks use solar architecture They oriented their houses to make use of the sun during winter, while obscuring its rays during summer and entire cities were built this way as early as 400 BC.

Examination of the domestic architecture Illustration of variants of Greek houses

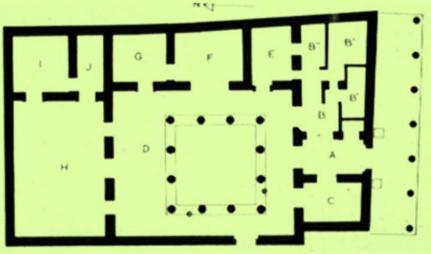
Epoque classique

- Maisons en pierre avec pièces de vie au fond d'une cour
- Pièce principale : mégaron adapté

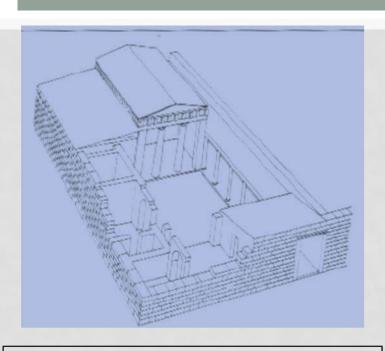


Epoque hellénistique

 Plan oriental : pièces disposées autour d'une cour centrale à portique (futur atrium romain)



Examination of the domestic architecture Illustration of variants of Greek houses



Maison à péristyle (Priène , Ve s av. J.-C.) : reconstitution en perspective



Habitation de type macédonien (Maison de l'Hermès, *Ile s av. J.-C.) : plan de l'étage supérieur et coupe*

Examination of the domestic architectureIllustration of variants of Greek houses

Traces des habitations grecques



Galerie d'étage de la maison de l'Hermès. Délos II siècle av. J.-C.





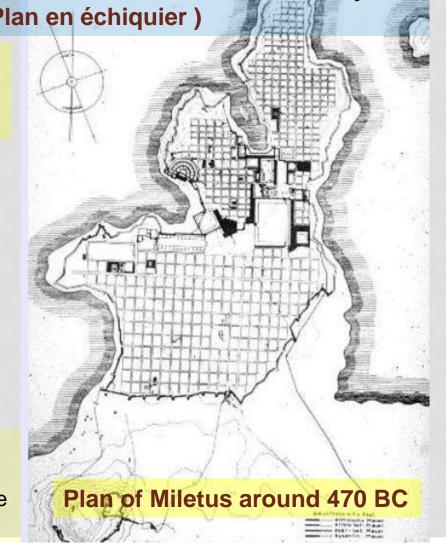
Greek urban planning and organization The grid plan

The Grid plan / Hippodamian Plan / Checkerboard Plan / Chessboard Layout (Le plan en damier, Plan hippodamien, Plan en échiquier)

The invention of formal city planning was attributed to **Hippodamus** (or Hippodamos) of **Miletus** around 450 BC.

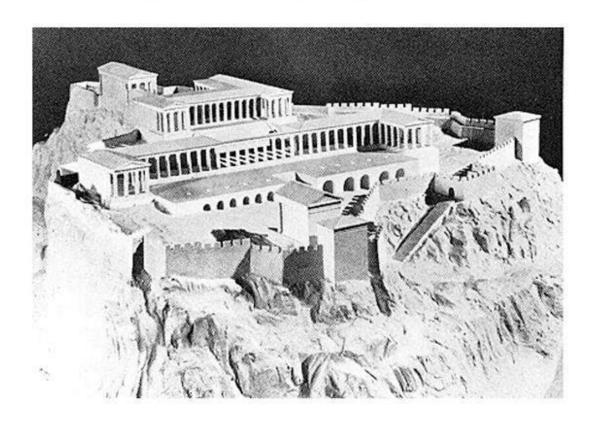
Hippodamus first applied to his home city the grid plan which he had developed on inspiration from geometrically designed settlements, and that later many cities were laid out according to this plan. Miletus, which is a fine example of the grid plan, comprises houses on blocks created by streets and side streets crossing at right angles, with public buildings in the city centre.

The buildings and the streets werw also arranged such that the winds from the mountains and the sea could flow optimal through the city and provide a cooling during the hot summer.



Adaptation of the grid plan for sloping terrain

Hellenistic planning with large terraces



Acropolis at Lindos, Rhodes

Adaptation of ideal forms to irregular sites

...In synthesis

Greek architecture places a strong emphasis on **proportion and harmony**. Buildings and architectural elements are designed according to mathematical ratios and geometric principles, such as the Golden Ratio. The use of proportion creates a sense of balance and visual appeal.

Greek buildings are **typically symmetrical**, with balanced and mirrored designs on both sides. This symmetry contributes to the overall sense of order and harmony.

It was in the Classical period (5th-3rd centuries) that Greek architecture found its perfection, above all creating temples, perfectly integrated into the site or landscape and which became models of style and proportions. The monuments built forget the Egyptian gigantism and remain on a human scale. They are similar to "orders" defined by characteristics concerning their plan, their order, their columns (Doric, Ionic, Corinthian) and the decoration of their pediments.

The Greeks created a vocabulary of architectural detail in stone and marble which will remain a fundamental reference in European architecture for more than 2000 years.

Later Influences of the classical Greek style

The period of glory of ancient Greece (classical period 5th century BC), a reference for the neoclassical style (end of the 18th century - beginning of the 19th century)



video links

https://www.youtube.com/watch?v=XwetbIZ2KNo Understanding the Greek Temple

https://www.youtube.com/watch?v=YCdzUcB34m0 How Classical Architecture Began in Ancient Greece: A Survey of Classical Architecture, Part I

https://www.youtube.com/watch?v=yGPevxwITBE&t=21s

Ancient Greek Architecture: Dorian, Ionic & Corinthian