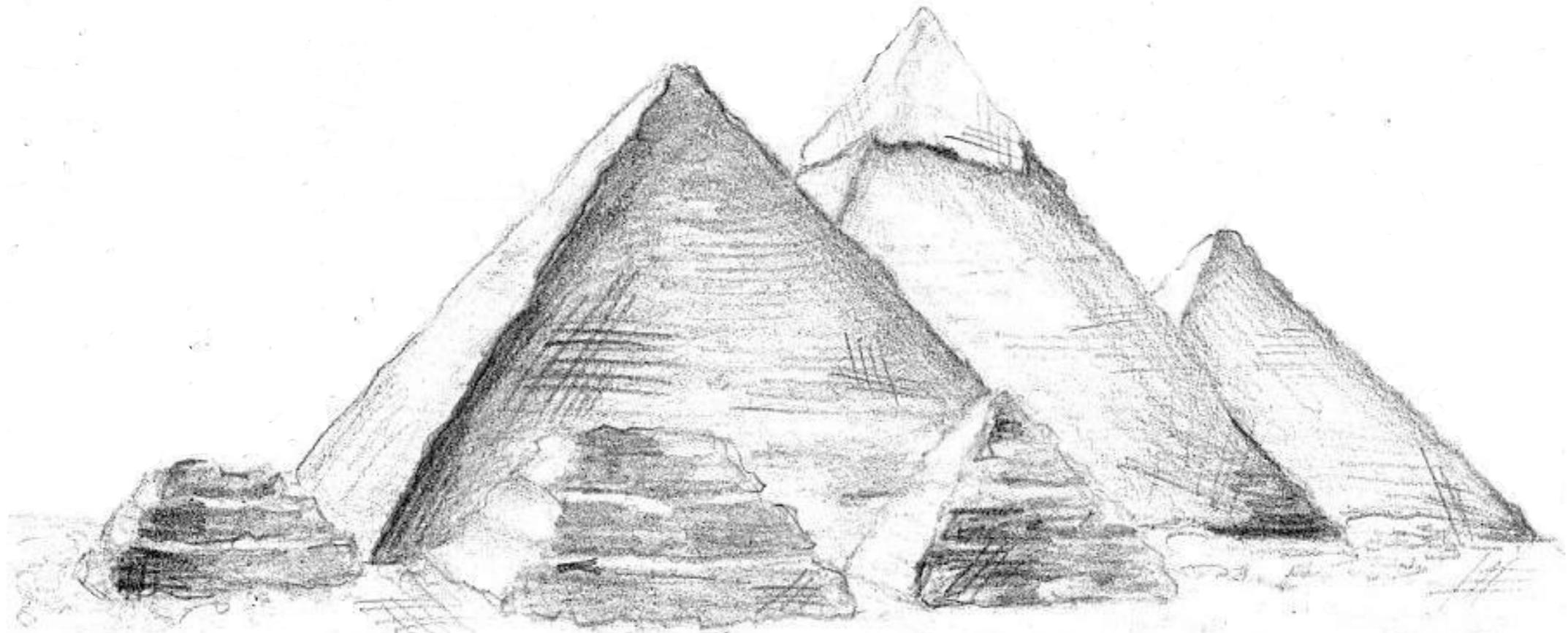


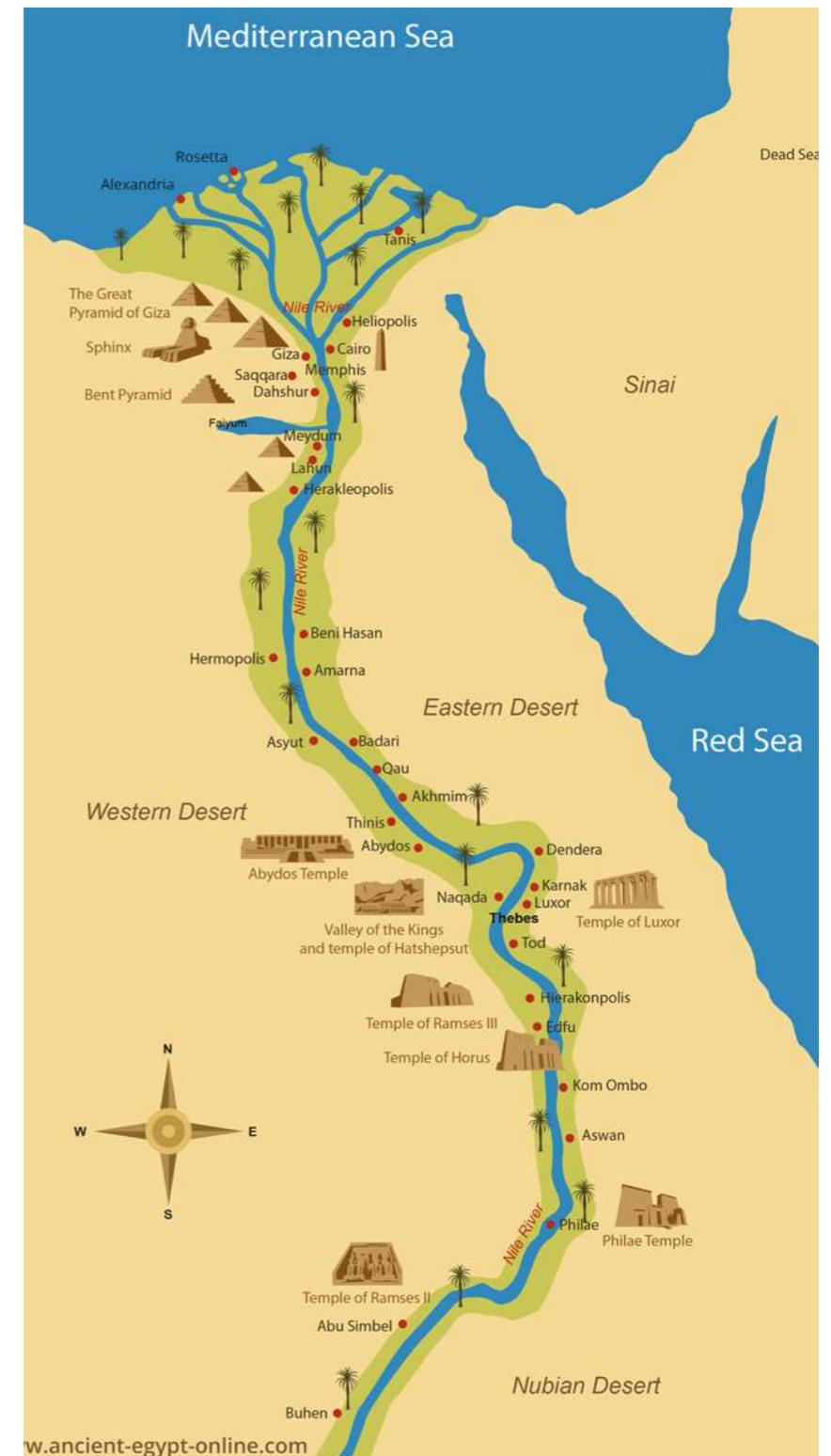
History of Architecture

Ancient Egyptian Architecture



The gift of the river

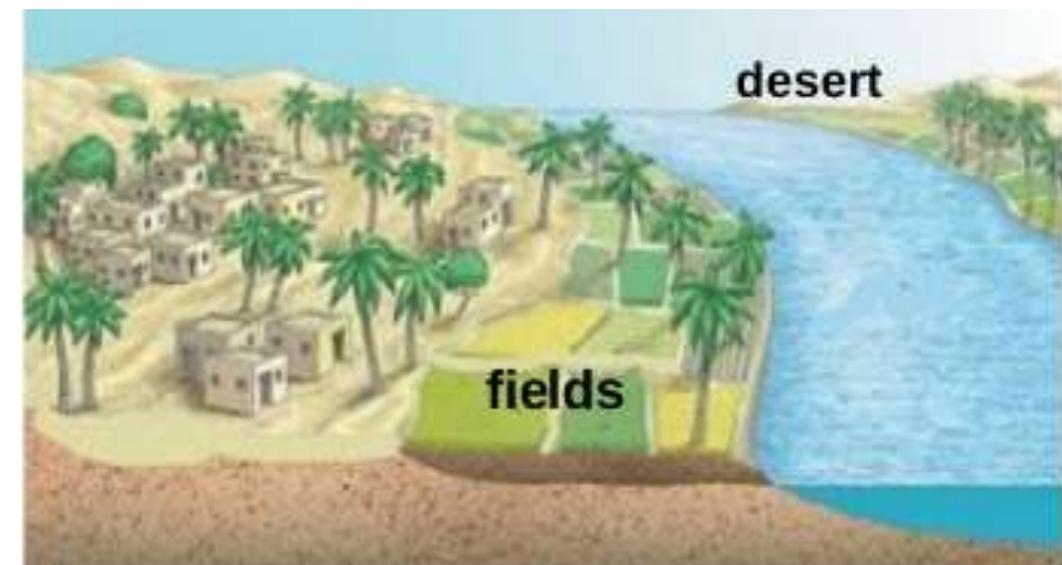
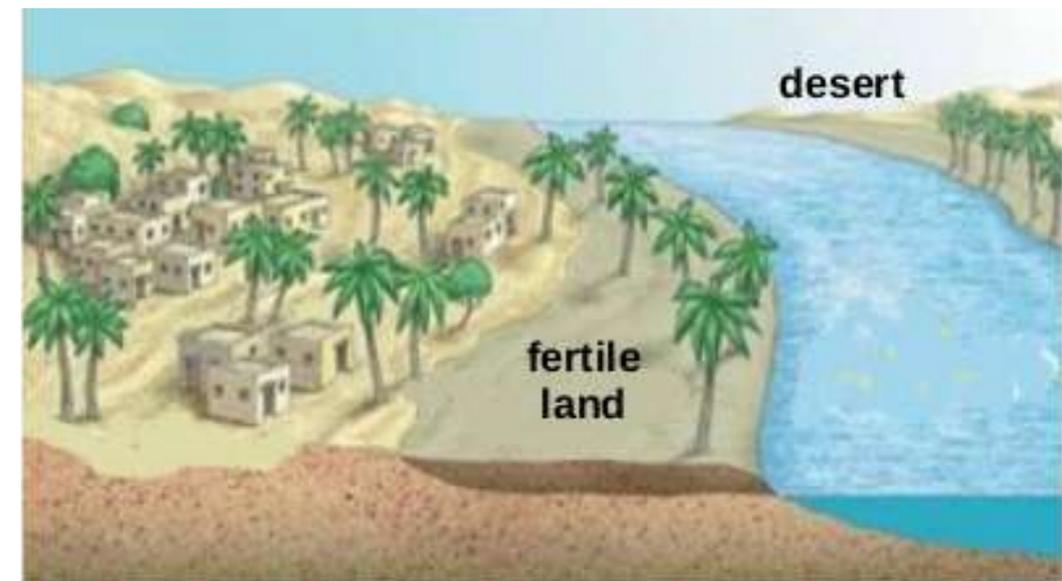
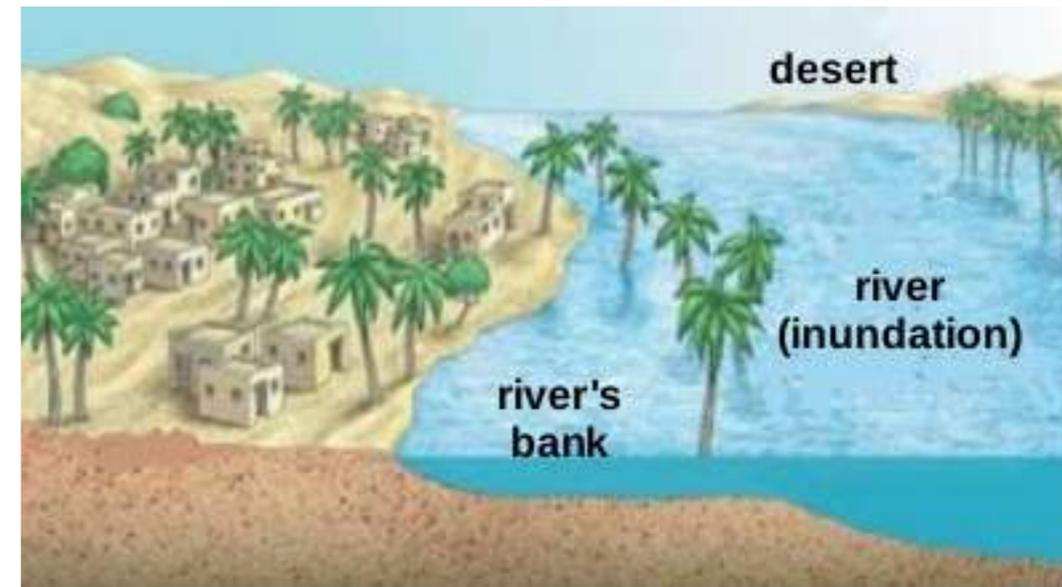
- Two distinctly different landscapes are found in Egypt:
 - **The fertile country** on the banks of the Nile
 - **The sandy desert** to the east and west
- Egypt was **protected from invasion by the desert** to the east and west, **the mountains** to the south, and **the Sea** to the north



Weather

The Nile created three seasons for the Egyptians:

1. **Inundation**: from June through October
2. **Emergence of the fields from the Water**: November to February, fields planted and tended
3. **Drought**: from March to May, harvesting and threshing



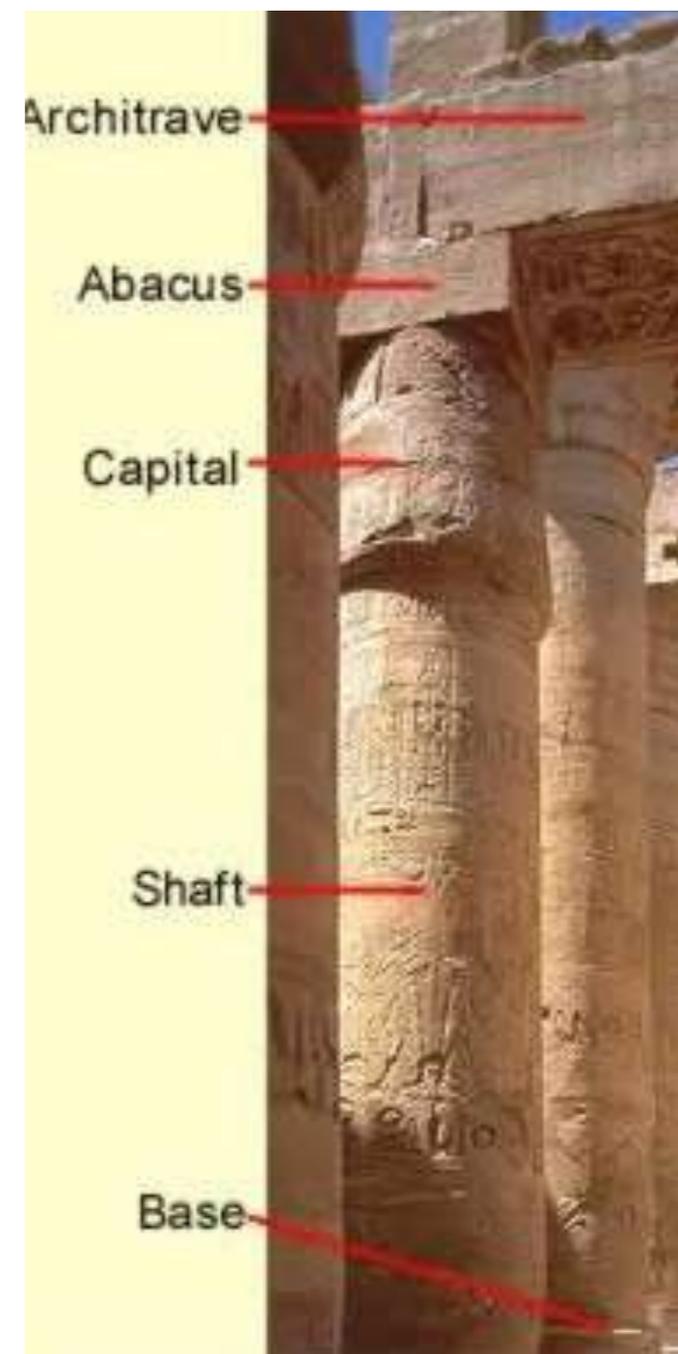
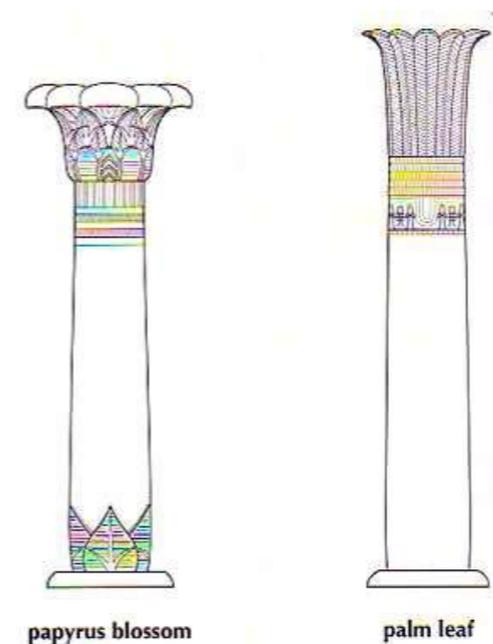
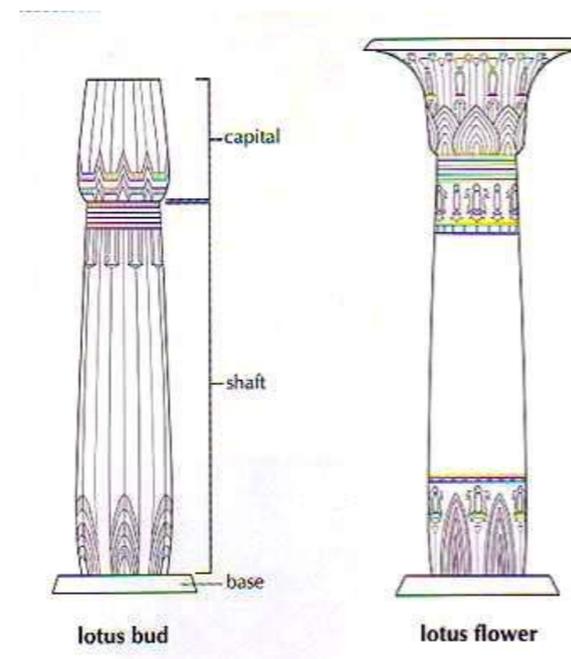
Geology

- Abundance of **limestone** in the North
- **Sandstone** in the central region
- **Granite** in the South (Near Aswan)
- Hard and lasting building material influenced the architecture due to its **durable qualities**
- Wood as a building material was not available





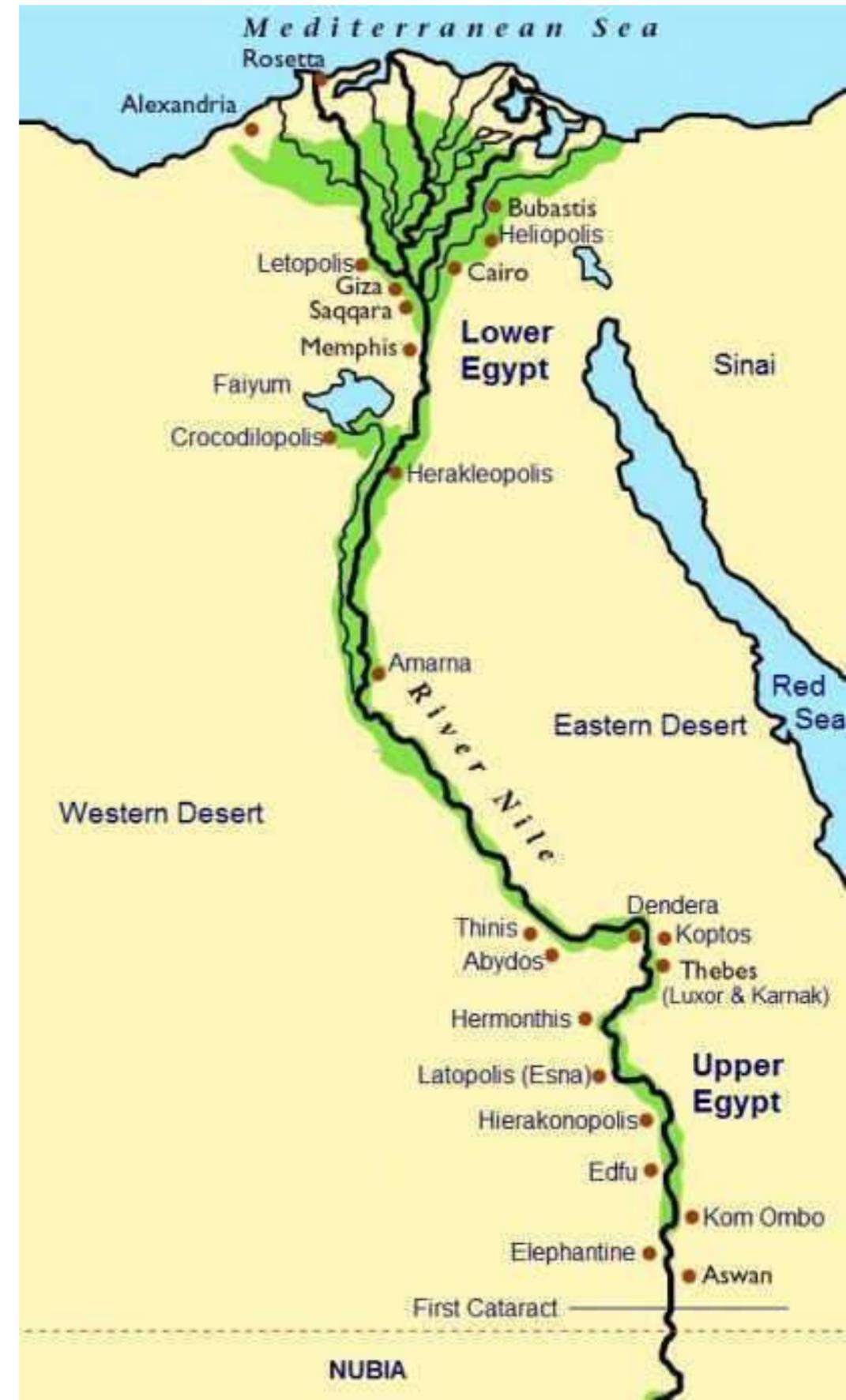
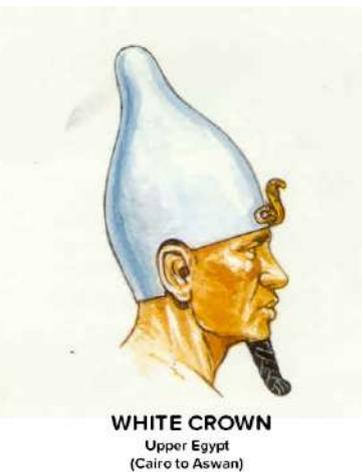
- At the beginning, the regular material was '**Sun-dried mud brick**'. Then the finest buildings of religious character used **stone**
- Egyptian used columns that had a distinctive character:
 - Large in proportion
 - Vegetable origin
 - Shafts indicative of bundle of plant stems - gathered at the base
 - Capitals derived from: Lotus bud, or papyrus flower, or palms



History

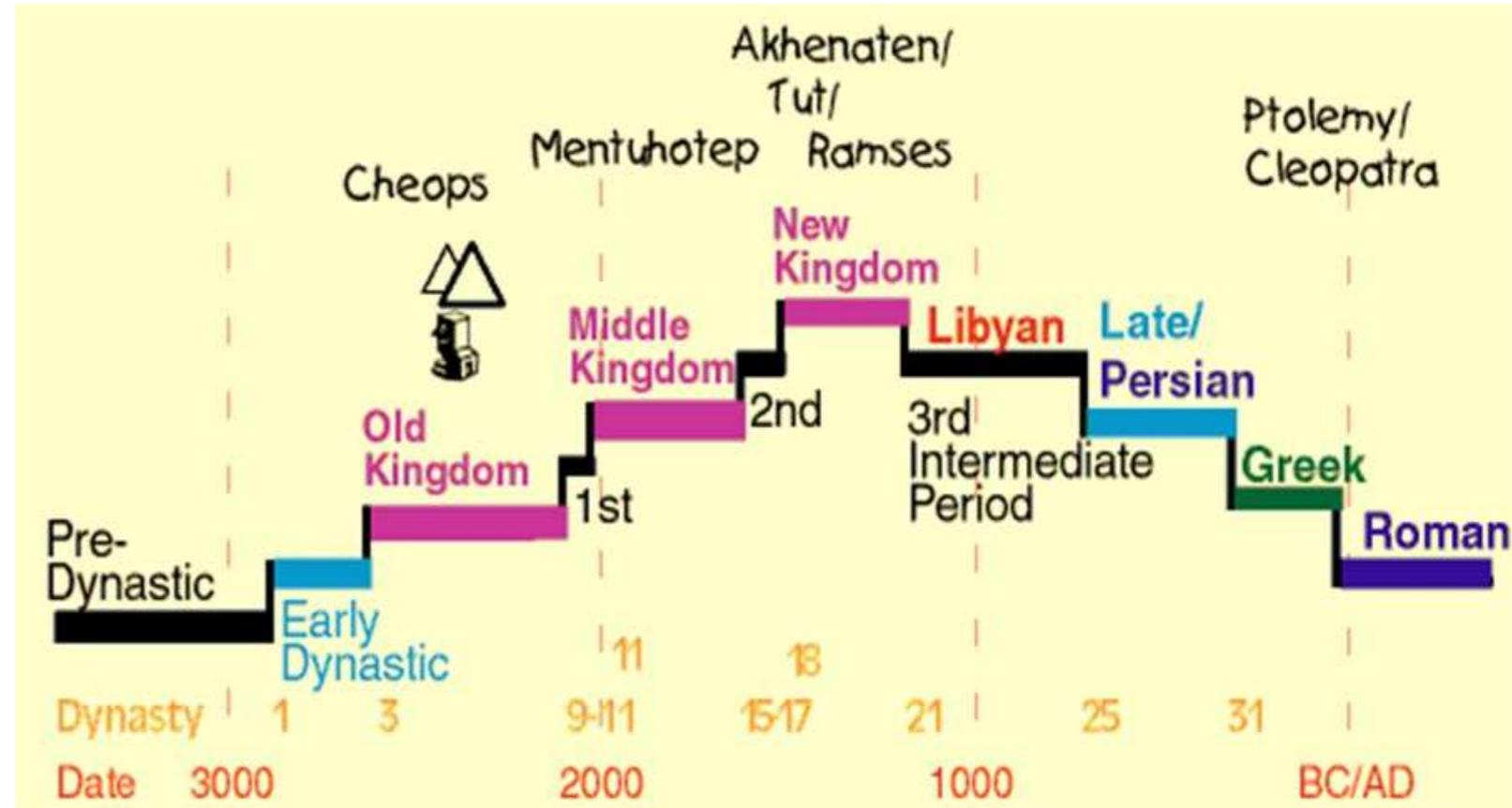
Around **4000 BC**, two cultures were developed:

- **Upper Egypt**: in the harsher geography of the southern valley
- **Lower Egypt**: more moderate climate of the flat, northern delta marshes
- In about **3100 BC** the cultures were united by the **king Menes (called Narmer)**, out of this unification emerged the '**Old Kingdom**'



History

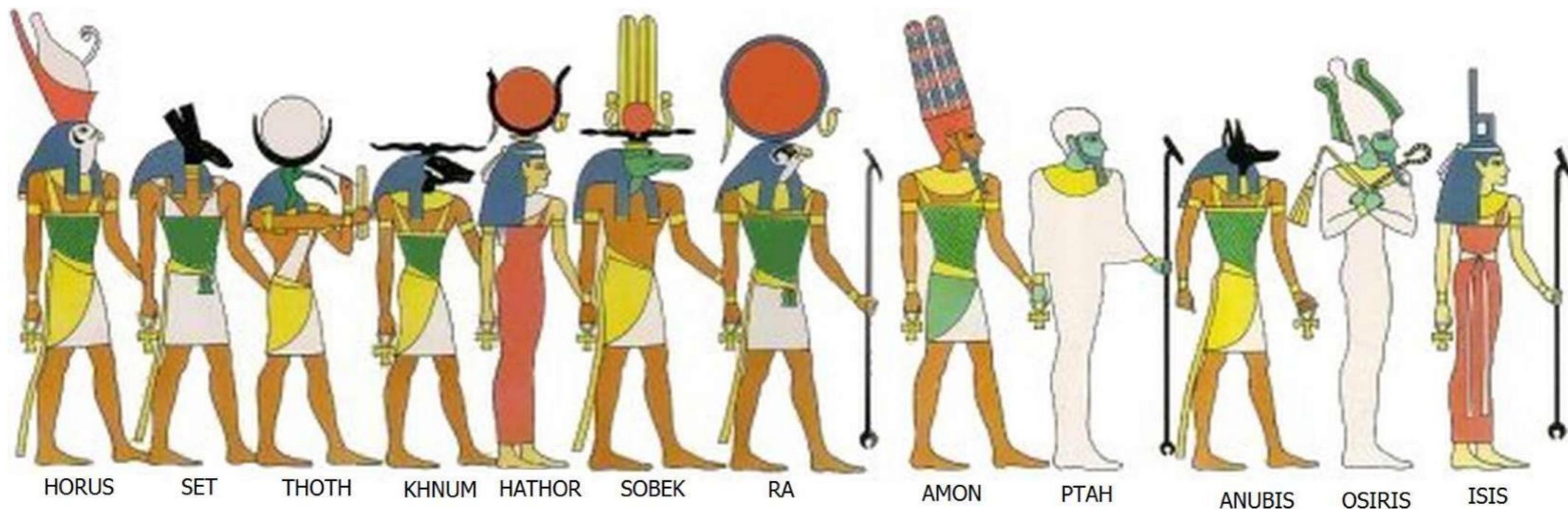
- With the expansion of the nation, the pharaoh gradually gave more power to regional provinces which led to the breakdown in the administration and the decentralisation of the power by the end of the 6th dynasty (2,200 BC)



- During the eleventh dynasty the government was restored and the Middle Kingdom began (2,052-1786 BC)
- Return of strength during the eighteenth dynasty (1575-1000 BC), The New Kingdom

Religion

- The Egyptians were strong believers in the **future state**. Emphasis on the **preservation of the dead**
- A close connection between religion and architecture - **monumental architecture focused on religious and ritualistic temples**. The **dwelling house is temporary lodging, the tomb being the permanent**
- The Egyptians were content by the **endless cycle of life determined by the sun and river**
- Most of the many gods represented **forces of nature** and their images incorporated aspects of humans and animals. The chief god was the **sun god (Ra and Amun)**



Egyptian Funerary Architecture

Egyptian funerary architecture is divided into three types:

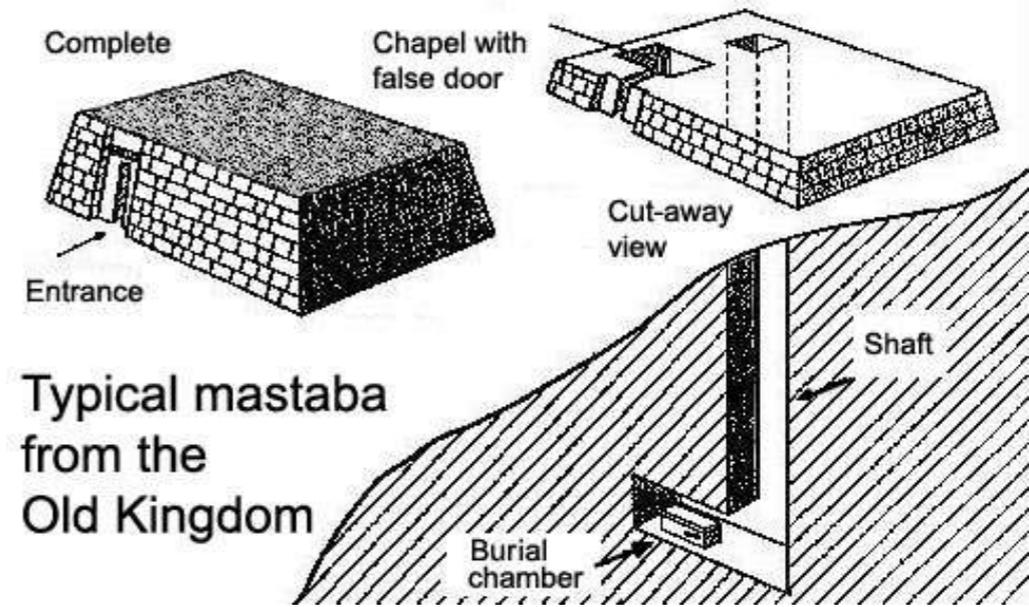
1. Mastabas:

a flat-roofed, rectangular structure with outward sloping sides that marked the burial site

2. Royal tombs (Pyramids)

3. Rock-hewn Tombs:

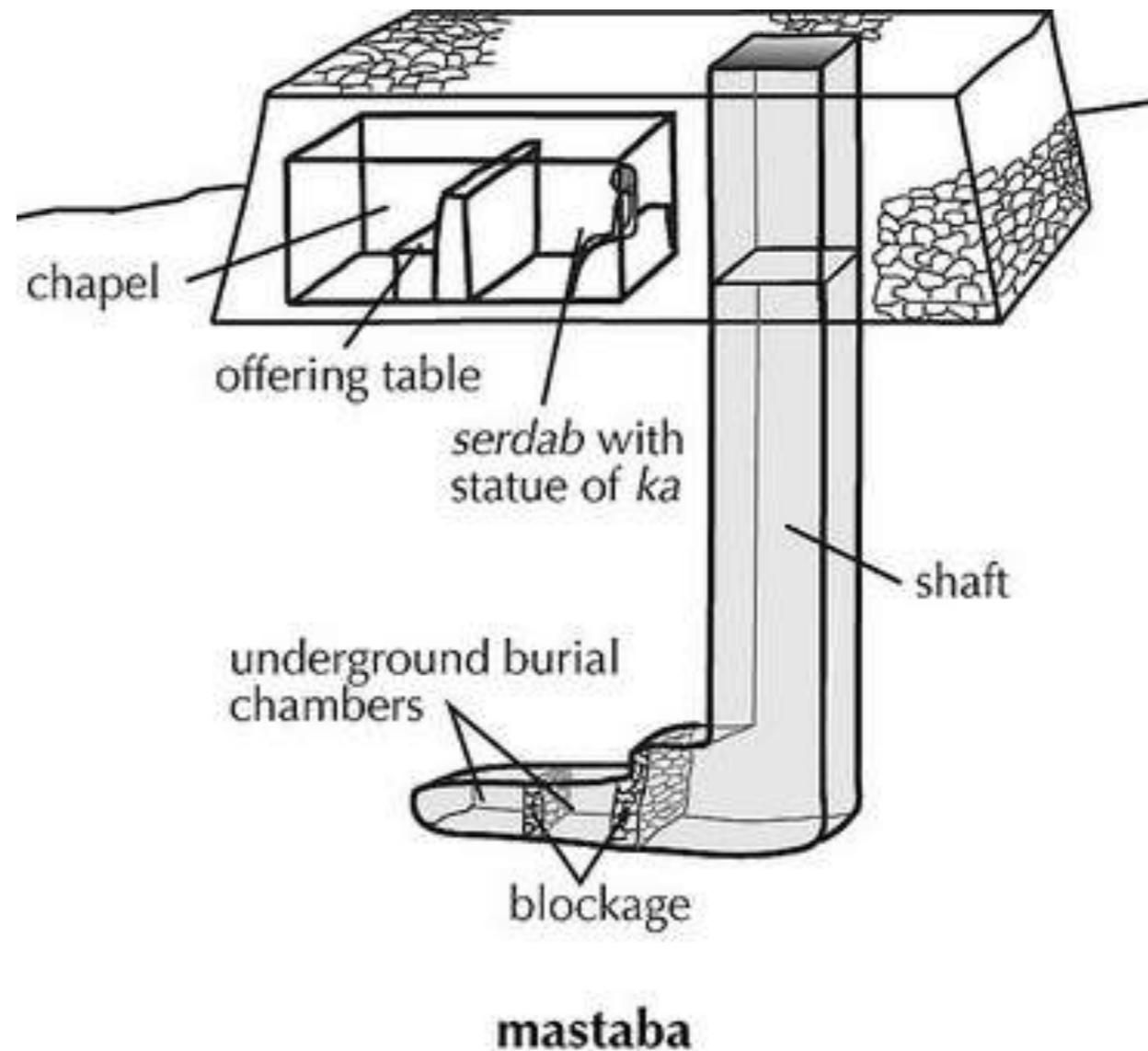
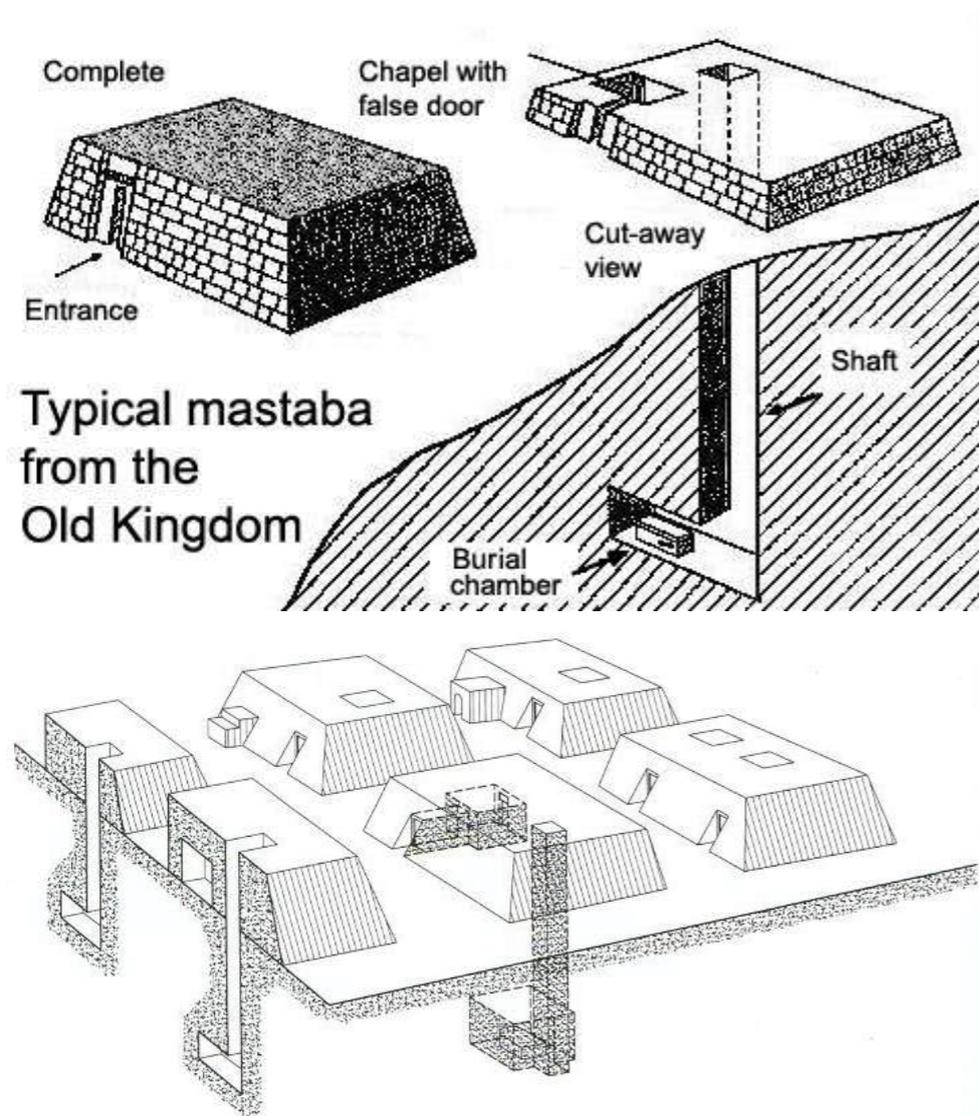
Temples carved inside rock-cuts



Mastabas

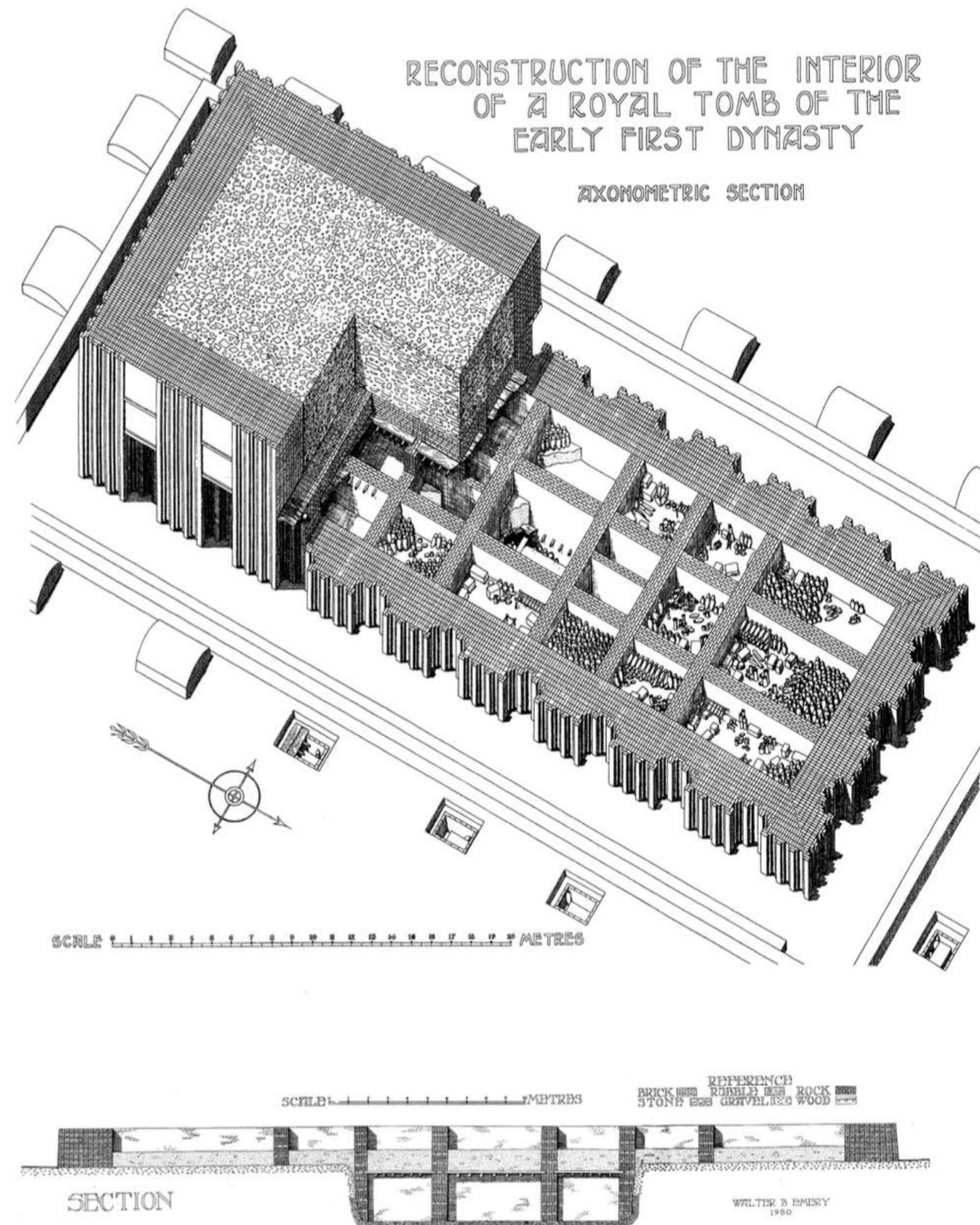
Mastabas are usually made up of two main elements:

- **Rectangular structure** above ground that is visited by priests and loved ones
- **Substructure of sealed chambers** carved out of the rock below which housed the king's sarcophagus and all the amenities he will need for eternity



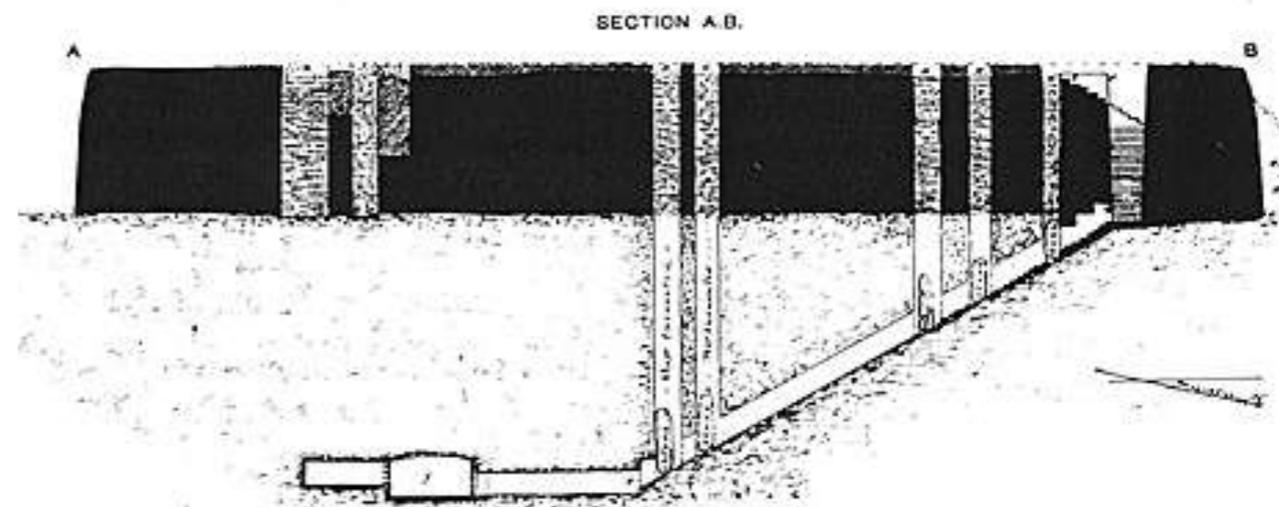
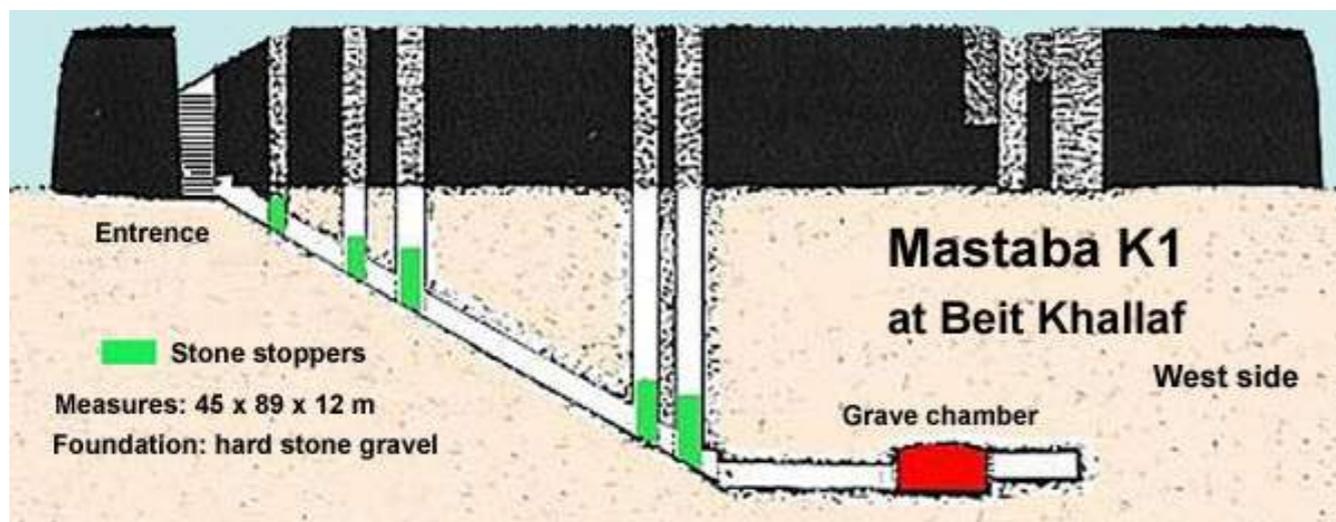
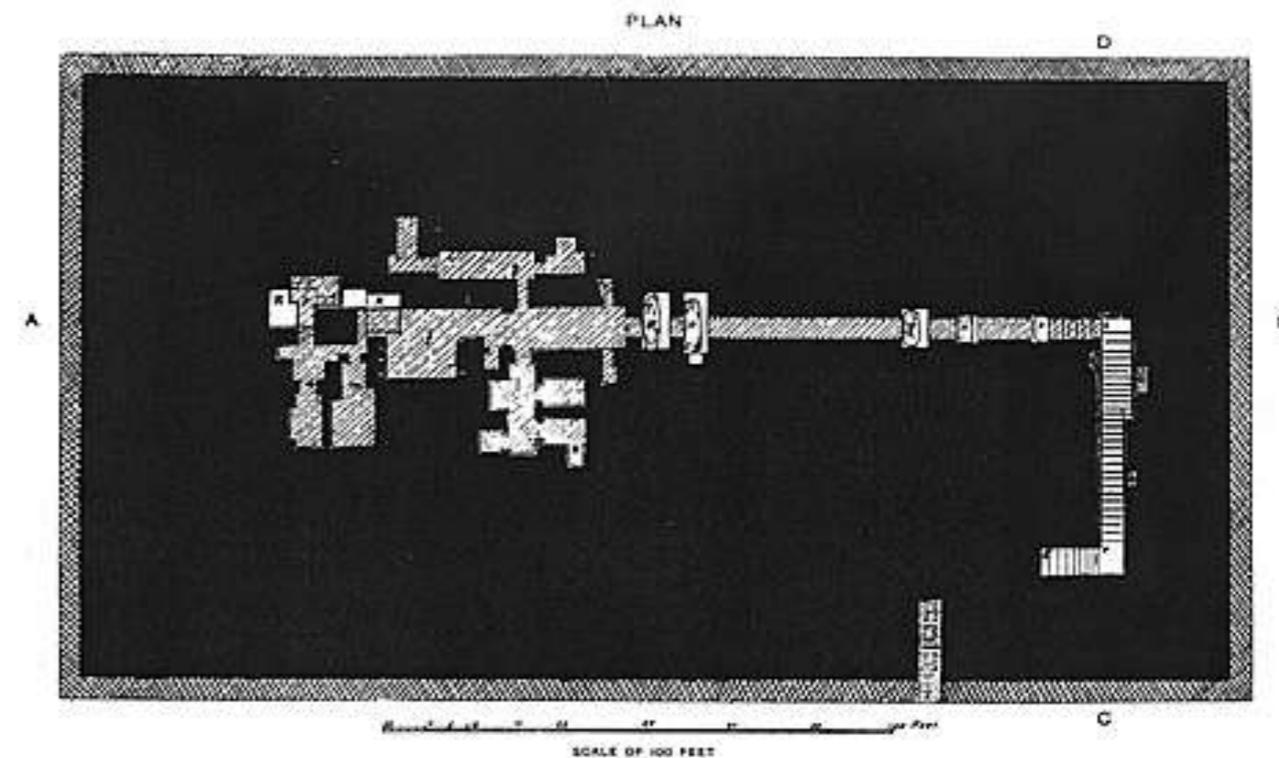
1. The Original Mastaba (1st Dynasty)

- Graves had come to simulate house plans with several small rooms
- A central room for the coffin constructed below ground
- Surrounding rooms to receive the funerary offerings
- All covered with wooden roof then the entire area covered by a rectangular mound of the soil with very thick brick walls



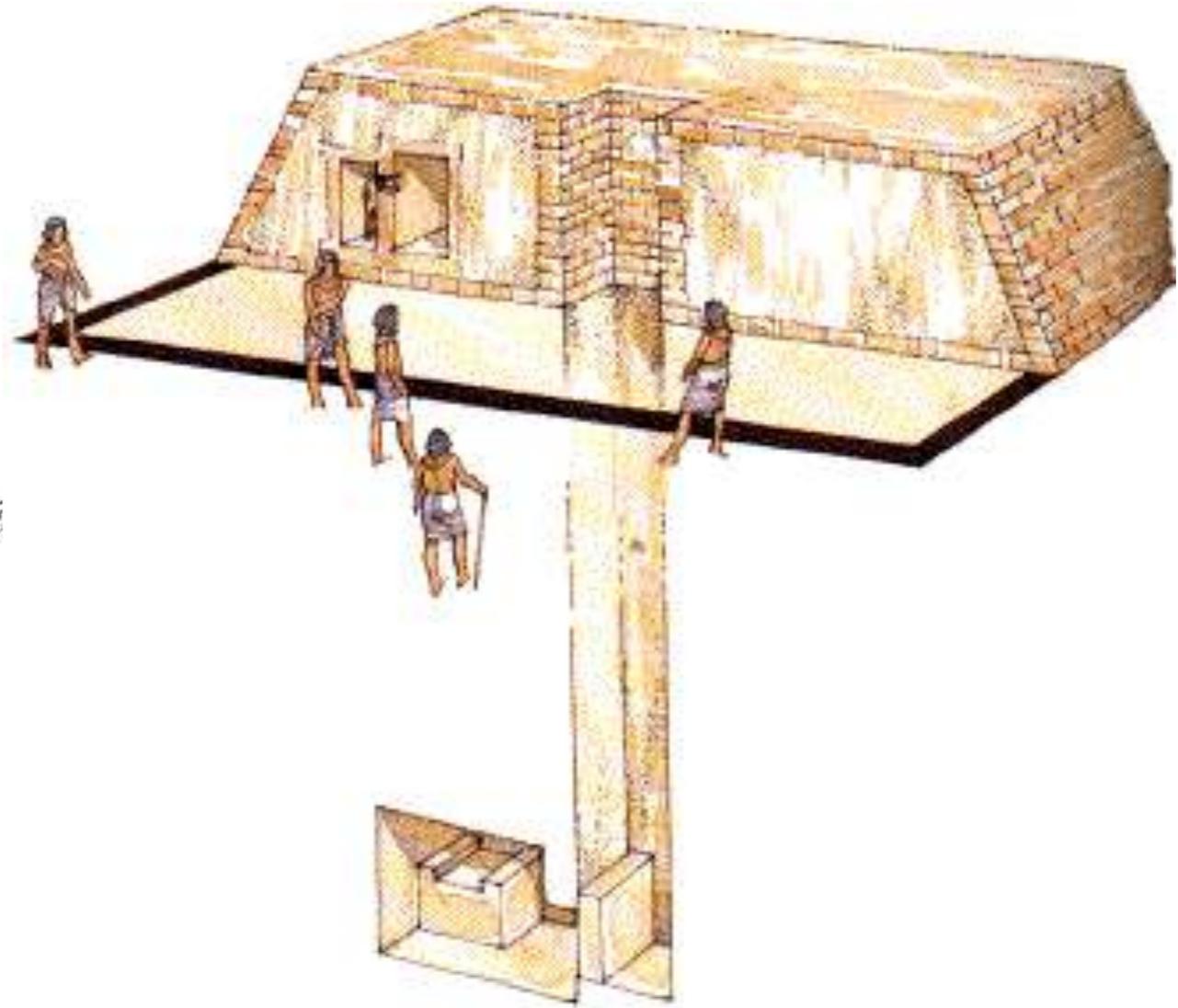
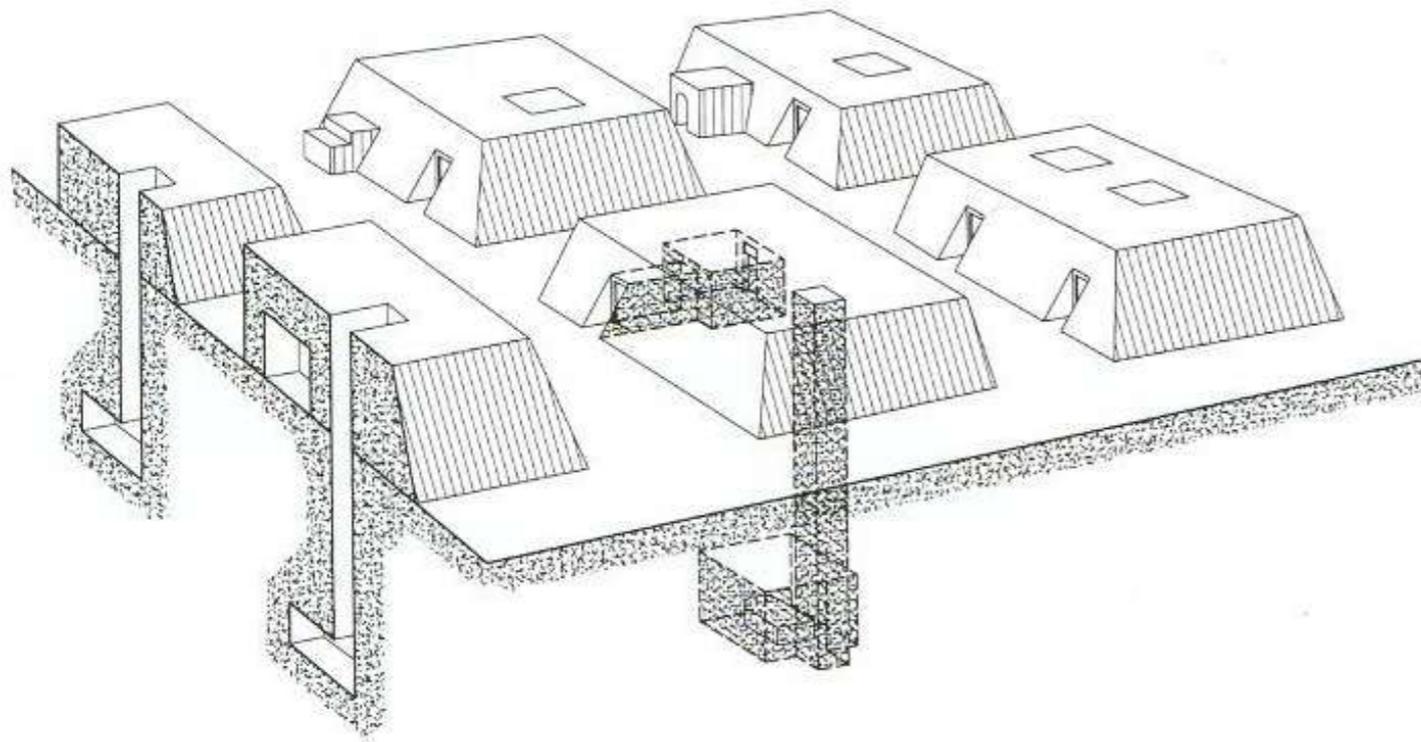
2. The Stairway Mastaba (2nd and 3rd Dynasty)

- The tomb chamber **sunk much deeper** and **cut in the rock below**
- The main axis of the tomb lay **North and South**
- Steps and ramps led from the top of the mastaba to connect with a shaft which descended to the level of the tomb chamber
- **Stone** was used besides the mud bricks



3. Shaft Mastaba (4th and 5th Dynasty)

- A small offering chapel developed and constructed within the mastaba
- Tomb chambers were sunk more deeply
- Inclined walls



Pyramids

The great pyramids of 3rd - 6th dynasties are on site distributed along the west side of the Nile

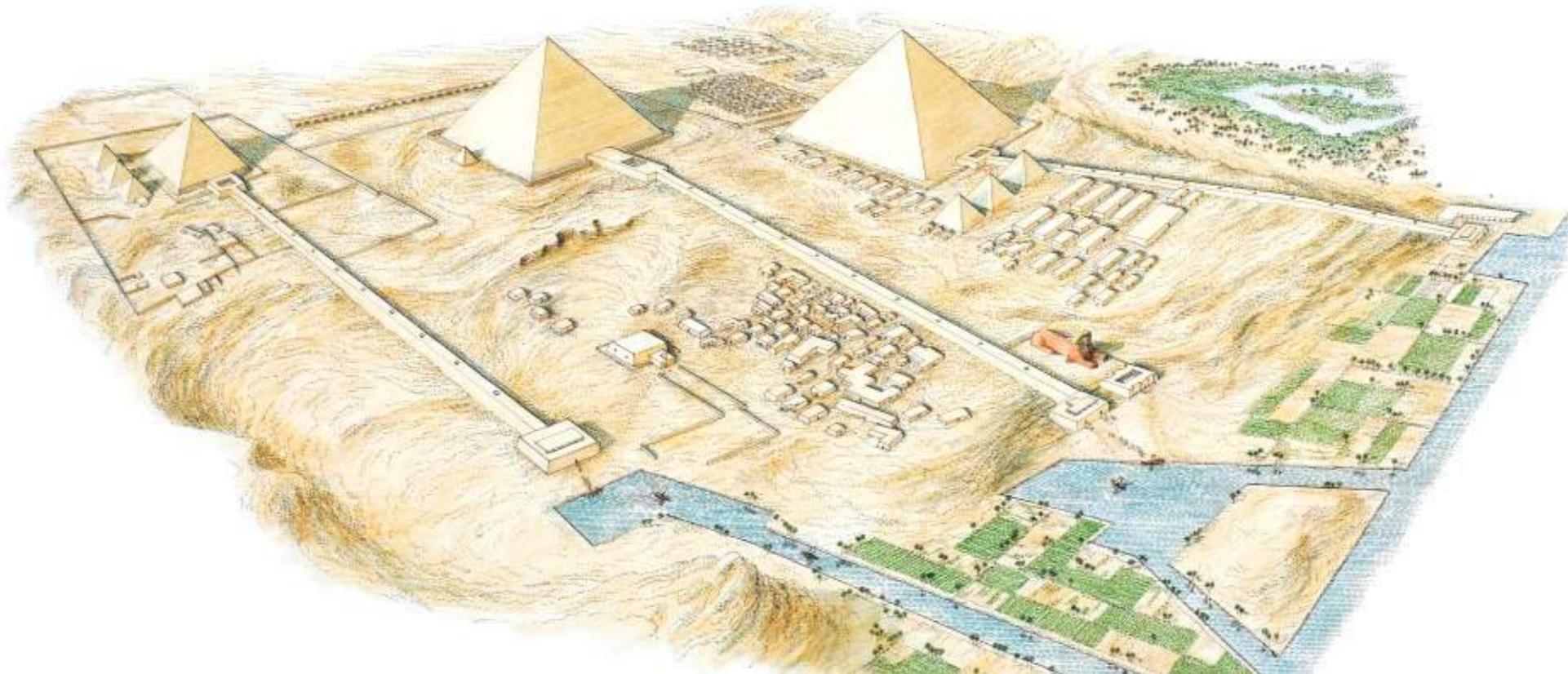
Transition from

1. **Step Pyramid: 3rd dynasty**
2. **Meidum Pyramid: 4th dynasty**
3. **Bent Pyramid: 4th dynasty**
4. **Red Pyramid: 4th dynasty**
5. **True Pyramid (pyramids of Giza): 4th dynasty**



Pyramids characteristic

- Pyramids built to secure the preservation of the body after death until the soul would once again return to the body
- Pyramids were made of **limestone**
- Entrance of the tombs were normally from the **north side**
- Pyramids were part of a **larger complex of buildings** surrounded by a **walled enclosure**. The east side had a **mortuary temple** for the worship of the dead. Also had a **raised and enclosed causeway** leading **towards the Nile**, where there stood a '**valley building**'

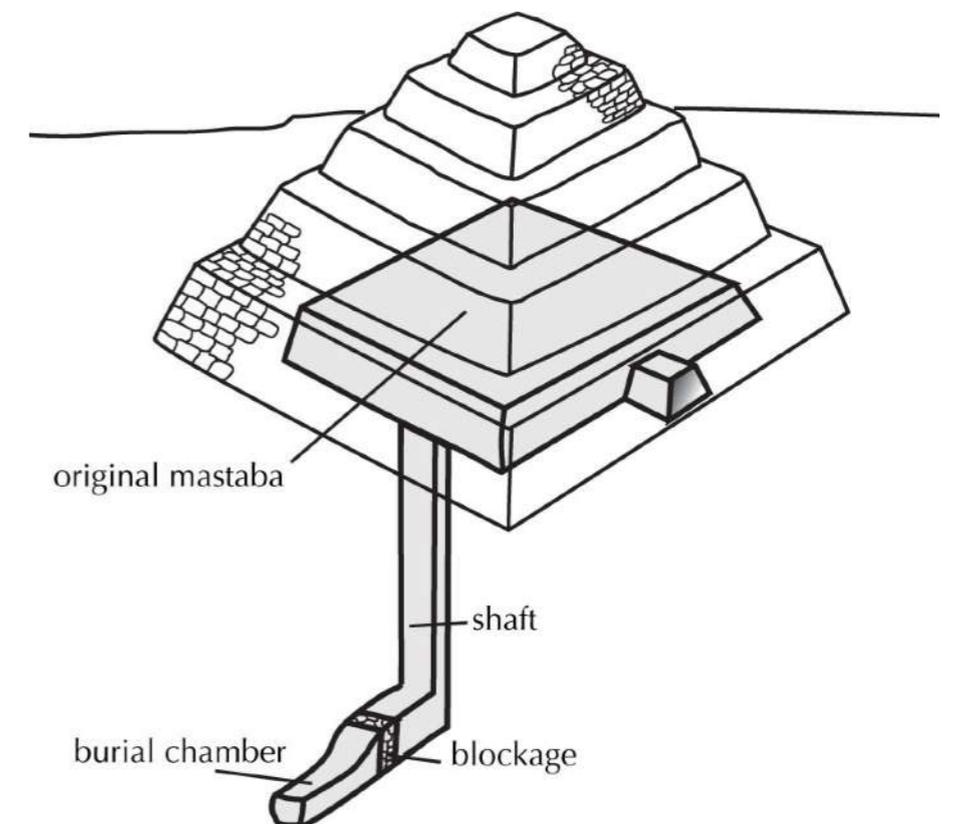
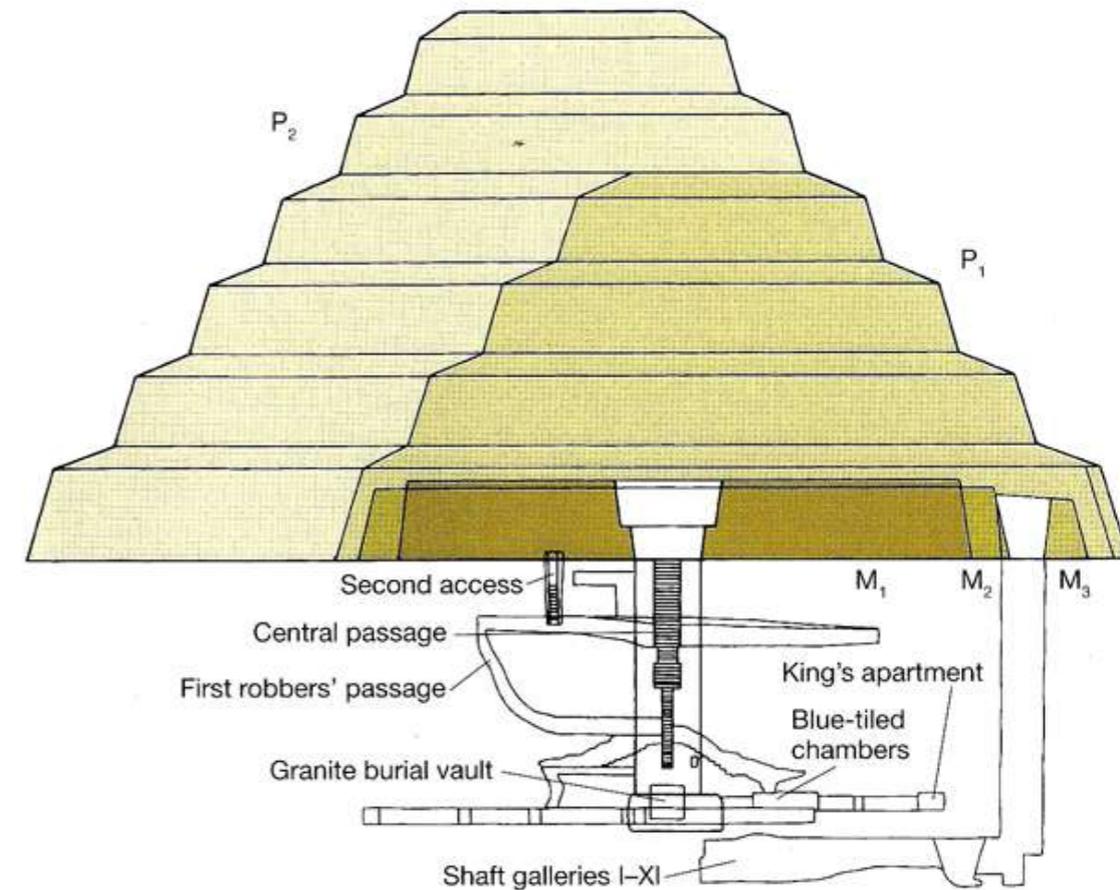


Step Pyramid Saqqara, 2750 BC, 3rd Dynasty



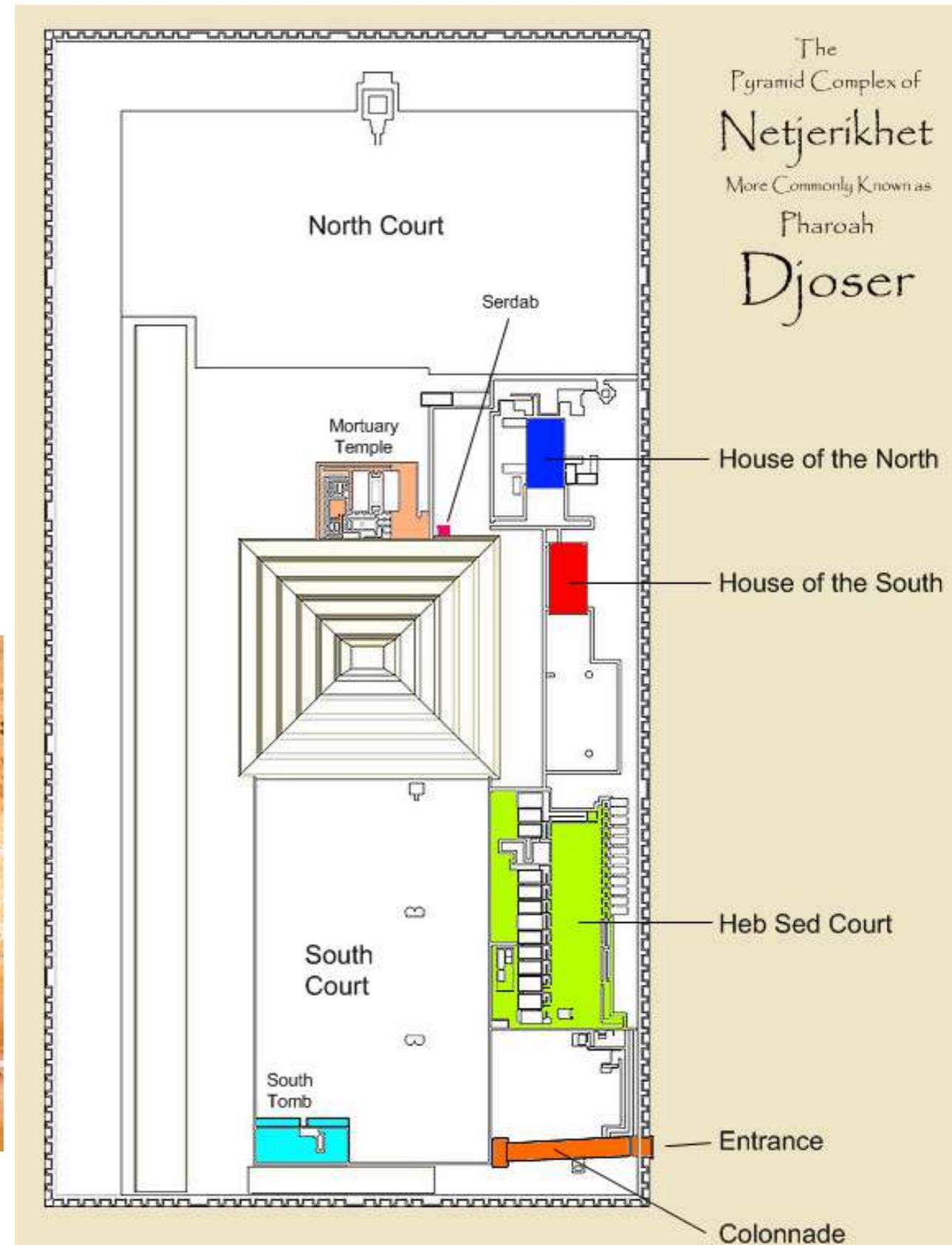
Step Pyramid

- A tomb complex created during the **3rd dynasty** by **Pharaoh Zoser**.
- Measured **140*118m**, and **60m height**
- The building shows different stages of construction
 1. Mastaba with subterranean tomb
 2. The Mastaba was extended to contain burials of other members of the family
 3. Superimposed mastabas above the original, reaches to 4 levels
 4. The base was enlarged and the mastabas were raised to 6 levels



Step Pyramid

- The tomb complex was enclosed in a wall
- **South-East entrance** led to a large **court hall** used for festivals

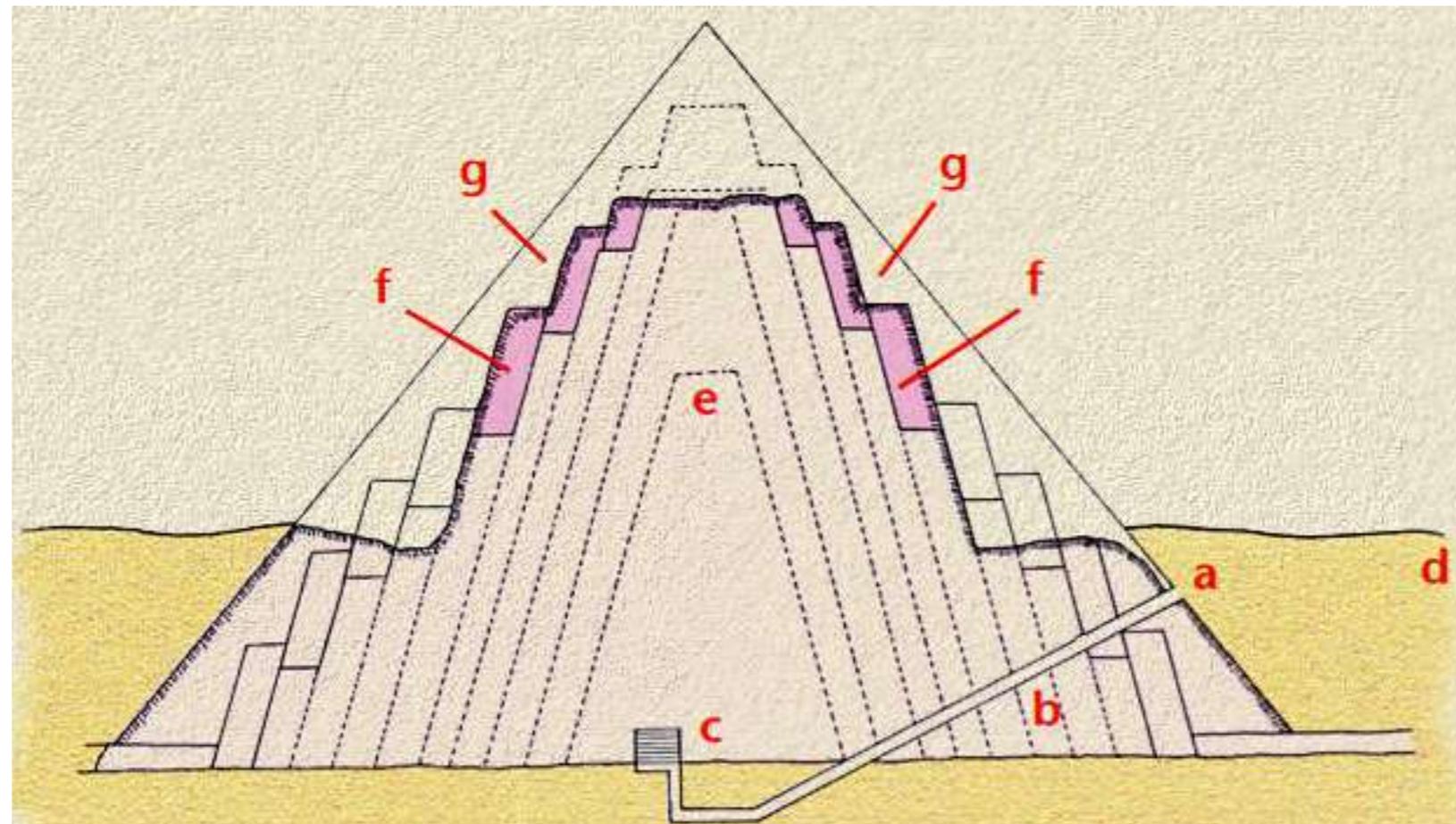


Meidum Pyramid (Meidum, 4th Dynasty)



Meidum Pyramid

- Built by **Seneferu**, the founder of the 4th dynasty during the **old kingdom**
- Designed to be eventually completed as a true pyramid, but was originally built as a **stepped structure**
- Seneferu abandoned the building **after 15 years of work and started another one**, but the failure of the next pyramid forced him to **return to the step pyramid at medium**



CROSS SECTION OF THE MEIDIM PYRAMID,
BASED ON THE STUDY BY POTRIO AND BORCHARDT

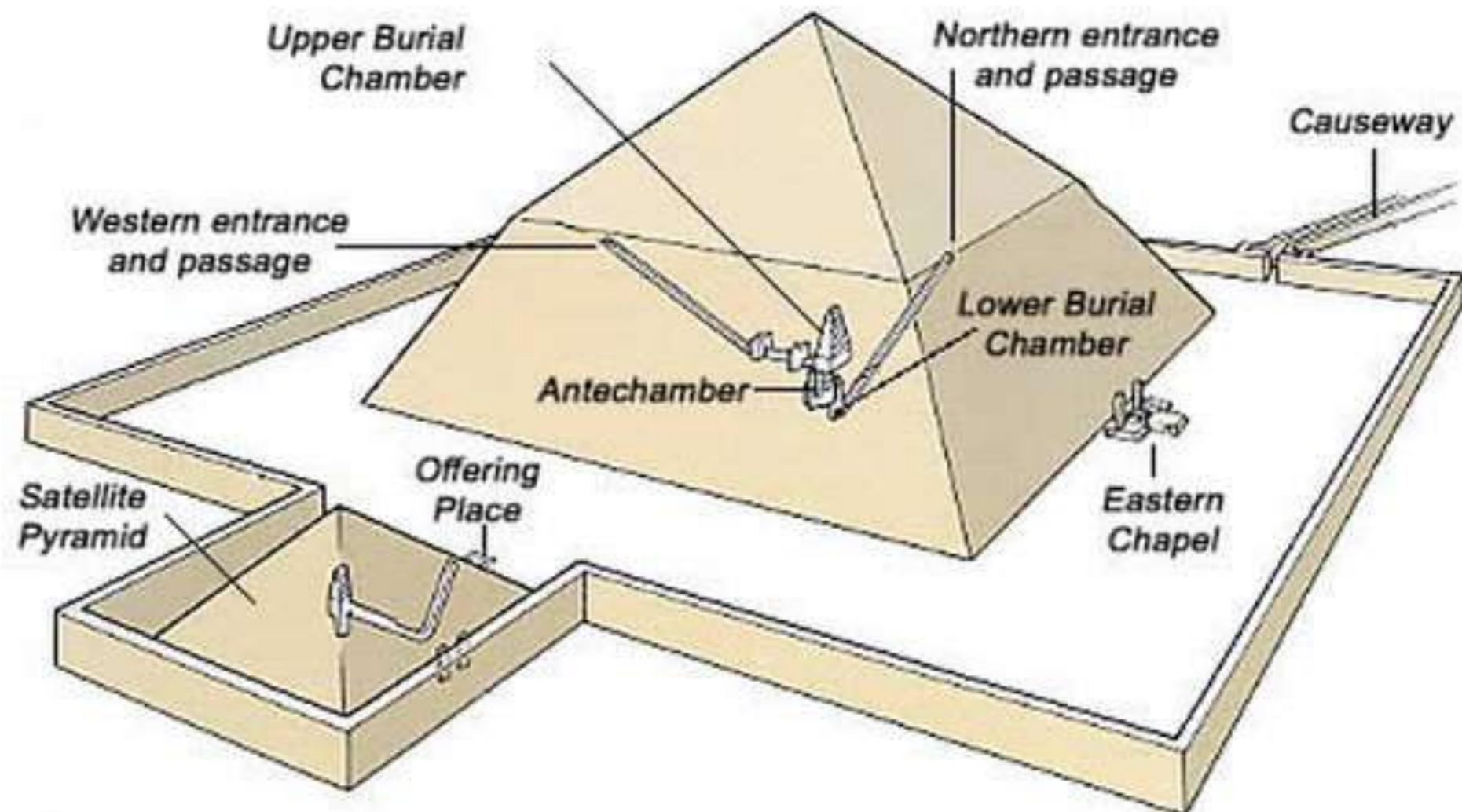
- a. Entrance
- b. Descending corridor
- c. Burial chamber
- d. Level detritus
- e. Central core of the seven step pyramid (phase I)
- f. Enlargement of the pyramid and raising of the steps (phase II)
- g. Outside covering (phase III)

Bent Pyramid (Dahshur, 2723 BC, 4th Dynasty)



Bent Pyramid

- Created by the first king of the 4th dynasty - Seneferu to represent the changing from step pyramid into smooth surface one
- The lower part 55 degree angle, the upper part 43 degree angle. Square in plan, 187m in length, 102m in height
- Has two independent tomb chambers, one is reached from the north side and one from the west

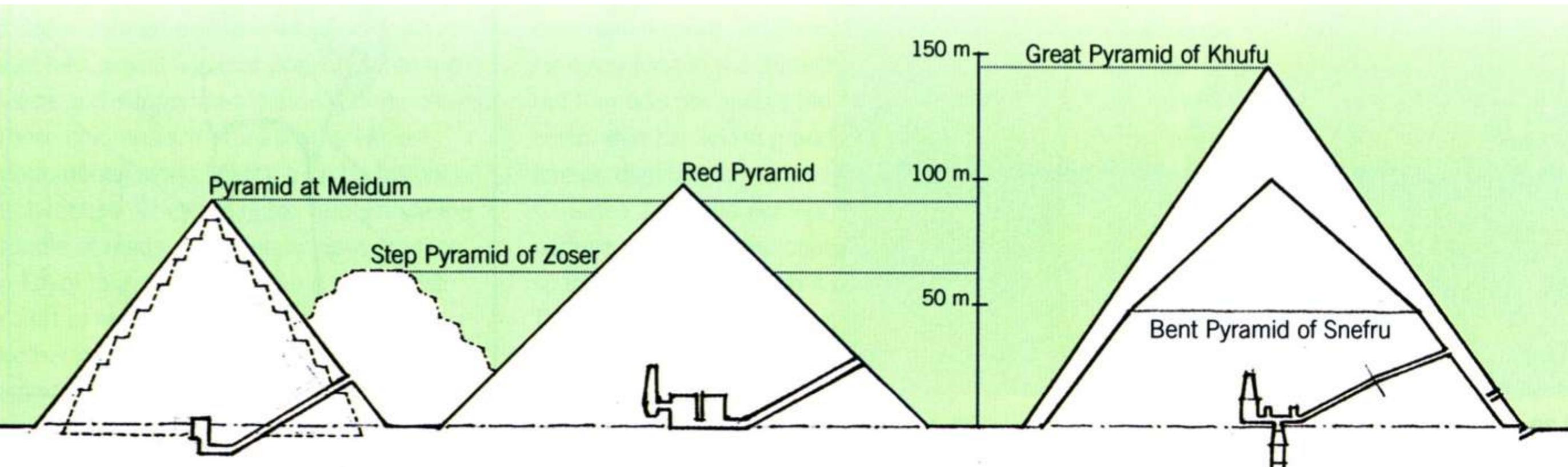
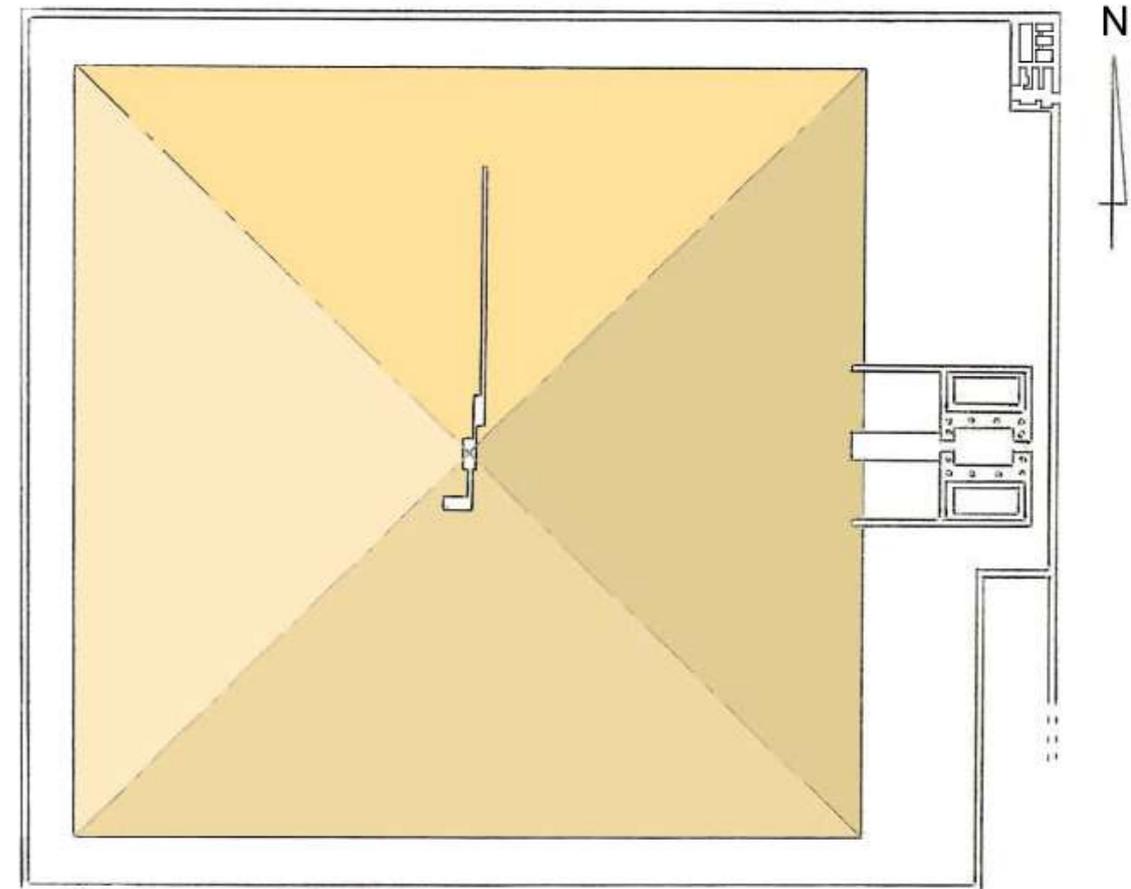


Red Pyramid (Dahshur, 4th Dynasty)



Red Pyramid

- Built by Seneferu, might be the actual place of his burial
- The pitch of its sides is very low 43 degrees as apposed to the usual 52 degrees (similar to the higher part of the bent pyramid)

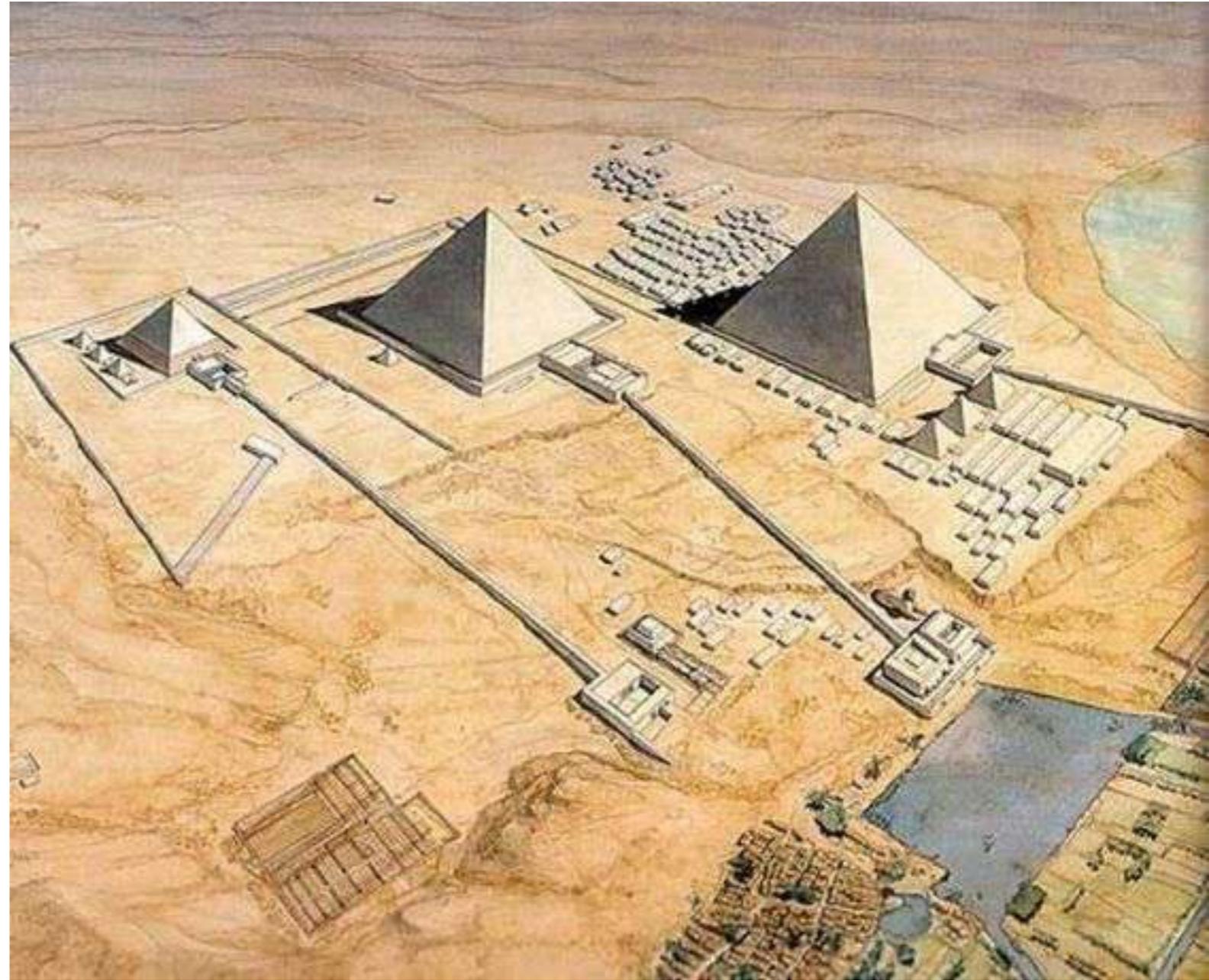


Pyramids of Giza (Giza, 2680–2560BC, 4th Dynasty)



Pyramids of Giza

- Each of the masses is perfectly aligned towards the **north star** and the **perpendicular axis of the sun**
- 1st pyramid -northmost- was built for **Khufu** (the 2nd Pharaoh of the 4th dynasty and the son of Seneferu)
- 2nd pyramid -the middle- built for **Khafre** (the son of khufu)
- 3rd pyramid -southwest- built for **Mankara** (the son of Khafre)



Pyramids of Giza

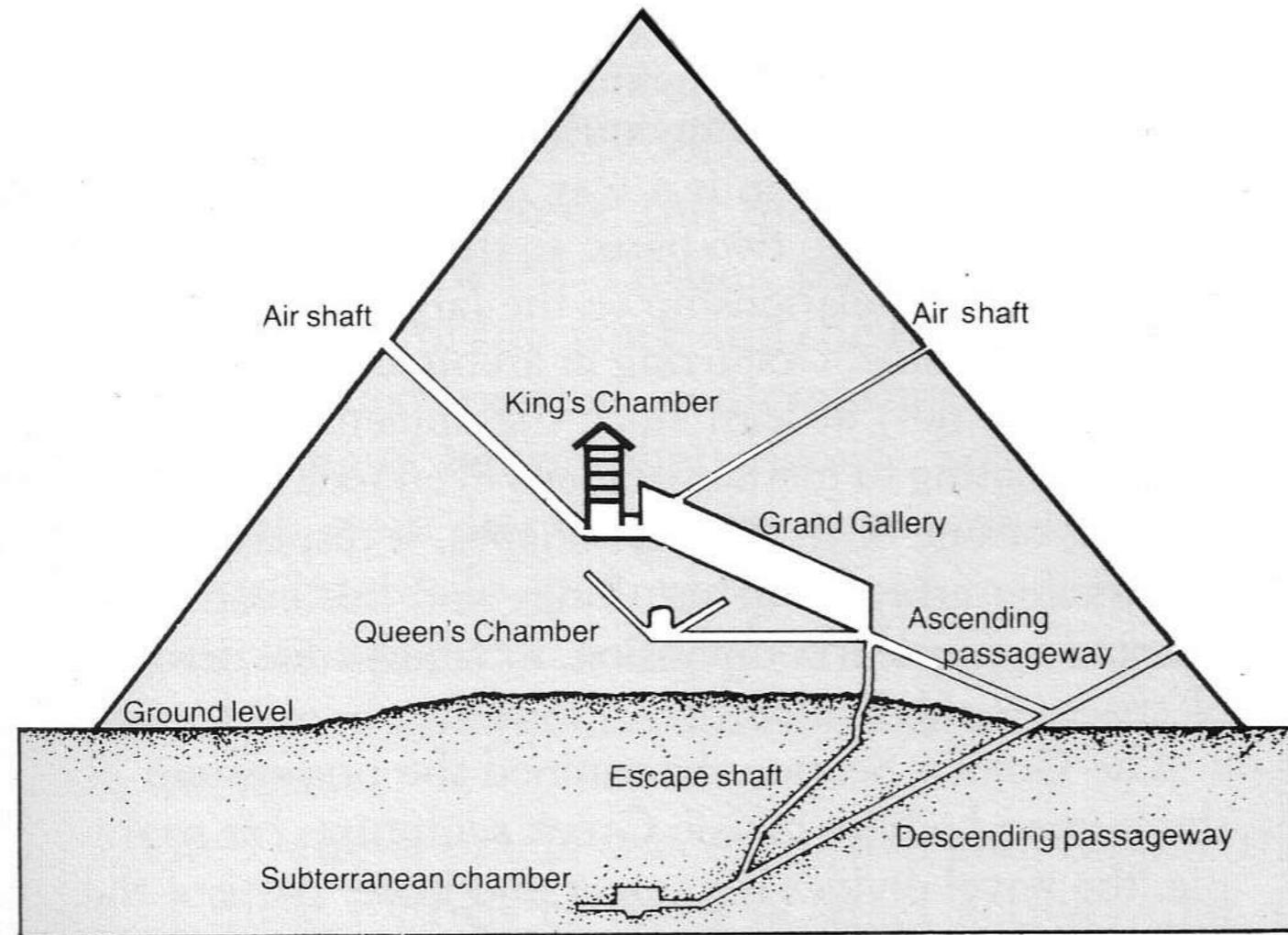
Pyramids of Giza Construction theories



<https://www.youtube.com/watch?v=p0znETH5nGY&t=14s>

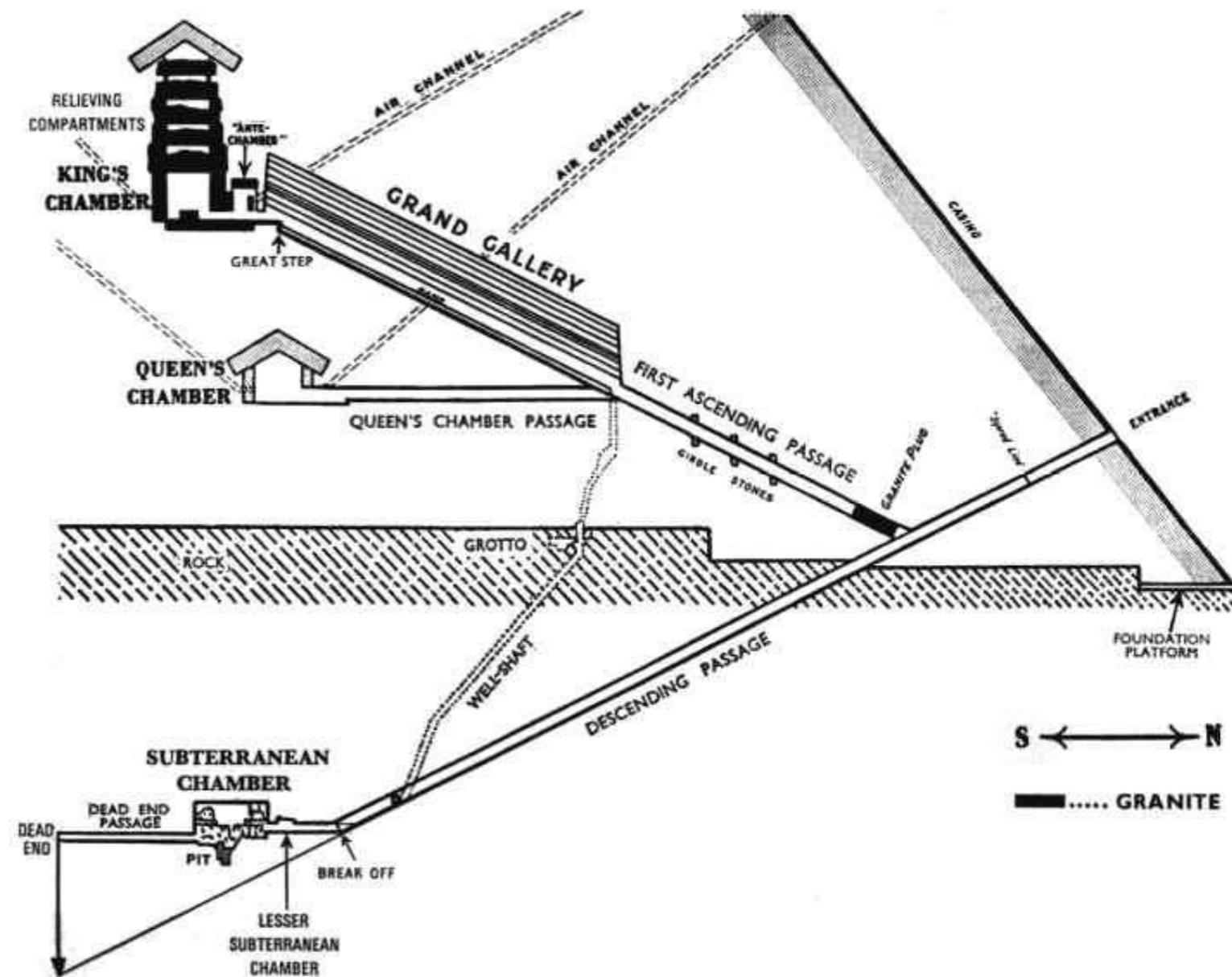
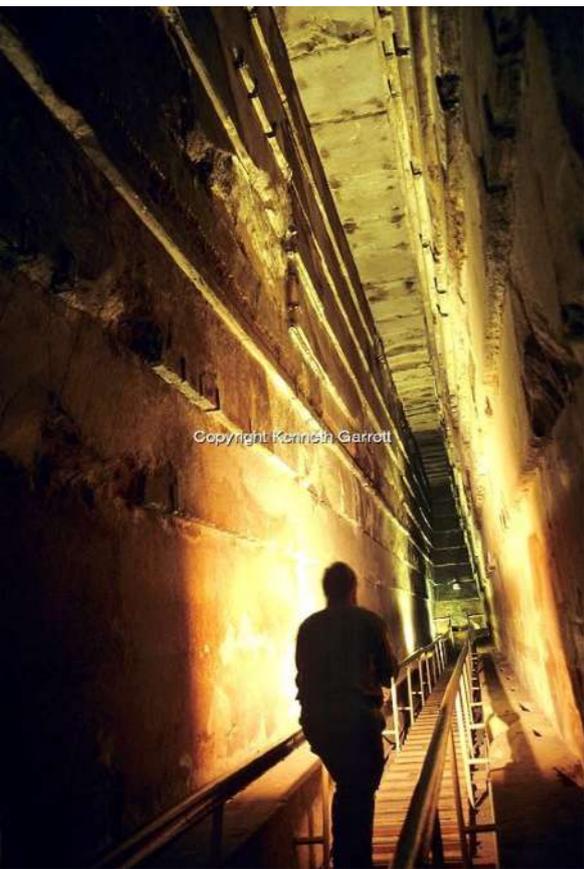
Pyramids of Khufu

- The largest pyramid of the 3
- 146.4 m in height, 230.6 m, square in plan
- Inclination of 51 degrees, 52 minutes
- There are 3 separate internal chambers due to changed in plan:
 - **The subterranean chamber**
 - **The 'Queen's Chamber**
 - **The 'King's Chamber**



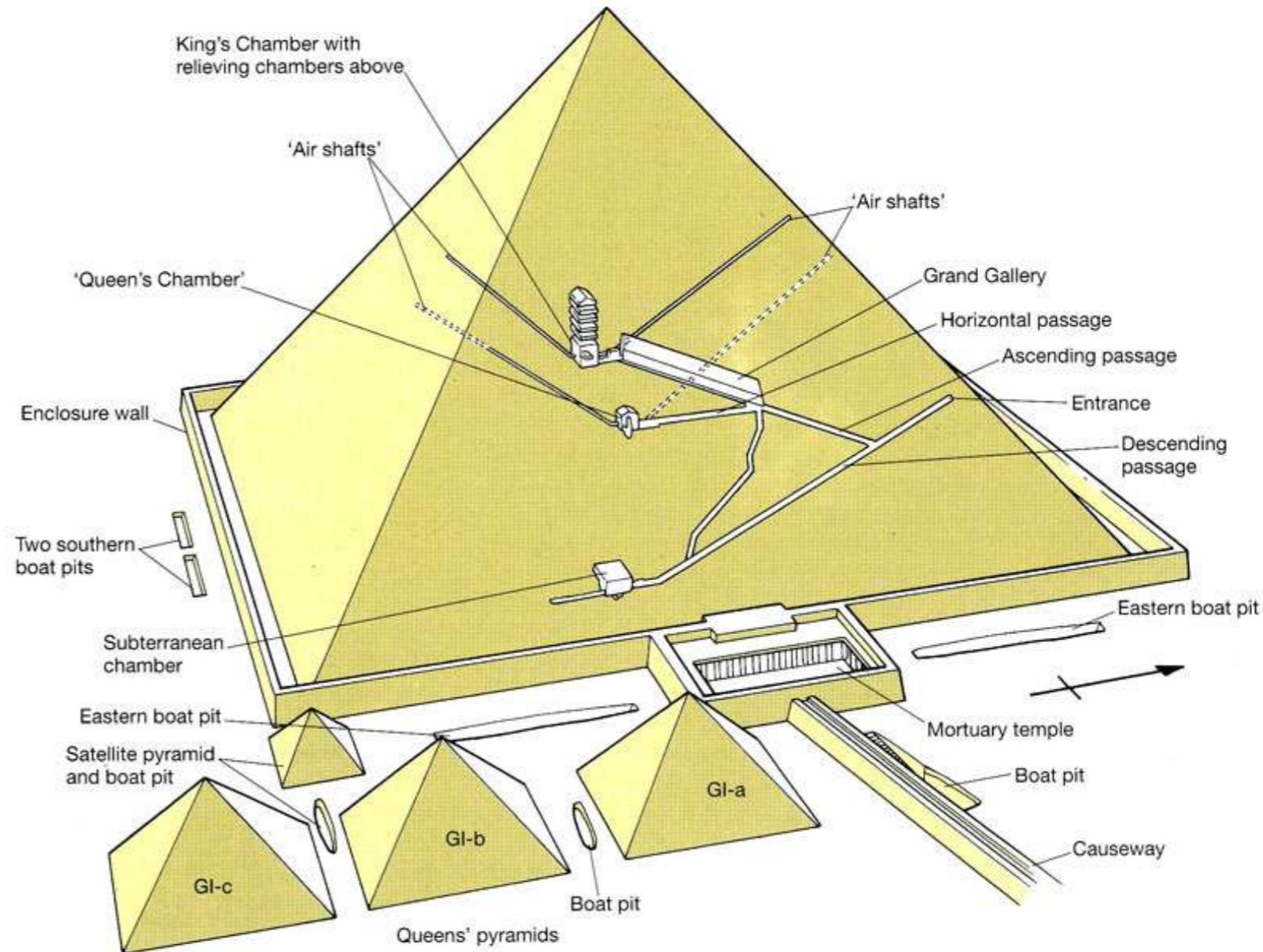
Pyramids of Khufu

The entrance is on the **north** side, leading to a descending corridor, which was cut in the ceiling to reach the **Queen's chamber**. Then another change led to an ascending corridor, it was extended into the **Grand Gallery**



Pyramids of Khufu

- The east side of the pyramid includes a **mortuary temple**
- Three subsidiary pyramid to the east face of the pyramid are **the tombs of Khufu's wives**
- The pyramid contained **2.3 million blocks**, each weighing about 2.5 tons (2,268 Kg)

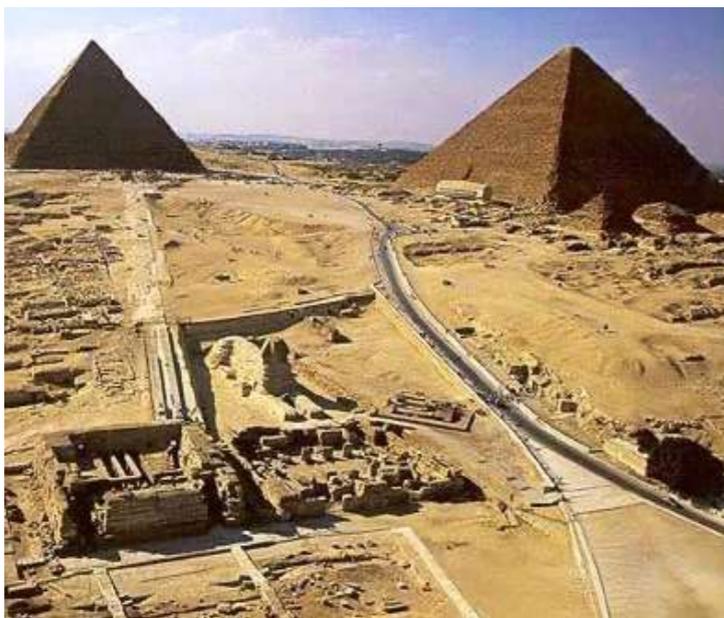
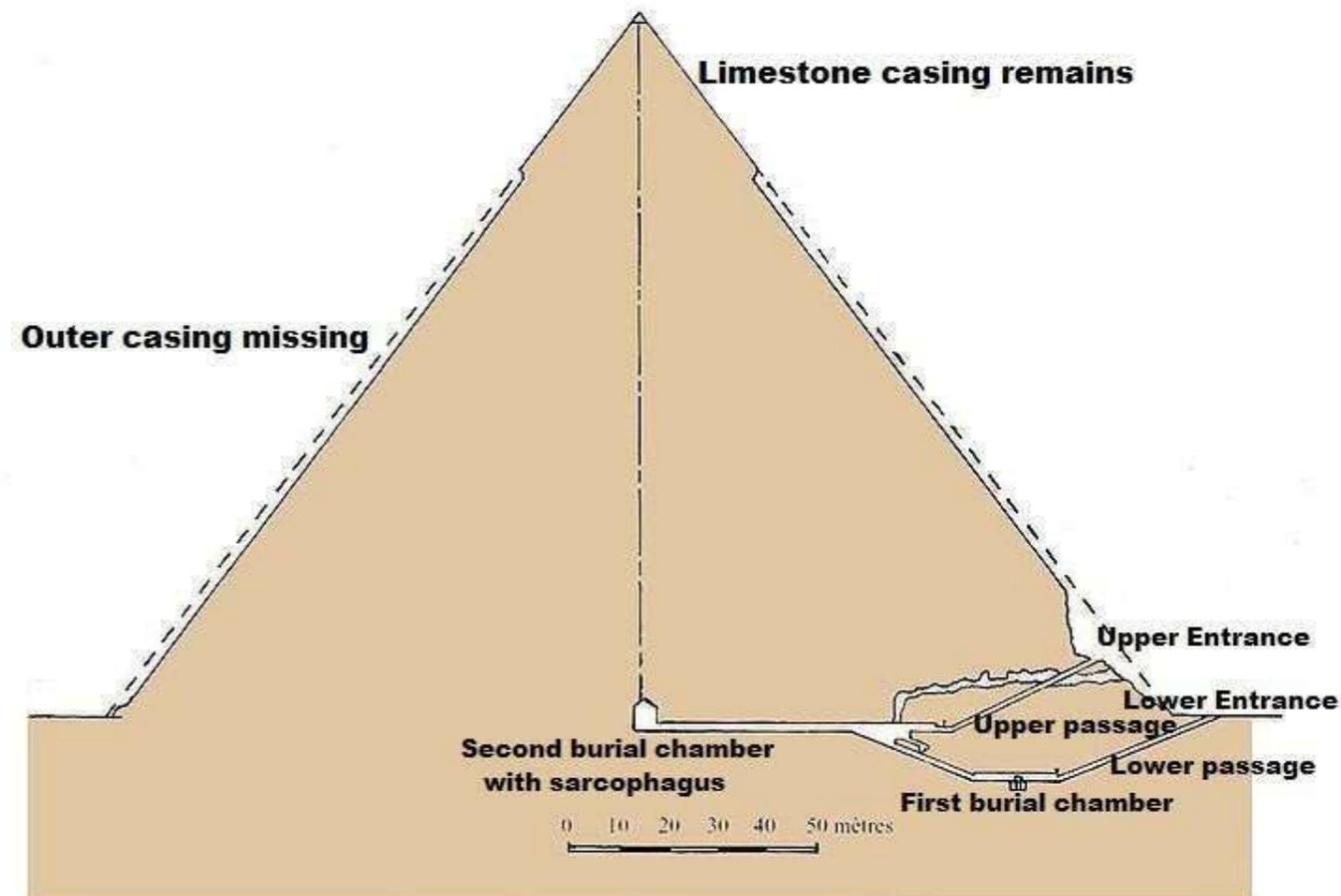


Pyramids of Khafre

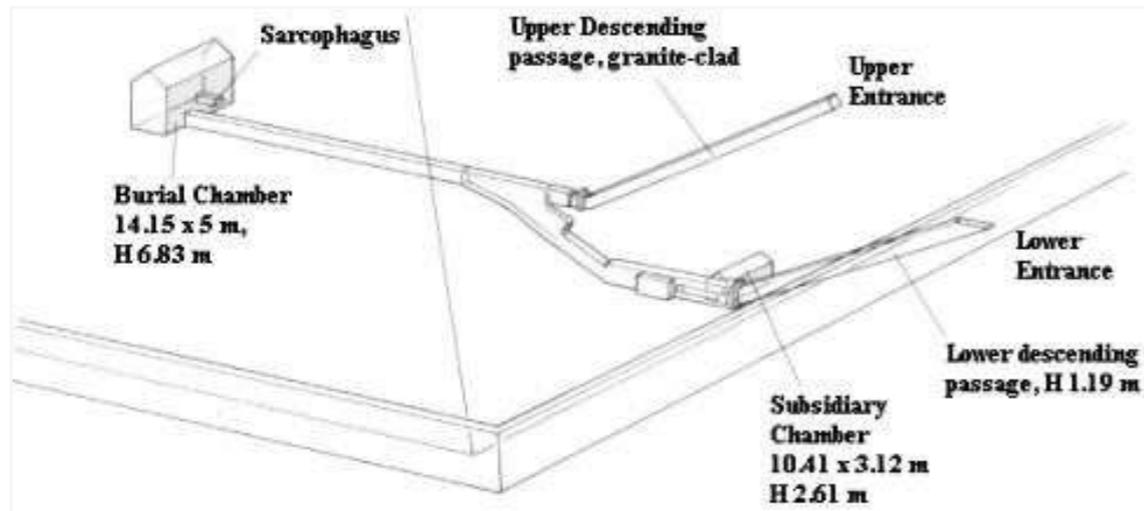
- 143 m in height, 216 m, square in plan
- Inclination of 53 degrees, 10 minutes
- Only **one chamber at the core**, but with 2 entrances from the north, one through the stone work, and another subterranean way, joining half way with a **subsidiary chamber**



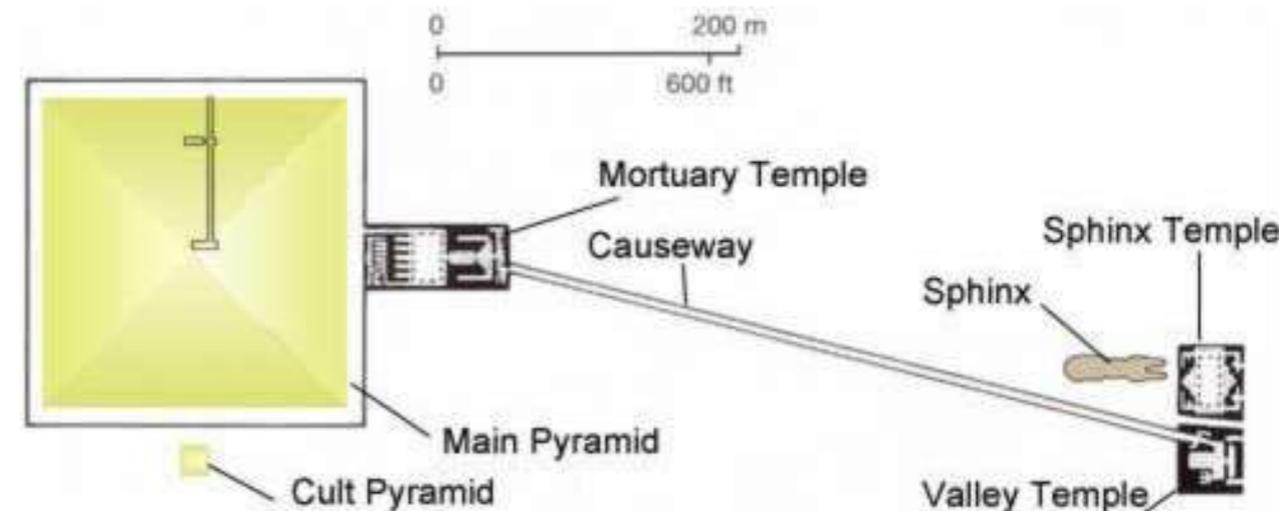
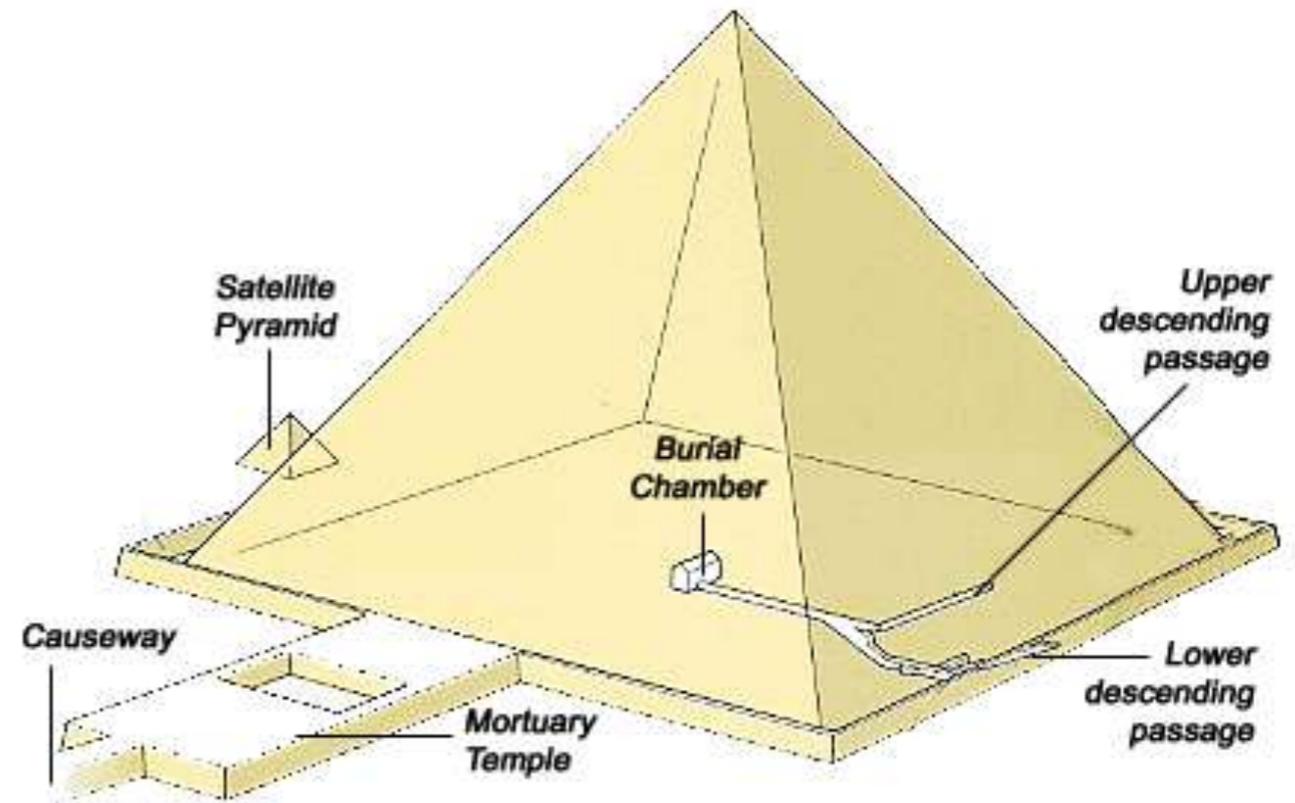
Inside the Pyramid of Khafre



Pyramids of Khafre



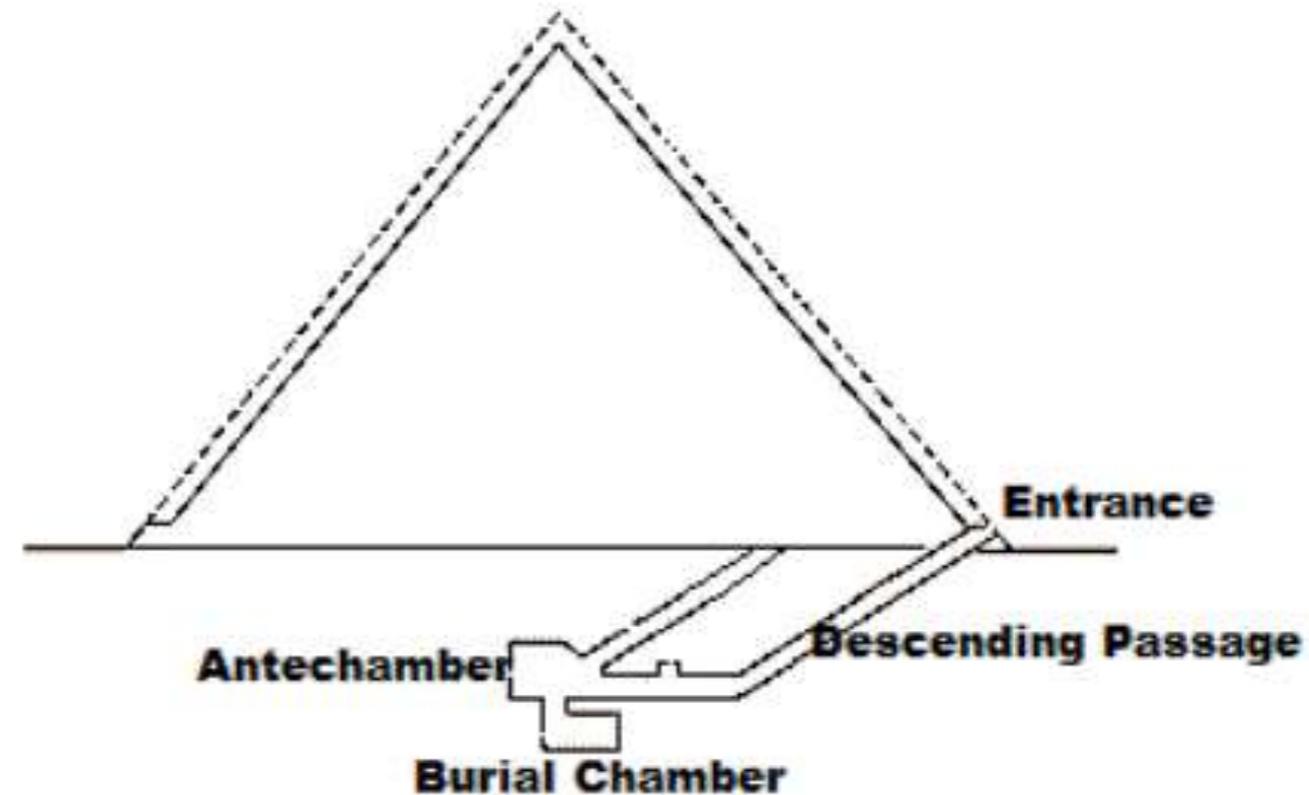
- The subsidiary chamber may be used to store offerings or store burial equipment
- On the east face of the pyramid there is a mortuary temple
- Cult, or Satellite pyramid may have been for the burial of statues dedicated to the Ka



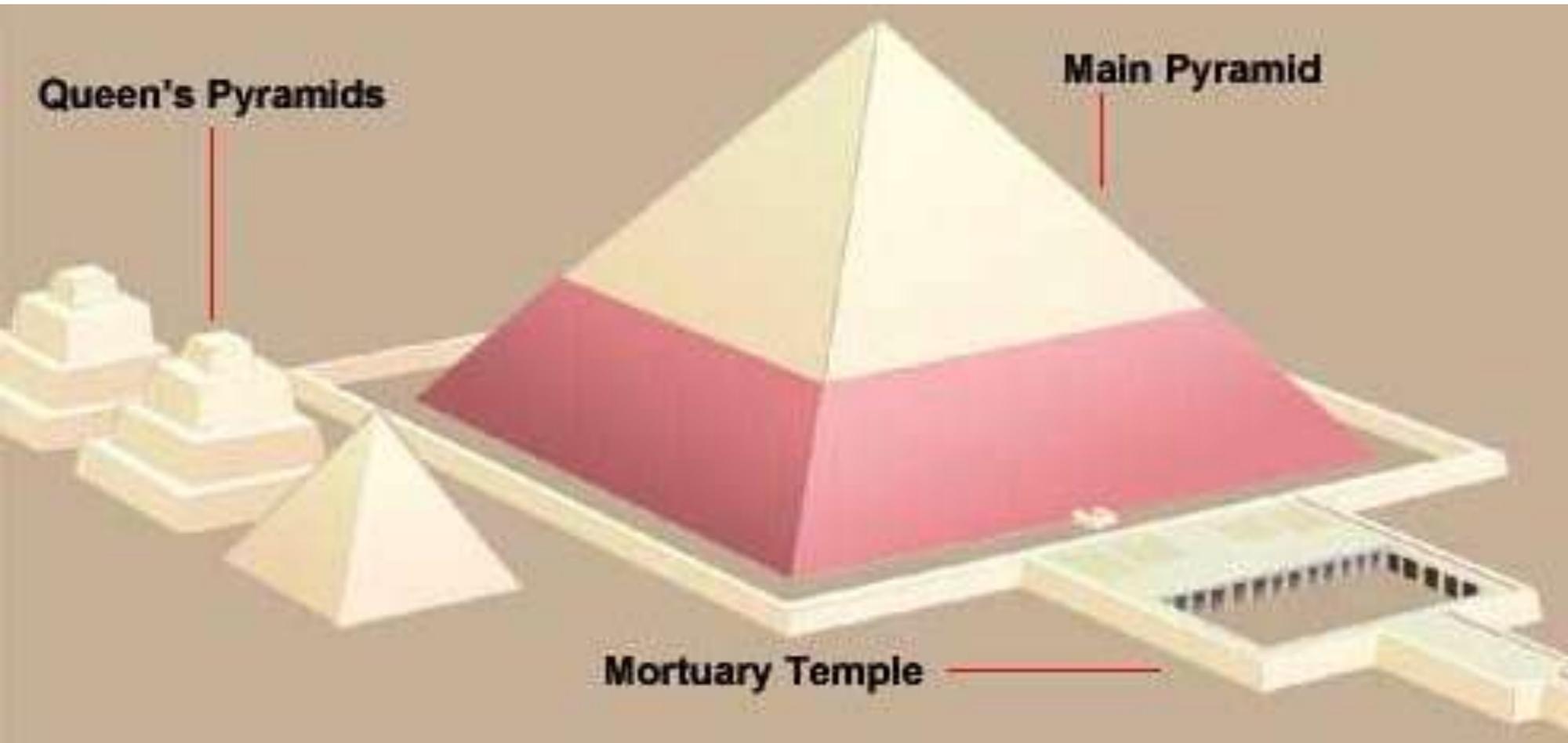
Pyramids of Menkaure

- 66.5 m in height, 109 m, square in plan
- Inclination of 51 degrees
- The Main entrance from the north wall
- Has a burial chamber and antechamber

Inside the Pyramid of Menkaure



Pyramids of Menkaure

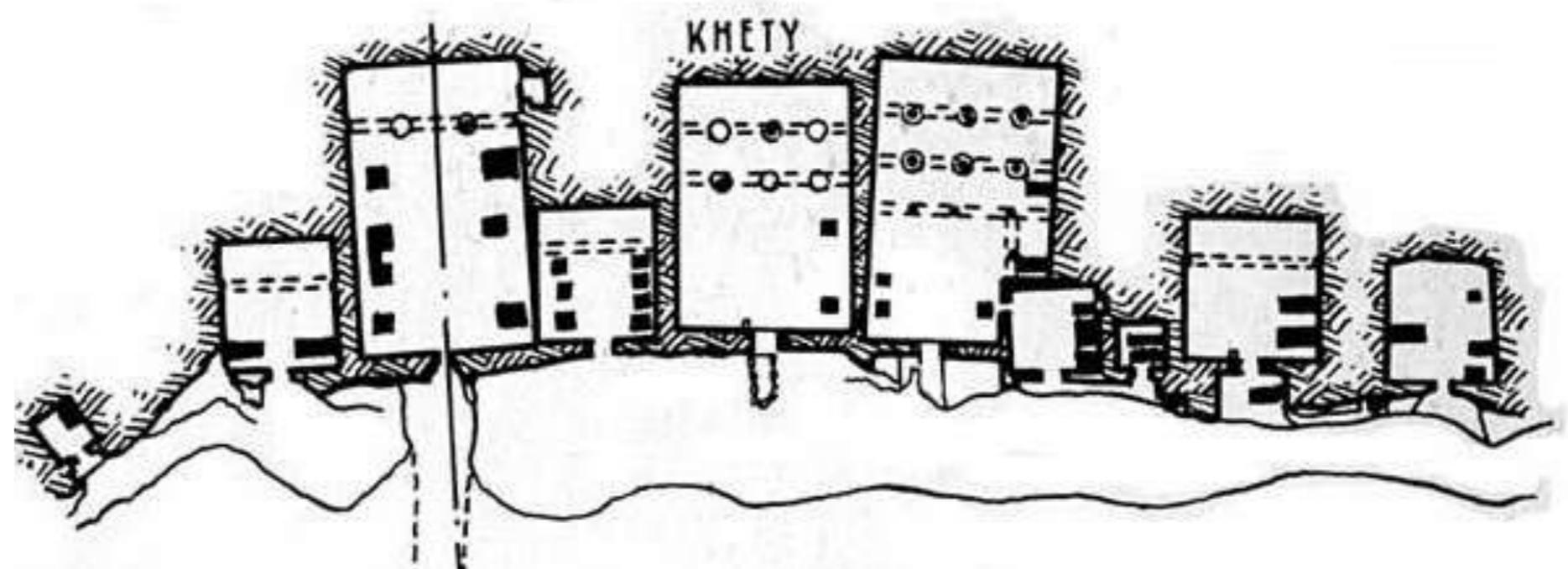
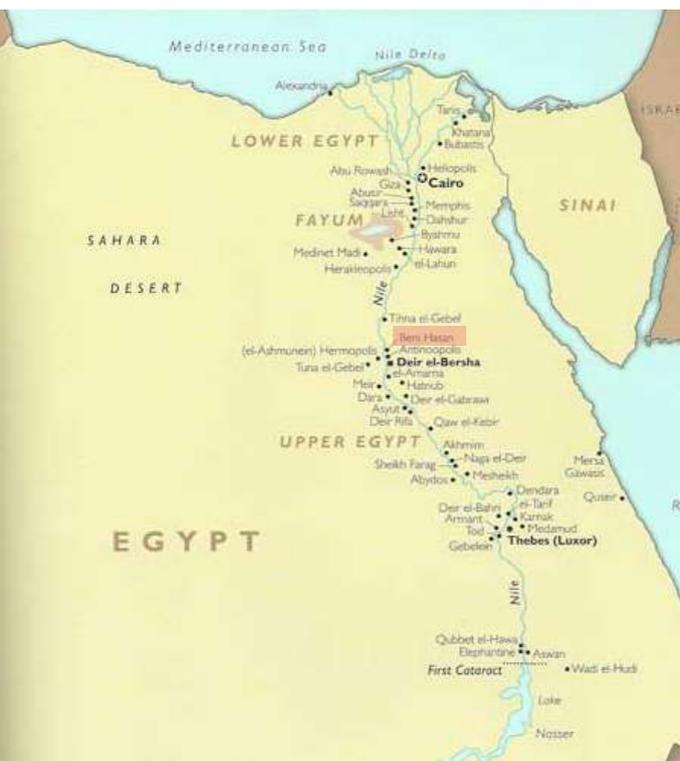
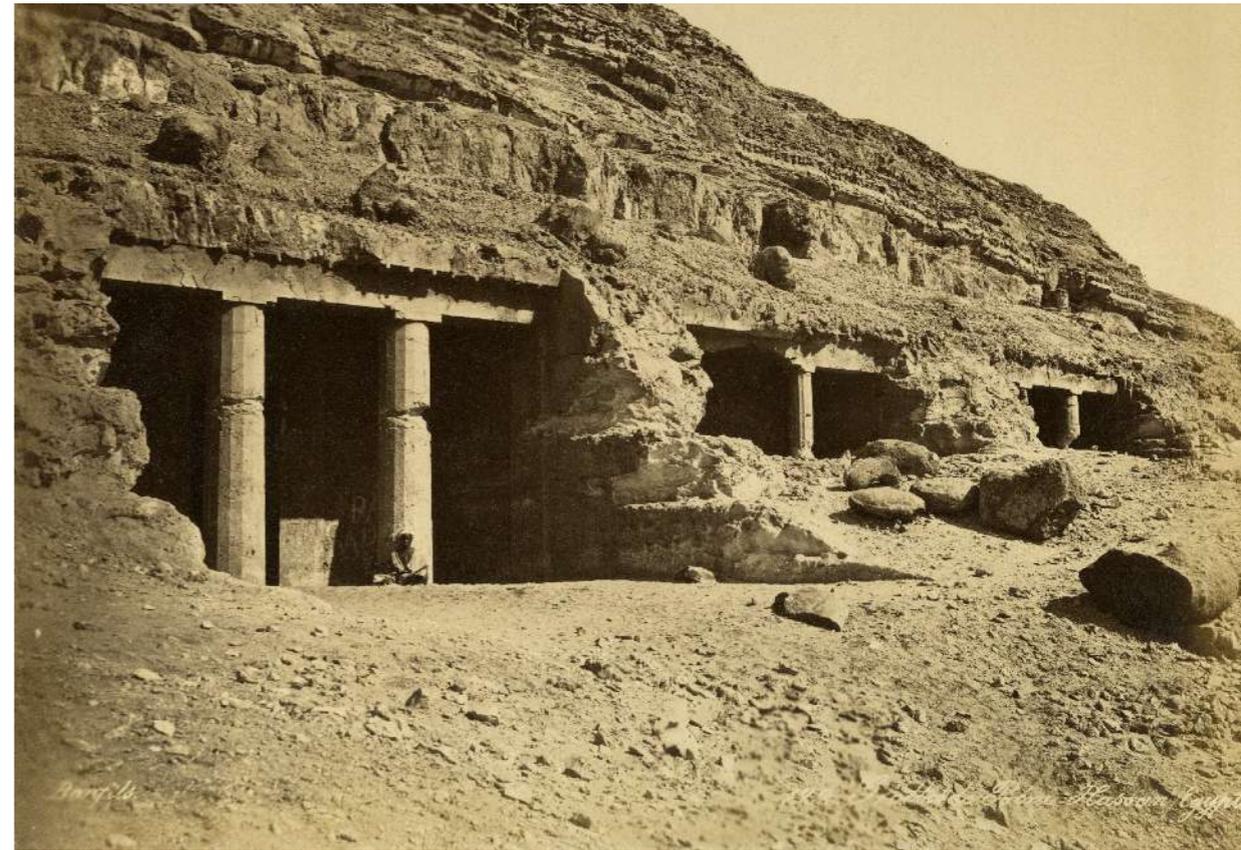


- The first sixteen courses of the exterior were made of **granite**
- South of the pyramid are **3 satellite pyramids**, none of which appear to have been completed

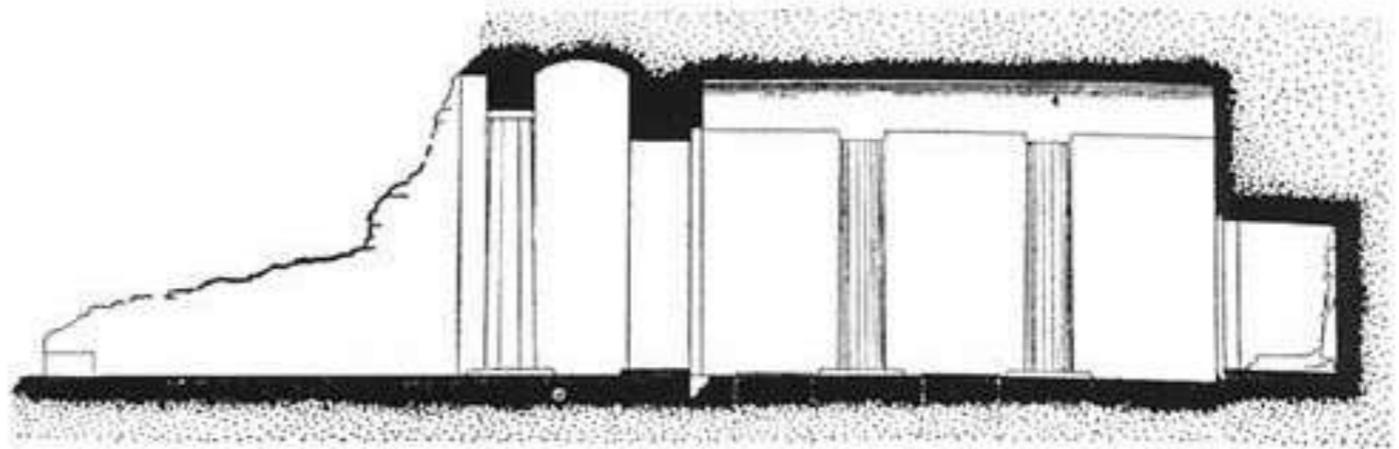
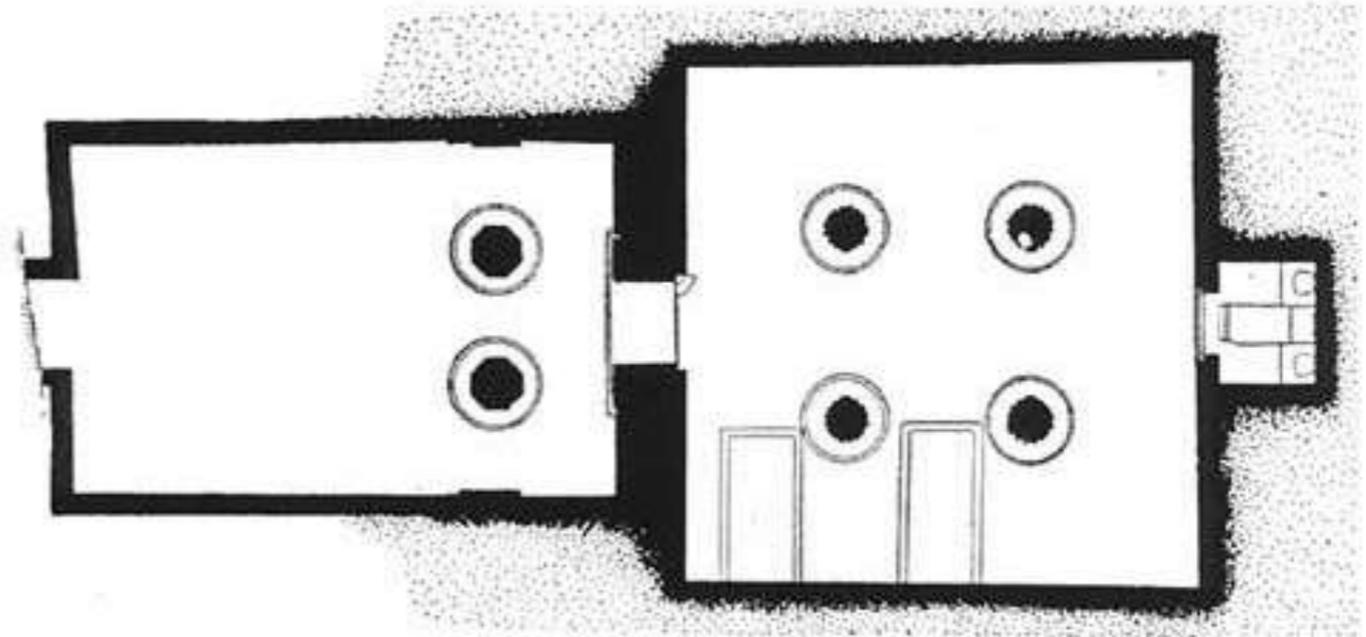
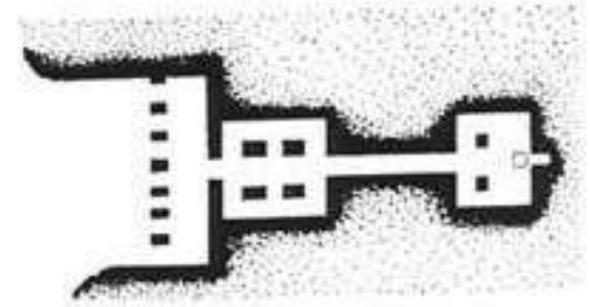
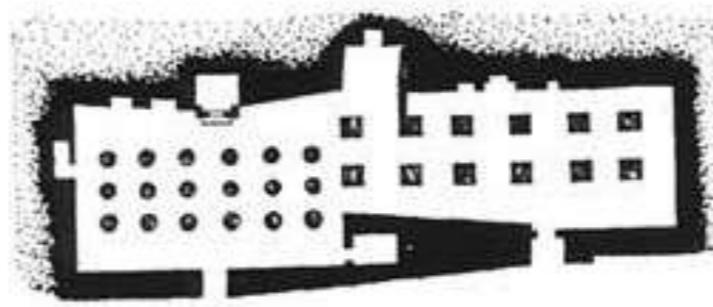
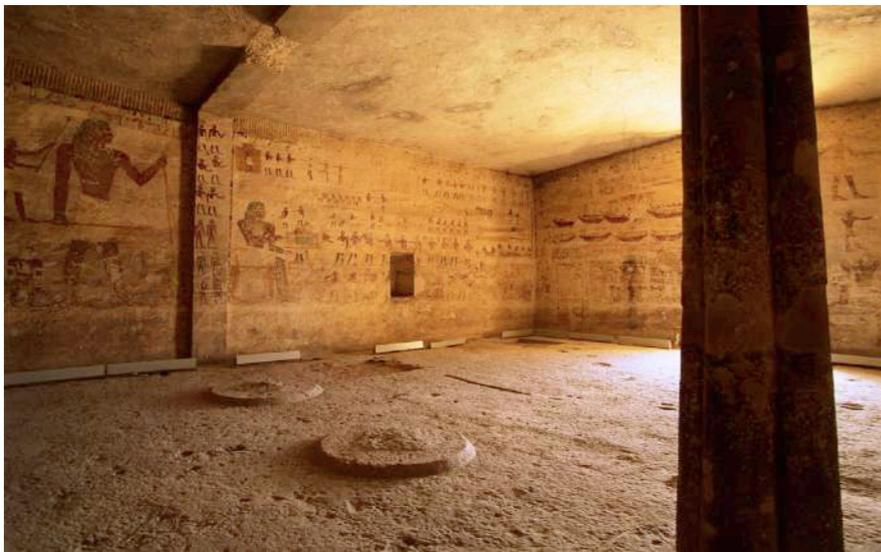
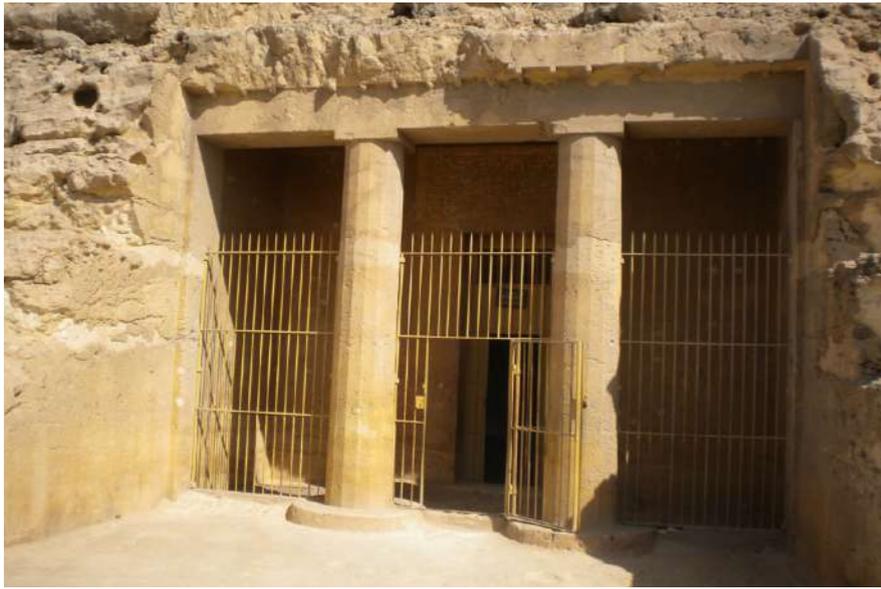
Rock-hewn Tombs

Roch-hewn Tombs

- Rare before the Middle kingdom. Served for the nobility more than the royalty
- Many tombs were located at **Beni Hasan**, built by the 11th & 12th Dynasty
- Each tomb consists of a **chamber behind porticoes façade**. Walls were lightly stuccoed and painted with pastoral, domestic and other scenes

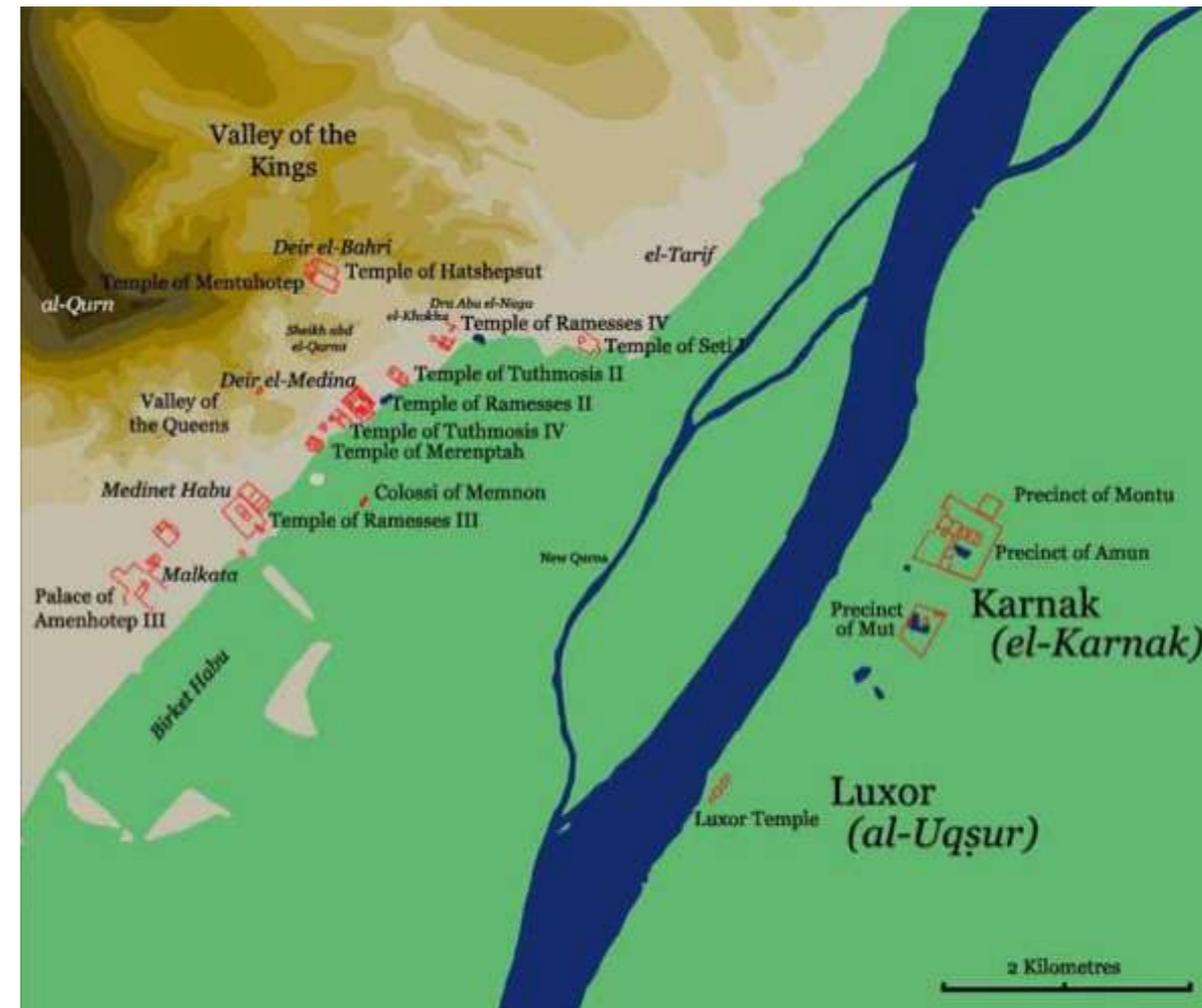


Bani Hasan Tombs

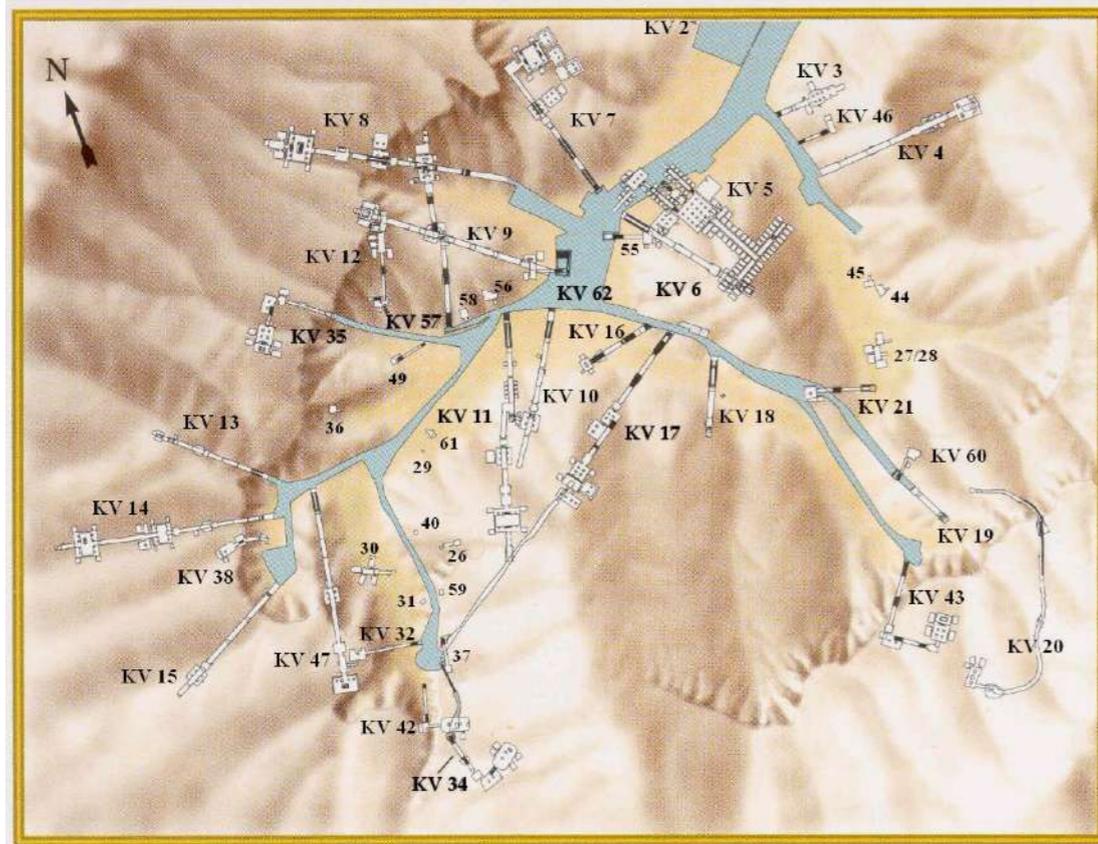


Valley of the Kings

- During **New Kingdom**, a complete abandonment of the royal pyramid in favour of corridor type
- Sarcophagus lay in a rock-columned hall where the walls were painted
- Tombs were **only for burial**, the mortuary temple stood completely detached

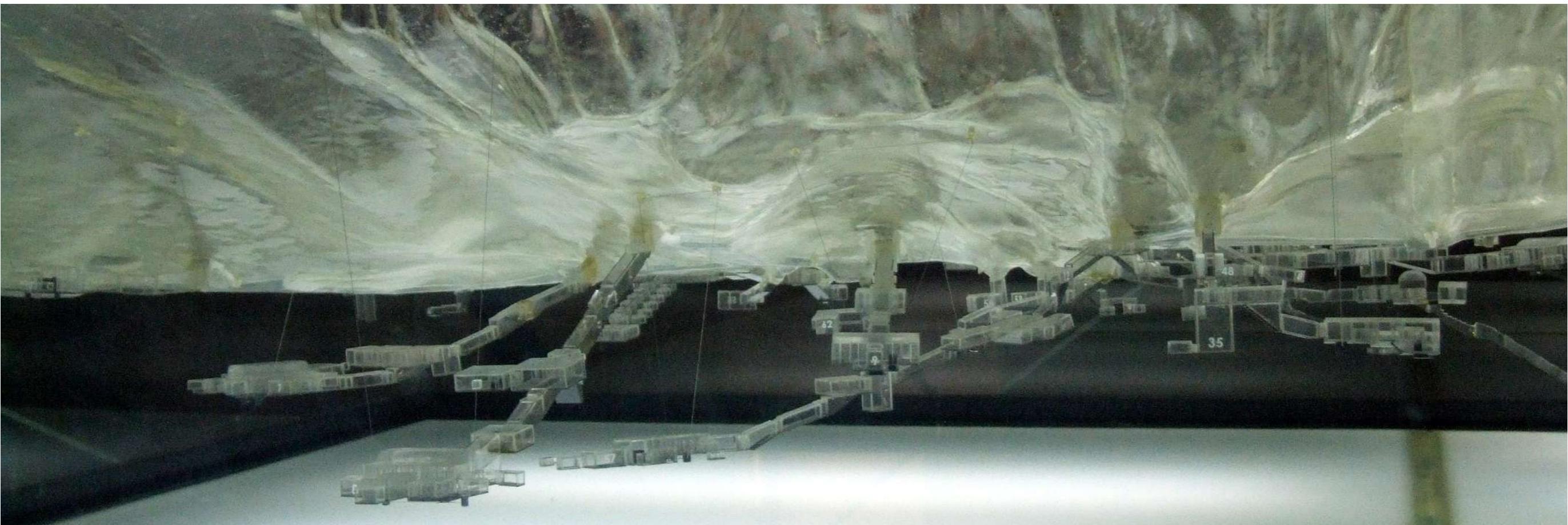


Valley of the Kings



Principal Tombs

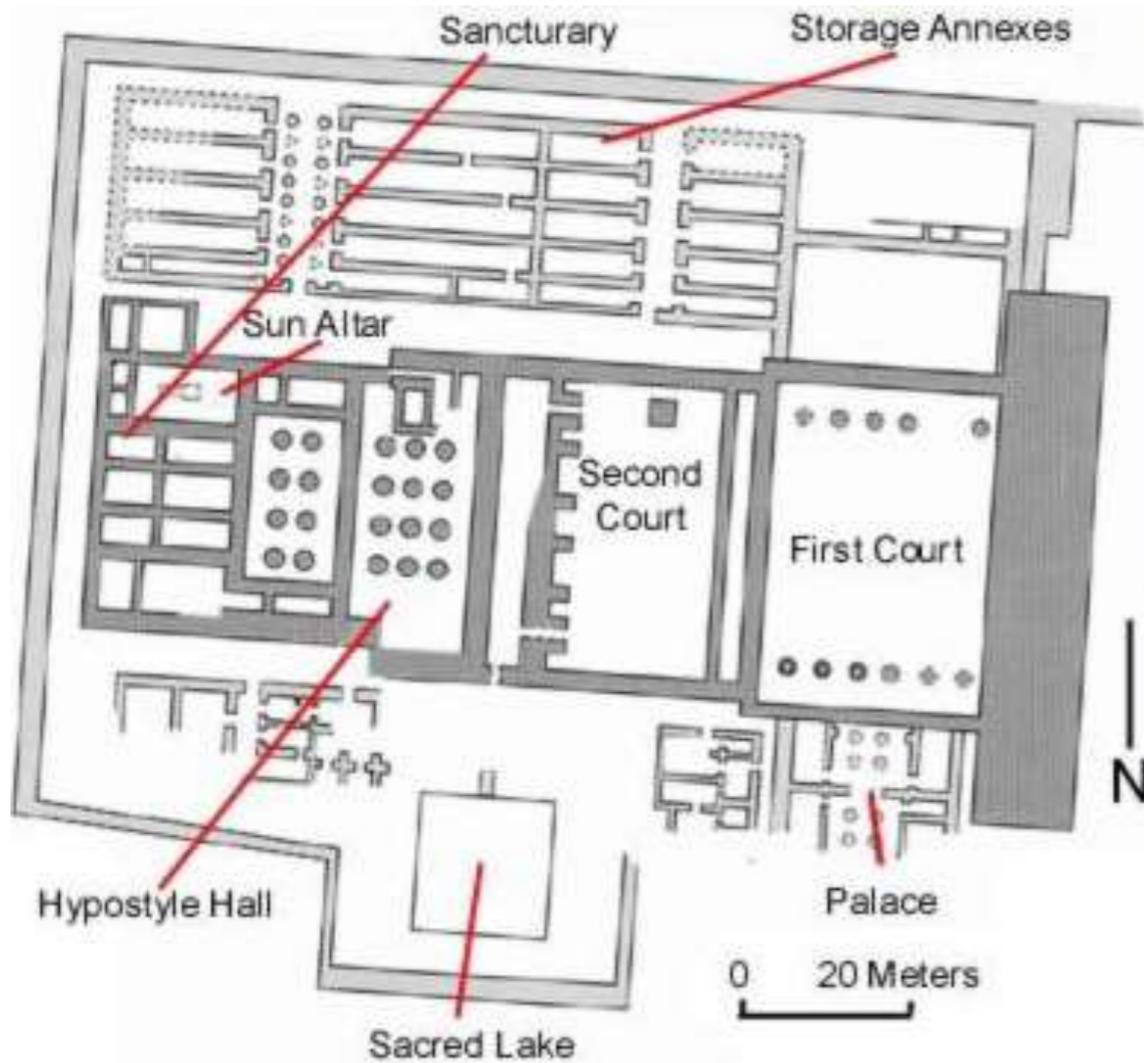
- KV 2 Ramesses IV
- KV 3 Son of Ramesses III
- KV 4 Ramesses XI
- KV 5 Sons of Ramesses II
(largest tomb in the Valley)
- KV 6 Ramesses IX
- KV 7 Ramesses II
- KV 8 Merenptah
- KV 9 Ramesses V/VI
- KV10 Amememose
- KV11 Ramesses III
- KV13 Bey
- KV14 Twosret/Sethnakht
- KV15 Seti II
- KV16 Ramesses I
- KV17 Seti I
(longest tomb in the Valley)
- KV18 Ramesses X
- KV19 Mentuherkpshef
- KV20 Hatshepsut/Thutmose I
- KV34 Thutmose III
- KV35 Amenhotep II
- KV36 Maiherpri
- KV38 Thutmose I
(reburial from KV20)
- KV42 Wife of Thutmose III or Sennefer
- KV43 Thutmose IV
- KV45 Userhet
- KV46 Yuya & Thuya
- KV47 Siptah
- KV57 Horemheb
- KV62 Tutankhamun



Temples

The mortuary temples

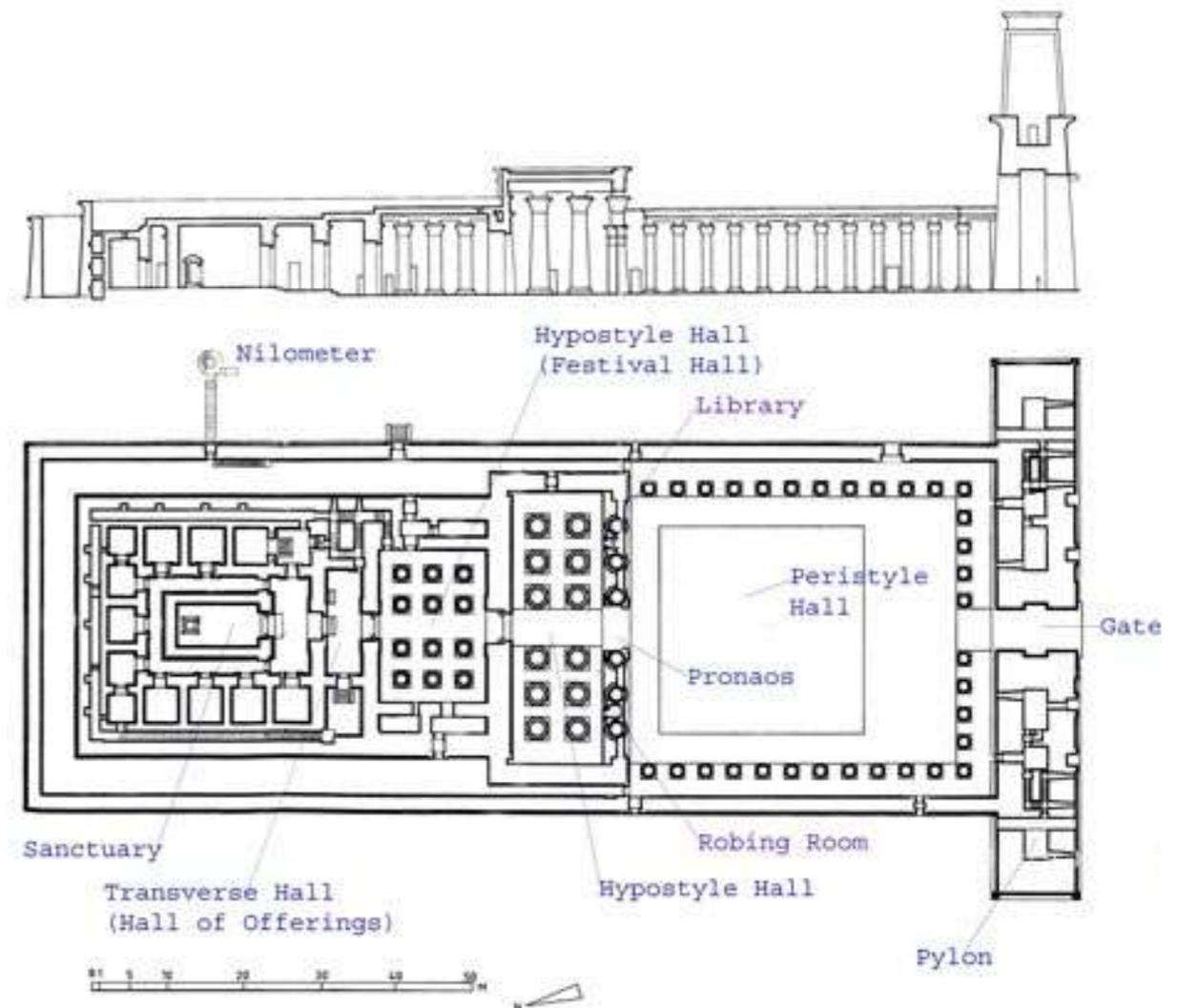
A memorial temples to defied Pharaohs



Mortuary Temple of Merenptah I

Cult temples

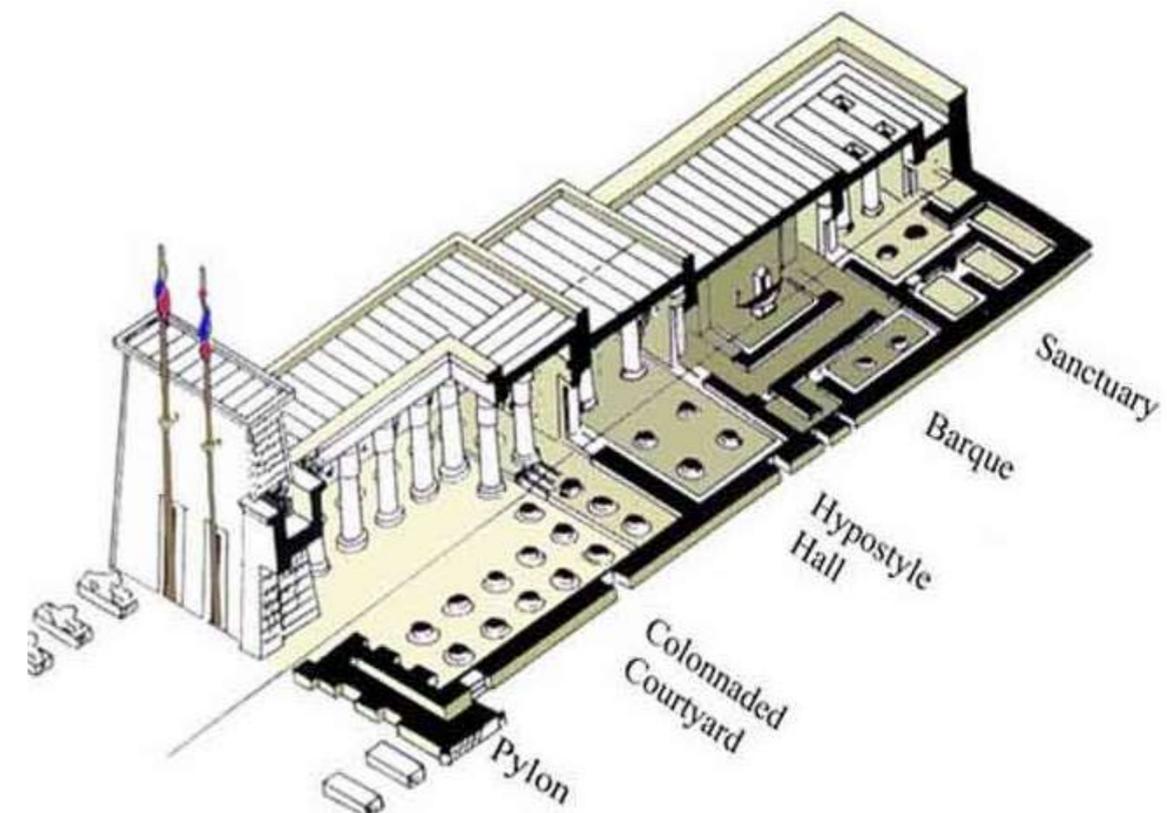
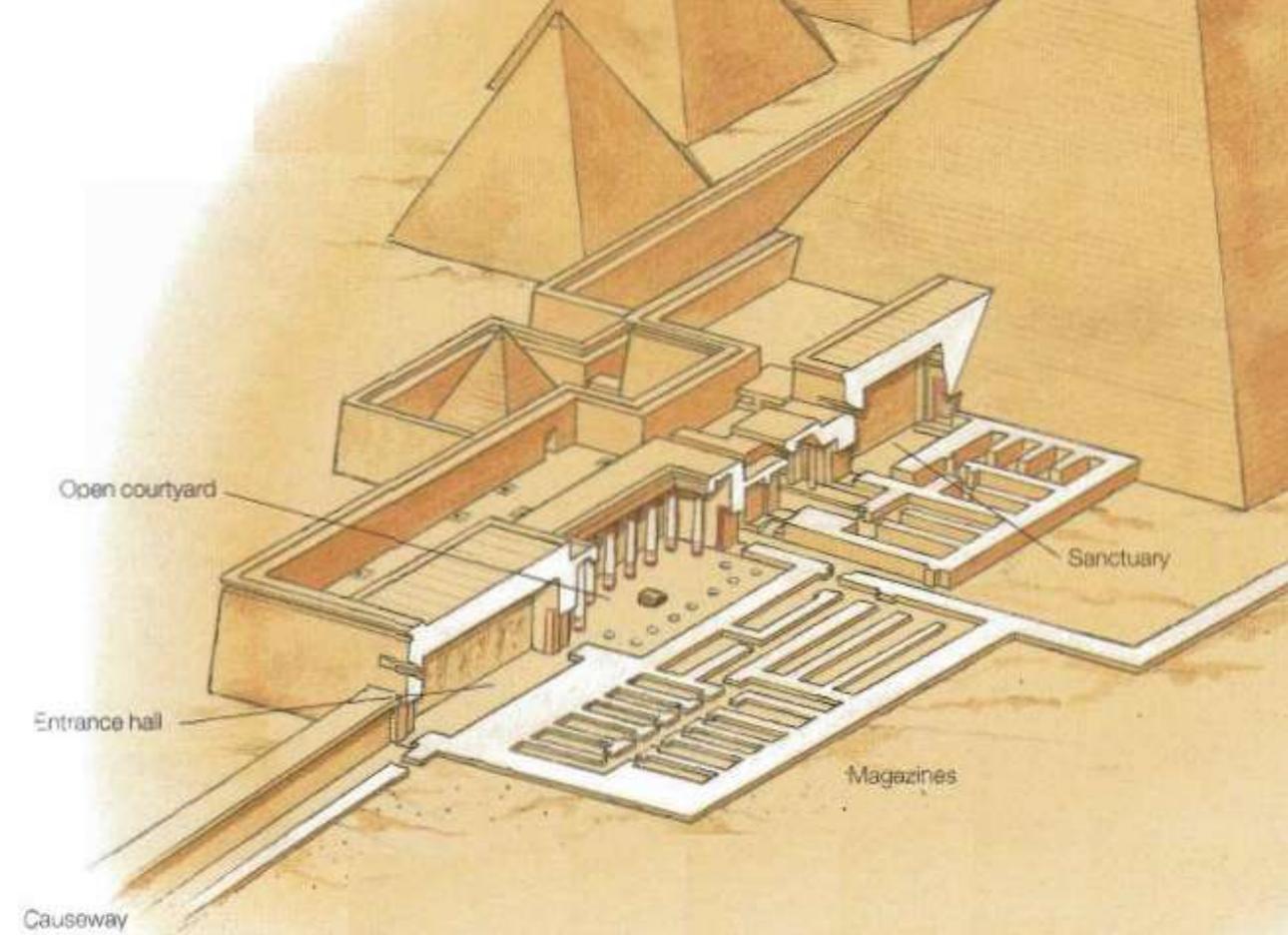
For the popular worship of the ancient gods



Cult Temple of Edfu

Main characteristics of Temples:

- **Rectangular** and **symmetrical** along an **axis**
- A massive **axial gate-way** forms a **towering, sloping sided pair of pylons**
- Along the main axis there was a **walled open court with colonnades around**
- Comprising a **'hypostyle hall'**
- A **sanctuary** beyond, with chapels and other rooms needed by the priests



Temples Case studies

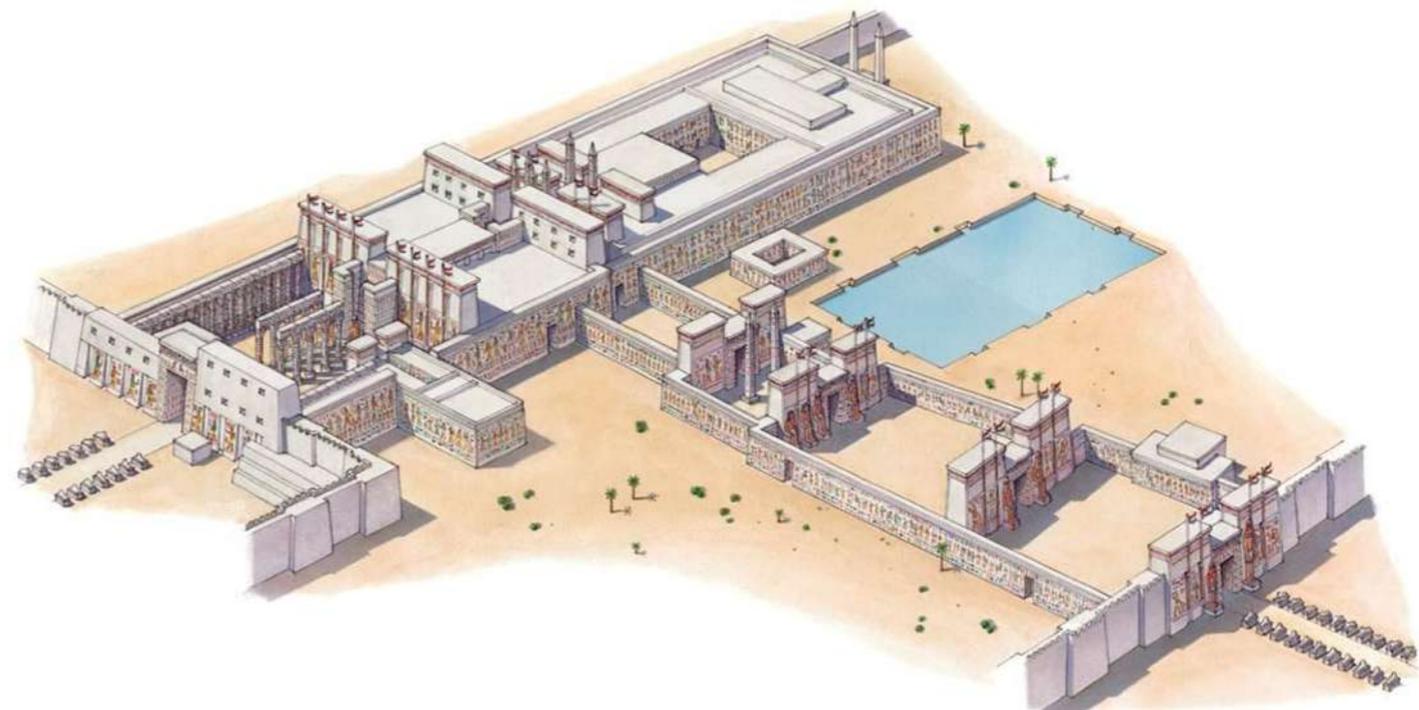
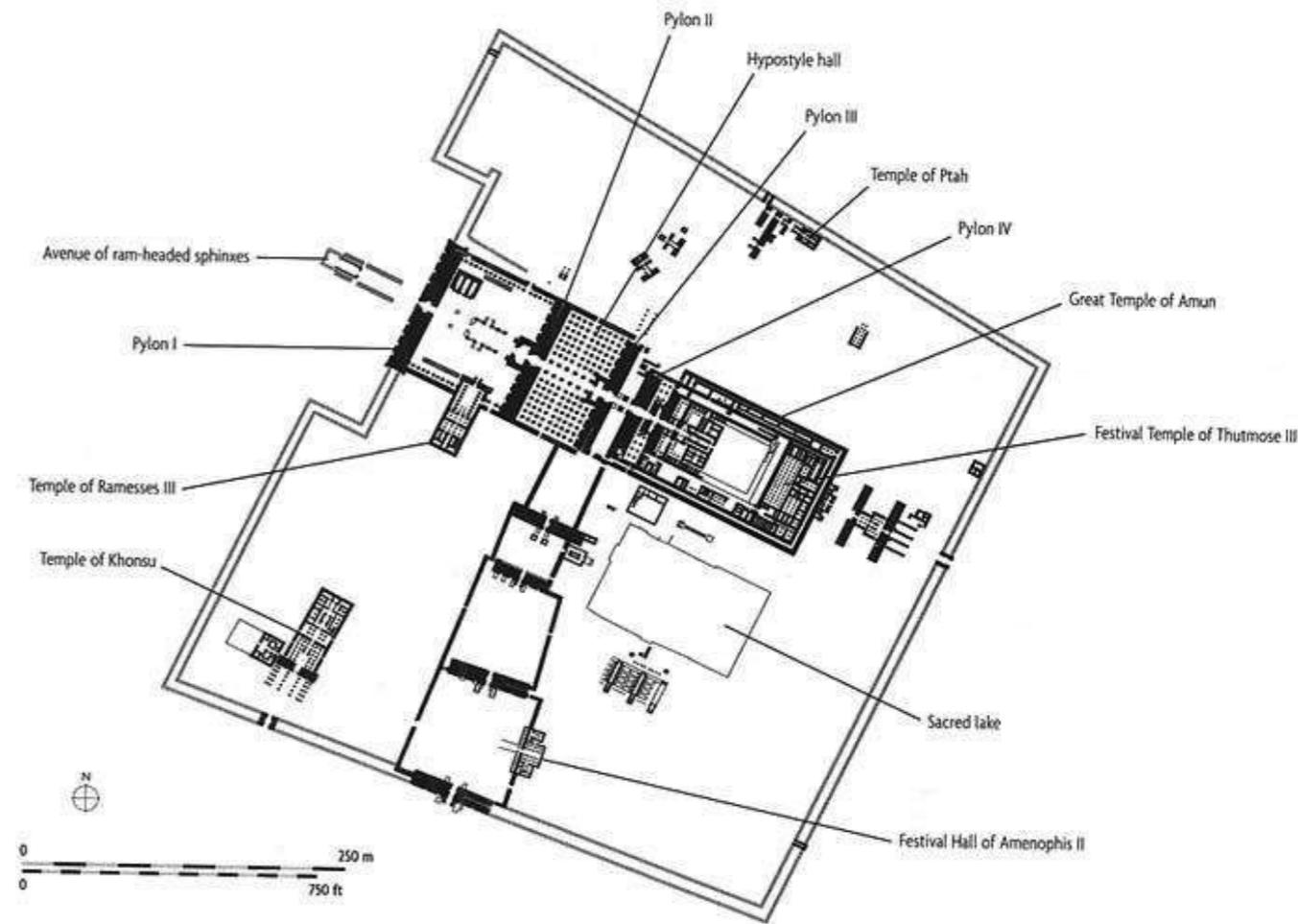
The Temple of Amun

(Karnak, 2000-323 BC, Middle & New kingdom)



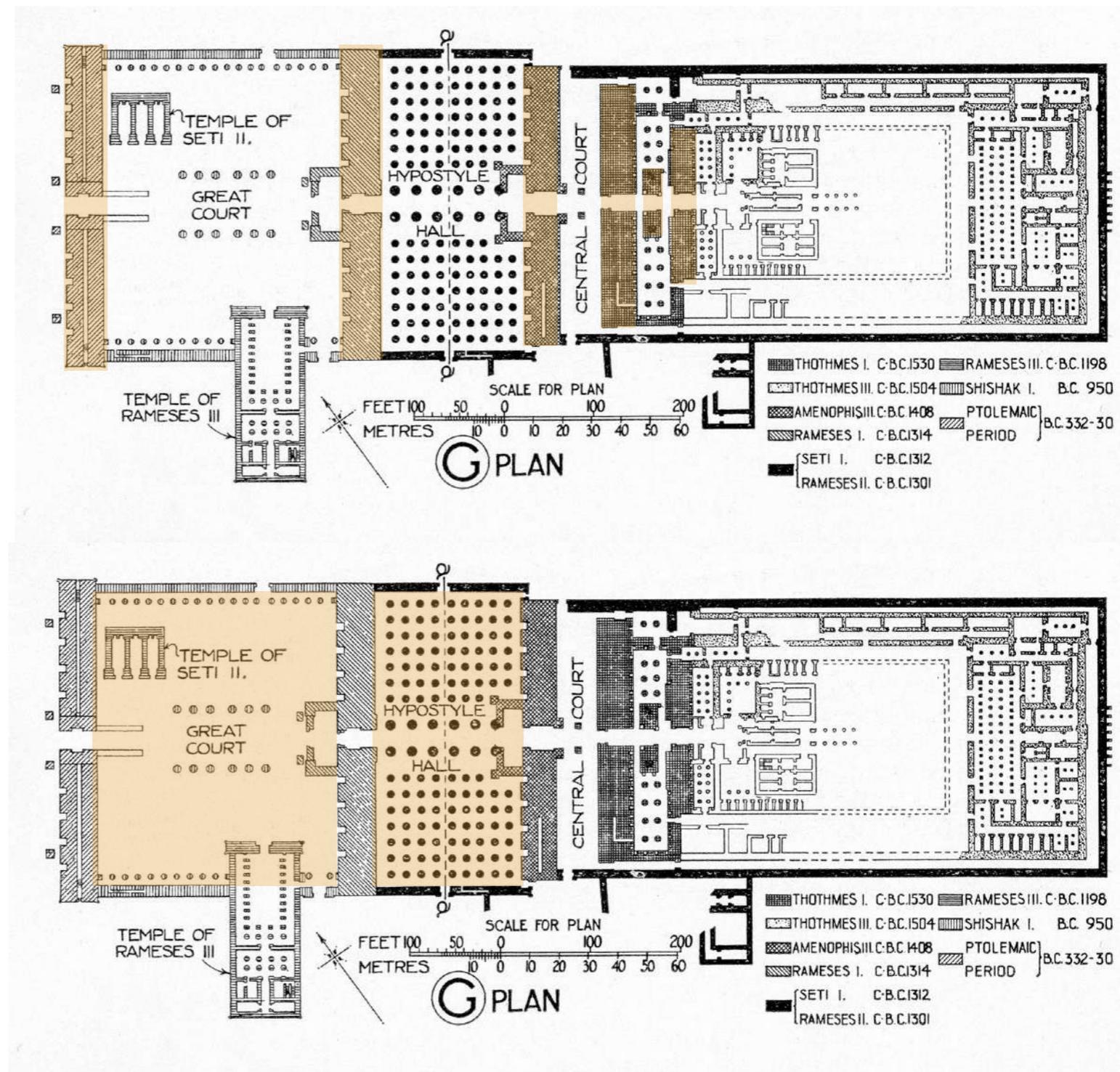
Temple of Amun

- Built during **different stages** and by **many kings**
- Placed in an immense enclosure along with other **temples** and a **sacred lake**
- **Constructed** started in the **Middle Kingdom**, then, the first considered enlargement was by **Thothmes I** (the 3rd king of the 18th dynasty)
- A site of **366m x 110m**



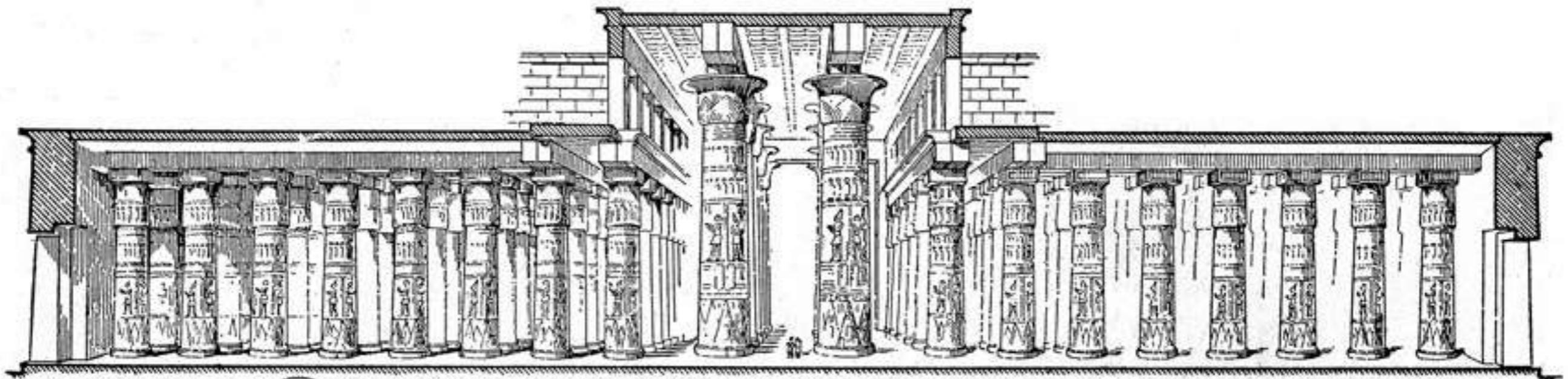
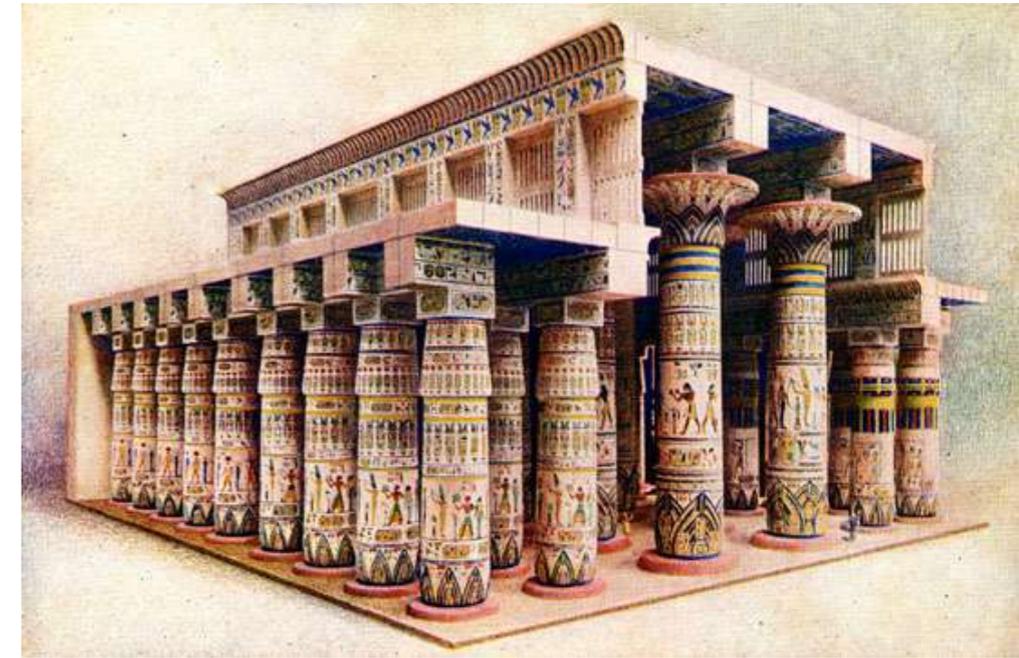
Temple of Amun

- **Six pairs** of pylons added by successive rulers with various courts and halls leading to the **sanctuary** and a large ceremonial hall by Thothmes III in the rear
- A **great court** gives entrance to the vast **hypostyle hall**, the roof is supported by 134 columns in 16 rows
- In about 1170 BC. Ramses III built a small temple house for himself south of the entrance axis



Temple of Amun

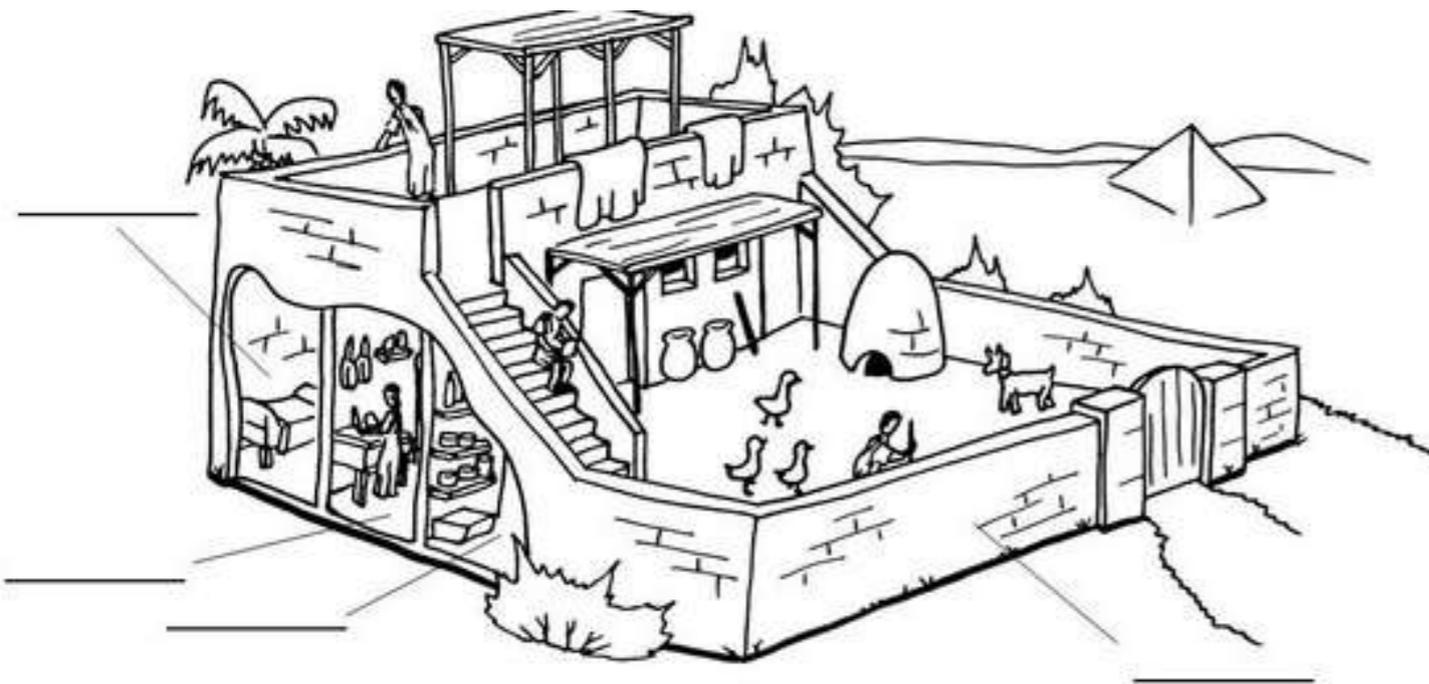
- The hypostyle hall had 12 lotus bloom (bell) tall columns, and 122 short columns with lotus or papyrus bud
- The taller central columns permitted **clerestory** lighting through stone louvers
- This forest of columns led the eye to **vanish into semi-darkness** and give an idea of unlimited extent



F SECTIONAL VIEW OF HYPOSTYLE HALL ON A-A

Dwelling

- Constructed from **bricks**, columns and beams are from **timber**
- **Stone** was used for **columns bases**, and **surrounding the door and window openings**
- Dwelling of **one or two storey height**
- Rooms looked towards a **north facing court**
- Dwellings are sometimes **white washed**

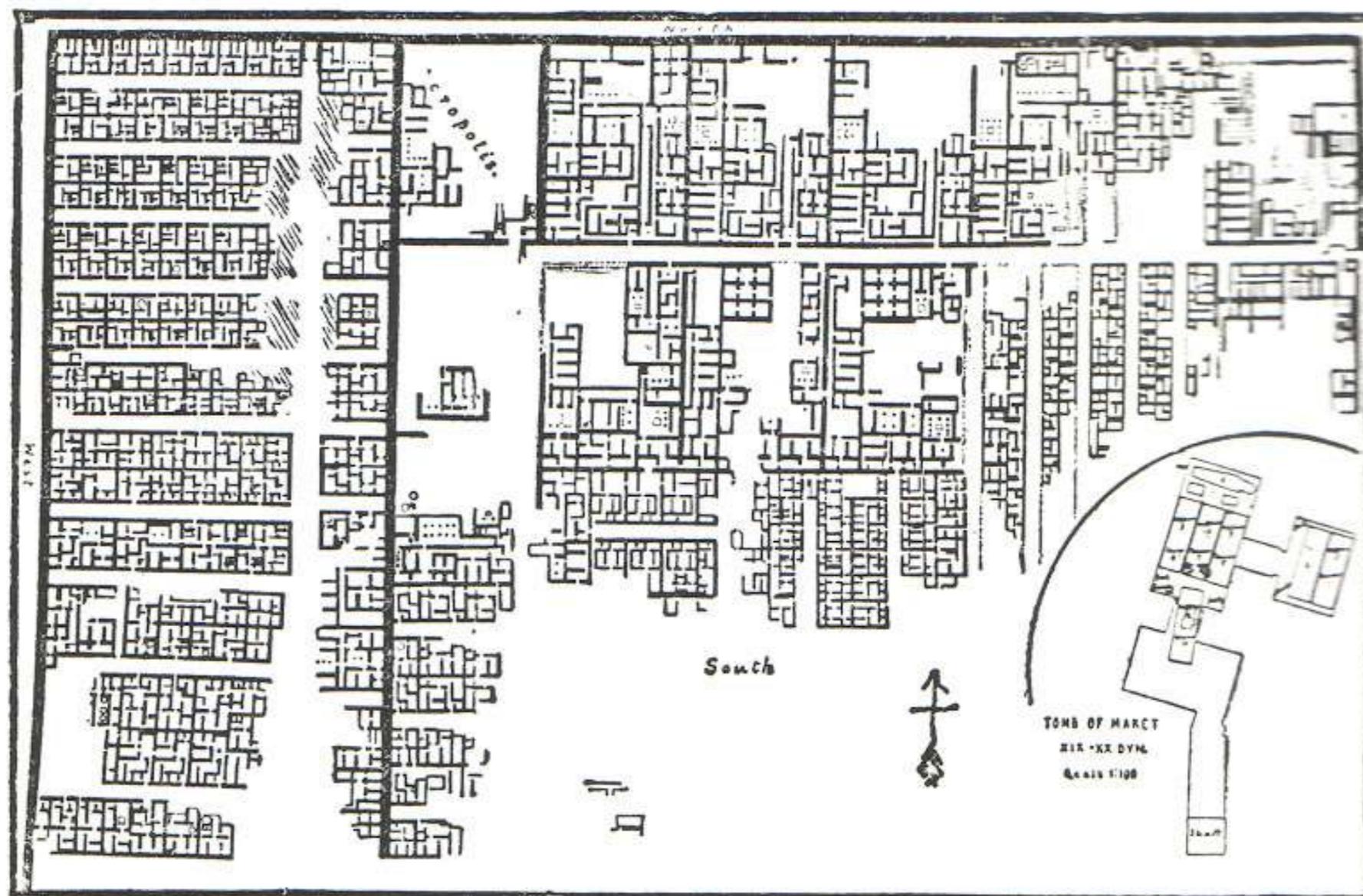


Towns

- Towns were **enclosed within walls** and governed by a **representative of the central authority**
- The main town's layout in the Egypt are:

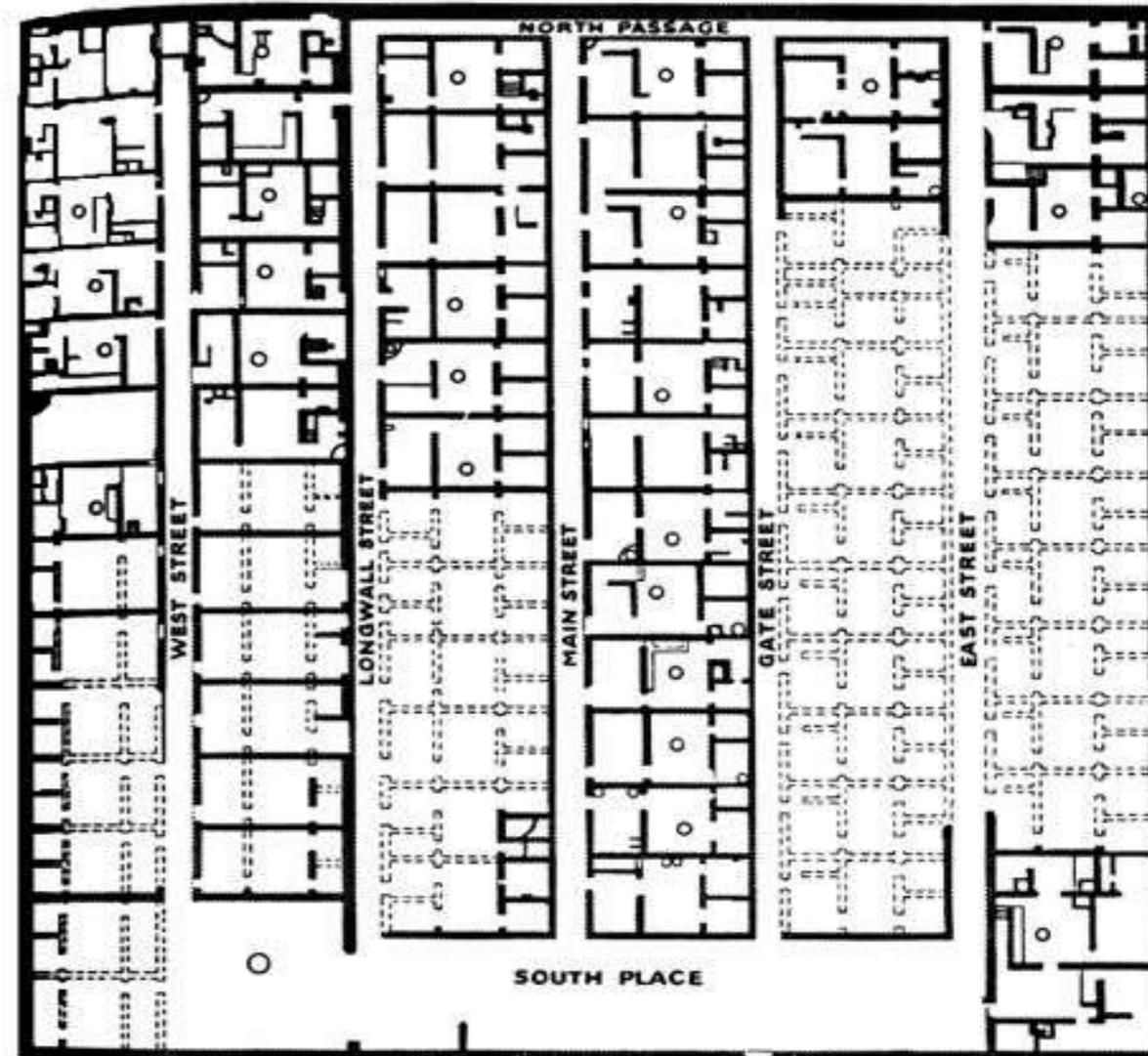
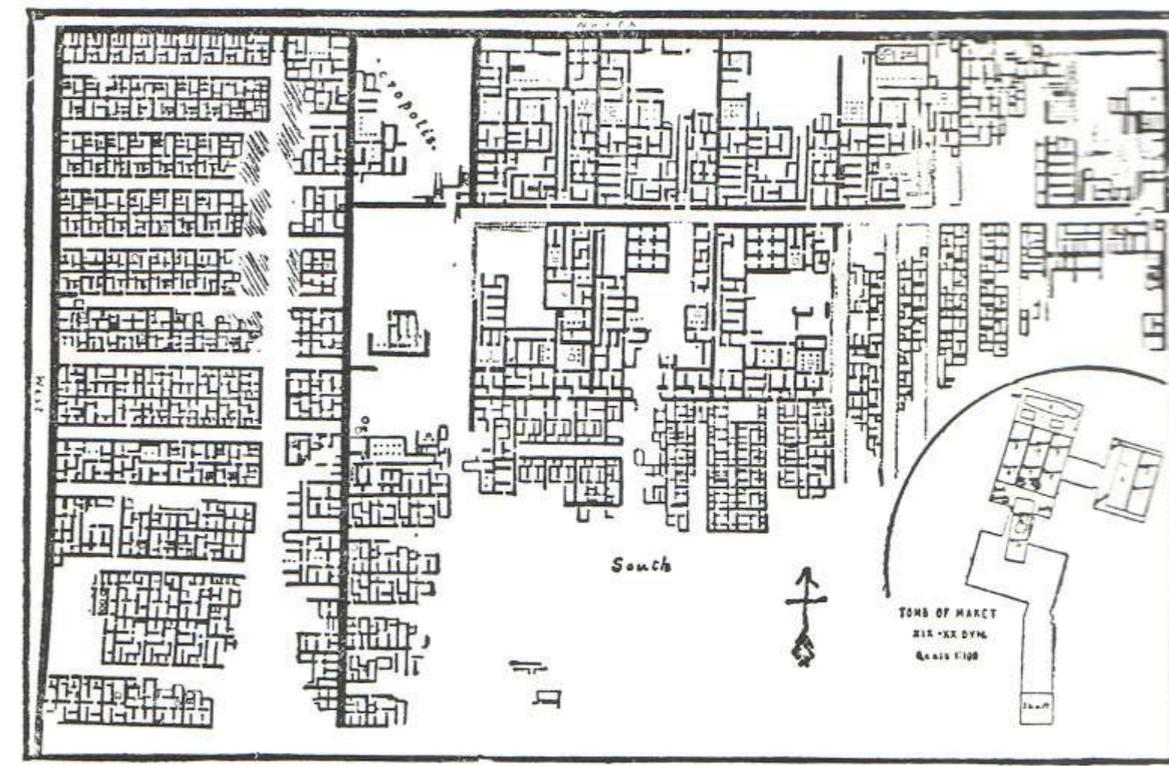
1. **Orthogonal Layouts:**

Pyramid cities were **preplanned settlements** built in the desert for the laborers and craftsmen, or for the funerary priests



Orthogonal Layouts Characteristics:

- Blocks of uniform single or double rows of attached houses
- The town is surrounded by a massive wall
- Streets are orthogonal
- Houses are grouped according to types into quarters, conforming to a system of zoning



Tal Al Amarana workers housing to the east of Amarna city

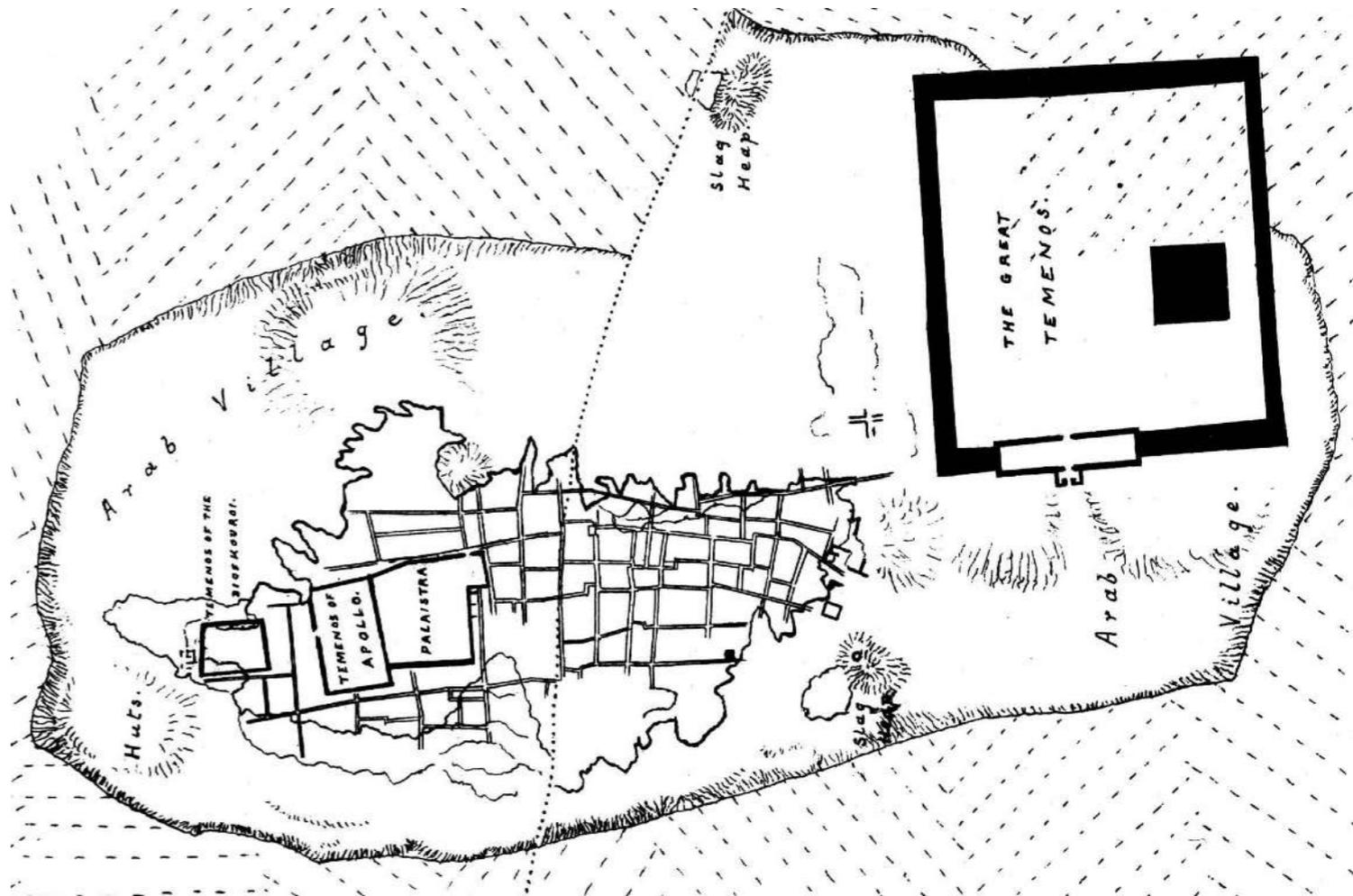
2. Organic Layouts

One house being added to an earlier one along **narrow streets**. This was probably the process followed in the villages and the smaller rural towns in Egypt



3. Mixed Town Plans

Some of the towns from the Late Period and Greco-Roman towns were enlarged or even superseded by Greek settlements



Next lecture

Greek Architecture