History of Architecture

This book is about the pre-historic period starting from man cave period, Egyptian Architecture, Mesopotamian Architecture, Romans Architecture, Creek Architecture, Byzantine Architecture ending by Regional periorty, and ending by Early Christian Architecture, Bajrawia in Sudan, Petra in Jordan, Madaien Saleh in Saudi Arabia, the student will be able to analyze case studies, drawing sketches and compare between different era.

.....

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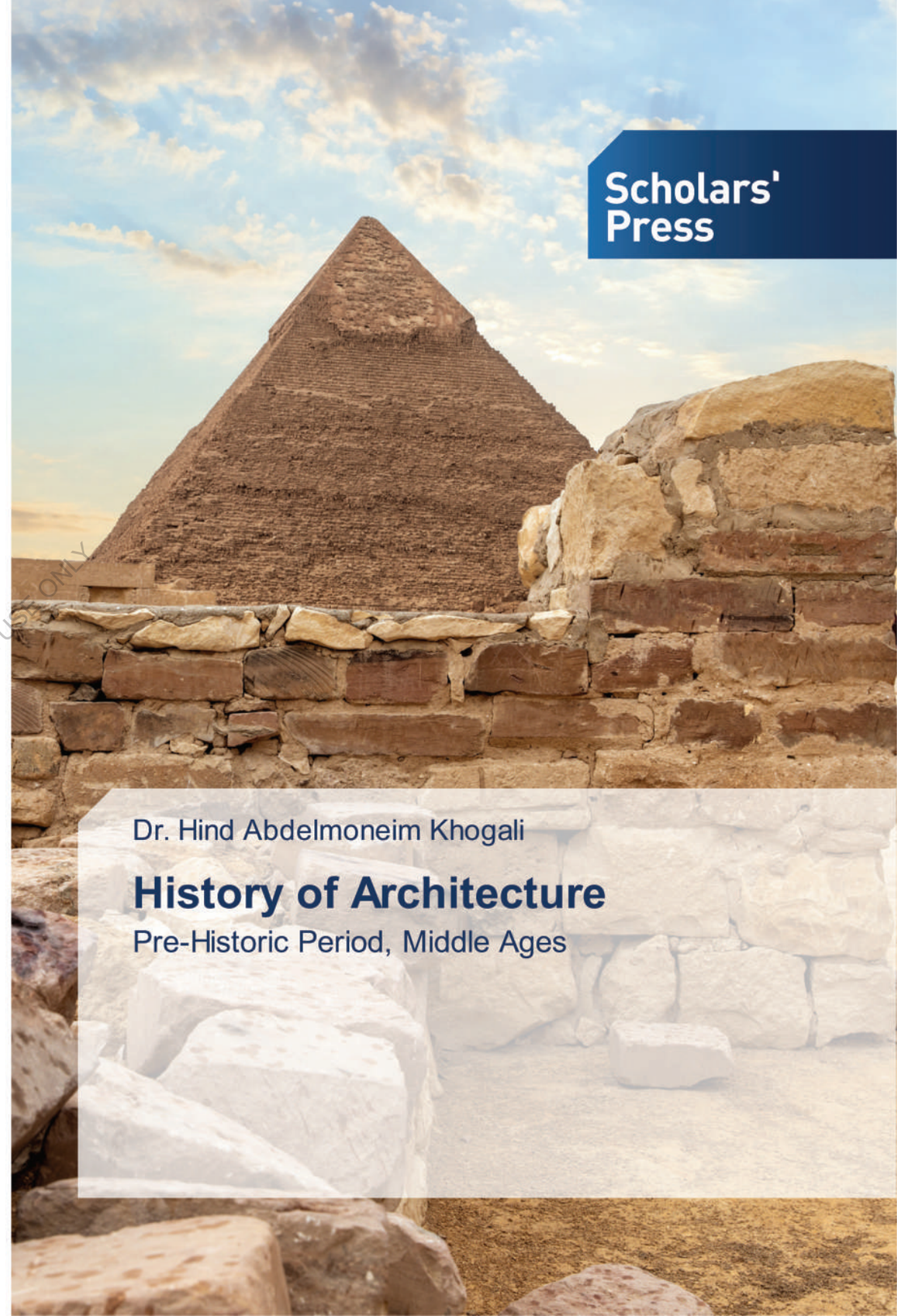

Scholars' Press

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Pre-Historic Period, Middle Ages

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Imprint

Cover image: www.ingimage.com

Publisher:
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is a trademark of
Dodo Books Indian Ocean Ltd. and OmniScriptum S.R.L publishing group

120 High Road, East Finchley, London, N2 9ED, United Kingdom
Str. Armeneasca 28/1, office 1, Chisinau MD-2012, Republic of Moldova, Europe
Printed at: see last page
ISBN: 978-613-8-97247-1

DEDICATION

In His HOLY Book, the Almighty Allah mentioned: **"And says (unto Act! Allah will behold your actions, and (so will) His messenger and the believers, and you will be brought back to the Knower of the Invisible and the Visible, and He will tell you what you used to do"** (Surat Al-Tawbah. 105); and He mentioned: "**And We have enjoined Upon man concerning his parents - His mother beareth him in weakness Upon weakness, and his weaning is in two years - Give thanks unto Me and unto thy parents. Unto Me is the journeying**" (Surat Luqman, 14). This dissertation is dedicated to my beloved mother Mrs. Al-Sareerah Mohammad Ata-Almanan. I cannot find more eloquent words than Prophet Mohmmad's words Peace Be Upon him as he mentioned: "**Who is the most worthy of your company? He mentioned: Your mother. Then, he added: Your mother and added: Your mother, then, your father**". My dear father, Engineer Dr. Abdel Moneim Khogali, who worked and struggled until his name flew up in the sky of Sudan. His plant has produced delicious fruits literally speaking. I pray Almighty Allah to watch over him, protect him, and bestow upon him His blessings and bounties. It is a great honour and source of ultimate happiness to me to dedicate this effort and dissertation to my beloved parents, in recognition of their love and care. I also dedicate this effort and dissertation to my respectable beloved husband, Dr. Al-Fatih Mohi Al Dein. I cannot forget, and I appreciate your endless and relentless support and love. I also dedicate this work and dissertation to my beloved children: Muhammad, Momen, Mazin and Noon. This work should be a guiding light for you to follow on the path of knowledge and learning

Bio:

PhD in Architecture Engineering Philosophy and Consultant Engineer / Fellowship in Architecture Engineering/ Dr.Hind Abdel Moneim Khogali, Has both experience *consultancy* in Architecture Engineering and Doctorate in teaching. *Fellowship* in Architecture Engineering SIA. My PhD research in *Sustainable- Eco- Buildings Assessment Method to Evaluate Residential Buildings in Greater Khartoum*, in 21/05/2019/Khartoum University. MSc. in Environmental studies, since 2005, Khartoum University. BSc. in architecture engineering, in 1994 from Ain Shams University, teaching more than 12 courses in Architecture school has a long experience 27 years' experience. Eng. Hind now working with Dar Al Uloom university in Riyadh city Published 20 Research, 5 Conference Proceeding, 6 Books, Professional Practice Training and workshops and Community participation. Outstanding Evaluation by the Dean in DAU. Working in Quality Unit in Architecture program. Win the First Prize in Scientific Research in 2021,2020, 2019, 2018, International Membership in RIBA, USGBC, SEC.

1. My website www.hindamkh.blogspot.com
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CHAPTER ONE
PRE-HISTORIC ARCHITECTURE

1.1 Period of time

- Prehistory begins as early as 35,000 BCE (Before Common Era) to about 3,000 BCE in the eastern Mediterranean lands to after 2,000 BCE in Western Europe lands
- Dates in humankind timescale = earliest years of human evolution from cooperative hunting-and-gathering societies into agricultural civilizations with a fixed settlement area and a ruling class.

Figure 1: Mancave, 35000 BC

- Occurred before invention of written records
- Also called **Stone Age** period because of the absence of metal implements
- Sub-Division of Period: Period can be further subdivided into Early (or Paleolithic) Stone Age and New (or Neolithic) Stone Age
- Early Stone Age- Up to 9,000 BCE
- New Stone Age – 9,000 BCE to 2,000 BCE
- the hut (No. 2 A, D, E) for the agriculturist, and the tent (No. 2 j)
- for those such as shepherds leading a pastoral or nomadic life.
- Structures of the prehistoric period, although interesting for
- archaeological reasons, have little or no architectural value.
- will only be lightly touched upon.

1.2 The Menhires

- Monoliths, or single upright stones, also known as **menhirs**,
- a well-known example 63 feet high, 14 feet in diameter, and
- weighing 260 tons, being at Carnac, Brittany. Another example

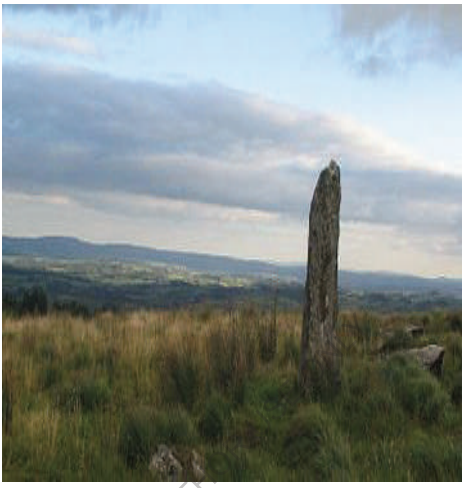
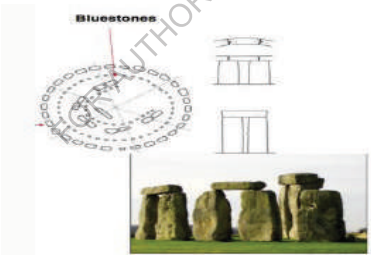


Figure 1.2: The Merhent ,

1.3 Daul Table Stone

- Dolmens (Daul, a table, and maen, a stone), consisting of
- one large flat stone supported by upright stones. Examples are
- to be found near Maidstone and other places in England, also in
- Ireland, Northern France, the Channel Islands, Italy (No. 2 F)
- and India.

Figure1.3: The flat stone with post



1.4 Circle Hinge

- Cromlechs, or circles of stone, as at Stonehenge (No. 2 G),
- stones arranged in a circle and supporting horizontal slabs.
- Lake Dwellings, as discovered in the lakes of Switzerland,
- Italy and Ireland consisted of wooden huts supported on
- piles, and were so placed for protection against hostile attacks of
- all kinds.
- These foregoing primitive or prehistoric remains have little
- constructive sequence, and are merely mentioned here to show
- from what simple beginnings the noble art of architecture was
- evolved, although unfortunately the stages of the evolution cannot
- be traced, owing to the fact that the oldest existing monuments of
- any pretension, as in Egypt, belong to a high state of civilization.

Figure 1.5 : Circle hinge

1.5 The First period: Early Stone Age- Up to 9000 BCE

- The first habitations of man were undoubtedly those that
- nature afforded, such as caves (No. 2 H) or grottoes, which
- demanded little labour on his part to convert into shelters against
- the fury of the elements, and attacks from his fellows or wild
- animals.
- Usually close to sources of food, near rivers
- qNomadic, always on the move in search of food, water, and good climate
- qGot their food through food gathering, hunting and fishing
- qTheir lifestyle made them barely able to survive
- qNot much is known about their beliefs

Figure 1.6: Mancave learnt hunting.

1.6 The second period Middle Stone Age (9000- 2000BC)

- As soon as man rose above the state of rude nature, he
- naturally began to build more commodious habitations for himself,
- and some form of temple for his god.
- Discovered art of farming and animal husbandry
- Discovery result of population pressure
- Neolithic people acquired confidence in ability to tame and control nature
- Period saw interest in natural cycles such as of weather and heavenly bodies e.g. that of the sun and moon

Figure 1.7: Mancave discover Art work

1.7 The Third Period is the new Stone Age 2000 BC

- Neolithic Dwelling and Settlement
- q Catal Huyuk
- }Megalithic Monuments
- qDolmen Tomb, Carnac France
- qStone Alignment, Carnac France
- qStonehenge, England

Figure 1.8 : Mancave Town in the mountains

1.8 Catal Huyuk

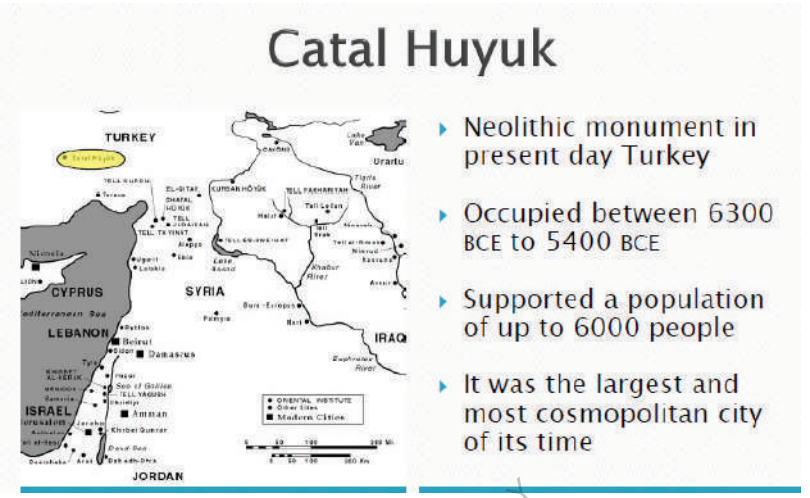


Figure 1.9: Catal Huyuk

1.9 The material used

- Stones
- **in Egypt** a system of architecture which consisted of a massive construction of walls and columns, in which the latter closely spaced, short, and massive carried lintels, which in their turn
- supported the flat beamed roof. The influence of Egyptian and Assyrian
- **architecture on that of Greece** is apparent in many directions.
- GENERAL INTRODUCTION TO THE HISTORICAL STYLES. 5 Grecian architecture is considered by many to have had its origin in the wooden hut or cabin formed of posts set in the earth, and covered with transverse beams and rafters, and this was the type which was developed in the early Mycenaean period into the pyodomus of the Greek house.

1.10 The vaults

the development

of brick construction with the consequent evolution of

the arch and vault was due to the absence of more permanent

building materials.

1.11 The arts

- value of stone aided in the growth
- of the art. It should be noted, however, that many writers hold
- Like Greek e and Egyptian Architecture

1.12 Types of Buildings

Firstly:Rock Shelter

- Rock shelters and caves provided natural protection
- Reconstructed **image to the left shows the use of rock formation as shelter**

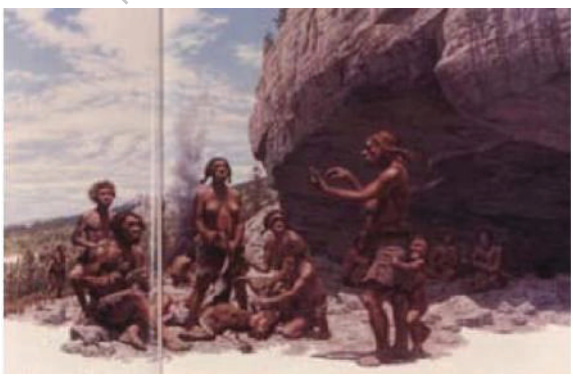


Figure 1.10: Rock shelter

1.13 Secondly :Cave Dwelling

- **Caves were, however, more popular as dwelling**
- **}Caves used by Stone Age people have been found in many regions of the world**
- **}A good example is the cave at Lascaux in France**

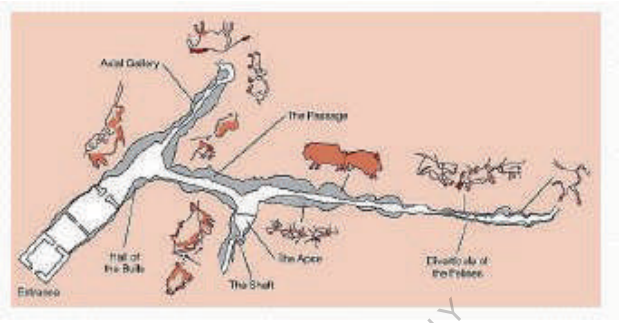


Figure 1.11 Cave Dwelling

1.14 Stonehenge

- Neolithic ritual monument located in Salisbury England
- Most celebrated Monument in England
- Most important prehistoric structure in Europe
- Well preserved monument
- Subject of a very lively controversy and theories about its function The plan of Stonehenge is arranged in the form of concentric circles
- At the center is an alter
- Around it five trilithons
- Beyond trilithons a circle of blue stones from Wales, 200km away
- Beyond blue stones, an outer monumental circle of large rectangular blocks capped by continuous lintel

Figure 1.12 **Stonehenge**

1.15 Thirdly: Houses

It had an extensive economy based on specialized craft and commerce

The city was a trading center

The size of the city and its wealth are a product of its status as a trading center

Figure 1.13 : Mancave houses

CHAPTER TWO
Ancient Egyptian Architecture

Historical Background

Table 2.1 Historical background

Chronology	
Beginning of prehistory	ca. 35,000 BCE
Sumerians develop a written language	3500 BCE
Construction of Stonehenge	ca. 2900–1400 BCE
Egyptian Old Kingdom	2649–2134 BCE
Construction of pyramids at Giza	2550–2460 BCE
Construction of Ziggurat at Ur	2100 BCE
Egyptian Middle Kingdom	2040–1640 BCE
Egyptian New Kingdom	1550–1070 BCE

- The Early Dynastic Period and Old Kingdom
- The First Pyramids
- Fourth-Dynasty Pyramids at Giza
- The Middle Kingdom
- The New Kingdom

The Location

- Located in Africa on the northern edge of the Sahara
- The Nile bisects through the land from the south to the north
- The Nile is a seasonal river that overflows its bank yearly to create a fertile valley
- The Ancient Egyptians lived in the fertile valley and grew their crops
- They buried their dead in the desert

Figure 2.1: The Egypt location

Social Background

- The Nile and its delta were the guiding force of ancient Egyptian civilization
- It was a very predictable river, overflowing its banks every year from July to October
- The floods leave a rich black silt that is fertile and is farmed by the people
- During the floods, people were freed from farming to engage in other activities including building work
- The Nile was also the highway of Egypt connecting upper and lower Egypt
- The Nile also offered protection from Invasion by outsiders
- The Nile offered a symbolic sense of direction to the people, forming the primary principle in architectural organization

Religion Background

- Ancient Egyptians were a religious people
- They believed in many Gods
- Different symbols were used to represent the Gods and temples were built and dedicated to them
- The pharaohs were also held as living Gods
- Egyptians also believed in life after death
- They believed that when they die, their souls called Ka would live in them for ever
- For the Ka to live, it needed either the body of the dead person or a copy of it in the form a statue
- The Ka will return each night to the body or statue
- If both the body and statue are destroyed, then the Ka would
- To ensure the availability of a body to the ka of a dead person, the Egyptians developed a process of preservation called mummification
- The process involves cutting open the body and removing all the internal organs and brain
- The body is then packed in natron to dry it out
- It is then soaked in oil to preserve it
- Next it is wrapped in a special cloth called mummy cloth
- The mummy is then coated with wax and a face painted onto its wrapped head
- The mummification of a pharaoh took a period of 72 days
- Once mummification is finished, burial ceremonies are performed, and the body is ready for burial

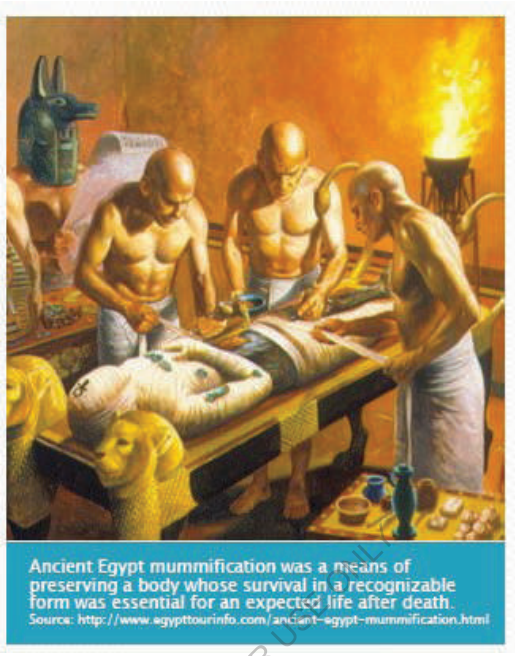


Figure 2.2: The ancient Egypt mummification

Buildings

Tombs were most outstanding architectural element of the period

- Tombs also serve as the focus for the worship of the dead
- The Tomb evolved during the old kingdom from the Mastaba, through the stepped pyramid to the renown ancient Egyptian Pyramid

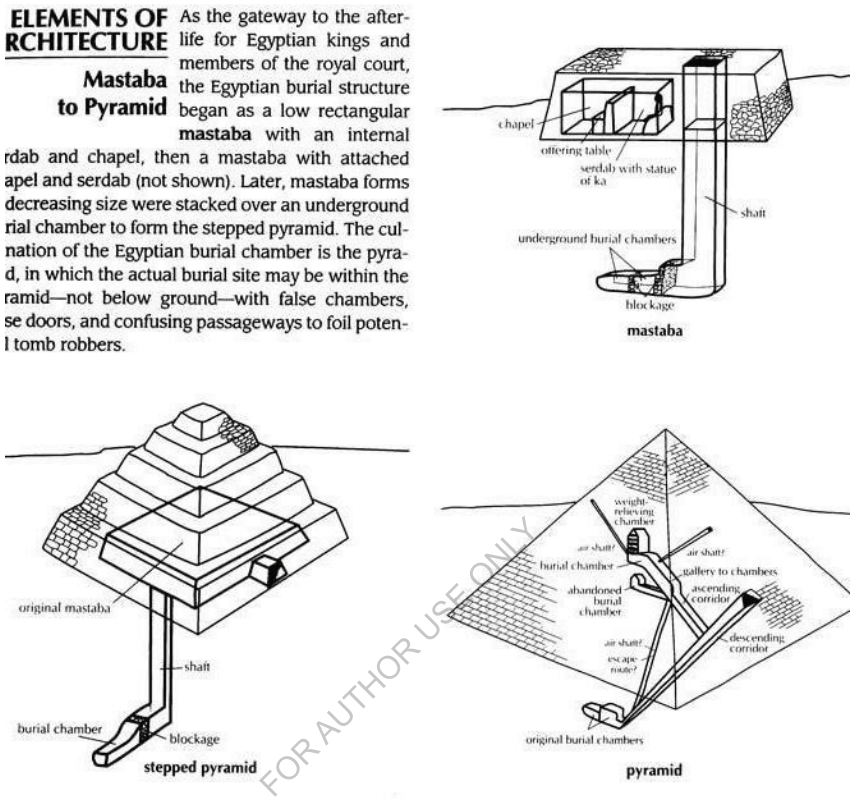


Figure 2.3 : The Egypt Tombs

The development of Egyptian burial sites and buildings spreads over centuries, starting with simple burial mounds, and then working up to a more formal structure, the mastaba, which were used by the early pharaohs. From there, the idea of the stepped pyramid isn't a great leap; it's basically stacking up mastabas.

- One of the earliest stepped pyramids (27th century BCE) was for Pharaoh Imhotep (whose name should be familiar from the movie The Mummy. From here, the proper pyramid form is desired, in part because it looks better (gotta look good for the afterlife!), and finally we get the pyramid into the form we know and love.

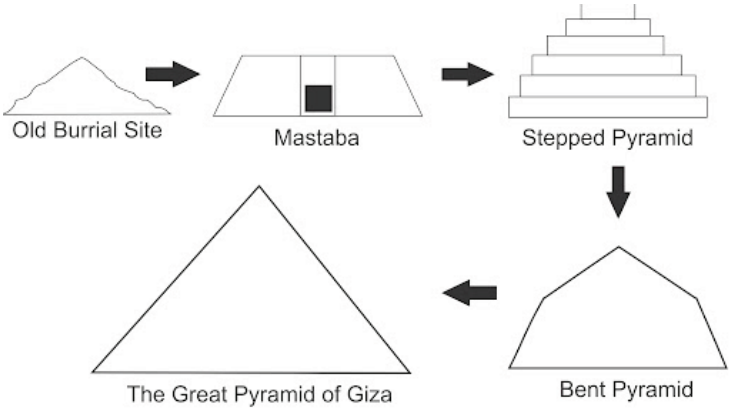


Figure 2.4: The Egypt Tomb Mastaba

The Mastaba

The name mastaba is derived from podiums found in the front of traditional houses

- A mastaba, or "pr-djt" (meaning "eternal house"), is a type of ancient Egyptian tomb in the form of a flat-roofed, rectangular structure with outward sloping sides that marked the burial site of many eminent Egyptians of Egypt's ancient period. Mastabas were constructed out of mudbricks or stone.
- In the Old Kingdom, rich and noble person-built mastaba for their burial in the city of the dead
- Above ground the Mastaba is a large bench of sun - baked bricks rising 9 meters high
- It had a flat top and slanting walls.

Figure:2.5: The Mastaba

The earliest method of burial in ancient Egypt was in shallow pits in the desert

- When animals preyed on bodies, the people dug deeper
- In the end they built a bench-like structure over graves to create first burial structure called Mastaba
- The mastabas will be the first royal burial types, then being reserved for scribes, priests and senior army (privileged)
- Internally, a mastaba consists of three parts- a burial chamber, a serdab and a chapel
- The burial chamber was located 30 feet below ground
- It was connected to burial chamber above ground through a shaft
- The burial chamber is the place for the burial of the dead person
- Inside the mastaba, a deep chamber was dug into the ground and lined with stone or bricks. Over time these tomb chambers sank deeper and were connected by stairs. The above ground structure had space for a small chapel to which priests and family members could bring offerings for the soul of the deceased
- It was truncated pyramids (inward sloping walls or slope) that had at least a living outward offering and dug into the ground, another area where the sarcophagus and funerary equipment was found (burial chamber). Mastabas usually clustered in large arrays

arranged through streets forming a checkerboard or lattice structure, such as Giza.

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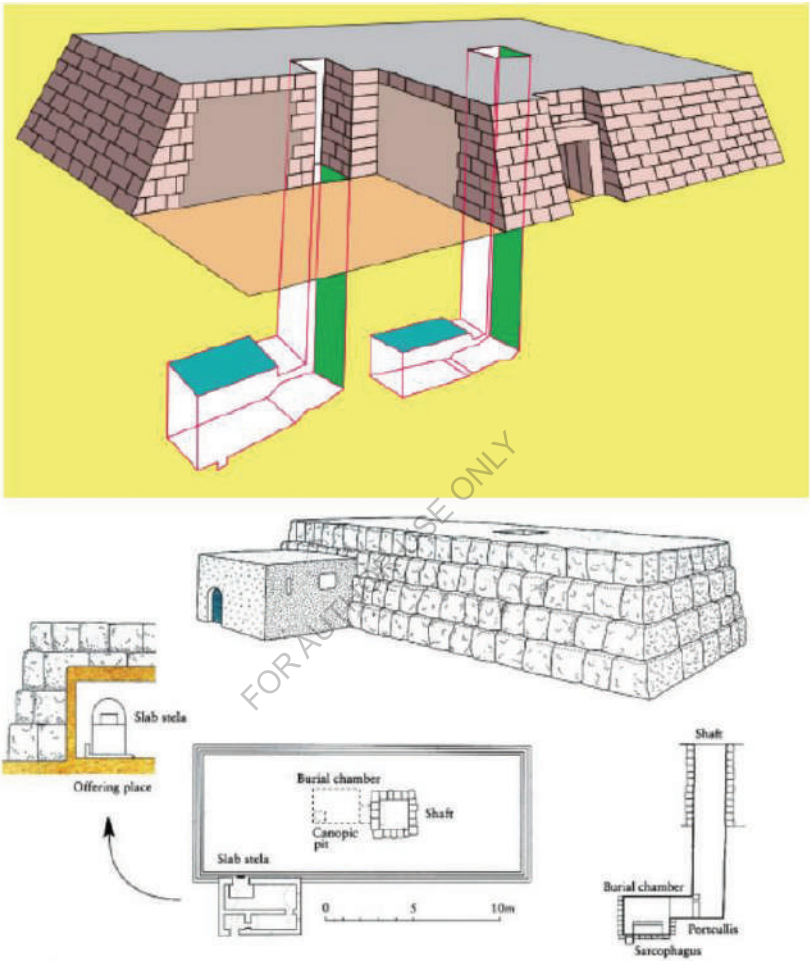


Figure:2.6: The Egypt Mastaba construction

In the chamber is found the sarcophagus where the dead body was placed

- The burial chamber is packed with all the necessary things needed in the after life
- After burial, the shaft to the burial chamber is sealed
- The earliest royal tombs were decorated with painted patterns in brilliant colors

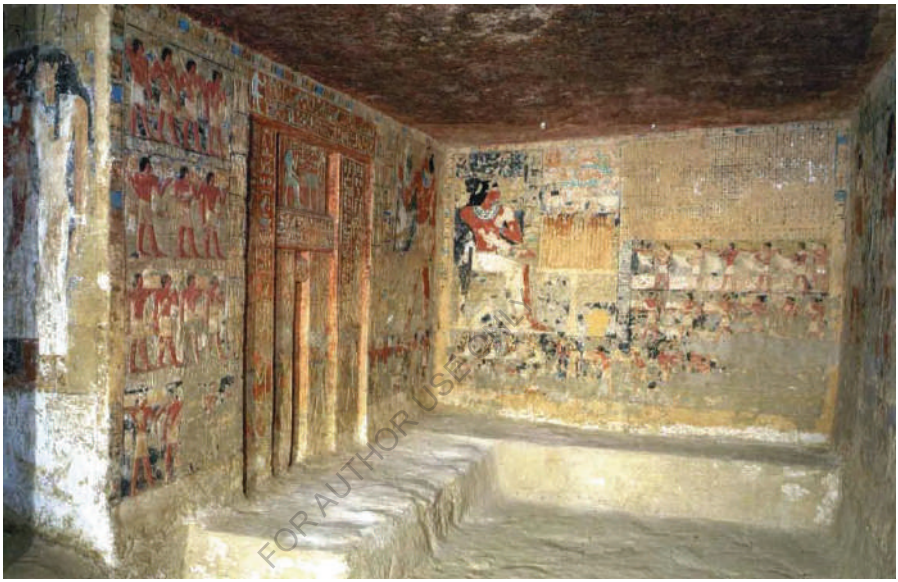


Figure 2.7: The Egypt Tomb Art mastaba of Merefnebef. Source: http://egyptianaemporium.wordpress.com/2012/10/02/tuesday-tomb-the-mastaba-of-merefnebef/

Stepped Pyramid

Later pharaohs attempted to leave differing in their burials from the rest of the privileged, appearing pyramids. Its creation required a long period of trials to find the model that we know.

- The first experiments were performed by the architect and priest for the pharaoh Zoser Imhothep, creating a staggered basis for the creation of overlapping mastabas at Saqqara pyramid. All surrounded by a complex of temples that can vaguely remember the Mesopotamian ziggurat
- Imhotep initially conceived of the tomb as a large Mastaba of stone. Dissatisfaction with the result led to the stacking of mastaba one on top of another
- The result was the stepped pyramid with five sloping setbacks
- The stepped pyramid is the intermediate step between mastaba and geometric pyramid
- Stepped pyramid was 200 feet high with 6 giant steps
- The burial chamber is entered from the north side and is 92 feet down
- On either side of the chamber are storerooms for the kings treasures
- All the treasures buried with Zoser have long been stolen
- A stone statue of zoser was also recently found staring out through peep holes in his Serdab.

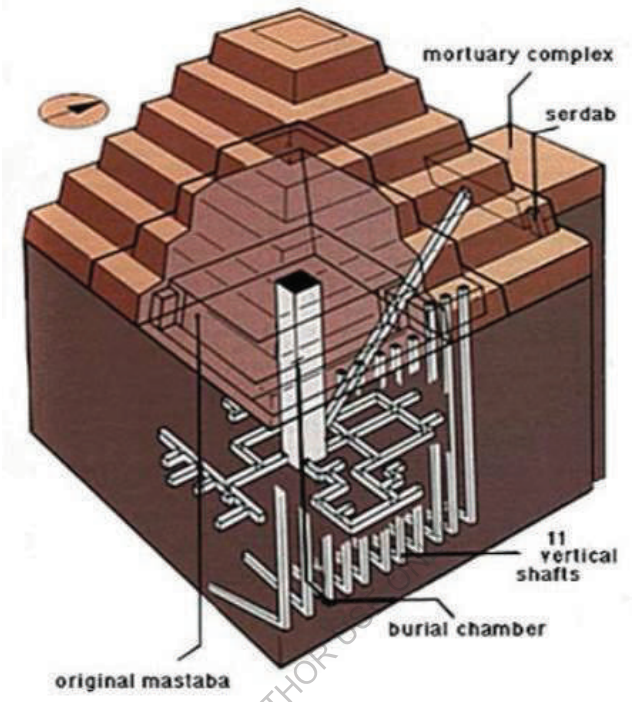


Figure 2.8: The steps pyramid

The Serdab is located on the north side, along with the funerary temple

- The stepped pyramid stands at the middle of a large complex
- The funeral complex consisted of palaces, temples and the stepped pyramid
- They were all surrounded by a fence wall 33 feet high

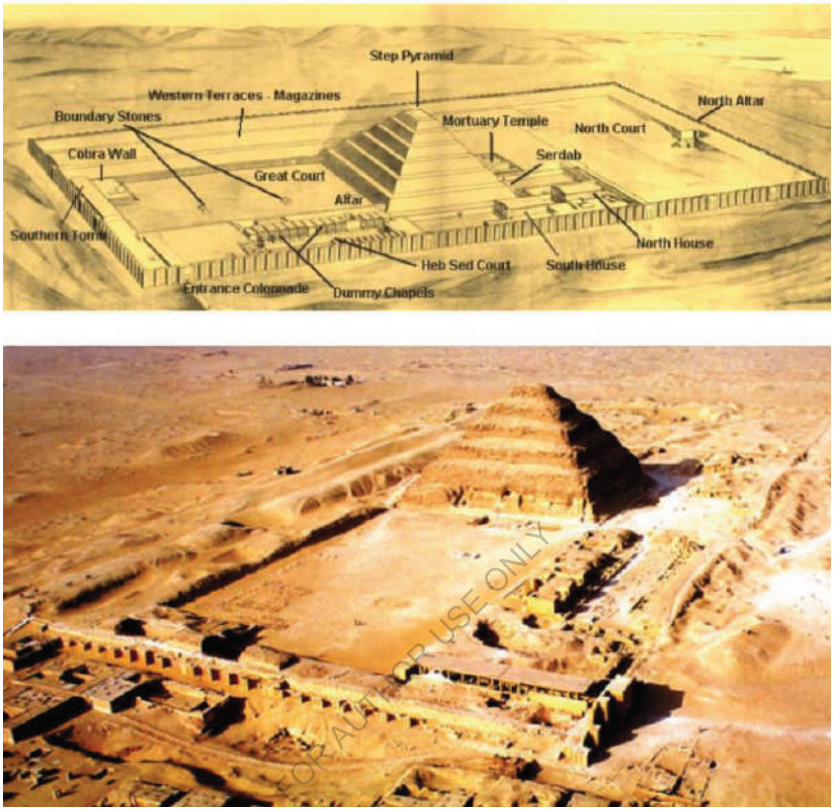


Figure 2.9: The steps pyramids on site

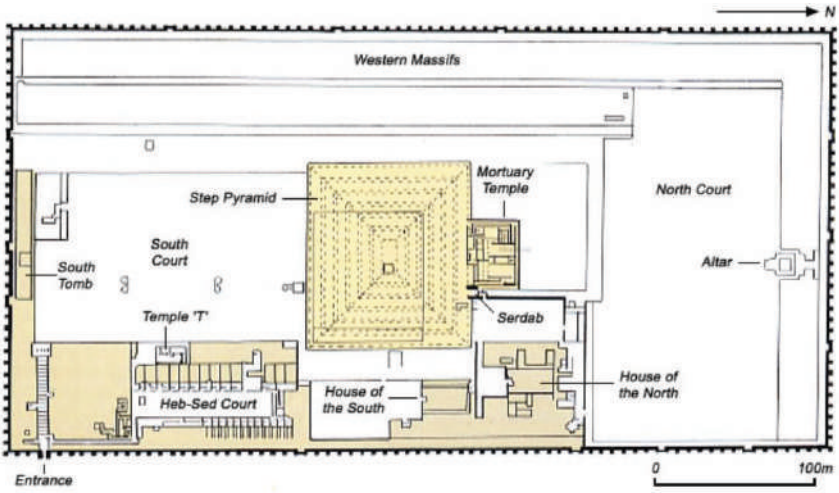


Figure 2.10: The steps pyramid plan

The Early Kingdom Tombs

Snefru's 2nd pyramid (north pyramid) is place he was buried

- Low pitch of 43° instead of 52° making it look stunted
- A true pyramid has an incline angle of 52°.

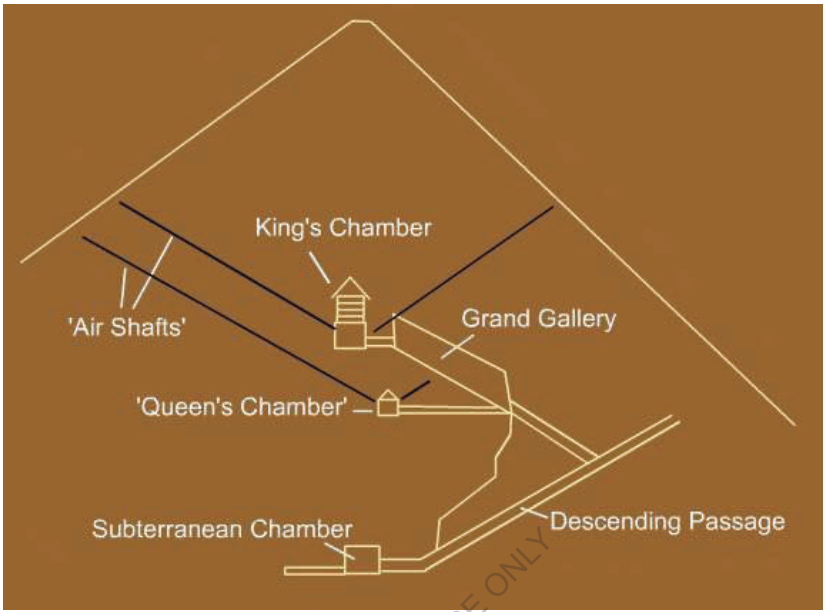


Figure 2.11: The pyramid section

Early Kingdom Tombs at GIZA:

Construction of a true geometrical pyramid achieved during reign of Cheops, son of Snefru

- Located at Giza
- Called Great Pyramid because of size
- The pyramid is 147m high on a plan 230*230m

Figure 2.12: The pyramid on site

Two additional pyramids built at Giza

- 2nd largest in the center built by Chefren, the son of Cheops
- 3rd and smallest built by Mykerinus, son of Chefren
- The three together are referred to as the Pyramids at Giza

Figure:2.13: The three pyramids in Giza

Three are aligned diagonally along the projection of the diagonal of the great pyramid

- The small pyramids close by were built for queens

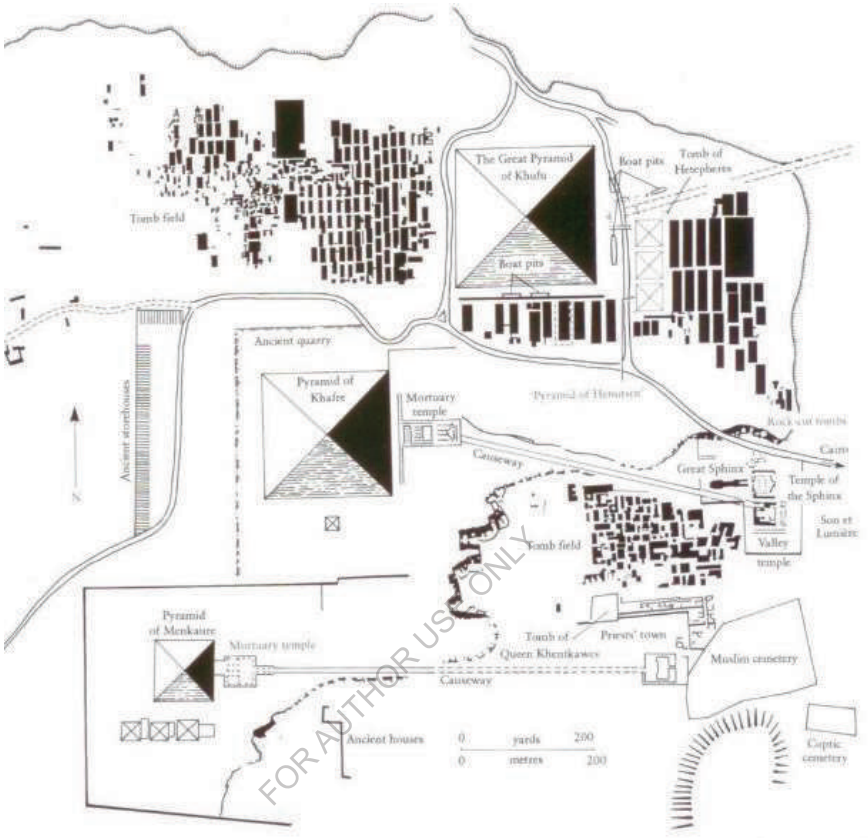


Figure 2.14: The Great pyramid

Great pyramid unique internal arrangement

- First: a chamber built below base of pyramid
- Another chamber built above it known as queen's chamber
- Larger burial chamber known as the king's chamber-built center of pyramid

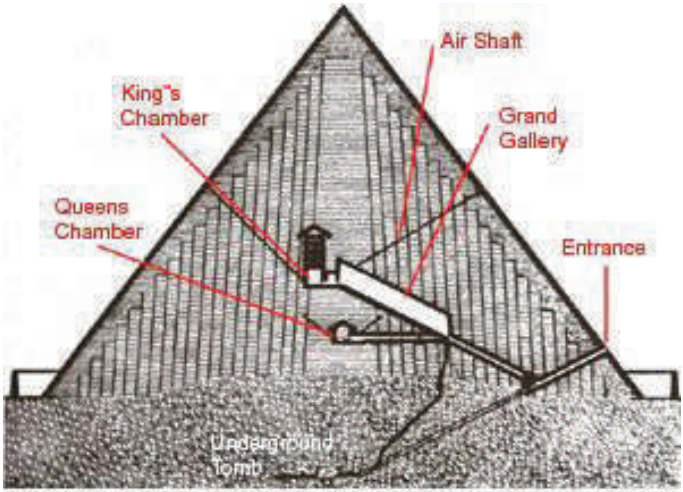
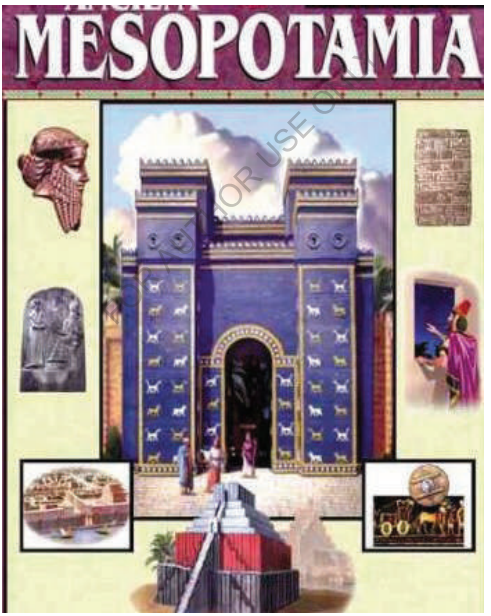


Figure 2.15: The Great Pyramid section

CHAPTER THREE

Mesopotamian Architecture



3.1 The Main factors helps in appearance Mesopotamian Architecture

3.1.1 The Location

Mesopotamia (between the rivers): the “fertile” lands between the Tigris and Euphrates rivers.

"Land of rivers") is a name for the area of the Tigris–Euphrates river system, corresponding to modern-day Iraq, Kuwait,

The northeastern section of Syria and to a much lesser extent southeastern Turkey and smaller parts of southwestern Iran.

Fig. 3.1 The location of Mesopotamian architecture (Iraq today)

3.1.2 The Climatic Factor

The arid environment which ranges from the northern areas of rain-fed agriculture to the south were irrigation of agriculture

3.1.3 Economical Factor

Shifts in the river channels

Climatic changes

Increased salinity of formerly irrigated lands

Mesopotamian specialists include influential merchants, artisans, artists, and architects

3.1.4 Historical Factor

1) Ancient Mesopotamia (9000 BC)

2) Sumerians, Akkadians, and Neo-Sumerians

Sumerians (4000-2350 BCE) formed the world's first civilization

3) Babylonians, Hittites, and Assyrians

1800 BCE: Babylonians dominated Mesopotamia

Most celebrated Babylonian kind is Hammurabi

The Persians

- Sumerians (4000-2350 BCE) formed the world's first civilization
- The typical form of Sumerians settlements was the city-state
- City-state: a political and religious center devoted to serving gods based on natural elements.
- Urban communities developed around religious shrines, the dwelling places of the gods and the repositories for surplus food stores, leading to the development of monumental temple complexes at the heart of Sumerian cities.

3.1.4 Religion Factor

They Believe of many Gods, from stones

Figure 3.2: Mesopotamian GODs.

Mesopotamian religion was the first to be recorded. Mesopotamians believed that the world was a flat disc surrounded by a huge, holed space, and above that, heaven. They also believed that water was everywhere, the top, bottom and sides, and that the universe was born from this enormous sea.

In addition, Mesopotamian religion was polytheistic. Although the beliefs described above were held in common among Mesopotamians, there were also regional variations. The Sumerian word for universe is an-ki, which refers to the god An and the goddess Ki

Their son was Enlil, the air god. They believed that Enlil was the most powerful god. He was the chief god of the Pantheon, equivalent to the Greek god Zeus

and the Roman god Jupiter. The Sumerians also posed philosophical questions, such as: Who are we?, Where are we?, How did we get here. They attributed answers to these questions to explanations provided by their gods.

3.2 Comparative points in Architectural Elements

- **PLANS**: Major buildings formed a U-shaped open court, rectangular shrine room
- **WALLS**: Wall niche or recess, constructed to contain a cult statue. Alters and niches were found in all later Sumerian temples
- Facades were articulated by buttressing pilasters
- **Material**: sun-baked brick; a material easily obtained by shaping mud in molds and leaving it several weeks in the sun. The area is generally lacking in building stone, precious metals and timber
- **Roofs** were fabricated from lightweight wooden members or reeds that could not span great distances
- **Decor** :Mosaic, Courtyards ornamented by mosaic

Fig. 3.2 Showing the décor of Mesopotamian Architecture; sculptures, art plants and animals on the walls.

- **Domes**: they used dome
- **Arches**: they used circular arch
- **Columns:** they used Roman's style columns
- **Openings**: high level small windows
- **Scale**: out of scale
- **Colour:** Natural colour and paint
- **Form**: cubic, Rectangular forms
- **Surfaces**: square, rectangular

3.3 City of Mesopotamian

This plan shows the walled precinct with the ziggurat and enclosing city wall. A portion of the residential section that has been excavated can be seen to the southeast of the city Centre. Note the maze-like arrangement of the houses, contrasting sharply to the larger open spaces of the administrative and ceremonial Centre.

Fig 3.3 Mesopotamian city

Figure 3.4: City of Ur, Mesopotamia

3.4 Types of buildings

3.4.1 Ziggurat

- This drawing shows the original details that re now lost, including recessed panels defined by pilaster strips and parapets. This population below could observe the priestly processions up the successive flights of stairs to the temple on the uppermost platform

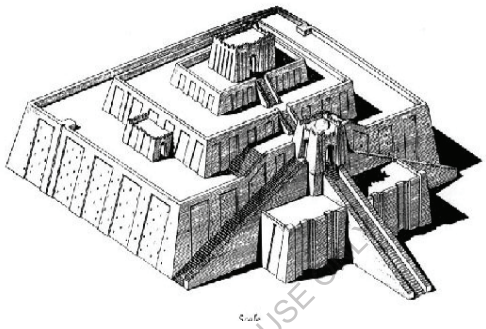


Fig. 3.5 : The ziggurat with 5 steps

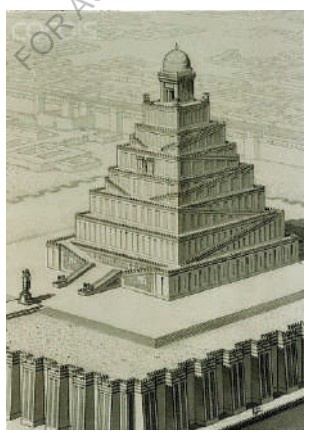


Fig. 3.6 The ziggurat with 7 steps

3.4.2 The White Temple

Many temples in Mesopotamia were erected on raised platforms. The base of this temple was made in part with the rubble from the previous buildings on site, buttressed a regular pattern and protected by layers of whitewash,

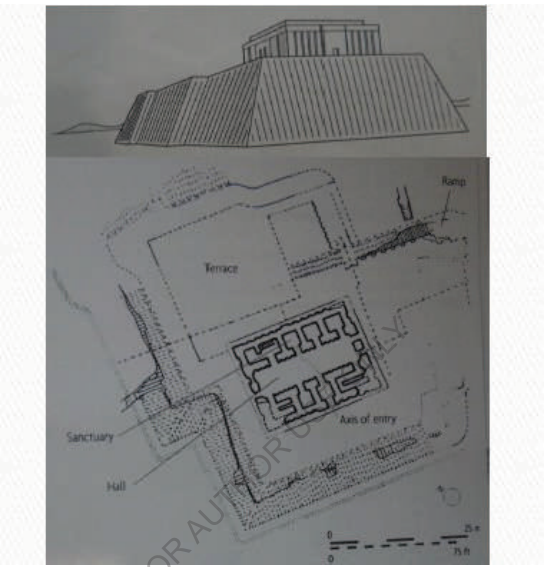


Figure 3.7: View and plan of the White temple, Uruk, Mesopotamia (Iraq)

3.4.3 Houses

Surviving foundations indicate houses laid on the right-angled plans with living spaces organized around courtyards (shown hatched), a configuration that promoted urban density while also providing privacy and fresh air to each dwelling.

Figure 3.8: Plan of the residential quarter, Ur, Mesopotamia

3.4.4 Palaces

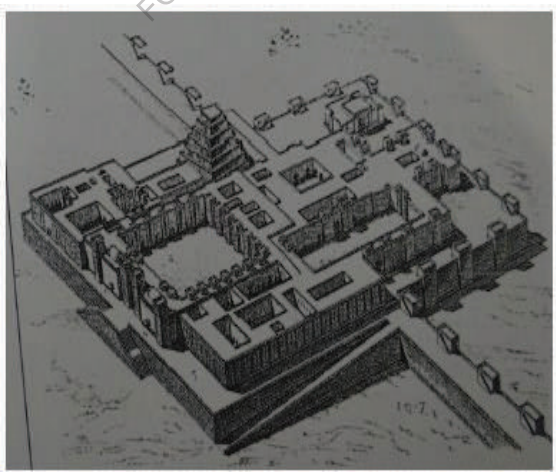
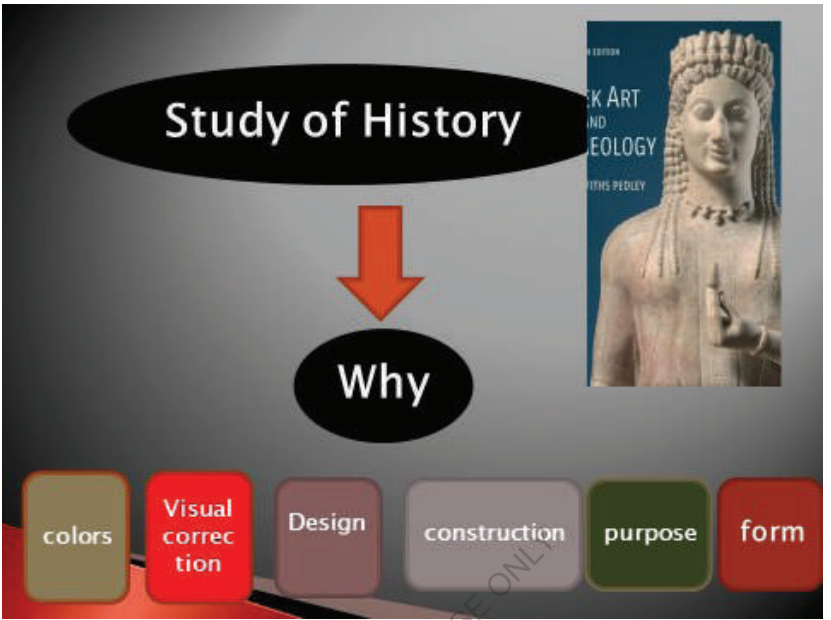


Figure: 3.9 Reconstruction of palace, Khorsabadm Assyria (Iraq)

CHAPTER FOUR

GREEK ARCHITECTURE



Historical review of the Greek Civilization

- Established in the group of islands of ancient Greece
- It has a great importance
- Its strategic location in the Mediterranean Sea where the ancient east civilization makes it easy to communicate so the whole zone became a center of ancient civilizations
- Greek civilization become the core of all European civilizations
- It is based on the interaction between Ancient Egyptian and Mesopotamian civilizations
- It is the classic civilization still used in all the world
- Greek civilization did not develop in isolation of other civilization, however it obtains its own thinking and concepts from them, then it developed these concepts to become the Ancient Greek civilization.

Greek people were very sensitive for beauty and dignity

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- Greek people were very sensitive for beauty and dignity

The Geographic factors

1- The peninsula of Mura located in Aegean Sea and the

Other small isles are considered the original

Country of the Greek

2- These isles in the Mediterranean and Aegean Sea

Make the communication much easier

3- Its close location to the civilizations of the east

Make it possible to get benefits from its culture

4- Mountains and the high topography divided

Greece into small, isolated regions, with no communications between them

5- Small states grew around big cities and became independent economically and politically

6- However internal rivers make easier to transit from one city to the other . Rivers were considered also ways of treat and violation

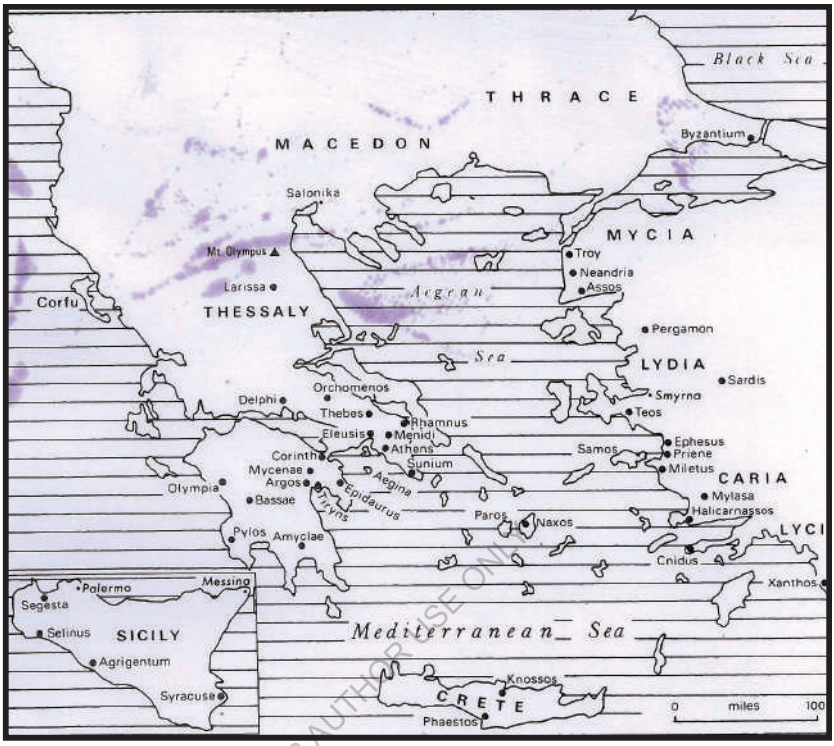


Figure 4.1: old Europe Map

Impact of topography and Geographic Factor

- The mountain nature of Greece led to the difficulty of making one unified strong big State, but creates small conflicted states
- These mountains shifted people towards the sea as a way of communication
- Sea created the nature of coasted commercial civilization
- Fleets, especially Athens fleet, were as the sight of Greek civilization and facilitate riding sea among isles, gulfs and peninsulas

- Fleets make easy transformation and migration of people from one region to the other and establish new countries with new thoughts and origins from other civilization
-

Geological factors

Greece was characterized by new building materials: -

Marble

- Marble – the Greek were aware of the character of marble and used it for facing and sculpture
- The most important marble was the Travertino
- Marble creates hardness beauty and Luxurious to the facades

Alabaster

- Alabaster has been used sometimes

Bronze

- Bronze has been used for internal space treatments which led to beauty and luxurious

Wood- Timber

- Wood was not available in Greece so it must be imported from abroad, wood was used for ceilings of temples to create luxurious and dignity

Historical Factor

- Greece suffered several invasions of the Persians, however many victories existed in the different marine and ground wars.
- The Greek people records these victories by the Greek temples they established after that.
- The Capital Athens flourished during the reign of Heraclius 444-429 BC. M

- In the reign of Alexander, the Great, king of Macedonia 334 BC. M the great conquests spread until it reached to the north of India in Asia to Egypt
- During his reign the art of the Hellenic civilization spread to west of Asia . After his death in 323 BC. the empire was divided and distributed among his leaders.
- Egypt became the share of Ptolemy who founded the State of Ptolemy which had great share in the history of Ancient Egyptian Architecture.
- Greece by its isolation gave the opportunity to Rome to interfere in their internal policies so it become under Roman rule by 146 BC. M

Climatic Factor

- Climate is moderate Winter is for a limited period
- The amount of sunshine in a long summer - and thus the small openings were required
- Lighting temples were carried out through the doors only and have no windows
- Housing had small openings and were lighted by the interior courtyards
- In the winter rains were much of what led to the use of pitched roof

Historical Factor

The original Greek people were from Asia and Europe. They came as a continuous migrations forming 4 groups:

1- The Allegan coming in the 12 century BC

2- The Doric people who lived in the peninsula of Mura, they threaded other immigrants.

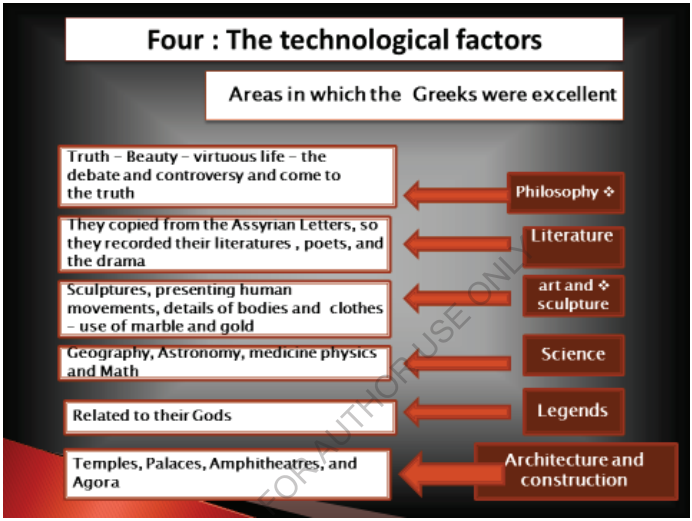
3- The Ikhanian who lived in the north

4- Ionic people who had great cities Miletus and Aphasias

The Greek civilization has developed into three main periods: -

- Age Alorge
- The classical age
- The age of Hellenistic

The technological factors



Religious influences

Religion played a great role in the formation of the Greek architecture Religion

- They worship Persons and Natural phenomena – each city and region had its own god and the way of worshiping-
- They looked to the religion a deep philosophical look
- The statue of the god was usually found in the middle of the Cella of the temple (Cult religion where gods were as idols)
- This worship is different than those of the Egyptian where God was found every where

- ❑ Zeus
- ❑ Hera
- ❑ Appolo
- ❑ Heracles

Athena, Aphrodite, Jupiter, Juno, Minerva, Venus, and Nike

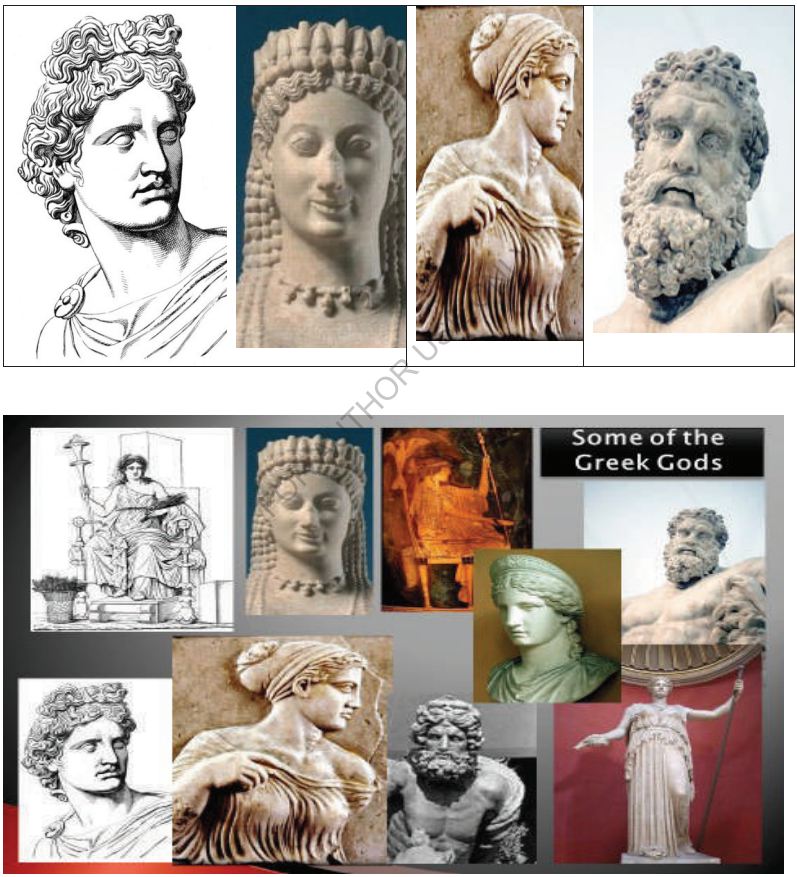


Figure 4.2: The Greek GODs

Human Factor

Greek people were aware of the followings	
Religion and religious festivals	Building temples
Love of music arts and drama	Building amphitheatres
Love of sports	Building stadiums
Spirit of adventure and travel	Importing orders from outside Greece
Loving of life and open spaces	Internal courts
Loving Science , philosophy and Math	Design of orders and columns
Great love of sense of beauty	Giving care to building proportions
Understanding of visual studies	Solving the problems of optical correction

General Forms of Architecture

Religion Buildings

Temples were built in the upper part of the city

Civil Buildings **Houses, Palaces, Amphitheatres, Sports , administration buildings**

- Greek Architecture is stone and marble architecture
- Some buildings were built by bricks
- The basic concept was the accurate geometrical order in the calculation of dimensions and proportions
- The main structural idea was what is carrying (bearing elements) and what is carried (non-bearing elements)
- Huge bearing columns and ornaments and entablature are the carried elements
- Walls are very tough coherent and adjacent
- Luxurious architecture
- An architecture inspired from the Ancient Egyptian and Persian architecture
- They tend to make optical correction

Optical Correction

Greek architecture was characterized by aesthetic features and work to consolidate the full beauty by correcting and improving the architecture of the temple to another optical corrections

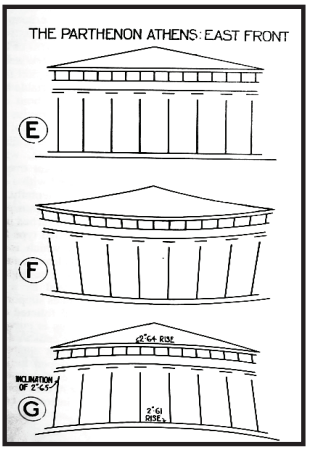


Figure 4.3: Optical correction

Golden Section

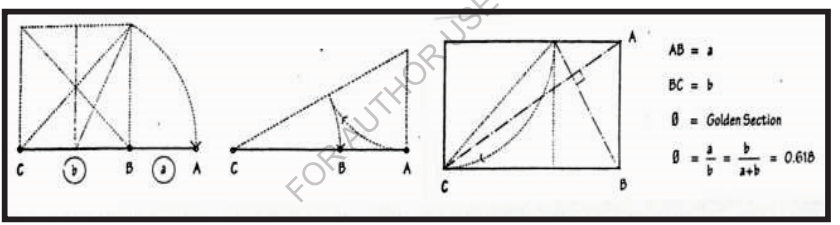


Figure 4.3 : The Golden section

- **Golden section is a rate associated with a proportional relationship and dimensions of the human body**
- **Buildings must be linked to a calculated system related to the proportions of the human body**

Golden section must be applied on the façades and the plans of the buildings

Structural Elements

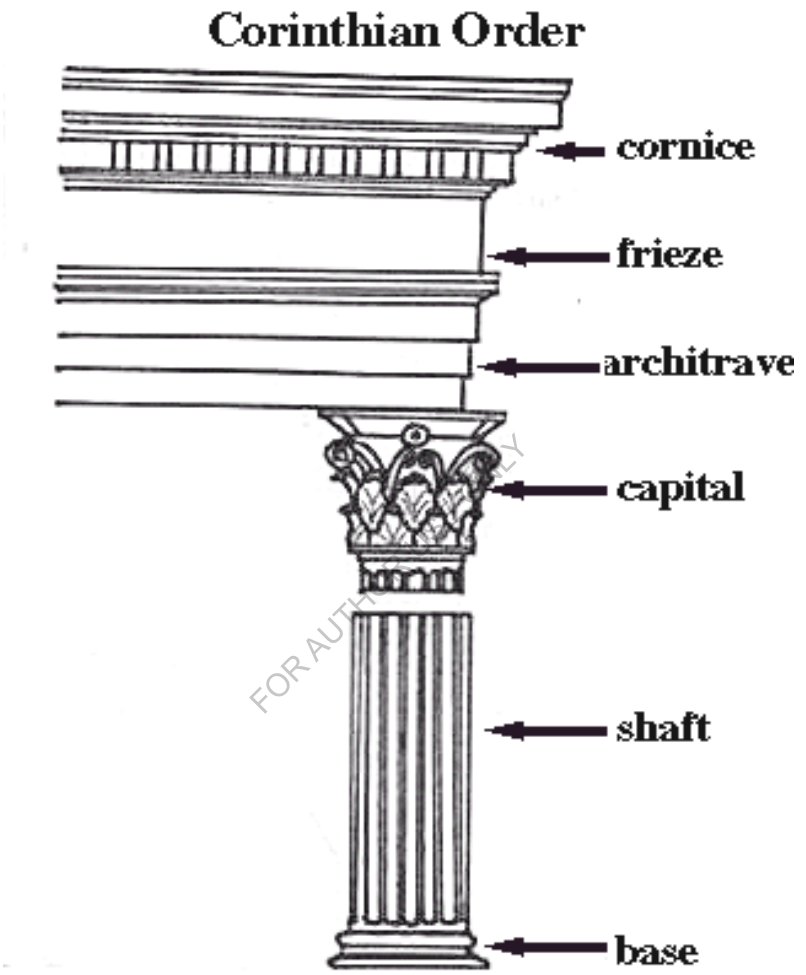


Figure 4.4: The Corinthian column

Some of Creek Buildings

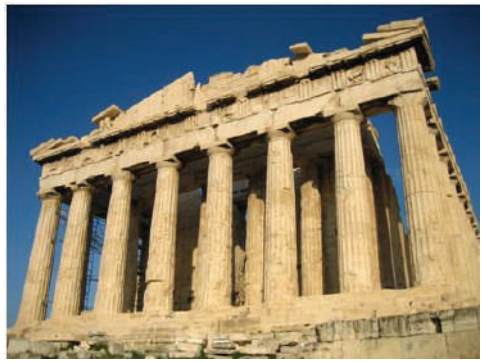


Fig. 4.5 Parthenon

Fig. 4.6 **The Erechtheion**

Fig. **4.6: the theatre of Dionysus**

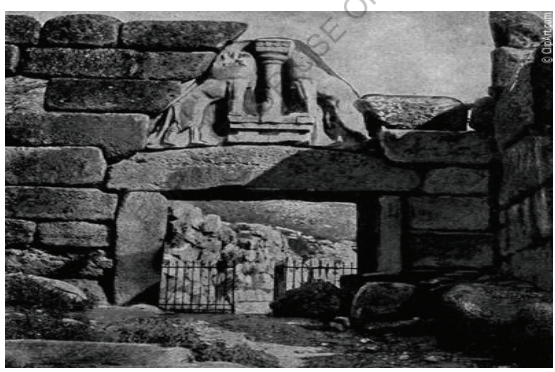


Fig.4.7 Gate of Lions

Fig. 4.8 : The temple of Aphaia, Aegina 500 BC

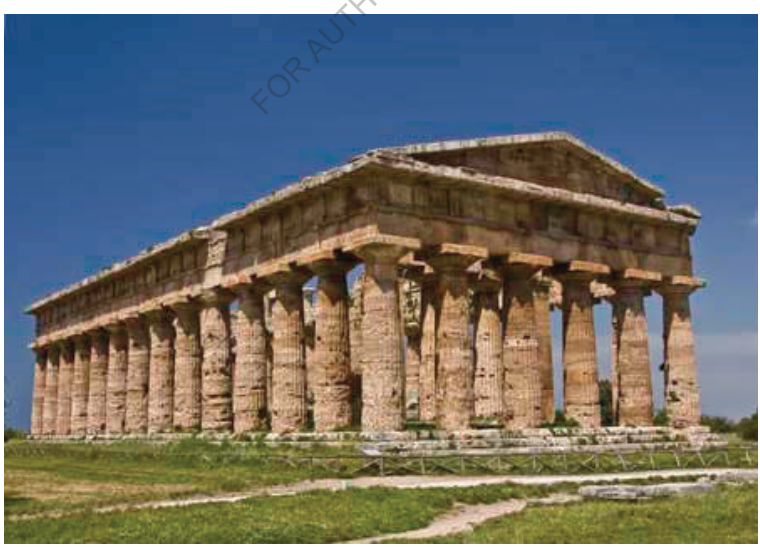


Fig 4.9: The temple of Neptune

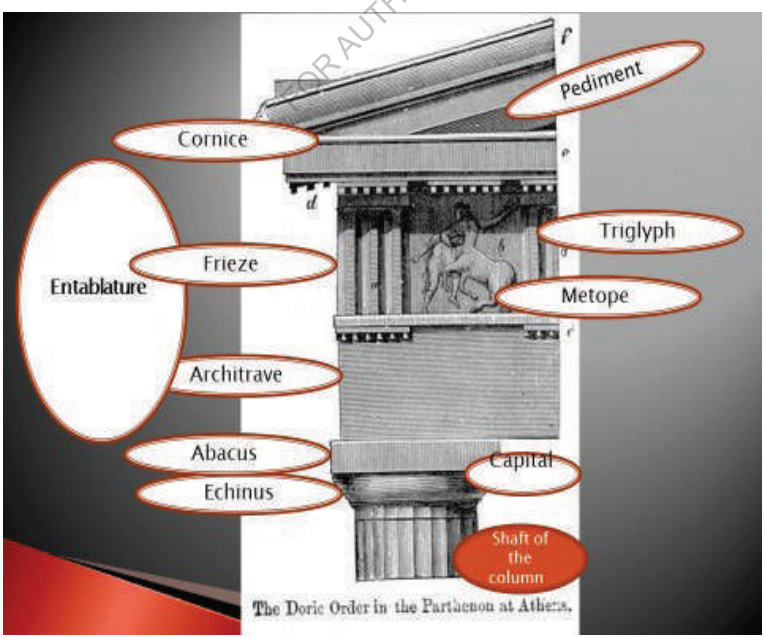
CHAPTER FIVE

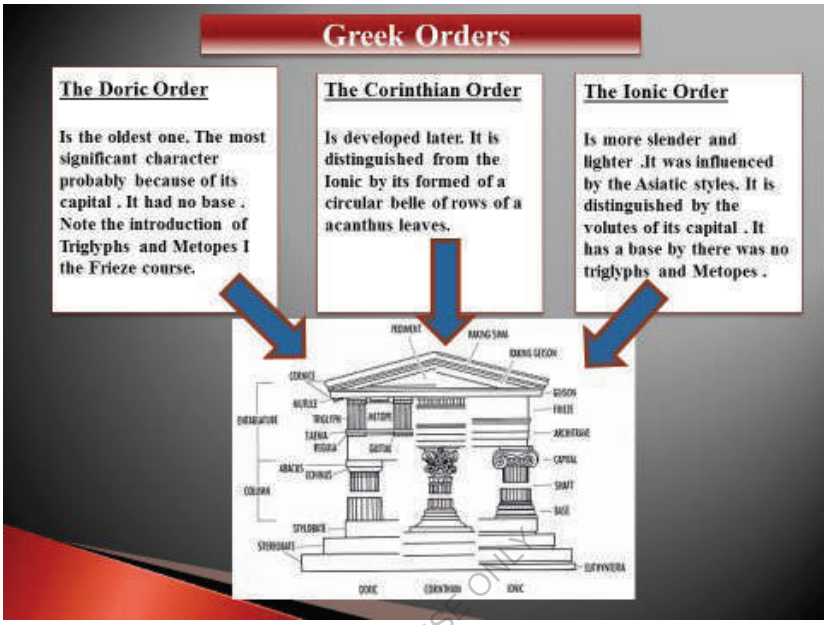
GREEK ARCHITECTURE

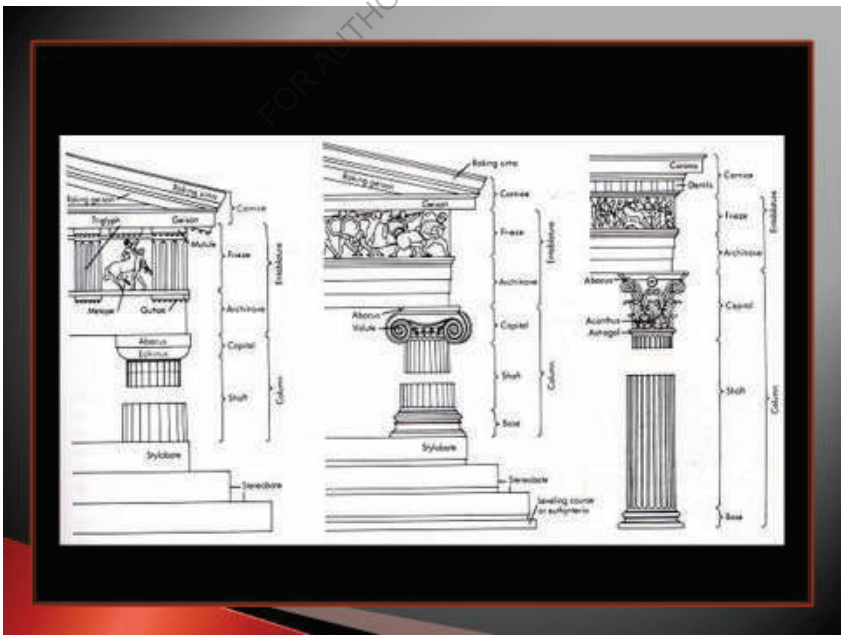
PART TWO

Terminologies Used in Greek Order studies

Stereobate	A solid mass of masonry serving as the visible base of a Greek Temple
Stylobate	The top step on which the column rest
Echinus	The quarter round mould beneath the abacus of a capital
Entablature	The group of horizontal members resting on the column . It is divided into three parts : The architrave, the frieze and the cornice.
Architrave	The lowest member of an entablature resting directly on the columns.
Frieze	The middle member of an entablature between the architrave and the cornice.
Triglyph	In the frieze of the entablature of the Doric order, the vertical blocks, which are divided by channels into 3 sections. It is the end of the wooden ceiling beams.
Metope	In the frieze of an entablature , one of the panels between the triglyph , sometimes ornamented.
Cornice	The topmost part of a classical entablature
Pediment	A low pitched gable or triangular area formed by two slopes of the low pitched roof of a temple , framed by the horizontal cornice and sometimes filled with sculpture.







Greek Orders الطرز المعمارية الإغريقية

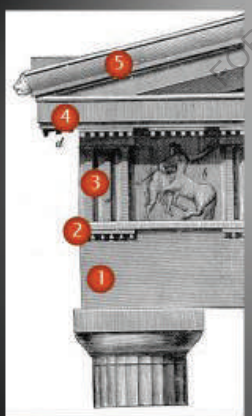
The architectural terminology "Order" is one of the classical systems of carefully proportioned and interdependent parts which include column and entablature and the stylobate

1- *Entablature* التكنة It consists of the cornice , the frieze and the entablature

2- *Column* العمود , It consist of the base, the shaft and the capital

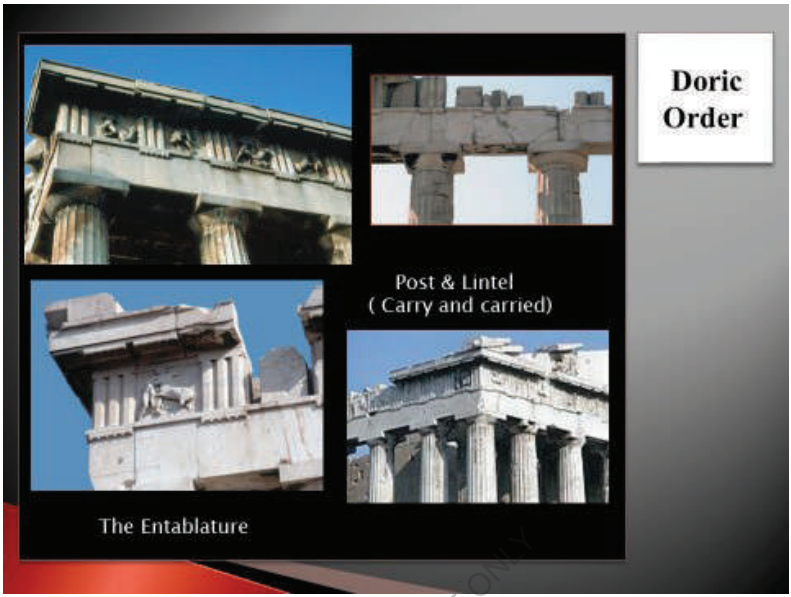
3- *Stylobate* السفل It consists of the stair under the base

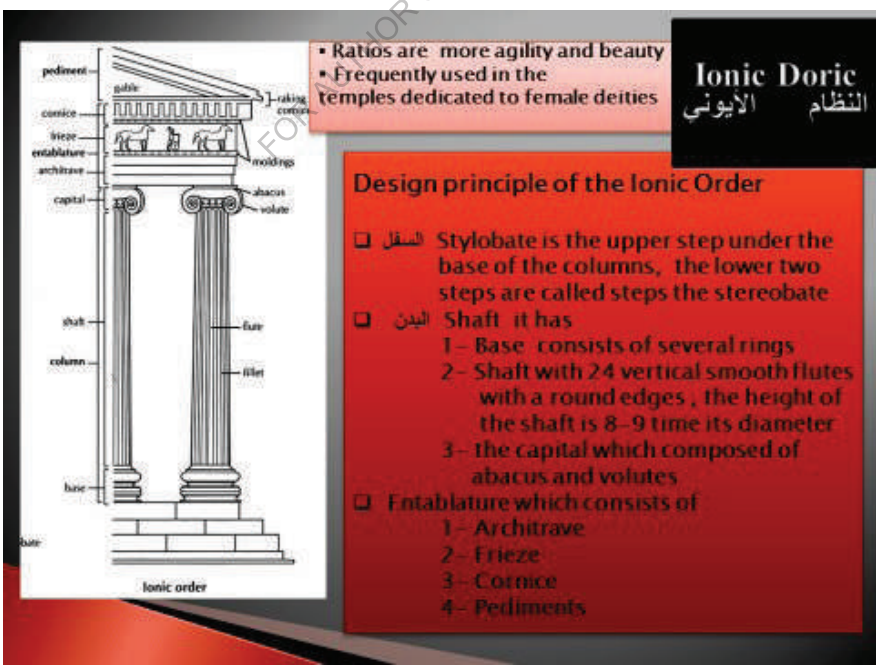
The design principle of the *Entablature* in the Doric order

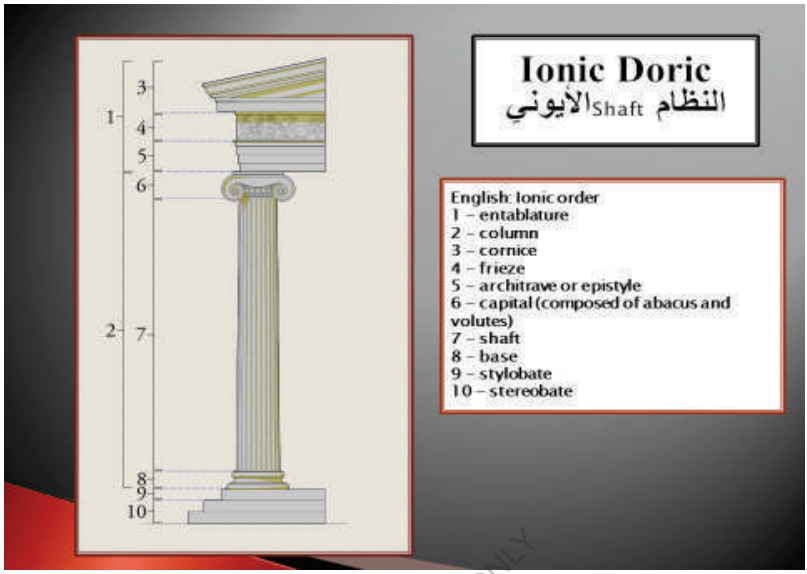


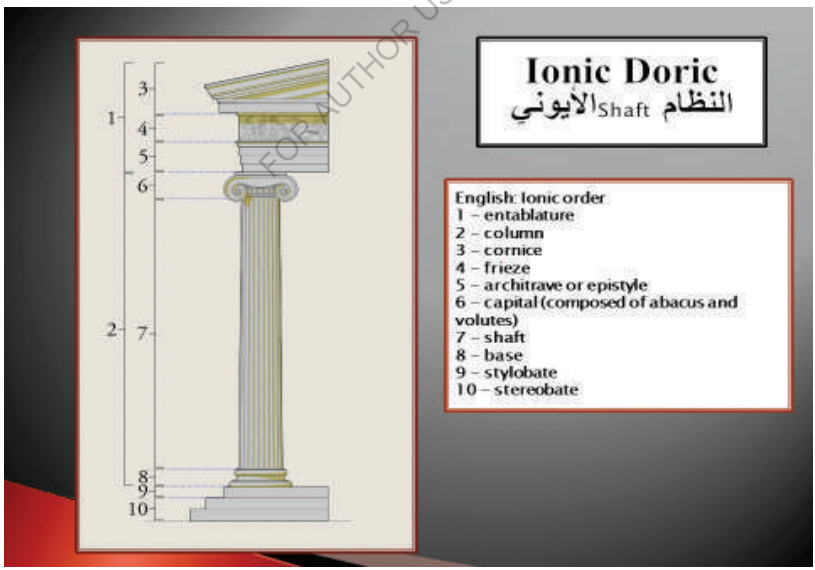
1. **Architrave** is the lowest part of the entablature , it is plain
2. nooth part
3. **Frieze** is a row of engraved squares which centered the entablature. It lies etween the architrave and the triglyphs
4. **Triglyphs** is an architectural term for the vertically channeled tablets of the Doric order, it consists of three vertical canals
5. **Cornice** is the set of projecting moldings that crown the entablature along the top of the temple.

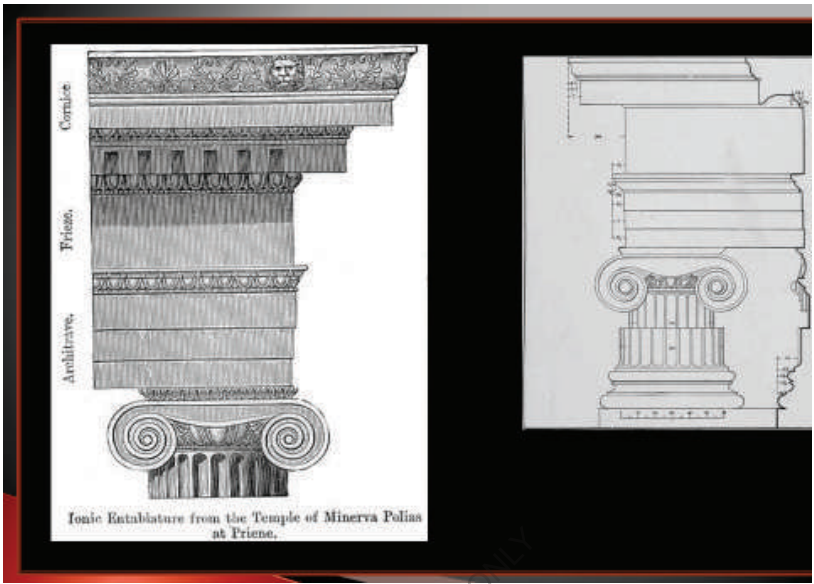
Pediment is the upper element of the entablature that consists of the triangular section





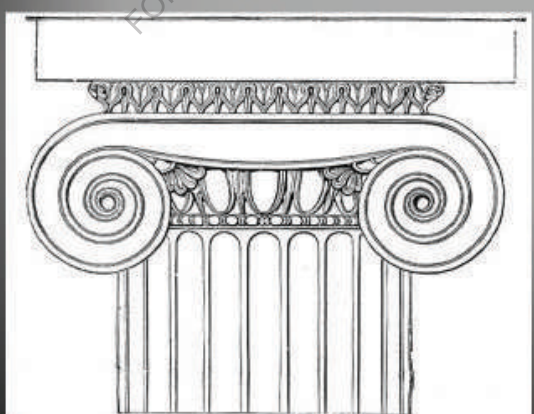


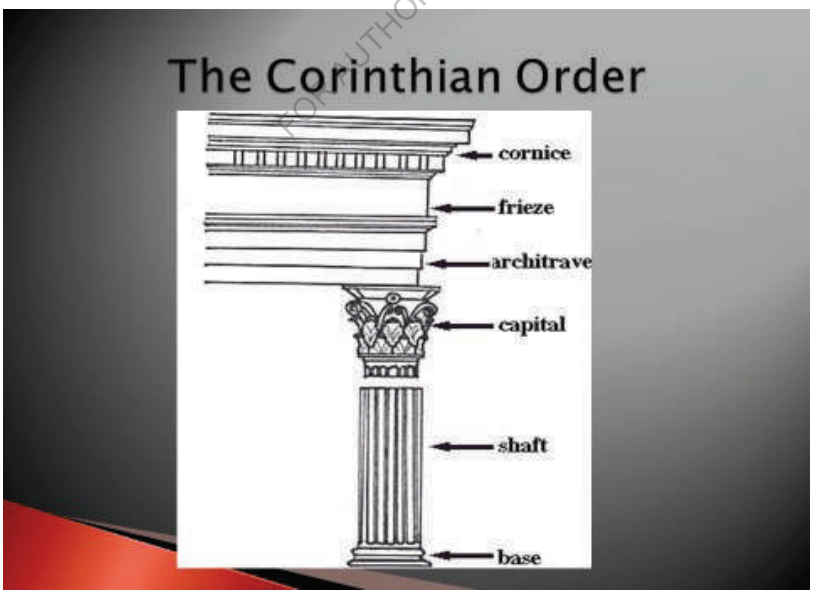


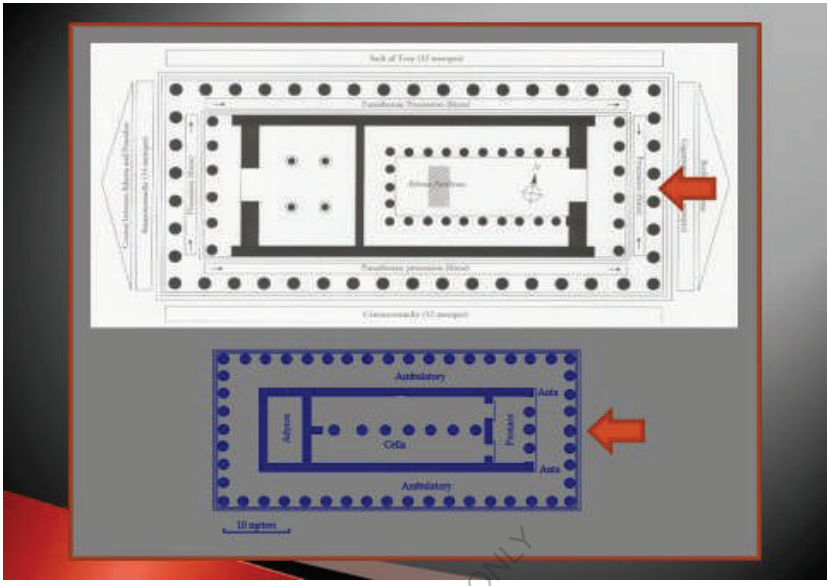


Ionic Entablature from the Temple of Minerva Polias at Priene.

The Ionic Capital


Ionic Capital from the Temple of Minerva Polias at Priene.

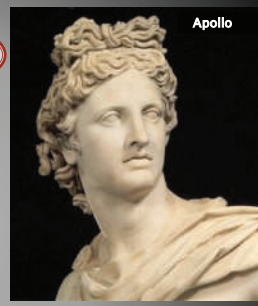




CHAPTER SIX

ROMANS ARCHITECTURE

Study of History



Why

Color | Visual correction | Design | Construction | Function | Form

Roman Empire 700 BC – 365 AC

- Rome originated about 700 BC and devolved later.
- The Roman conquest of Italy began in 343 BC. m.
- Sicily was the first who fallen in the hands of the Romans in 264 BC
- Cartagena fell in 146 BC
- Macedonia fell at the same time
- Egypt fell after the death of Cleopatra in 34 BC
- The invasion of Syria done in 34 AD
- However In 65 AD In the Empire split into East and West
- In 475 AD the west empire has ended

- نشأت روما حوالي 700 ق.م. وتطورت بعد ذلك
- بدأ الغزو الروماني لإيطاليا عام 343 ق.م.
- أول من سقط في قبضة الرومان كانت صقلية 264ق.م.
- سقطت قرطاجنة عام 146ق.م.
- سقطت مقدونيا في نفس الوقت
- سقطت مصر بعد موت كليوباترة 34 ق .م
- تم غزو سوريا عام 34 ميلادي.
- وفي عام 65 ميلادي انقسمت الإمبراطورية إلي شرقية وغربية
- وفي عام 475ميلادي انتهت الدولة الغربية

❑ساعد موقع إيطاليا على البحر الابيض المتوسط وكذلك موقع روما أن يكون وسيطا على نشر الفن والحضارة المدنية إلى أوروبا وأسيا الصغرى وشمال أفريقيا

❑ساعد موقع إيطاليا المتمركز على امتداد المستعمرات في كل الاتجاهات وفي القارات الثلاث

▪The site of Italy on the Mediterranean as well as the site of Rome helped to be a mediator to publish art to European civilization and to Asia Minor and finally to North Africa countries.

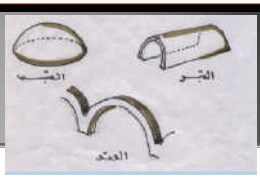
▪ Italy–based site has helped over the colonies in all directions and in three continents

❑ Marble – Italy was characterized by an abundance of marble, as Greece, which added a kind of hardness, beauty and luxury on the facades –elevations.

❑ Stone – There are multiple types of stone types of stones, therefore, we find the diversity of buildings between the marble and stone.

❑ Natural cement – known as Potzolana a natural substance used in adhesives and is located near Rome and Napoli The Potzolana is mixed with water and converted into a strong mortar contributed significantly to the emergence of new structural elements such as domes and circular arches and vaults.

❑ Sand and gravel also were found



❑الرخام – تميزت إيطاليا بوفرة الرخام مثل بلاد اليونان
وهو مما اضاف نوع من الصلابة والجمال والفخامة على الواجهات
❑ الحجر – يوجد أنواع متعددة من الاحجار ولذلك نجد تنوع المباني ما بين الرخام والحجر
❑ الاسمنت الطبيعي- ويعرف باسم بوتزولانا وهي مادة طبيعية تستخدم في اللصق وتوجد بالقرب من روما ونابولي . تخلط البوتزولانا بالماء فتتحول الى مونة قوية ساهمت بدرجة كبيرة في ظهور عناصر إنشائية جديدة مثل القباب والقبوات والعقود الدائرية
❑ الرمل والزلط

Historical factor

- The Roman history spread from 700BC to 365.
- From early time, the Etruscans lived in central Italy. They were a race of great builders. They understood the use of the arch as a constructive principle.
- Roman civilization was characterized by famous personalities throughout history and the most important is Julius Caesar – who was killed in 41 BC. m – followed by Mark Antonio – Octavos – and others
- Roman architecture is a combination of Etruscan construction and Greek orders and decorative features.
- Roman was ruled in the beginning by kings and emperors and then became a Republic
- The Roman republic ended in 31 BC at the time that Augusts Caesar became the ruler under the title of emperor. This was the period that the great Architecture was achieved.
- In 65 in the Empire was divided into two parts:
  * Eastern Empire with its capital in Byzantium (القسطنطينية– Istanbul)
  * Western Empire with its capital in Rome

Climatic factor

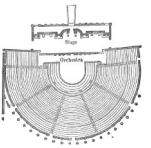
- The climate differs Along North to south of Italy
- North of Italy is cold as the climate of Europe
- Middle of Italy is moderate and the sun is shinny
- South of Italy is moderate and warm relatively
- The diversity of climate → led to the diversity of architectural treatments
- Use of architectural elements is different from one region to the other

Religion factor

Religion was not So important → so temples did not take the same high status and respect and the great number as in the Greek

- ❑ The emperor was the ruler of the state politically and religion
- ❑ Sufficient small place for worship was enough in the houses, this affects number of temples
- ❑ Different types of buildings appeared such as Forum, Amphitheaters, Stadium, Thermæ, Victory Arches , and memorial victories columns.



Roman Gods



Human Factor

Love life	buildings
violent	sport
music	Amphitheater
sport	stadium
war	Gates
Love life	Forum

[redacted]

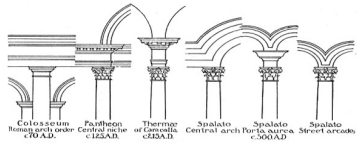
Architectural elements derived from Greek architecture kind but it was characterized by the following: –

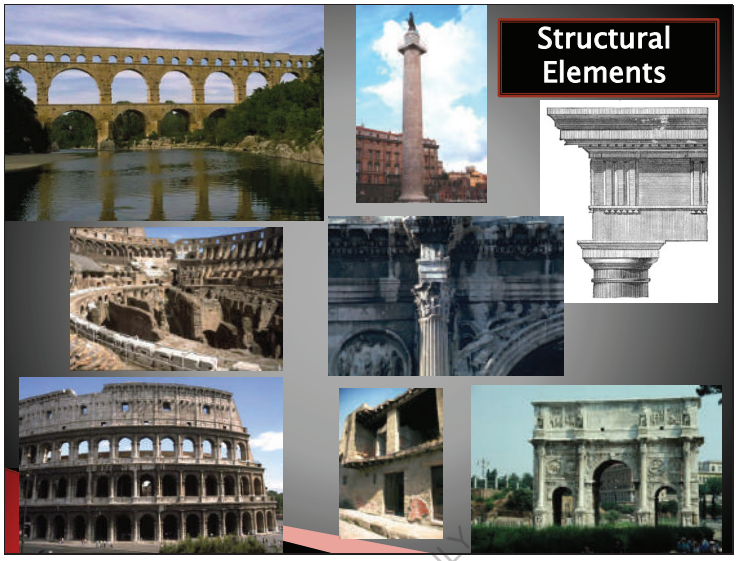
Roman architecture is characterized by

1- New structural elements such as Arches, Vaults and domes

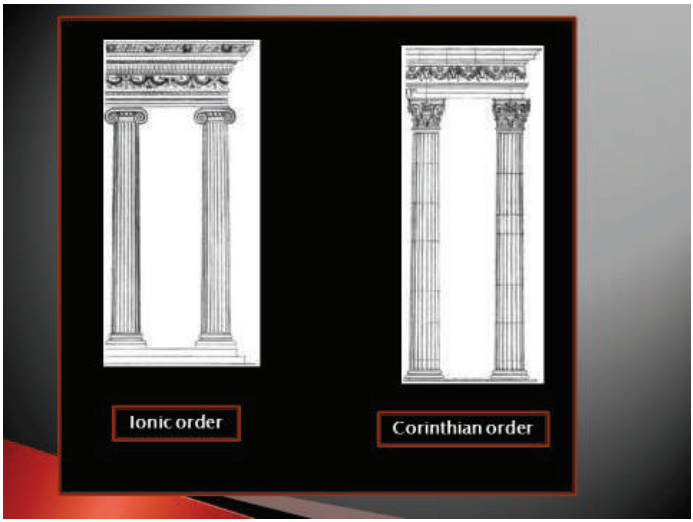
2- Roman Orders (with different than Greek)

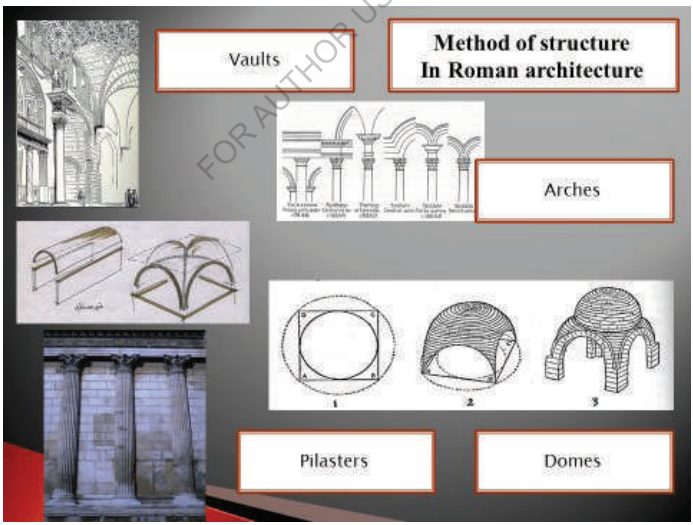
3- The discovery of Potzolana , the mortar material which had great effect on the development of Roman Buildings and the use of domes vaults and arches

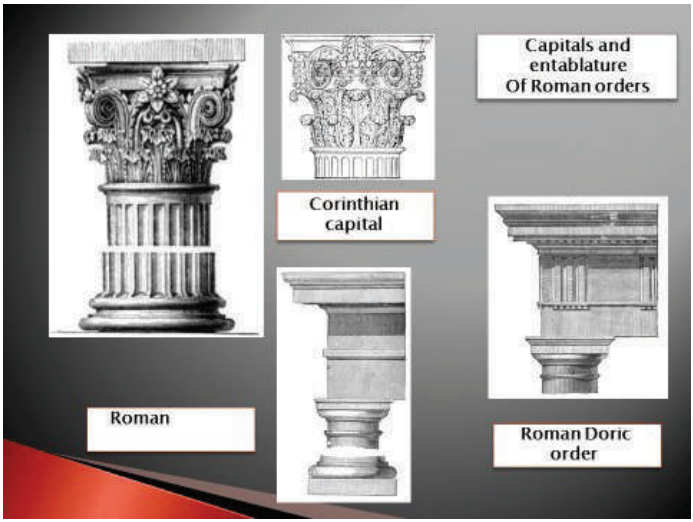


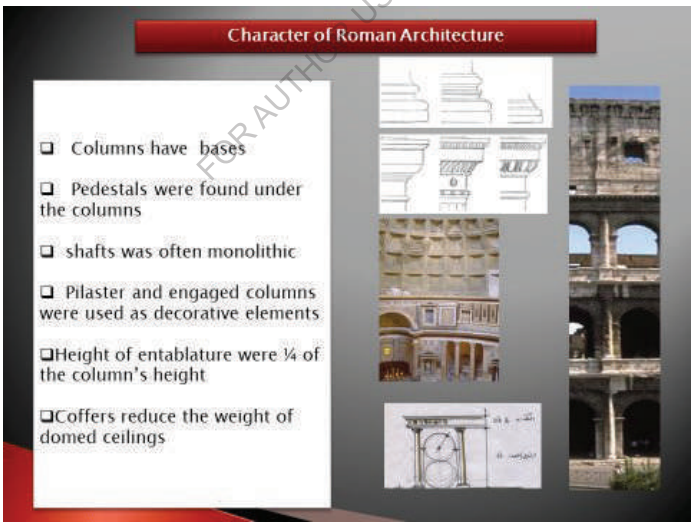

Structural Elements

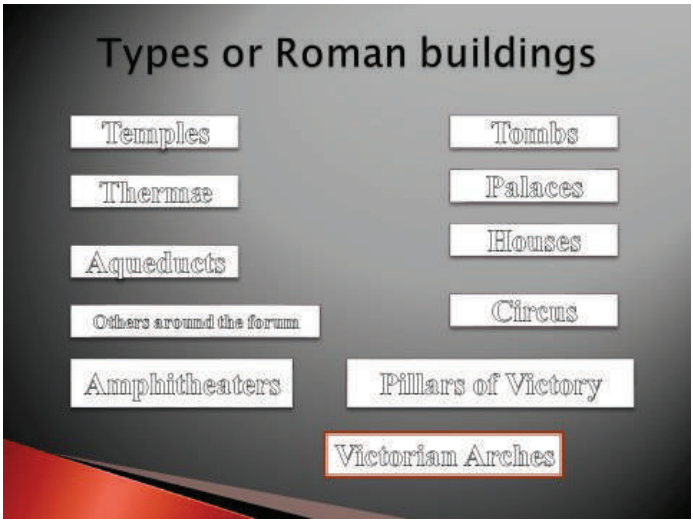

Some of Roman Architectural buildings

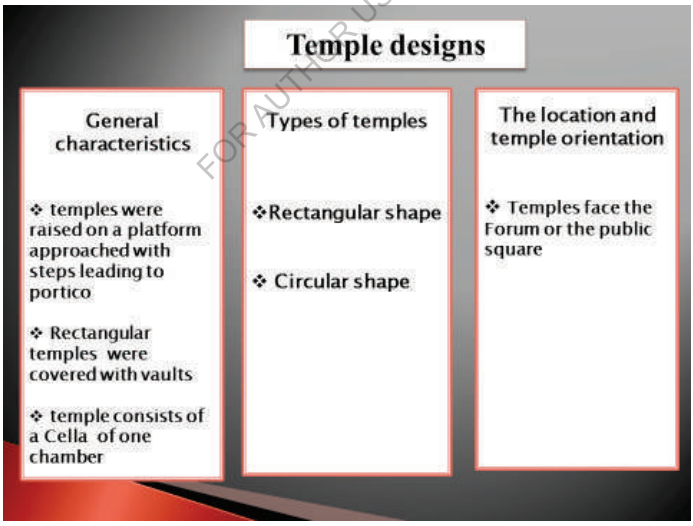








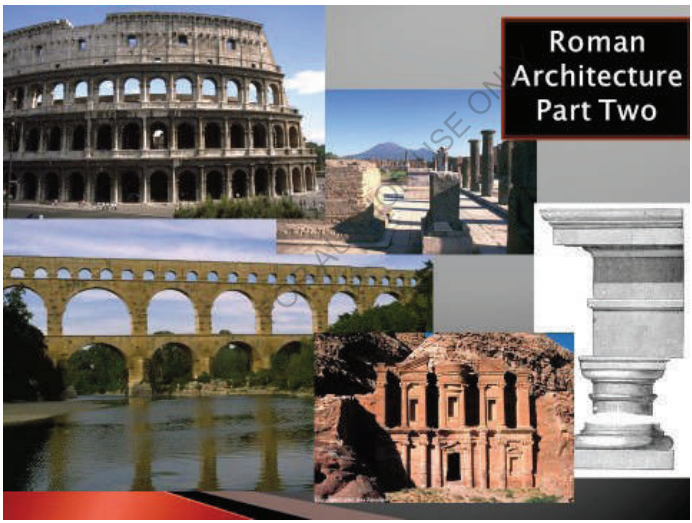




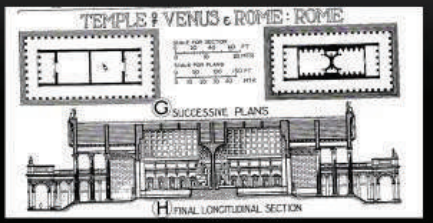
CHAPTER SEVEN

ROMANS ARCHITECTURE

PART TWO

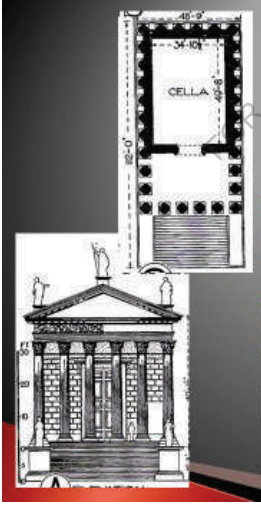


Temple of Venus & Rome
Rome



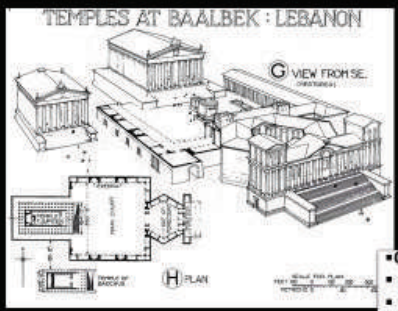
- Corinthian temple
- Rectangular temple
- Low platform
- 2 cellas back to back
- Dedicated to Venus & Rome
- 2 fronts
- 10 columns in each front
- barrel vault

Maison Carrée



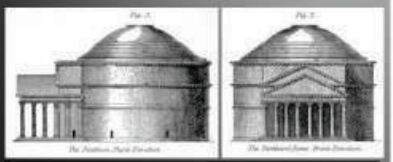
- Hexastyle (6 columns in the front)
- high platform
- Pilaster columns in the sides

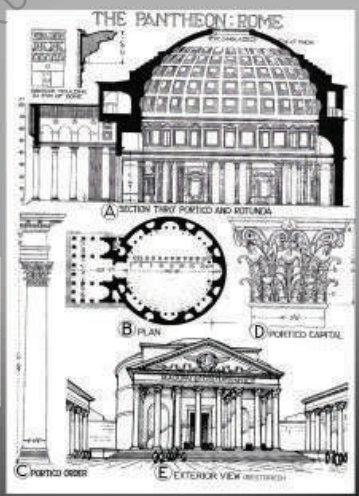
Temples at Baalbak
Lebanon



- Great in size and magnificent
- high platform with staircase
- Entrance
- Portico
- hexagon fore-court
- the temple is decastyle corinthian unfluted columns

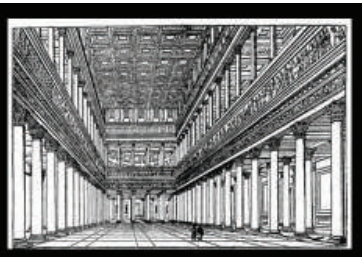
The Pantheon





- Octastyle monolithic Corinthian order
- the rotunda is 44 m. wide and height
- Walls & structure are concrete, faced with bricks
- Ceiling is semi-circular coffered dome of bricks
- The eye is 8 meter wide.

Basilica of Trajan

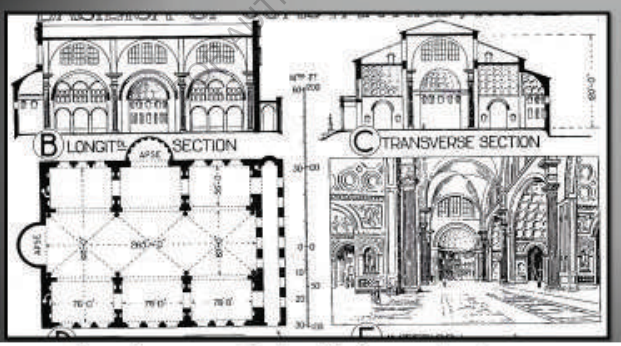


The entrance is from the Trajan's forum

One nave and double aisles

Galleries were arranged above the aisles which allow for clearstory lighting.

Basilica of Constantine



Nave crowned by an immense groined vault in 3 compartments

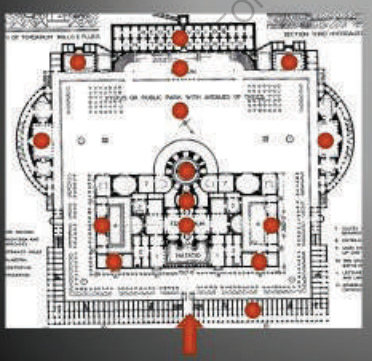
The aisles also are in 3 compartments, each roofed with semi-circular vault

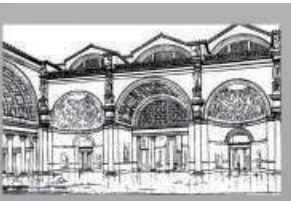
2 semi-circular apses

The intersecting vaults and the semi-circular vaults were deeply coffered.

•The Roman basilica was a large public building where business or legal matters could be transacted
•The first basilicas had no religious function at all
•a public basilica for transacting business had been part of any settlement that considered itself a city
•where the meeting room, for lack of urban space, was set *above* the arcades
•basilicas often contained interior colonnades that divided the space
•The central aisle tended to be wide and was higher than the flanking aisles
•the Basilica Porcia, was built in Rome in 184 BC by Cato the Elder during the time he was Censor. Other early examples include the basilica at Pompeii (late 2nd century BC).

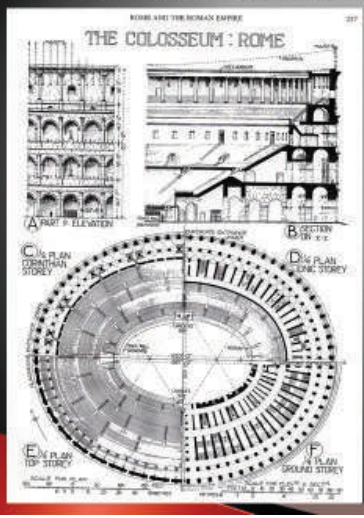
Thermæ of Caracalla
Rome

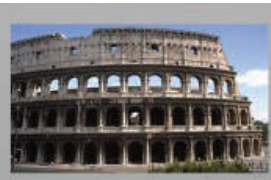




Tepiderium
Caliderium
Frigidarium
Gemnasiun
stadium

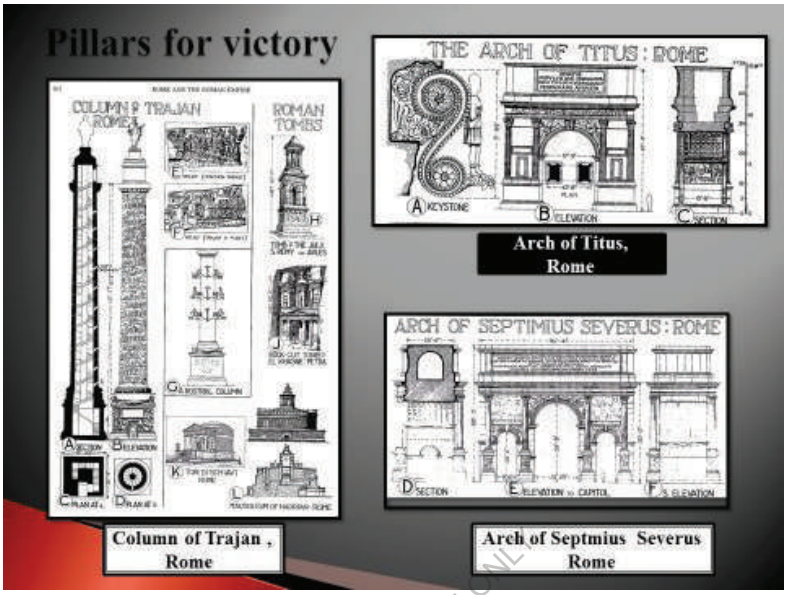
The Colosseum of Rome

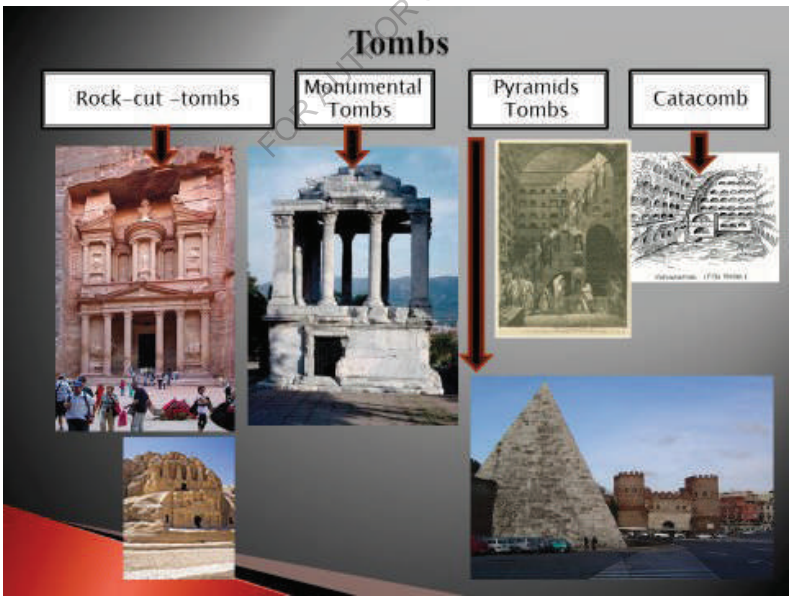


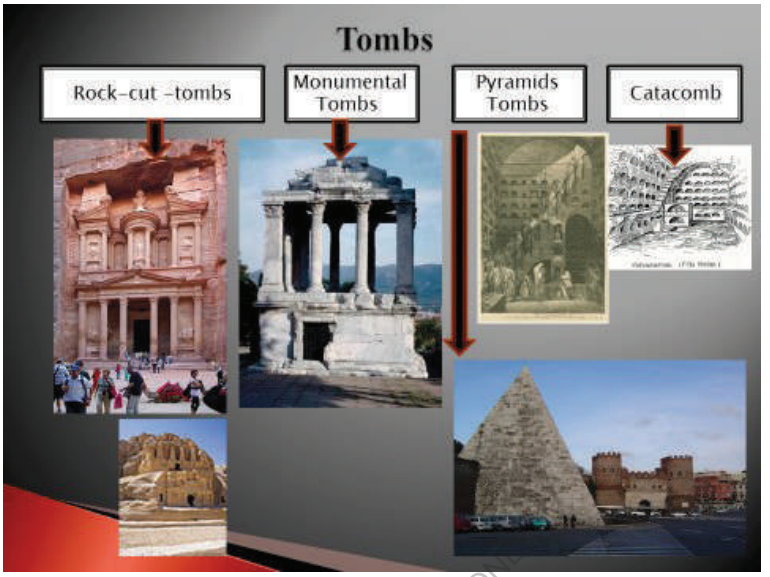


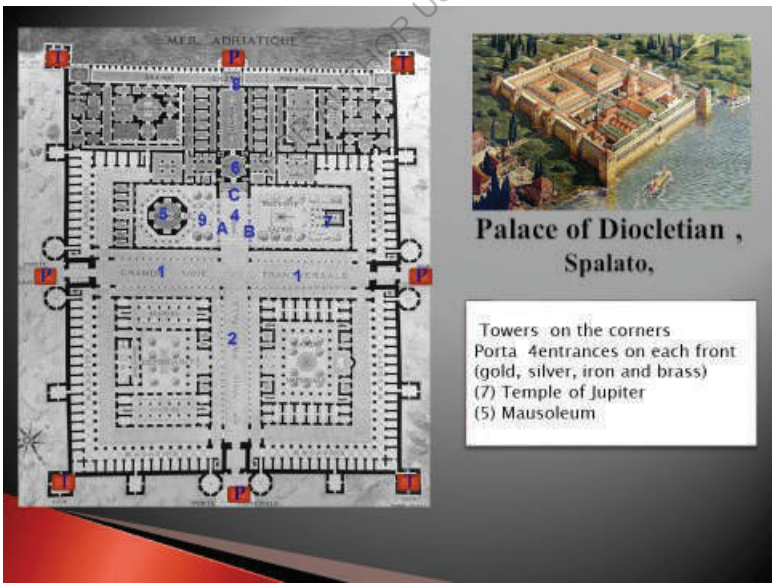
- To accommodates 80000
- it consists of 4floors
  - 1–Doric
  - 2– Ionic
  - 3– Corinthian
  - 4– Corinthian pilasters
- Seating were around the arena
- Underneath the seats corridors leading to the various parts (places for animals, slaves, and gladiators)
- The top gallery was shaded by canvas

- is an elliptical amphitheatre in the centre of the city of Rome, Italy
- Built of concrete and stone
- is considered one of the greatest works of architecture and engineering
- Construction began under the emperor Vespasian in 72 AD and was completed in 80 AD
- The Colosseum could hold, it is estimated, between 50,000 and 80,000 spectators
- It was later reused for such purposes as housing, workshops, quarters for a religious order, a fortress, a quarry, and a Christian shrine
- in the 21st century it stays partially ruined because of damage caused by devastating earthquakes and stone-robbers, the Coliseums is an iconic symbol of Imperial Rome
- In 2007 the complex was included among the New7Wonders of the World, following a competition organized by New Open World Corporation (NOWC).





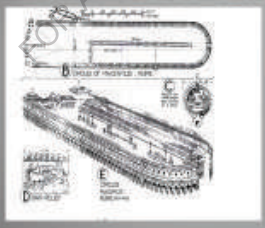

Tombs
Rock-cut -tombs
Monumental Tombs
Pyramids Tombs
Catacomb

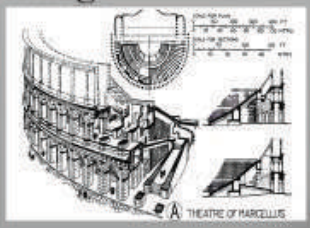

MER ADRIATIQUE
Palace of Diocletian ,
Spalato,
Towers on the corners
Porta 4entrances on each front
(gold, silver, iron and brass)
(7) Temple of Jupiter
(5) Mausoleum

Insula

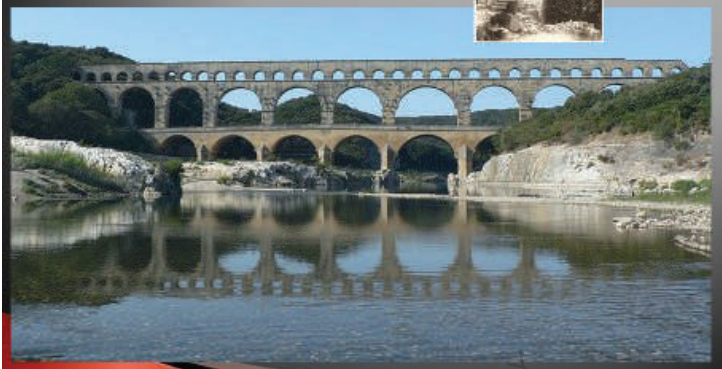
- Multi-story apartment blocks called insulae catered to a range of residential needs
- The cheapest rooms were at the top owing to the inability to escape in the event of a fire and the lack of piped water
- Windows were mostly small
- External walls were in "Opus Reticulatum" and interiors in "Opus Incertum", which would then be plastered and sometimes painted.

Some other buildings





Pont du Gard



Baths of Caracalla

The **Baths of Caracalla** (in Rome, Italy, were the second largest Roman public baths, built in Rome between AD 212 and 216, during the reign of the Emperor Caracalla.[1] Chris Scarre provides a slightly longer construction period 211-217 AD.[2] They would have had to install over 2,000 tons of material every day for six years in order to complete it in this time. Records show that the idea for the baths were drawn up by Septimius Severus, and merely completed or opened in the lifetime of Caracalla.[3] This would allow for a longer construction timeframe. They are today a tourist attraction.

Amphitheatre

•Some of the most impressive secular buildings are the amphitheatres
•They were used for gladiatorial contests
•public displays
•public meetings
•semicircular in shape
•designed for athletics and footraces
•the largest could accommodate 40,000–60,000 spectators,
•multi-storeyed
•arcaded façades and were elaborately decorated with marble, stucco and statuary
•After the end of gladiatorial games in the 5th century and of animal killings in the sixth
•their materials were mined or recycled

Forum

•A forum was a public square in a Roman municipium
•reserved primarily for the vending of goods
•a marketplace, along with the buildings used for shops
•Every city had a forum of varying size
•In addition to its standard function as a marketplace
•a forum was a gathering place of great social significance, and often the scene of diverse activities
•including political discussions and debates
•meetings

Triumphal arch

A triumphal arch is a monumental structure in the shape of an archway with one or more arched passageways

- decorated single bay arches as gates or portals to their cities
- The two key elements of the triumphal arch – a round-topped arch and a square entablature
- The innovation of the Romans was to these elements in a single free-standing structure

CHAPTER EIGHT

BYZANTINE ARCHITECTURE.

400C-1500C

1.THE MAIN FACTORS THAT AFECTING IN APPEARANCE BYZANTINE ARCHITECTURE ARCHITECTURE:

a. Influences.

b. GEOGRAPHICAL.

c. GEOLOGICAL.

d. CLIMATE.

e. RELIGION.

f. SOCIAL AND POLITICAL.

g. HISTORICAL.

2. Examples.

3. Comparative Table.

1. Plan, or general distribution of the building.

2. Walls, their construction and treatment. -

3. Roofs, their treatment and development.

4. Openings, their character and shape.

5. Columns, their position, structure, and decoration.

6. Decorative, their form and decoration.

7. Arches

8. Volts

9. Domes

10. Lighting

11. Flying Buttresses:

12. Surfaces:

13. Forms:

14. Scale:

15: the towers : Towers are detached

16: the colour

1. INFLUENCES.

a. Geographical. Byzantium (renamed Constantinople by Constantine), occupies the finest site in Europe, standing on two promontories at the junction of the Bosphorus and the Sea of Marmora. It was called " New Rome" by the Turks of Asia, and, like the other Rome in Italy, it rests on seven hills. It occupies an important commercial site, standing at the intersection of the two great highways of commerce the water highroad from the Black Sea into the Mediterranean, and the land highroad from Asia into Europe; a position which, from early times, gave it power and influence, especially over the corn trade carried on with the western merchants on the northern shores of the Euxine. The absence of tides and the depth of its harbor, an inlet known as the " Golden Horn," four miles in length, rendered its quays accessible to vessels of large burden.

b. Geological. Constantinople possessed no good building stone or even material for making good bricks, but, as far as possible the materials upon the spot had to be employed. Most of the marble used in the new capital was brought from different quarries round the Eastern Mediterranean, for Constantinople was a marble working center from which sculptured marbles were exported to all parts of the Roman world.

Mr. Brindley, a. writer on the subject, is of opinion that quite seventy-five per cent, of the colored marble used in Santa Sophia, and the other churches and mosques in Constantinople, is Thessalian green (Verde Antico), and that the architect was influenced by the kind of column likely to be at once obtainable. The quarries were situated in different parts of the empire, the monolith columns being worked by convicts in groups of sizes such as the quarry could produce.

c. Climate. Owing to Constantinople being hotter than Rome, and to its being further east, the Romans on settling there altered their method of building to suit the novel conditions due to climate and their contact with Oriental arts.

d. Religion. Constantine first made Christianity the state religion (page 176). The political division that came to pass between east and west was followed by a separation of churches also. This was due to the " Filioque controversy" as to whether the Spirit proceeded from the Father and Son or from the Father only ; the Eastern church which still claims to be the orthodox church, maintaining the latter, and the western the former. The iconoclastic movement during the eighth and ninth centuries was in force and ended in the admission of painted figures in the decoration of churches, but all sculptured statues were excluded.

These and other points of difference in ritual have vitally affected eastern church architecture up to the present day.

e. Social and Political. Constantine, whose system of government was an expansion of the despotic methods introduced by Diocletian, removed the capital from Rome to Byzantium in A.D. 324, the position of the latter city being unrivalled as a great commercial Centre on the trading highway between east and west.
After his death rival emperors troubled the state, and disputes in the church were rife the Council of Nice in A.D. 325 being the first of the general councils called to suppress heresies. The eastern emperors lost all power in Italy by endeavoring to force upon the west their policy of preventing the worship and use of images. By the election of Charlemagne, chosen Emperor of the West in A.D. 800, the Roman empire was finally divided.
f. Historical. Byzantium is said to have been founded in the seventh century B.C., and was a Greek colony as early as the fourth century B.C. fSyzantine architecture is that which was developed at Byzantium on the removal of the capital from Rome
to that city. It includes not only the buildings in Byzantium but also those which were erected under its influence, as at Ravenna and Venice, also in Greece, Russia, and elsewhere. During the reign of Justinian (A.D. 527-565) Italy was recovered to the Eastern Empire, accounting for the style of some of the buildings. Ravenna became important owing to the emperor Honorius transferring his residence there from Rome in A.D. 402, and it was created an archiepiscopal see in A.D. 438. After the fall of the
Western Empire the town was taken by Odoacer, and in A.D. 493
Theodoric the Great took the city, which, remaining the residence of the Gothic kings till 539, rivalled Rome in importance. From A.D. 539-752 it was the seat of the Exarch of the Eastern Roman or Byzantine Emperors. The Byzantine style was carried on until Constantinople fell into the hands of the Turks in A.D. 1453,
when it became the capital of the Ottoman Empire.

2. EXAMPLES: see the examples

3. COMPARATIVE points.

1. Plan, or general distribution of the building.: Byzantine churches are all distinguished by a great central square space covered with a dome. On each side
extend short arms, forming a Greek cross

2. Walls, their construction and treatment. : These were often constructed of brick

3. Roofs, their treatment and development.: The method of roofing these buildings was by a series of domes formed in brick, stone, or concrete, with frequently

no further external covering.

4. **Openings,** their character and shape.: Doors and windows are semicircular headed
but segmental and horse- shoe/ arched openings are sometimes seen. The windows are small and grouped together, the churches depend largely for light on the ring of windows at the base of the dome, or in the " drum,", within the semicircular arch

5. Columns, their position, structure, and decoration.: In the earlier buildings, these were taken from ancient structures, which not being so numerous in the East as in
the neighbourhood of Rome, the supply was sooner exhausted; and thus, there was an incentive to design fresh ones. Capitals sometimes took a form derived from the Roman Ionic, or Corinthian types.

6. **Decorative**, their form and decoration.: all the oriental love of magnificence was developed, marble Casing and mosaic being applied to the walls, The scheme of ornamentation was elaborate in the extreme, the walls being lined with costly marbles

7. **Arches**: segmental and horse- shoe/ arched openings

8. **Volts**: single volts at corridors some time were covered by sheets.

9. **Domes**: at the centre large circular dome, The Byzantines introduced the dome placed over a square or octagonal plan, In early examples the pendentives were part of one sphere. A good idea of this type is obtained by halving an orange, cutting
off four slices, each at right angles to the last, to represent the four arches, and then scooping out the interior; the portion above the crown of these semicircles is the dome, and the intervening triangles are the pendentives.

10. **Lighting**: large amount of light, through large windows at ground level and small windows at the large dome.

11. **Flying Buttresses**: they are not found

12. **Surfaces**: squares and rectangular

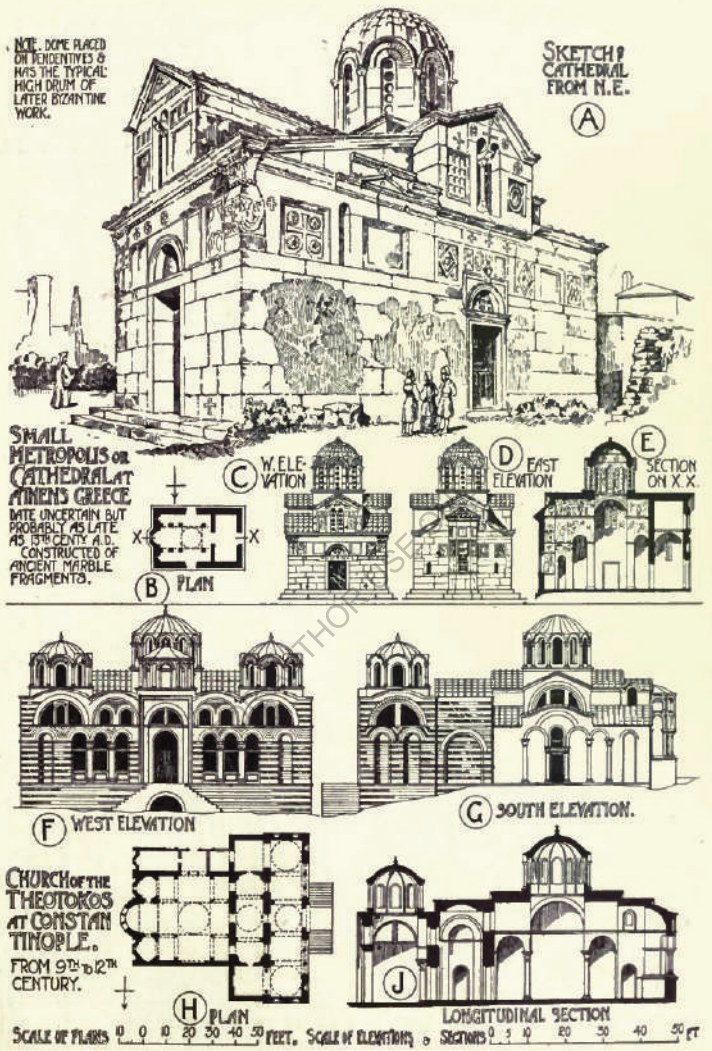
13**. Forms:** cubic forms

14. **Scale**: out of scale

15: the towers: Towers are detached

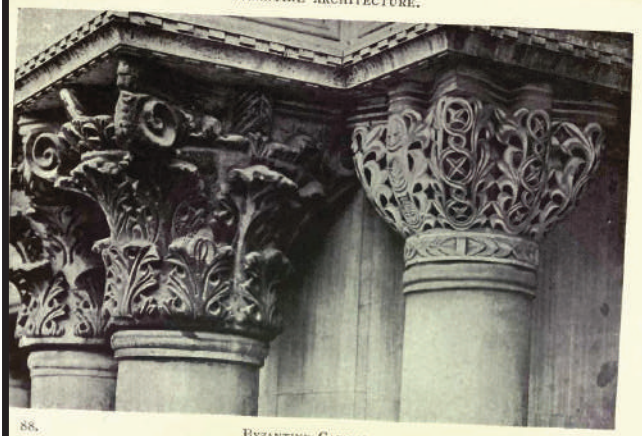
16: **the colour** : although the façade was sometimes relieved by alternate rows of stone and brick, in
various colours.

BYZANTINE EXAMPLES. IV.



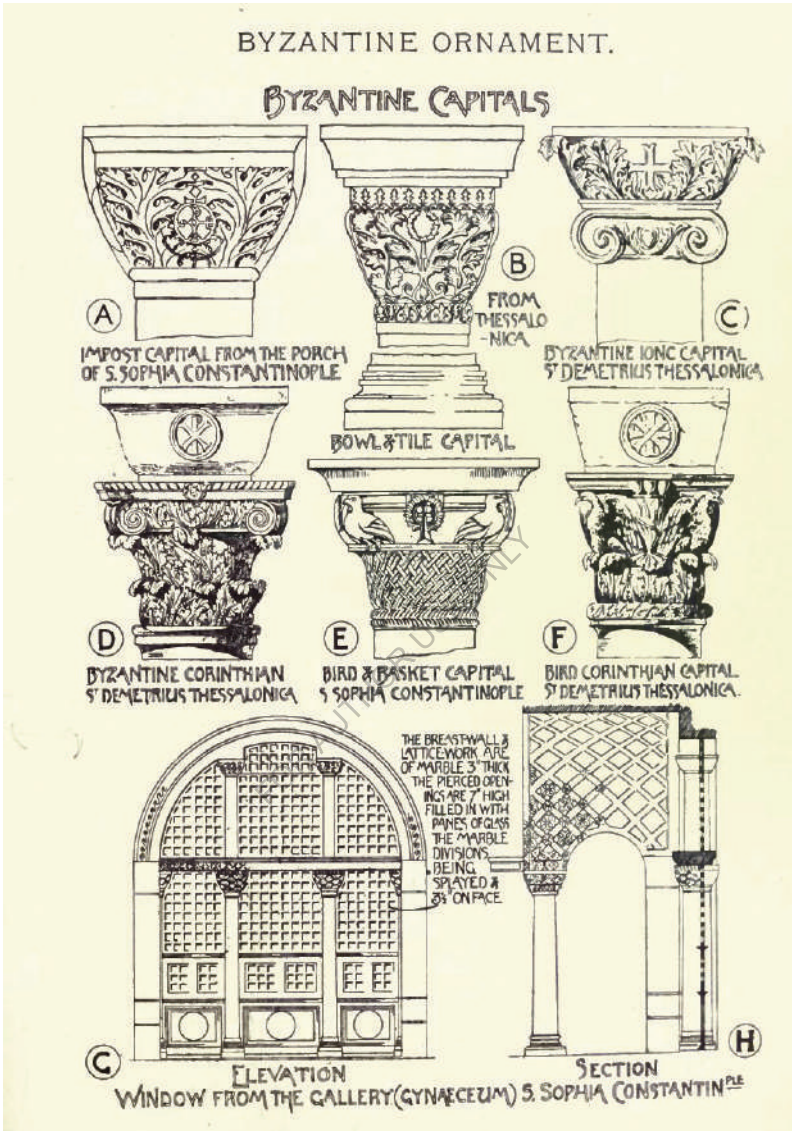
87.

P 2



88.

BYZANTINE CAPITALS.
From S. Mark, Venice.


BYZANTINE ORNAMENT.
BYZANTINE CAPITALS
A
IMPOST CAPITAL FROM THE PORCH OF S. SOPHIA CONSTANTINOPLE
B
FROM THESSALO-NICA
C
BYZANTINE IONIC CAPITAL S^T DEMETRIUS THESSALONICA
BOWL & TILE CAPITAL
D
BYZANTINE CORINTHIAN S^T DEMETRIUS THESSALONICA
E
BIRD & BASKET CAPITAL S SOPHIA CONSTANTINOPLE
F
BIRD CORINTHIAN CAPITAL S^T DEMETRIUS THESSALONICA.
THE BREASTWALL & LATTICE-WORK ARE OF MARBLE 3" THICK THE PIERCED OPENINGS ARE 7" HIGH FILLED IN WITH PANES OF GLASS THE MARBLE DIVISIONS BEING SPLAYED A 3/8" ON FACE.
G
ELEVATION
H
SECTION
WINDOW FROM THE GALLERY (GYNAECEUM) S. SOPHIA CONSTANTIN^PLE

BYZANTINE ARCHITECTURE.

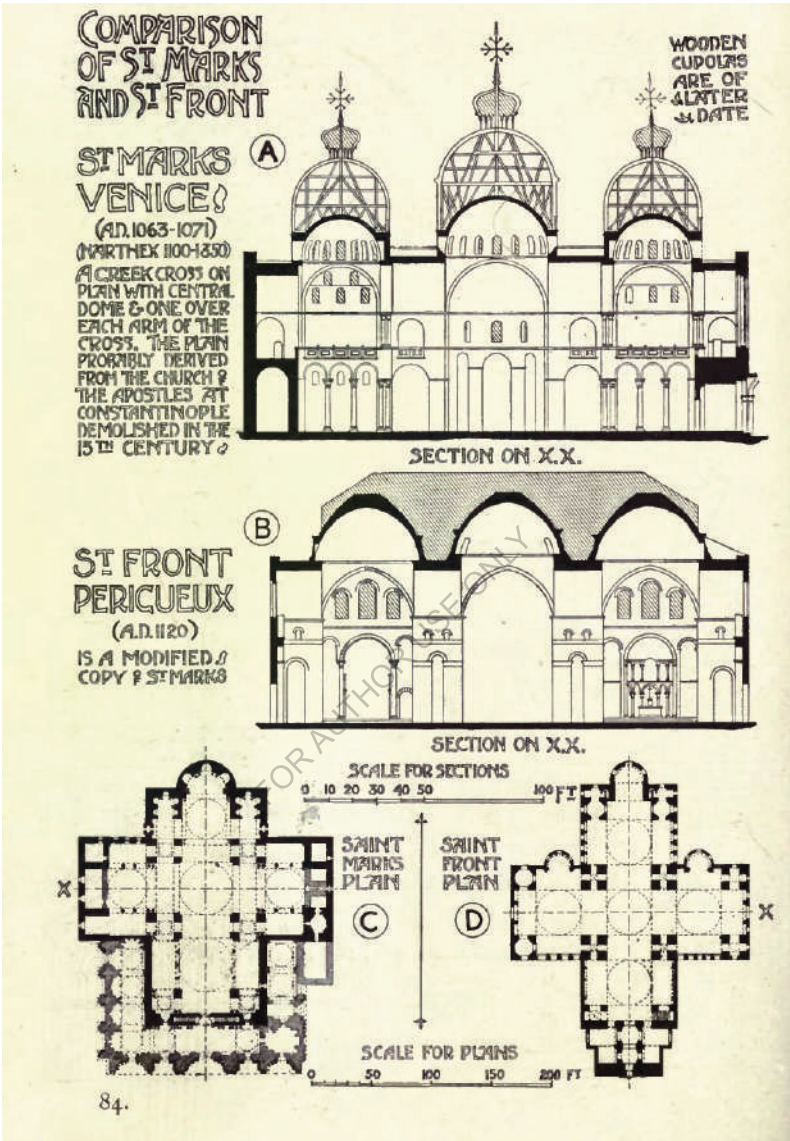
86. S. Mark, Venice.

BYZANTINE ARCHITECTURE.

85. S. Mark, Venice.

82. S. Sophia, Constantinople.

81. S. Sophia, Constantinople.
The minarets were added by the Mahometans in the fifteenth and sixteenth centuries.


COMPARISON OF ST MARKS AND ST FRONT
ST MARKS VENICE
(A.D. 1063-1071)
(NARTHEX 1100-1350)
A GREEK CROSS ON PLAN WITH CENTRAL DOME & ONE OVER EACH ARM OF THE CROSS. THE PLAN PROBABLY DERIVED FROM THE CHURCH OF THE APOSTLES AT CONSTANTINOPLE DEMOLISHED IN THE 15TH CENTURY
A
WOODEN CUPOLAS ARE OF LATER DATE
SECTION ON X.X.
ST FRONT PERICUEUX
(A.D. 1120)
IS A MODIFIED COPY OF ST MARKS
B
SECTION ON X.X.
SCALE FOR SECTIONS
0 10 20 30 40 50 100 FT
SAINT MARKS PLAN
C
SAINT FRONT PLAN
D
X
X
SCALE FOR PLANS
0 50 100 150 200 FT
84.

CHAPTER NINE
EARLY CHRISTIAN ARCHITECTURE.

1.THE MAIN FACTORS THAT AFECTING IN APPEARANCE THE EARLY CHRISTIAN ARCHITECTURE

1. Influences.
i. GEOGRAPHICAL.
n. GEOLOGICAL.
in. CLIMATE.
iv. RELIGION.
v. SOCIAL AND POLITICAL.
vi. HISTORICAL.

2. Examples.

3. Comparative Table.

1. Plan, or general distribution of the building.
2. Walls, their construction and treatment. -
3. Roofs, their treatment and development.
4. Openings, their character and shape.
5. Columns, their position, structure, and decoration.
6. Mouldings, their form and decoration.
7. Ornament, as applied in general to any building.
8.Lighting:
9.Arches:
10.surfaces:
11.forms :
12. Colours:
13. domes,
14.scale:

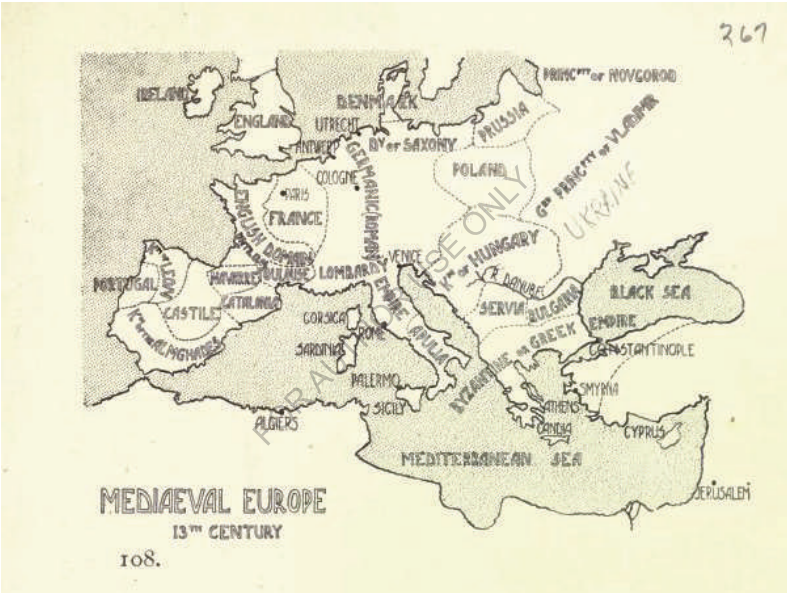
4. Reference Books.

University of Toronto (1761), History of architecture on comparative method, USA.

1.THE MAIN FACTORS HELPS IN APEARING THE EARLY CHRISTIAN ARCHITECTURE:

i. Geographical. The position of Rome as the Centre of a world-wide empire was an important factor

" All roads lead to Rome," and Christianity, to become universal, had to grow up at the capital, however eastern its birthplace.
Ravenna, subdued by Justinian in A.D. 537, was the connecting link of the early Christian and Byzantine styles .



i. INFLUENCES.

ii. Geological. The quarry of the ruins of Roman buildings influenced the architectural treatment of the style, both in regard to construction and decoration, as columns and other architectural features and marbles from the older buildings were worked into the design of the new basilican churches of the Christians.

iii. Climate. like Roman Architecture The north has the climate of the temperate region of continental Europe ; central Italy is more genial and sunny ; while the south is almost tropical.

iv. Religion. History presents no phenomenon so striking as the rise of Christianity, which spread so rapidly that in a very short period it was diffused throughout the whole civilized world.
In A.D. 313 Constantine issued his celebrated decree from Milan, according to Christianity equal rights with all other religions,
and in A.D. 323 he himself professed Christianity, which then became the established religion of the Roman Empire. The Christians, who up to that period were an unpopular dissenting sect, and had worshipped in the Catacombs, which formed their burial-places, were now able to hold their services openly and freely.
The Council of Nice, A.D. 325, called by Constantine, was the first of several Councils of the Church for the settlement of disputes about heresies.
A temporary reaction took place in A.D. 360-363, under Julian, known as the "
Apostate."

EARLY CHRISTIAN ARCHITECTURE.

Gregory the Great (590-604), when besieged by the Lombards at Rome, employed the imperial army of Constantinople and acted as the defender of Rome, making common cause with the people against the Lombards and others.
v. Social and Political. On changing the capital of the
empire from Rome to Byzantium in A.D. 324 Constantine practically reigned as an absolute monarch till his death in A.D. 337, the old Roman political system coming to an end.
The division of the Roman Empire first took place in A.D. 364, Valentian being Emperor of the West and his brother Valens of the East.
Theodosius the Great, reigning between the years A.D. 379-395, reunited the Eastern and Western portions of the Empire.
The series of emperors in the West came to an end in A.D. 476, and the empire was nominally again reunited, Zeno reigning at Constantinople over the Eastern and Western Empires.
Theodoric the Goth reigned in Italy, A.D. 493-526, a period of peace and prosperity, in which Byzantine art influenced Early Christian art by way of Ravenna, which, from 493-552, was the capital of the Gothic dynasty.
Kings of separate states were then elected in Italy, Spain, Gaul, and Northern Africa, Odoacer, the new king of Italy, recognizing the supremacy of the one Roman Emperor at Constantinople.
The emancipation of the West from direct imperial control made possible the development of Romano-German civilization, which facilitated the

growth of new states and nationalities, gave a fresh impulse to the Christian Church and laid the foundations of the power of the Bishops of Rome. From the Roman or common speech several of the chief

languages of modern Europe commenced to arise, and in consequence are called Romance languages.

vi. Histoncal. The Early Christian period is generally taken as lasting from Constantine to Gregory the Great, or from A.D. 300 to 604. The Teutonic invasions of Italy commenced about A.D. 376, and Teutonic settlements took place within the empire about this time, these movements being caused by the incursions of the Huns into Germany.

The West Goths sacked Rome under Alaric in A.D. 410. The defeat of Attila, king of the Huns, at the battle of Chalons, A.D. 451, aided in consolidating Christianity in Europe. During the reign of Gregory, the Great (A.D. 590 to 604) the Latin language and Early Christian architecture, the latest phase of Roman art, ceased to exist, and for the next two centuries architecture was practically at a standstill in Europe, when the old Roman traditions were to a great extent thrown aside, and Romanesque architecture was gradually evolved.

COMPARATIVE ARCHITECTURE.

2. ARCHITECTURAL CHARACTER.

One style was evolved from another so gradually that it is impossible to say exactly where the one ended and the next began.

This gradual growth characterizes progress in other departments as well as Architecture. Each age feels its way towards the expression of its own ideals, modifying the art of the past to meet fresh conditions.

Little money being at the command of the Early Christians, it was necessary for them to adopt places ofworship which could be readily constructed. Many of the Roman Temples, which were now rendered useless for their original purpose, were utilized for the new faith, and in addition new churches built on the model of the old Roman basilicas and formed of columns and other features from Pagan buildings, were erected.

These are known as basilica churches, and were often situated over the entrances to their former hiding-places or crypts, and were constructed with columns of different orders and sizes which were made to an uniform height by the addition of new pieces of stone, or double bases, or in some cases by the omission of the base mouldings On this account, although extremely interesting from an archaeological point of view, the early buildings can hardly have the value for study, in the architect's mind at

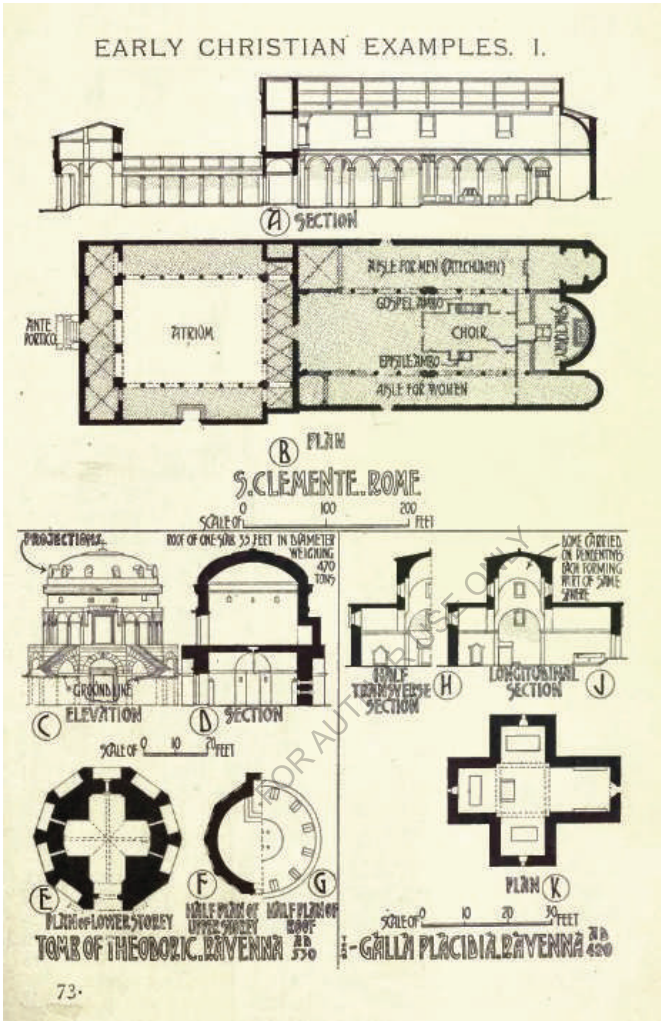
least, which a new manner in architecture, arising from new structural necessities, is certain to possess.

The earlier basilican churches had their columns closely spaced, and were crowned with the entablature which supported the main wall, on which rested the wooden roof but as the arch came more into general use these columns were spaced further apart, being connected by semicircular arches

The basilican church with three or five aisles, covered by a wooden roof, is the special type of the style as opposed to the vaulted types of the Byzantine style (Nos. 80, 81, 84 and 85), in which a circular dome was placed over a square space by means of the pendentive.

The architectural character is impressive and dignified; due to the increase in the apparent size of the basilicas by the long perspective of the columns, and the comparative lowness of the interiors in proportion to their length.

72. The Basilican Church of S. Clemente, Rome.
Showing projecting Choir and apsidal treatment.



73.

Discerption of 72, 73

How suitable the Roman basilica type (No. 58) was for Christian worship is seen from the plan of S. Clemente, Rome, A.D. 1084, which, ^although rebuilt in the eleventh century, contains the original internal arrangement of the churches of the fifth century.

An atrium or forecourt, being an open space surrounded by
arcades, formed an imposing approach in most of the Basilica churches. The covered portion next the church 'called the narthex was the place for penitents. In the Centre of the atrium was a fountain or well, the water from which was used for washing before entering the church a custom which still survives in an altered form amongst Catholics, who dip their fingers into a stoop,
or holy-water basin, at the entrances of their churches.

The nave, lighted by a clerestory of small windows, had an aisle on either side, such aisles being usually half the width of the nave. ([Occasionally two aisles occur on each side of the nave, as in the Basilicas of S. Peter (No. 75 c). Paul (No. 75 E) and S. John Lateran.

Galleries for the use of women were sometimes placed over the aisles, as at S. Agnese and S. Lorenzo; but where none existed the sexes sat apart on opposite sides of the nave.

A transept, called the " bema," or "presbytery," which existed in a modified form in the pagan basilicas, was occasionally introduced, converting the plan into a Latin cross, of which the nave was the long arm. Some consider, however, that this cruciform ground plan was derived from the buildings erected for sepulchral purposes as early as the age of Constantine.

A choir became necessary, owing to the increase of. ritual,
and was enclosed by low screen walls,
(From which the word chancel is derived), and provided with an " ambo " or pulpit on either side, from which the gospel and Epistle were read

The bishop took the place formerly occupied by the pratprf .
questor". until in subsequent ages the seat was moved to the side, becoming the bishop's throne.

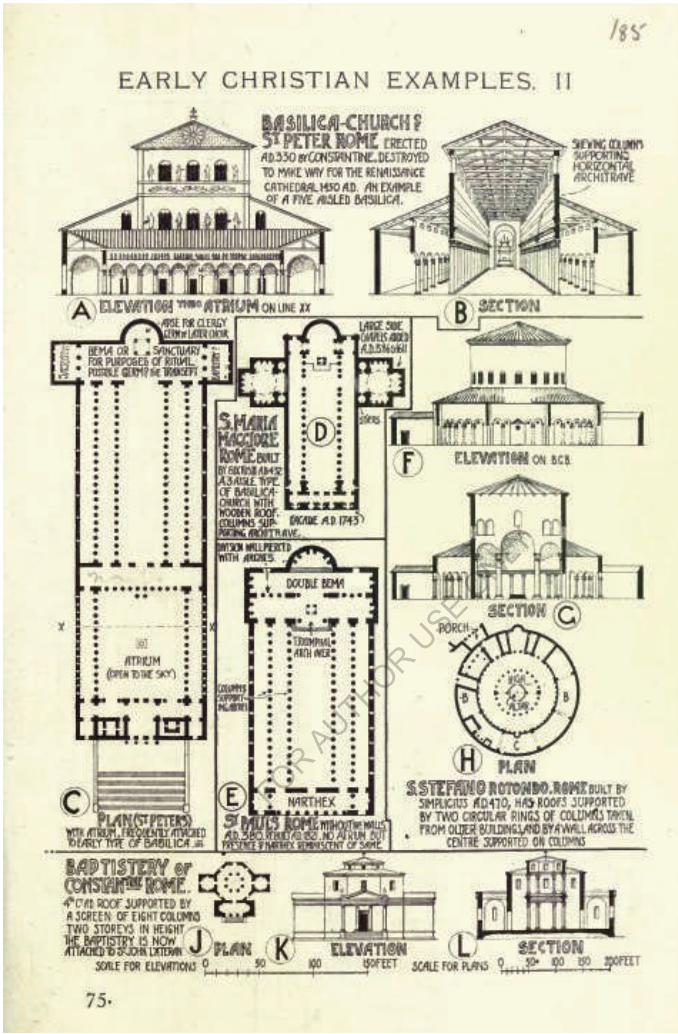
The presbyters or members of the council of the early Church, occupied seats on either side of the bishop formerly occupied by the assessors. The apse became the sanctuary which remained circular-ended in Northern Europe.

The altar in front of the apse, formerly used by the Romans for the pouring out of libations, or sacrifices to their gods, was now used for the celebration of Christian rites, and a baldachin, or canopy, supported on marble columns, was erected over it. In later times the altar was frequently placed against the east wall of the apse.

The interiors of these buildings owe their rich effect to the use of glass mosaic (" opus Grecanicum,") which was placed frequently in a broad band above the nave arcading and to the semi-dome of the apse, which is frequently richly treated with a central figure of Christ seared in glory and set in relief against a golden background.

Basilica Church of S. Peter

(A.D. 330) was erected near the site of the martyrdom of S. Peter in the circus of Nero. It had a "transept," or “bema," 55 feet wide, and 113 feet high (No. 75 A, B, c). Five arches, the centre called the arch of triumph, gave access from the body of the church, and at the sanctuary end was a semicircular apse on a raised floor, against the centre of the wall of which was the Pope's seat.
The priest stood behind the altar, and thus faced east, as the chancel was at the west end of the church.



S. John Lateran (A.D. 330)

has been altered so much in modern times as to have lost its early character. There were in all thirty-one Basilica churches in Rome,

mostly made up of fragments of earlier pagan buildings. The interiors of these basilicas are impressive and severe, the repetition of the long rows of columns being grand in the extreme, as in the interior view of S. Paolo fuori le mura , built A.D. 380 by Theodosius but re-erected in A.D.

74. BASILICAN CHURCH OF S. PAUL, BEYOND THE WALLS, ROME.

BAPTISTERIES

are another description of building met with in Early Christian architecture? They were originally used only for the sacrament of baptism, hence the name "

Baptistery." The form was derived from the Roman circular temples and tombs, already described .There was generally one baptistery in each city, as at Ravenna and Florence, and it was as a rule a detached building, usually adjoining the atrium or fore court Indeed, until the end of the sixth century of our era the baptistery appears to have been a distinct building; but after this period the font came to be placed in the vestibule of the church.

In adopting the Roman tombs as models for these buildings, the early Christians modified them to some extent, for the internal columns which in Roman examples were generally used in a decorative way were now used to support the walls carrying the domes. To cover a large area with one roof was difficult, but by the addition of an aisle in one story round a moderate-sized circular tomb, the inner walls could be replaced by columns in the lower half, resulting in such a building as these early baptisteries

The Baptistery of Constantine, Rome is octagonal, and the roof is supported by a screen of eight columns, two stories in height.

The Baptistery, Nocera, between Naples and Salerno, is circular, being 80 feet in diameter, with two rings of columns.

This building is domed and covered with a wooden roof and appears to be the first instance of the use of both, as the Roman architects always allowed the stone vault to show externally, as in the Pantheon. In the case of this building, however, the vault is merely an internal ceiling which is covered with an external wooden roof, and is like the practice of Gothic architects, who, in the mediaeval period, covered the stone vaults of their churches with timber roofs.

S. Stefano Rotondo, Rome (A.D. 470), though not a baptistery, is a good example of a circular plan of similar type, being 210 feet in diameter, and with roof supported on two circular rings of columns, all taken from older buildings, the outer range supporting arches, and the inner a horizontal architrave. The two central columns are an addition to support the roof timbers.

The Baptistery, Ravenna, founded at the end of the fourth century, is an octagonal structure with two arcades in the interior one above the other. The dome, constructed of hollow tiles.

76. Basilican Church of S. Maria Maggiore, Rome.

77. S. Stefano Rotondo, Rome.

3.. COMPARATIVE.

1. Plan. The early Christians adopted the Basilican model for their churches (Nos. 73 and 75), but in addition the halls, baths], dwelling-houses, and even the pagan temples were used for places of worship.
An isolated circular church, used as a baptistery,
1 was generally attached to the chief Basilica or cathedral.

2. Walls. These were still constructed according to the
Roman methods, rubble or concrete walling being used, faced with plaster, brick, or stone. Mosaic was used internally, and sometimes externally on the west facades for decorative purposes.

3. Openings. Doors, windows, and niches were generally
spanned by a semicircular arch, the use of the lintel being dispensed with. The window openings were small (No. 78 D, F) ; those to the nave being in the clerestory high in the nave wall above the aisle roof, a feature which was developed in Gothic architecture (Nos. 73 A, 75 B, G).

4. Roofs. Wooden roofs (No. 75 B), covered the central
nave, simple forms of construction such as King and Queen post trusses being employed.. These roofs were ceiled in some ornamental manner (No. 74), the decoration of a visible framework being of a later date, as at S. Miniato, Florence (No. 93). The side aisles in the churches were occasionally vaulted, and the apse was usually domed and lined with mosaic (Nos. 72 and 78 G, K).

5.Lighting: small high windows. Little light
.

6.Arches: like roman arches, semicircular arch**.**

7.Surfaces: squares, rectangular and circular surfaces

8.Forms :Cubic forms, cylindrical

9. Colours: Natural colours, they used bricks and stones on their buildings.

10. **Domes**, vaults: there are domes and vaults

11.**Scale**: huge scale, or out of scale

12. Columns (Nos. 72, 77 and 78). They are often of different design and size, being mostly from earlier Roman buildings which had fallen into ruins &kt were purposely destroyed. It was natural that the early Christian builders, not being good craftsmen themselves, should use in their buildings the materials and ornaments which had been left by the pagan Roman. A rich and grandiose effect wTas often obtained at the expense of fitness in the details of the design. Middleton states that all the fine marble.

columns

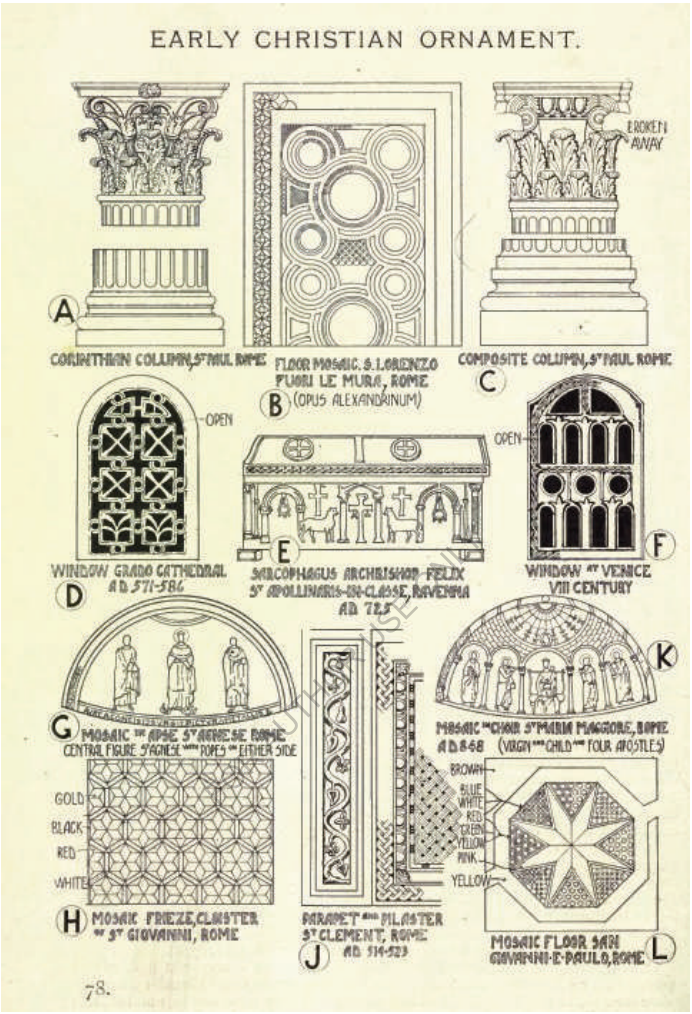
1 In later Romanesque and Gothic periods, these early baptisteries, themselves founded on the Roman circular temples and tombs, were treated as follows in the different European countries , Corinthian and composite

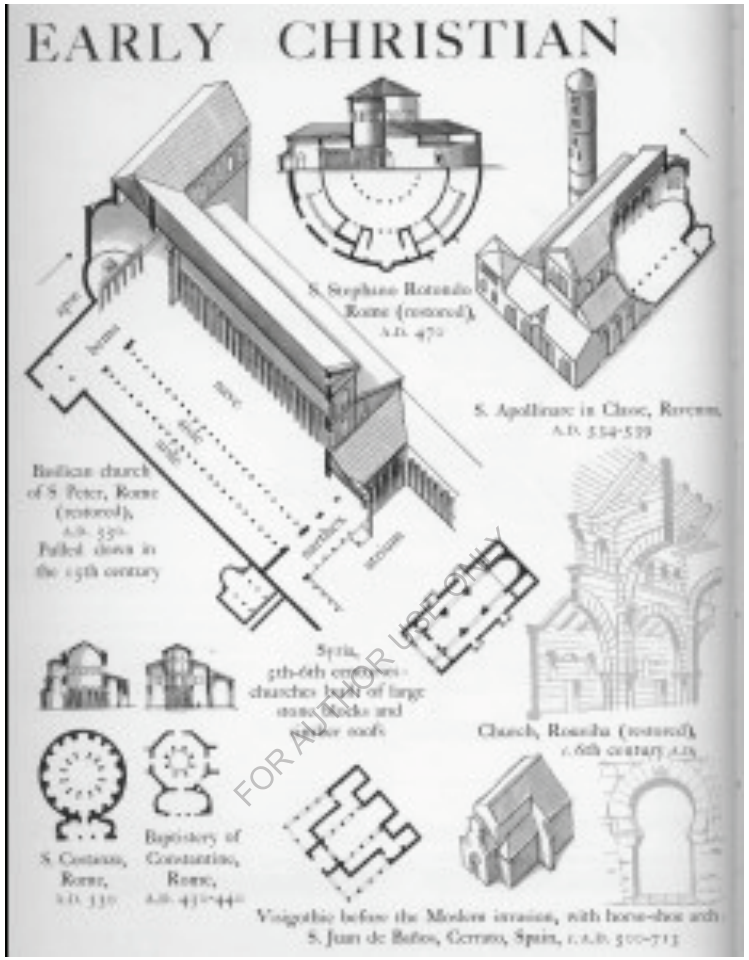
In Italy, where the churches were not derived from a combination of a circular eastern church with a western rectangular nave, as in France, but were direct copies of the Roman basilica, the baptistery always stands alone.

In France, circular churches were built to stand alone, and when it was necessary to enlarge them, the circular building was retained as the sanctuary or choir, and a straight lined nave was added for the use of the people. Thus from the circular church originated the apsidal choir of the Gothic period.

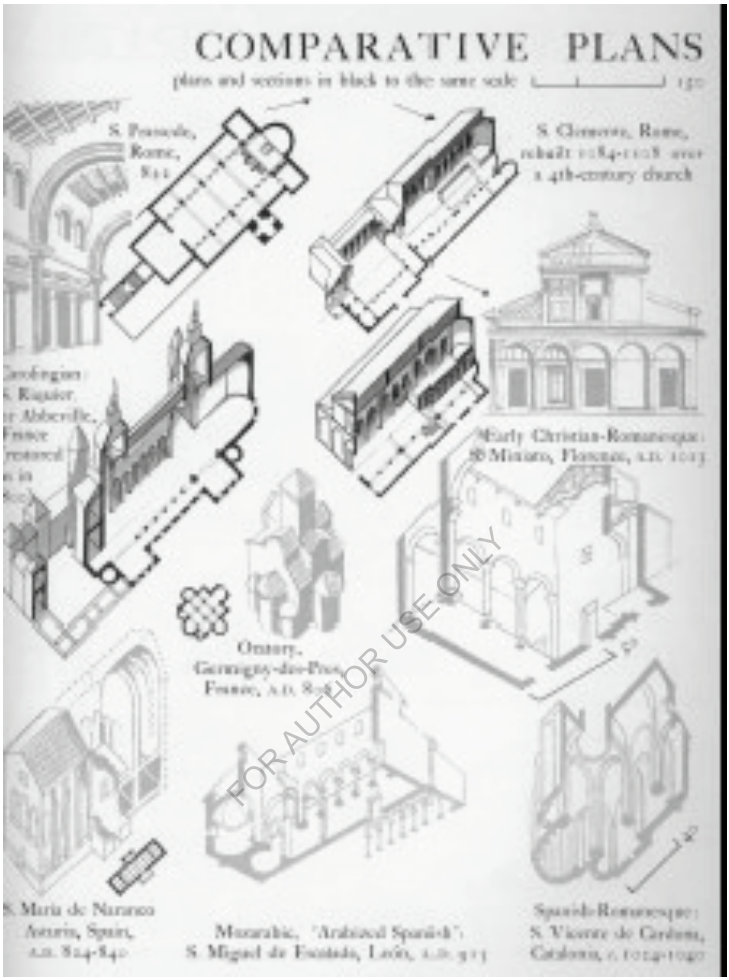
In Germany, the earlier baptistery was joined to the square church and formed a western apse. The Germans also built circular churches, and then added choirs for the priests, that they might pray apart from the people (No. 83 E).

In England, the Gothic builders generally preferred a square east end, except where French influence made itself felt, as at Westminster. Circular churches were erected, as the Temple Church, London, but they were few in number, and due to the Knights Templars (page 219), being built as copies of the Rotonda of the Holy Sepulchre at Jerusalem.

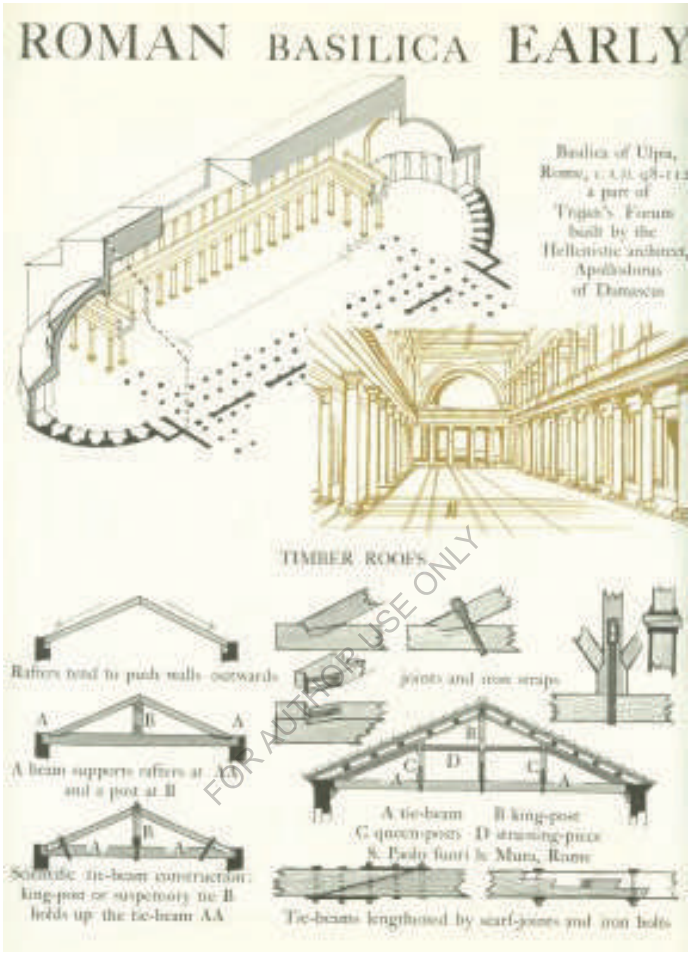

EARLY CHRISTIAN ORNAMENT.
A
CORINTHIAN COLUMN, S^T PAUL ROME
B
FLOOR MOSAIC. S. LORENZO FUORI LE MURA, ROME
(OPUS ALEXANDRINUM)
C
COMPOSITE COLUMN, S^T PAUL ROME
ERODED AWAY
D
WINDOW GRADO CATHEDRAL
A.D. 571-586
OPEN
E
SARCOPHAGUS ARCHBISHOP FELIX
S^T APOLLINARIS-IN-CLASSE, RAVENNA
A.D. 725
F
WINDOW AT VENICE
VIII CENTURY
OPEN
G
MOSAIC IN APSE S^T AGNESE ROME
CENTRAL FIGURE S^T AGNES WITH POPES ON EITHER SIDE
H
GOLD
BLACK
RED
WHITE
MOSAIC FRIEZE, CLOISTER OF S^T GIOVANNI, ROME
J
PARAPET AND PILASTER
S^T CLEMENT, ROME
A.D. 514-523
K
MOSAIC IN CHOIR S^T MARIA MAGGIORE, ROME
A.D. 468 (VIRGIN AND CHILD AND FOUR APOSTLES)
BROWN
BLUE
WHITE
RED
GREEN
YELLOW
PINK
YELLOW
L
MOSAIC FLOOR SAN GIOVANNI-E-PAULO, ROME
78.



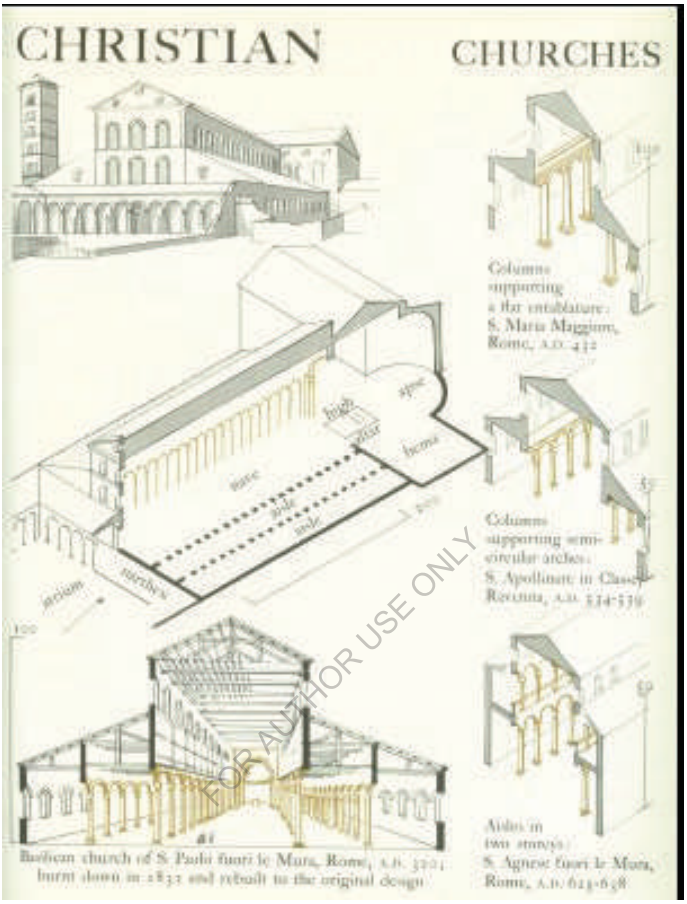
Grafic History Of Architecture

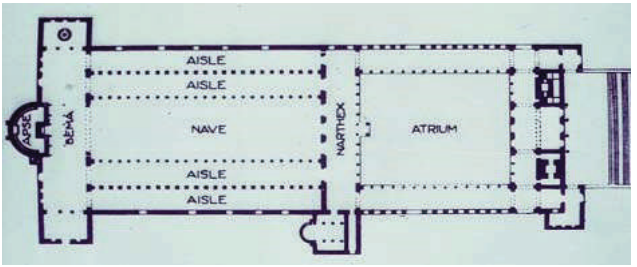


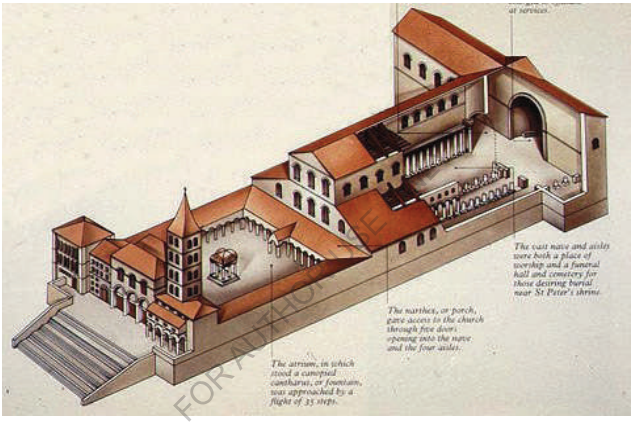
Grafic History Of Architecture

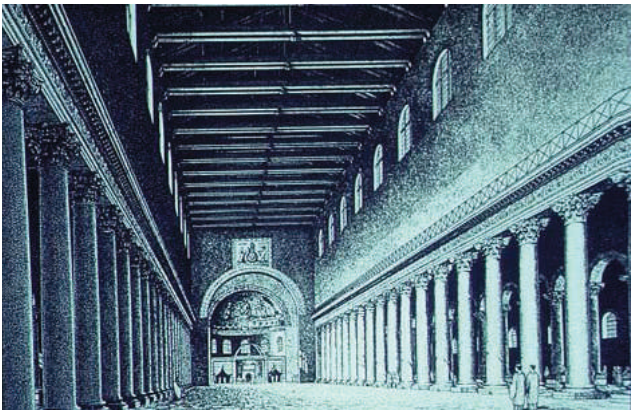


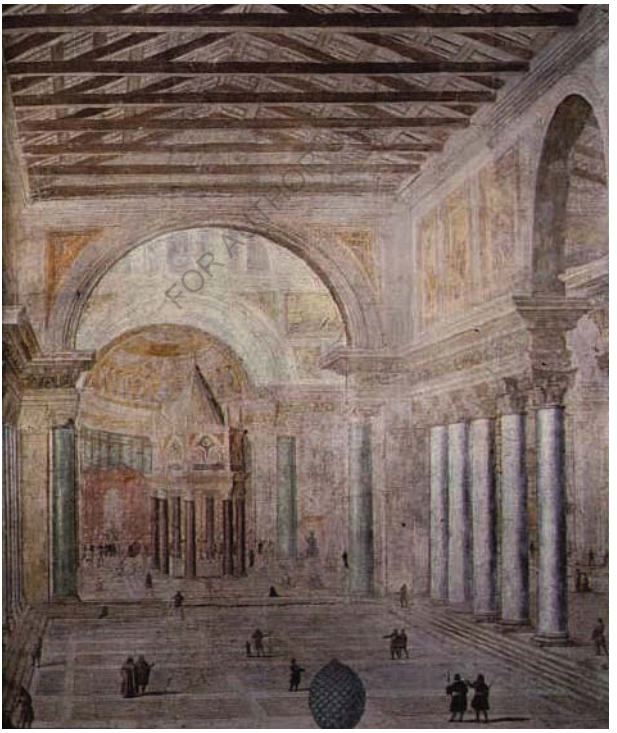
Grafic History of Architecture




AISLE
AISLE
APSE
BEMA
NAVE
NARTHEX
ATRIUM
AISLE
AISLE


The vast nave and aisles were both a place of worship and a funeral hall and cemetery for those desiring burial near St Peter's shrine.
The narthex, or porch, gave access to the church through five doors opening into the nave and the four aisles.
The atrium, in which stood a canopied cantharus, or fountain, was approached by a flight of 33 steps.





Christian houses

Christian house-church, Dura Europos, Syria, 230 AD: cutaway reconstruction; the baptistery: compare this house with the House of the Vettii at Pompeii, ca. 70 AD, on the lines of fig. 207.

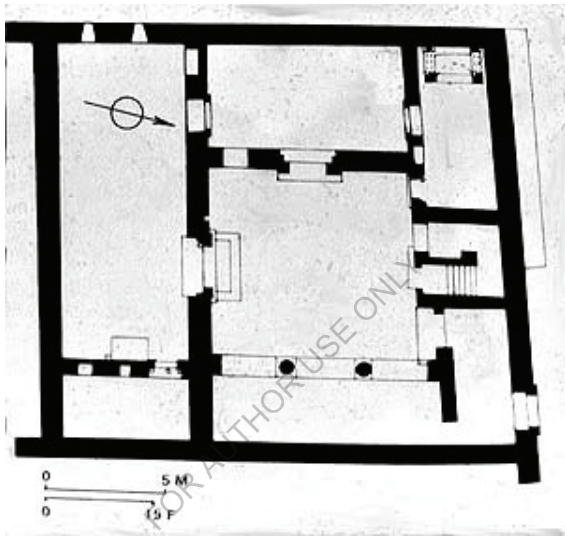


Fig : Romans House plan

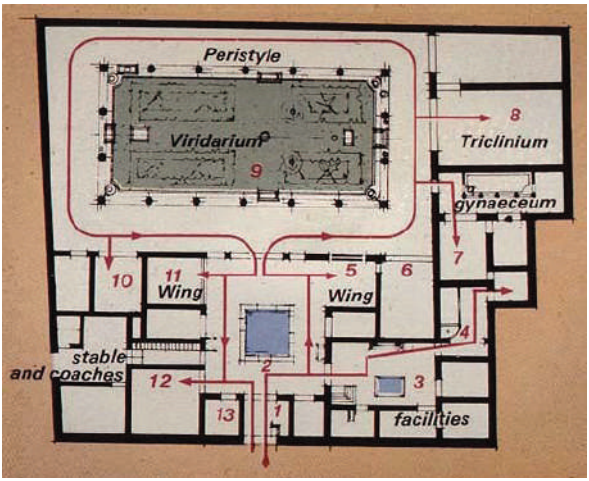


Fig: Romans palace

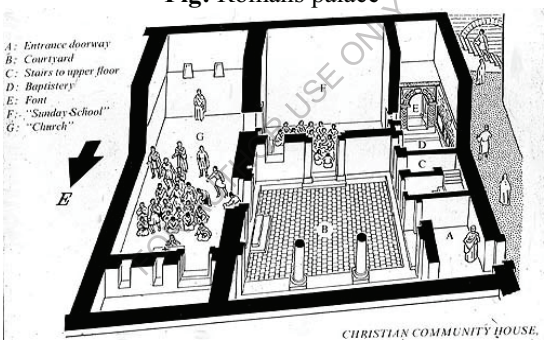


Fig: Romans house 3D

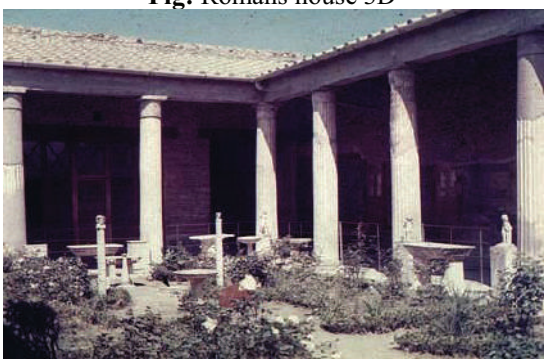
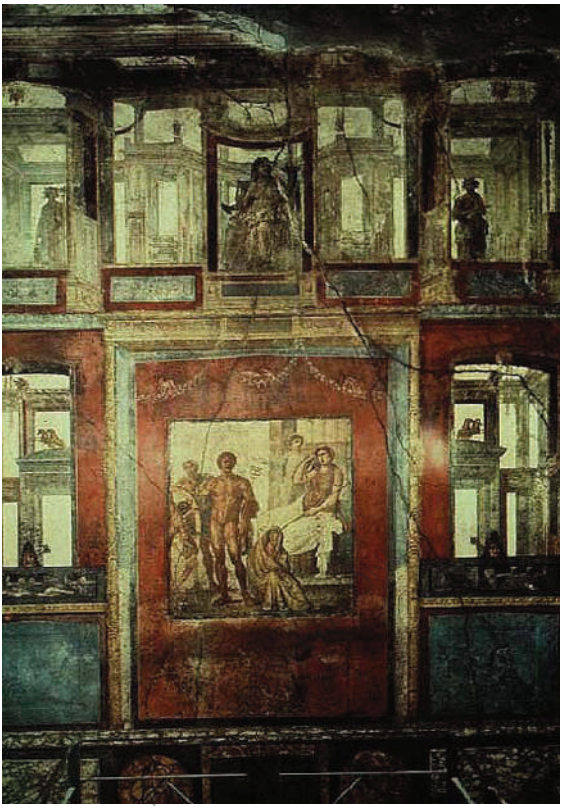
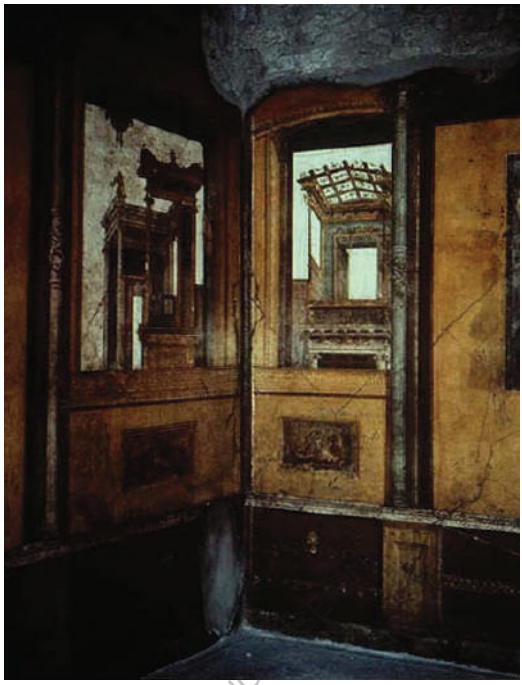


Fig : Romans house courtyard

Fig: Romans house art





http://www.pitt.edu/~tokerism/0040/syl/christian.html

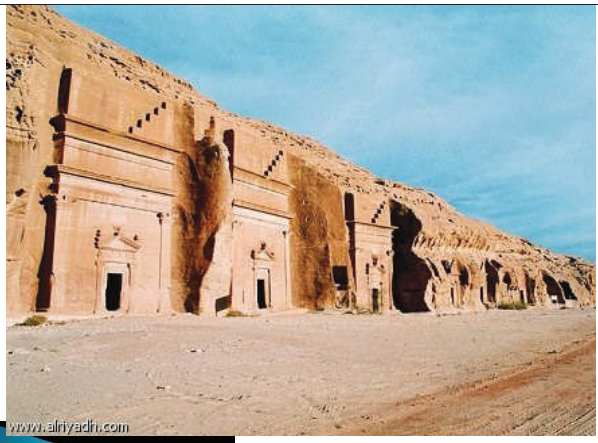
CAPTER TEN

REGIONAL TRADITION

Madain Saleh (200BC TO 106 AC) was known ancient stone city , an archaeological site is located in the north-west Saudi Arabia , specifically in the province of Ela the area of Medina . Occupies a place strategically located on the road linking the southern Arabian Peninsula, Mesopotamia and the Levant and Egypt , as that of the place of historical fame that he drew from his position on the ancient trade route that connects the south of the Arabian Peninsula and the Levant, and stone homes of Thamoud name Valley villages between Medina and Tabuk . It mentioned stone in the Koran as the home of folk Thamud , who responded to the call God's prophet Saleh , then wore their religion and Akaroa camel that God sent them a verse Vohlkhm Bachihh.[1] The Madain Saleh of the most important capitals of the Nabataeans after their capital of Petra , as it contains the largest southern settlement of the Kingdom of the Nabataeans after Petra in Jordan , which separated by 500 km, and returns the most prominent roles civilization to centuries first BC and the first century AD , during a period of prosperity State Nabatiyeh and before its fall at the hands of the Romanian Empire in 106 AD , is believed that the stone continued to civilization until the fourth century AD , and was the capital of Lihyan in the north of the Arabian Peninsula.

Includes the effects of Madain Saleh 153 interface rocky carved, also includes a number of Islamic monuments which consists of a number of castles and the remnants of line Hejaz Railway , which extends for a distance of 13 km, as well as the station and locomotives.[1] in the year 2008 were registered the site in the list of World Heritage sites , becoming the first site to be registered in Saudi Arabia. There is also another archaeological site known Bmdain Shoaib is located northwest of Madain Saleh and follow the

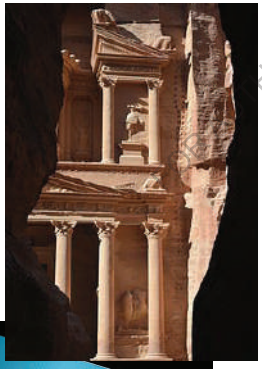
Madain Sali

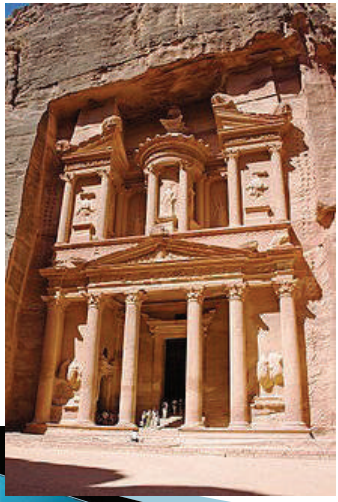


Petra City in Jordan

السيق

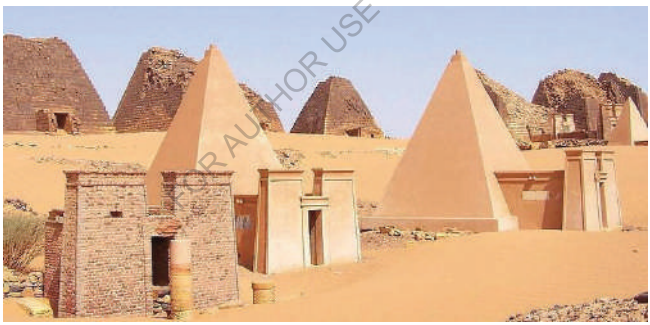
الخزنه





AL BAJRAWIA IN NORTH SUDAN

- Nobian architecture in North Sudan
- 300 BC
- Extend of early ancient civilization towards north Sudan
- Small pyrimds for kings and princes
- Paintings found inside these pyrimds and writings
- Steam baths are found related to Romans civilization at this area.

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Exercise-One

Draw Sketch About Ancient Man Cave

Draw A Sketch about Famous building in Ancient Man Cave, and analyze the building by using the min comparative points (1.The plan, Walls, Openings, Columns, Decorative, Arches, Volts, Domes, Lightings, Constructions systems , roof, Surfaces, Forms, Scales. Materials, Colours, السلالك and Types of buildings), this analysis will be write near the sketche.

The Requirements:

White drawing paper size A3

Pencils

A file for keeping his/her works

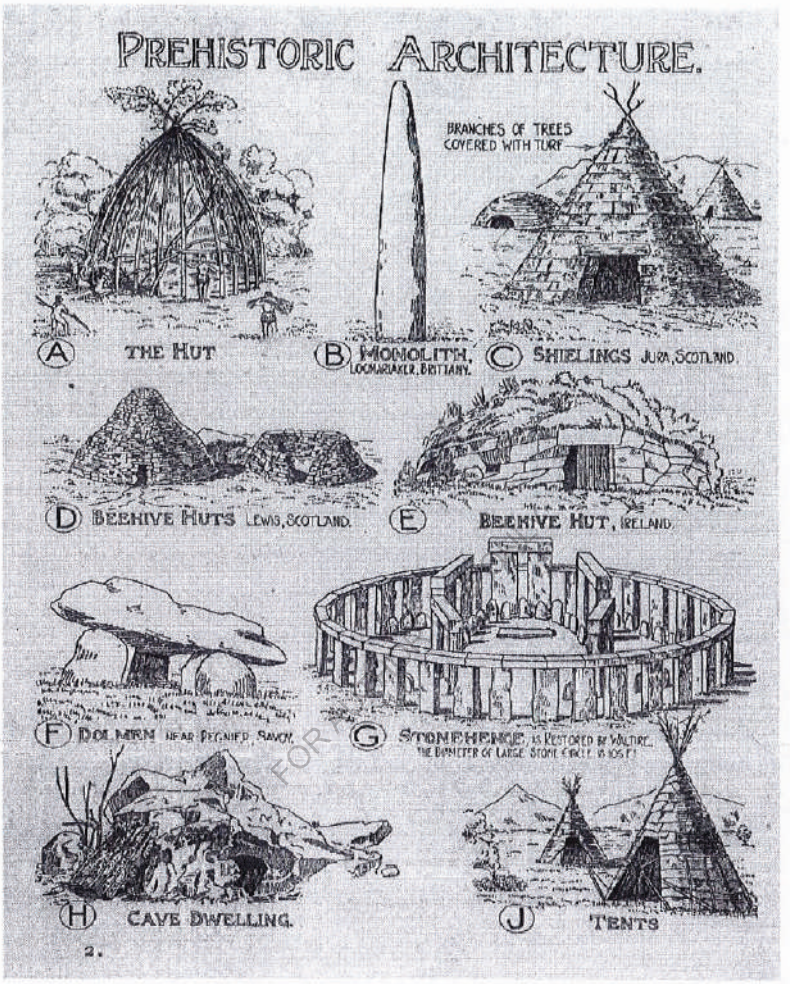
Skills:

1-The students will improve his knowledge ability by reading eBooks that was given to him by his Lecturer. About Ancient Egyptian Architecture

2.Analyze the building by main comparative points.

3-drawing sketch improve the psychomotor skill

4. Communication ability by making a jury at the end of our day. Students can see their works and make a comparison by the evaluation of each job.


PREHISTORIC ARCHITECTURE.
BRANCHES OF TREES COVERED WITH TURF
(A) THE HUT
(B) MONOLITH, LOCMARIAKER, BRITTANY.
(C) SHIELINGS JURA, SCOTLAND.
(D) BEEHIVE HUTS LEWIS, SCOTLAND.
(E) BEEHIVE HUT, IRELAND.
(F) DOLMEN NEAR PERGNIED, SAVOY.
(G) STONEHENGE, AS RESTORED BY VALTURE.
(H) CAVE DWELLING.
(J) TENTS
2.

Exercise-Two

Draw Sketch about Famous buildings

In Ancient Egyptian Architecture

Draw A Sketch about Famous building in Ancient Egyptian Architecture, and analyse the building by using the min comparative points (1.The plan, Walls, Openings, Columns, Decorative, Arches, Volts, Domes, Lightings, Constructions systems , roof, Surfaces, Forms, Scales. Materials, Colours, السلالت and Types of buildings), this analysis will be write near the sketche.

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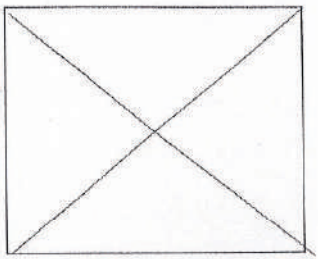
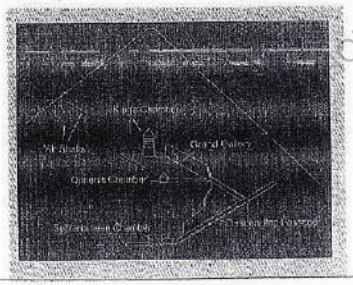
ARC201

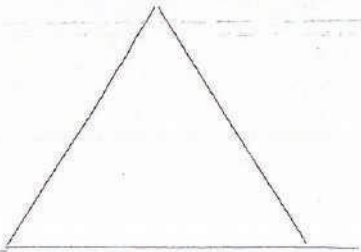
HISTORY OF ARCHITECTURE /Exercise Two



THE PLAN



THE SECTION



THE ELEVATION

Exercise-Three

Draw Sketch About Famous buildings

In Ancient Mesopotamian Architecture

Draw A Sketch about Famous building in Mesopotamian Architecture, and analyze the building by using the min comparative points (1.The plan, Walls, Openings, Columns, Decorative, Arches, Volts, Domes, Lightings, Constructions systems , roof, Surfaces, Forms, Scales. Materials, Colours, المسلات and Types of buildings), this analysis will be write near the sketche.

The Requirements:

White drawing papes size A3

Pencils

A file for keeping his/her works

The students will improve his knowledge ability by reading eBooks that was given to him by his Lecturer. About Ancient Egyptian Architecture

2.Analyze the building by main comparative points.

3-drawing sketch improve the psychomotor skill

4. Communication ability by making a jury at the end of our day. Students can see their works and make a comparison by the evaluation of each job.

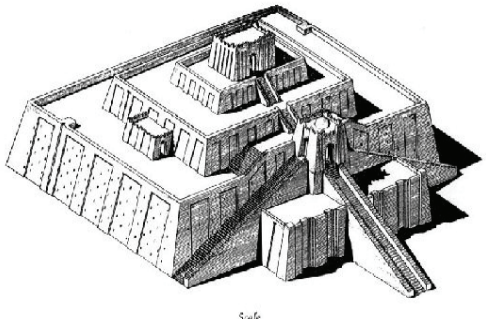


Fig. 3.5 : The ziggurat with 5 steps

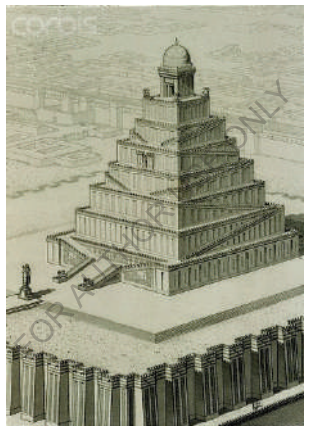


Fig. 3.6 The ziggurat with 7 steps

Exercise-four

Draw Sketch About Greek Columns

Draw A Sketch about Greek Columns Architecture, and analyze the building by using the min comparative points (1.The plan, Walls, Openings, Columns, Decorative, Arches, Volts, Domes, Lightings, Constructions systems , roof, Surfaces, Forms, Scales. Materials, Colours, المسلات and Types of buildings), this analysis will be write near the sketche.

The Requirements:

White drawing paper size A3

Pencils

A file for keeping his/her works

Skills:

1.The students will improve his knowledge ability by reading eBooks that was given to him by his Lecturer.

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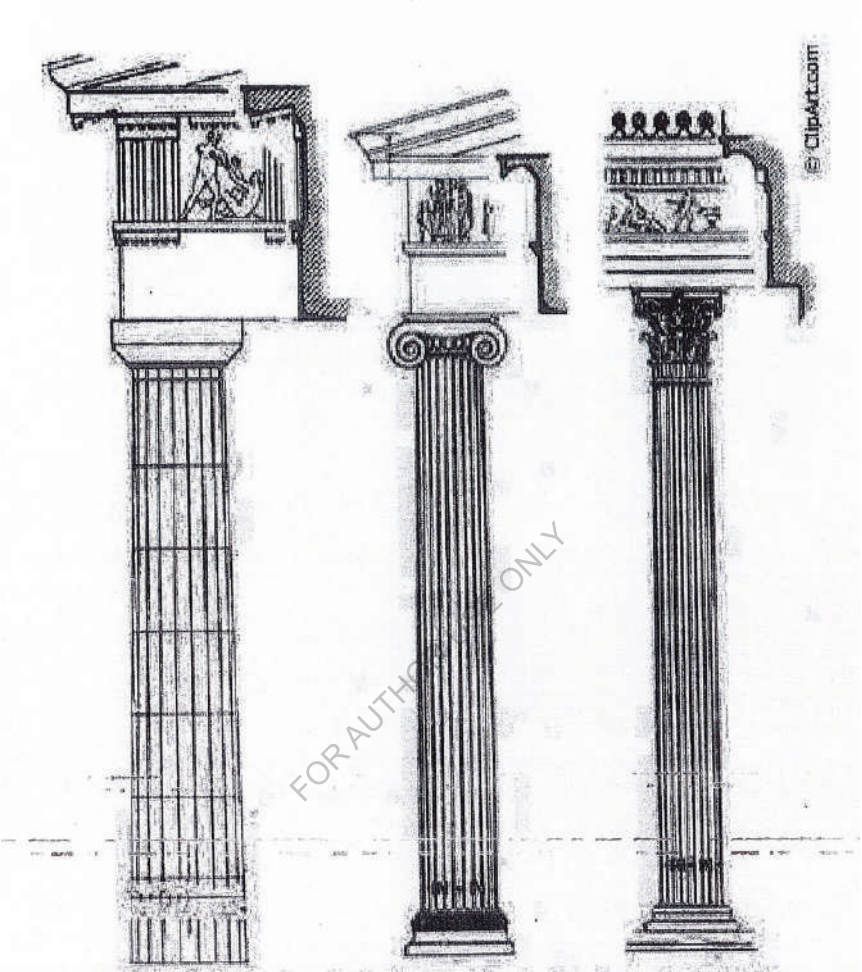

Comparison of Greek Columns: Doric, Ionic, and Corinthian

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