

What the Greeks knew

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- **Part IV: Hellenism**

What the Greeks knew

- Macedonia
 - Traditional buffer between Greece and the Barbarians
 - Land of constant warfare
 - A territorial empire, not a city state

What the Greeks knew

- Macedonia
 - Philip II unifies Greece (346 BC - 338 BC) in the League of Corinth
 - 24 years of continuous warfare
 - Aristocratic pyramidal army (unlike Greek egalitarian hoplites)
 - Cavalry (unlike Greek infantry-based army)
 - Mercenaries (unlike Greek orthodoxy)
 - Multi-ethnic (unlike Greek homogeneous army)
 - Lighter and more mobile hoplites armed with pike (twice longer than a spear)

What the Greeks knew

- Macedonia
 - Alexander III conquers the Persian empire (334 BC - 325 BC)
 - Alexander's army of 334
 - 36,000 in the navy and 37,000 on land (12,000 hoplites from Macedonia, 7,000 hoplites from Greek allies, 5,000 mercenary hoplites; 1,800 horsemen from Macedonia, 1,800 horsemen from Thessalia, 600 horsemen from Greek allies, etc)
 - The Persians at Issus number at least twice as many, multi-ethnic and filled with many mercenaries (Darius' best general is Memnon of Rhodes)

What the Greeks knew

- Macedonia
 - Basically, Alexander rebuilt Darius' empire two centuries later under Greek civilization (almost the exact same lands under one emperor)

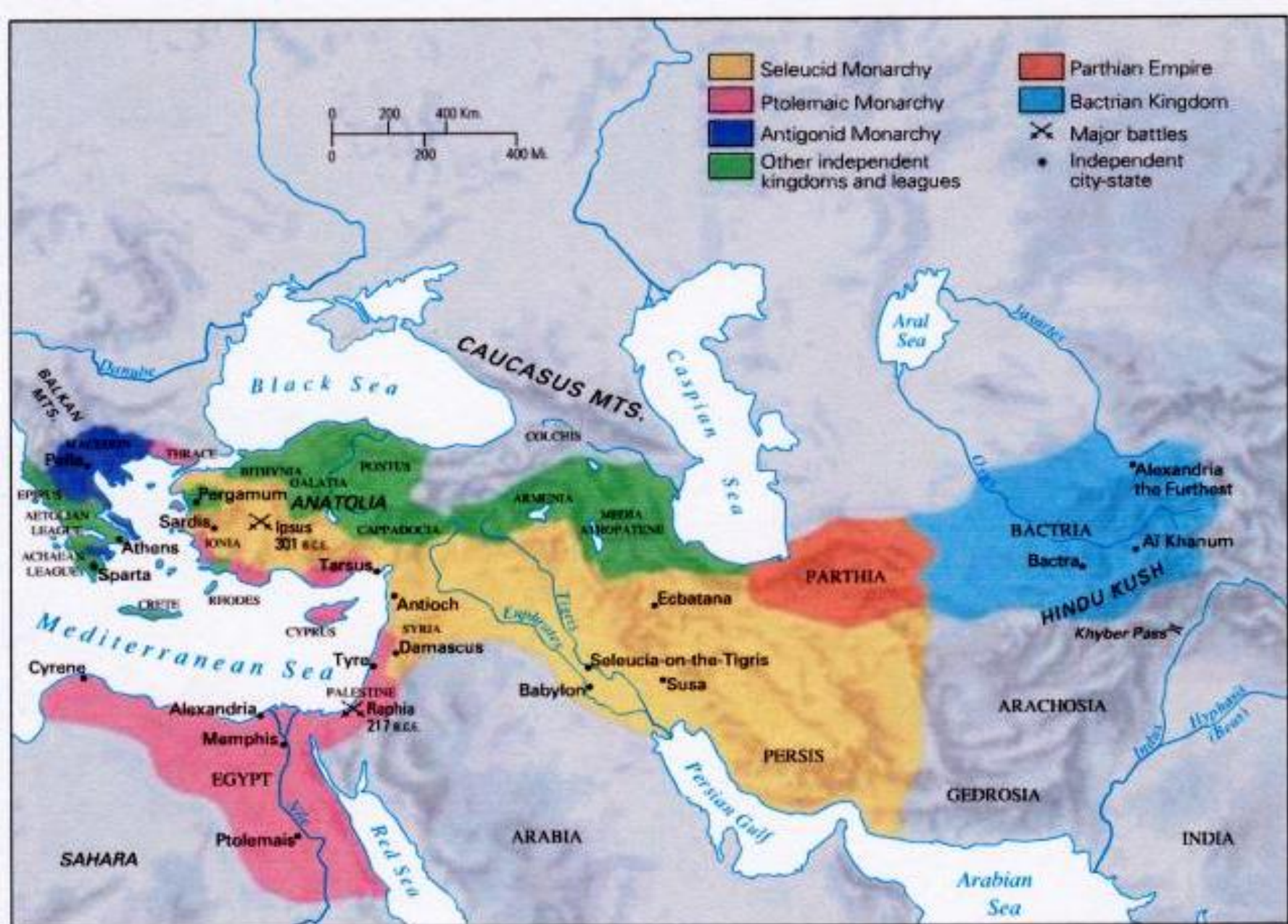
What the Greeks knew

- Alexander's Empire
 - Note: Alexander, Chandragupta Maurya and Qin Shi were very young when they founded their empires.



What the Greeks knew

- Macedonia
 - Alexander deifies himself (son of Zeus in Macedonia, incarnation of Ra and Osiris in Egypt, court ritual of proskynesis in Persia)
 - Alexander's empire breaks down into regional Greek-speaking kingdoms (323 BC)
 - Ptolemaic kingdom (Egypt, Palestine)
 - Antigonid kingdom (Macedonia)
 - Seleucid kingdom (Persia, Mesopotamia, Syria and later Asia Minor)



The Hellenistic World

http://www.historylink101.com/ancient_greece/ancient_greece_maps.htm



The disintegration of Alexander's empire

What the Greeks knew

- The Hellenistic Age (331 BC)
 - Hellenistic armies: Macedonians, Greeks, mercenaries, natives
 - Huge armies (unlike the armies of the Greek city-states)

What the Greeks knew

- The Hellenistic Age (331 BC)
 - Macedonian conquests... and destruction of Greek cities
 - Foundation of Alexandria (331 BC)
 - Hellenization of eastern Mediterranean
 - ...but also Orientalization of Greek culture
 - Cultural unification of the “oikoumene” (world that the Greek knew) on a level not seen since the advent of agriculture during the Neolithic

What the Greeks knew

- The Hellenistic Age (331 BC - 146 BC)
 - Revolution in trade routes and trade practices
 - E.g., Egypt: spices from Arabia, silk from China, carpets from Asia Minor, silver from Spain, gold from India, tin from Britain, etc
 - Trade boom spawns economic boom
 - Monetary revolution based on gold and silver coins
 - State-sponsored capitalism
 - State provides infrastructure (harbors, roads) and protection (warships)
 - State organizes large-scale industries
 - State taxes heavily the profit of merchants

What the Greeks knew

- The Hellenistic Age (331 BC - 146 BC)
 - Multiplication of cities
 - Government agencies
 - Merchants
 - Industry
 - Culture (e.g., Library of Alexandria)

What the Greeks knew

- The Hellenistic Age (331 BC - 146 BC)
 - Alexandria
 - Founded by Alexander in Egypt
 - Alexander's general Ptolemy I sponsors culture, art and science
 - Ptolemy I founds the “museum” (home of the muses), the Egyptian equivalent of Aristotle's Lyceum
 - Scholars move from Greece to Alexandria
 - Literature is for the reading public, not for an elite

What the Greeks knew

- Hellenistic Philosophy
 - Emphasis on happiness of the individual
- Hellenistic Religion
 - Emphasis on salvation of the individual
- Birth of Greek individualism

What the Greeks knew

- Library of Alexandria (307 BC)
 - Founded by Ptolemy I
 - Directed by scientists (Eratosthenes)
 - Papyri in Greek, Hebrew, Aramaic, Nabatean, Arabic, Indian, Egyptian
 - Not open to the public
 - Mouseion for the invited scholars

What the Greeks knew

- Books
 - Parchment made of animal skin instead of papyrus (190 BC)
 - Parchment codex instead of papyrus scroll (1st c AD), easier to consult and safer to transport
 - Parchment codex enables more sophisticated illustrations



What the Greeks knew

- Cynicism (350BC)
 - Absolute knowledge is impossible
 - Excessive attachment to material things is the problem
 - Individual freedom through renunciation of material things
 - No property, no money
 - Women and children should be held in common (Diogenes)
 - Return and submit to nature

What the Greeks knew

- Cynicism (350BC)
 - All humans and animals are equal (Diogenes)
 - Anarchy: only freedom brings happiness (Diogenes)
 - Diogenes lived inside a barrel
 - Diogenes was the first kosmopolites (citizen of the world)
 - No surviving book by Diogenes
 - He committed suicide holding his breath

What the Greeks knew

- Materialism
 - Cynicism
 - Epicureanism
 - Stoicism
 - The world is made of matter (even the soul)
 - There are no spiritual beings

What the Greeks knew

- Epicureanism (300BC)
 - Epicurus of Samos (b 341 BC)
 - Wrote a 37-volume book
 - Democritus' metaphysics
 - The universe is made of an infinite number of atoms moving randomly in empty space
 - Atoms collide and form objects, animals and people
 - A perception is due to physical contact: sight is due to particles that emanate from the object and strike the eye

What the Greeks knew

- Epicureanism (300BC)
 - Epicurus of Samos
 - Humans have no purpose: they just happened to be created by the motion of atoms
 - Humans are simply one of the many kinds of things created by atoms
 - A degree of randomness in the movement of atoms that grants humans a degree of freedom

What the Greeks knew

- Epicureanism (300BC)
 - Epicurus
 - There is no afterlife
 - Happiness/serenity (“ataraxia”) as the highest good
 - Anxiety is the main enemy of happiness
 - Superstitions and fear of death cause suffering/angst and keep us from appreciating life
 - “To practice living well and to practice dying well are one and the same”

What the Greeks knew

- Epicureanism (300BC)
 - Liberation from suffering via a correct theory of nature (reason):
 - Gods exist but have no role in human life
 - Democritus' materialism: the universe (not created by a god) is material, made of atoms, and is a machine
 - Human beings die with the death of the body
 - Gods are material too (and indifferent to humans)
 - The soul is material
 - But humans have free will: they are free to choose any life they wish

What the Greeks knew

- Epicureanism (300BC)
 - Don't fear death
 - Don't fear what comes next just like you don't fear what was before you were born
 - “While we exist death is not present, and when death is present we no longer exist”
 - “Infinite time contains no greater pleasure than limited time”

What the Greeks knew

- Epicureanism (300BC)
 - There is no absolute definition of right and wrong
 - Humans should be good to each other because it increases happiness (utilitarian approach)

What the Greeks knew

- Epicureanism (300BC)
 - Lucretius (95-55 BC)
 - Seneca (4 BC-65AD)
 - Our life is not short, we make it short by wasting most of it

What the Greeks knew

- Sceptics (300BC)
 - Sophist' metaphysics: knowledge is derived from the senses and is therefore uncertain

What the Greeks knew

- Sceptics (300BC)
 - Pyrrho (Elis, b 365BC)
 - We can determine (know) nothing, there is no absolute certainty
 - Angst is caused by the search for knowledge because reason cannot explain everything and leads to contradictions
 - There is no way to determine if things (such as sickness or poverty) are good or bad
 - Unhappiness derives from opinions are merely that: opinions, not facts
 - In order to achieve happiness/serenity (ataraxia), one has to avoid judgement/beliefs

What the Greeks knew

- Sceptics (300BC)
 - Carneades (Cyrene, b. 214 BC)
 - No absolute truth, but three degrees of uncertainty:
 - Probable
 - Probable and unrefuted
 - Probable, unrefuted and tested

What the Greeks knew

- Stoicism (300BC)
 - Heracleitus' metaphysics

What the Greeks knew

- Stoicism (300BC)
 - Zenon of Citium (Cyprus, b. 344 BC)
 - Some things are so obvious that they cannot be doubted (katalepsis)
 - Everything is matter
 - A ubiquitous active principle (a sort of eternal “fire”) is both the source of life and the source of reason (both pneuma and logos)
 - “God” is that original fire (and cosmic mind) who created the original principle (“logos spermatikos”)
 - The interaction between this “God” (“the cause”, “first reason”) and matter creates the world, which is a living organism

What the Greeks knew

- Stoicism (300BC)
 - Zenon of Citium (Cyprus, b. 344 BC)
 - Virtue consists in following the laws of nature
 - Favors a society in which women have the same rights as men (and slaves are citizens too), and in which all women and men can have sex with each other
 - Lectures on the stoas of the Athenian marketplaces (the Stoics were originally called Zenonians)

What the Greeks knew

- Stoicism (300BC)
 - Natural laws are determined by God (the active principle, “the cause”)
 - Laws of nature determine the evolution of the cosmos (cycle from big bang to big crush)
 - Endless cycles, identical in every detail
 - The entire universe is made of god (pantheism)
 - The world is a sentient living being filled with pneuma
 - The universe is a whole in which individual things/events make sense only in relationship to all the other things/events

What the Greeks knew

- Stoicism (300BC)
 - The individual has to accept that the universe is a mechanism and that the future is determined
 - The individual can only submit to the order of the universe

What the Greeks knew

- Stoicism (300BC)
 - Happiness is acceptance of what “is”
 - Happiness is accepting one’s role in the universe
 - Surrendering the self to the order of the cosmos
 - Happiness is acceptance of god/nature
 - Happiness is living in harmony with nature

What the Greeks knew

- Stoicism (300BC)
 - There is no evil because even evil events/things are mere aspects of a whole that is not evil
 - Four cardinal virtues: wisdom, courage, justice, and temperance

What the Greeks knew

- Stoicism (300BC)
 - Inner man vs outer man (the spiritual and rational vs the physical and emotional being)
 - Each person is an embryo of divine fire or cosmic mind
 - The microcosmos (individual soul) is part of the macrocosmos (universal soul)
 - Each person is partly divine
 - "Thou art a piece of God" (Epictetus)

What the Greeks knew

- Stoicism (300BC)
 - All human beings of all nations and all classes are equal (including slaves)
 - Pacifism

What the Greeks knew

- Stoicism (300BC)
 - Society (the polis) is an annoying distraction from what should be the real goal of life
 - Politics is dirty and boring, and certainly not for the wise

What the Greeks knew

- Stoicism (300BC)
 - Chrysippus (b. 280 BC): wrote more than 700 books, mostly on logic
 - Lucius Annaeus Seneca (1st c AD)
 - Epictetus (100AD)
 - emperor Marcus Aurelius (121-180)

What the Greeks knew

- Stoicism (300BC)
 - Invention of propositional calculus

What the Greeks knew

- Revival of Pythagoras
 - Ascetic life, vegetarianism
 - Sex only for procreation, not for pleasure

What the Greeks knew

- Astrology
 - Babylonian astrology: Berossus, priest of Bel Marduk, who settled in the island of Cos in 3rd c BC and wrote a treatise in Greek on the astrological theories of Mesopotamia
 - The stars influence human events
 - The state of the universe at any given moment is more or less favorable to certain actions
 - Man's fortunes are fixed by the position of the stars at the moment of his birth

What the Greeks knew

- Astrology
 - Correspondence between the 12 signs of the zodiac and the parts of the human body
 - Carneades of the Middle Academy critical of astrology on logical grounds (e.g. twins have different fortunes)
 - Epicureans oppose astrology (hostile to predestination)
 - Astrology influential on Hellenistic Egypt
 - Ptolemy himself writes a treatise on astrology ("Tetrabiblos/ Quadripartitum"): prediction of wars, pestilences, earthquakes, etc and prediction of a person's future

What the Greeks knew

- Sex
 - Cynics, Epicureans and neo-Pythagoreans view eros as a danger, encourage celibacy and discourage extramarital affairs
 - Menander's plays (4th c BC) are set in domestic surroundings: the Samian Chrysis is the mistress (not a prostitute) of a wealthy bachelor; wives tend to have more power
 - Hetaerae become celebrities
 - Philemon's "Neaira" is about the wealth of a young whore
 - Aristophanes of Byzantium (275-180 BC): "On Athenian Courtesans" (also similar books written by Apollodorus of Athens, Ammonius of Alexandria, etc)

What the Greeks knew

- Sex
 - The women of Alexandria enjoy more freedom and power than the women of Athens
 - The queens of Ptolemy I and Ptolemy II become famous (Berenice I and Arsinoe II, also Ptolemy II's sister)
 - Theocritus' Idyll 2: the adventures of a single woman, Somaetha
 - Asclepiades: epigrams to independent women who are sexually active

What the Greeks knew

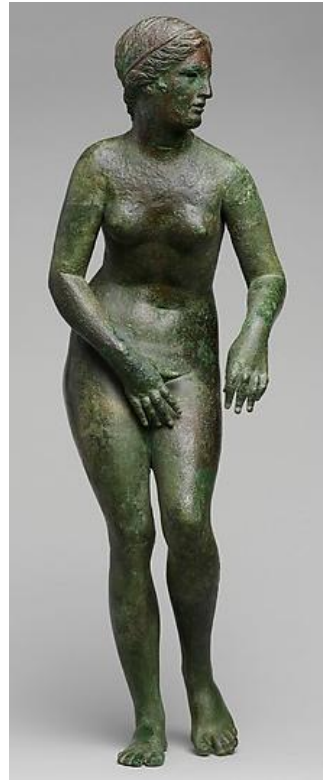
- Sex
 - Nude women for public monuments (not only the rare private vase)
 - starting with Praxiteles ‘ “Aphrodite of Cnidus” (4th c BC), whose model was the hataira Phryne (in classical Greece it would have been a mortal sin to pry into a divinity’s intimacy)
 - Literature deals with the grief of women in love
 - Sex manuals (exclusively about heterosex), mostly composed by men under female pseudonyms (pretending to be experienced hetaerae): Polycrates of Athens’ “Philaenis”

What the Greeks knew

- Sex



“Colonna Venus” a copy of the “Aphrodite of Cnidus” (Vatican Museum)



Bronze “Aphrodite” (Metropolitan Museum)

What the Greeks knew

- Sex
 - Plutarch' "Dialogue on Love/ Erotikos" (1st c AD)
 - Plutarch defends marriage over pederasty
 - A wealthy widow, Ismenodora, kidnaps a younger man, Bacchon, in order to marry him

What the Greeks knew

- **Hellenistic Science**
 - **First major scientific boom in the history of humankind**
 - **Largely at Alexandria: mathematicians, scientists, inventors, philosophers**

What the Greeks knew

- **Eukleides/ Euclid (b300BC, Alexandria)**
 - Geometry
 - Postulates (parallel lines)
 - A theory of space
 - All the truth that can be deduced from a handful of axioms
- **Erarosthenes (b276BC)**
 - Calculates the circumference of the Earth

What the Greeks knew

- Herophilus (Alexandria, b335BC)
 - Anatomy (dissection of alive human bodies)
 - The brain, not the heart, is the site of the mind
 - Arteries contain blood, not air

What the Greeks knew

- Archimedes (Siracusa/Syracuse, b287BC)
 - Mathematics and Mechanics
 - Principle of the lever
 - Law of hydrostatics
 - Physics becomes a separate discipline from Philosophy

What the Greeks knew

- **Archimedes (b287BC)**
 - **The Antikythera mechanism, the world's first computer**



What the Greeks knew

- Eratosthenes (Alexandria, b276BC)
 - Calculates the circumference of the Earth
 - Coins the word “geo-graphia”
- Posidonius
 - Tides are due to the influence of the Moon
- Aristarchus (Alexandria, b270BC)
 - The Earth is a planet
 - Planets revolve in circles around the Sun (heliocentric world)
 - Calculates the distance between the Earth and the Moon

What the Greeks knew

- **Helepolis, a war machine built by Epimachus for Antigon's son Demetrius during the siege of Rhodes (306 BC) to overcome the city's defensive walls: a 40m-tall pyramidal multi-story moving wooden tower, covered with leather, armed with catapults and equipped with water tanks, mounted on iron wheels.**



What the Greeks knew

- Poetry
 - Philitas of Cos,
 - Asclepiades of Samos (erotic epigram),
 - Callimachus of Cyrene (pederastic poetry + “Aetia” + “Lock of Berenice”),
 - Dioscorides (graphic details of both hetero and homoerotic sex),
 - Theocritus (pastoral Sicilian landscape, “Idylls”, first pastoral literature),
 - Apollonius of Rhodes (“Argonautica”, with clueless anti-hero Jason helped succeed by Hera, Athena and Aphrodite, and seduced by the witch Medea),

What the Greeks knew

- Poetry
 - Herodas (polemic mimes)
 - Poetesses: Erinna (“Distaff”, homoerotic), Nossis (homoerotic)
 - Demystifying mythic heroes of ancient Greece

What the Greeks knew

- Fiction
 - Chariton's Callirhoe (1st c. AD)
 - Achilles Tatius' Leucippe and Clitophon (early-2nd c.)
 - Longus' Daphnis and Chloe (2nd c.)
 - Xenophon of Ephesus' Ephesian Tale (2nd c.)
 - Heliodorus of Emesa's Aethiopica (3rd c.)
 - All deal with romantic love between two young lovers (a free young man and a free young woman)

What the Greeks knew

- Fiction
 - Euhemerus: “Sacred Scripture” (300 BC)
 - Great conquerors and kings become gods

What the Greeks knew

- Time-keeping
 - Late adoption of Egyptian “outflow” water clocks (325 BC)
 - Ctesibius of Alexandria (3rd C BC): the inflow water clock (“clepsydra)
 - Large-scale water automata
 - Athens' "Horologion" by Andronikos (1st C BC), comprising both sundials and 24-hour water clocks, indicators for the eight winds and the seasons, and astrological data



What the Greeks knew

- The Seven Wonders:



What the Greeks knew

- **The Seven Wonders:**
 - **Pyramid of Cheops (by Hemon, Egypt, 2500 BC)**
 - **Hanging Gardens (Babylon, 580 BC)**
 - **The Statue of Zeus at Olympia (by Pheidias, Greece, 432 BC)**
 - **Temple of Artemis at Ephesos (Greece, 356 BC)**
 - **The Mausoleum at Halicarnassos (Greece, 354 BC)**
 - **The Pharos of Alexandria (Egypt, 300 BC)**
 - **The Colossus of Rhodes (built by Chares of Lindos , 290 BC)**

What the Greeks knew

- **Colossus of Rhodes**

The Colossus
(Helios) of Rhodes
(built by Chares of
Lindos, 290 BC)

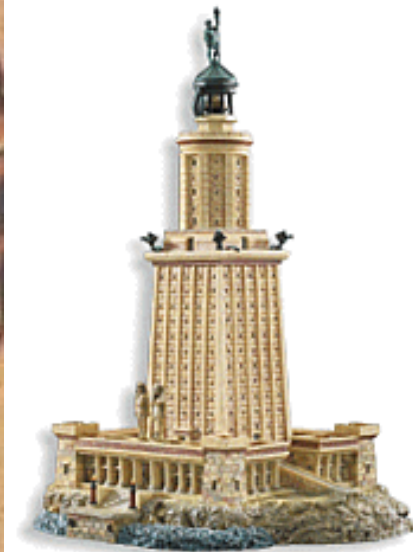


What the Greeks knew

- Sostratus: Pharos of Alexandria (279 BC, destroyed by earthquakes in the 14th c)
 - Travel report by Abou-Haggag Al-Andaloussi (1166):
 - Building in three stage
 - Lowest square, 55.9 m high with a cylindrical core
 - Middle octagonal stage 18.30 m wide and 27.45 m tall
 - Circular top 7.30 m tall
 - Total height: 117 m

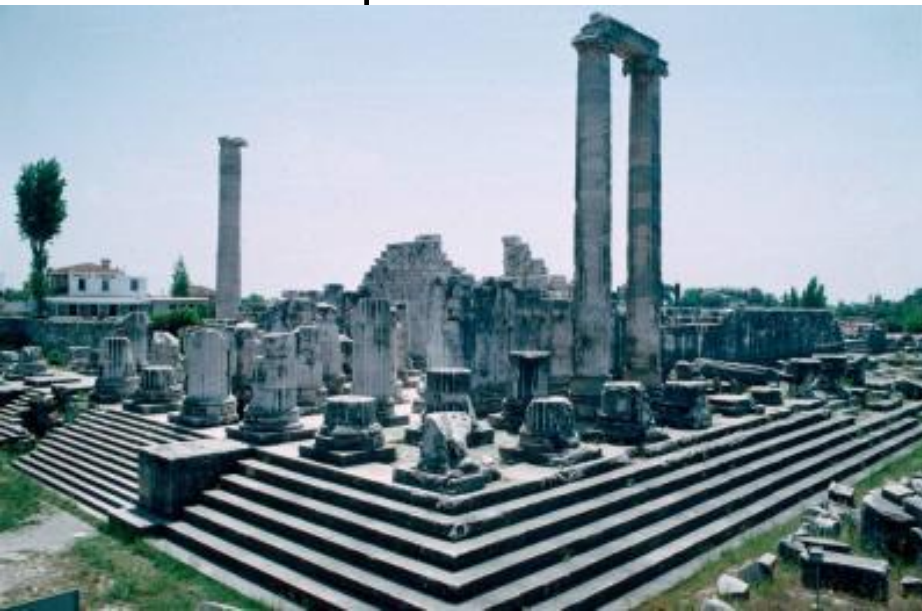


(Roman coin of 2nd c AD)



What the Greeks knew

- Temple of Apollo at Didyma (330 BC)
 - Fourth largest sanctuary in the Greek world after the Temple of Artemis, the Heraion of Samos and the Olympieion at Sicily
 - Largest arrangement of columns in the Greek world
 - One of the few decastyle temples (ten columns) with Heliopolis (Baalbek) in Syria and some in Roma
 - Begun in 330 BC and never finished
 - Collapsed in the 15th c AD



What the Greeks knew

- Royal necropolis of Sidon (4th c BC): Alexander Sarcophagus

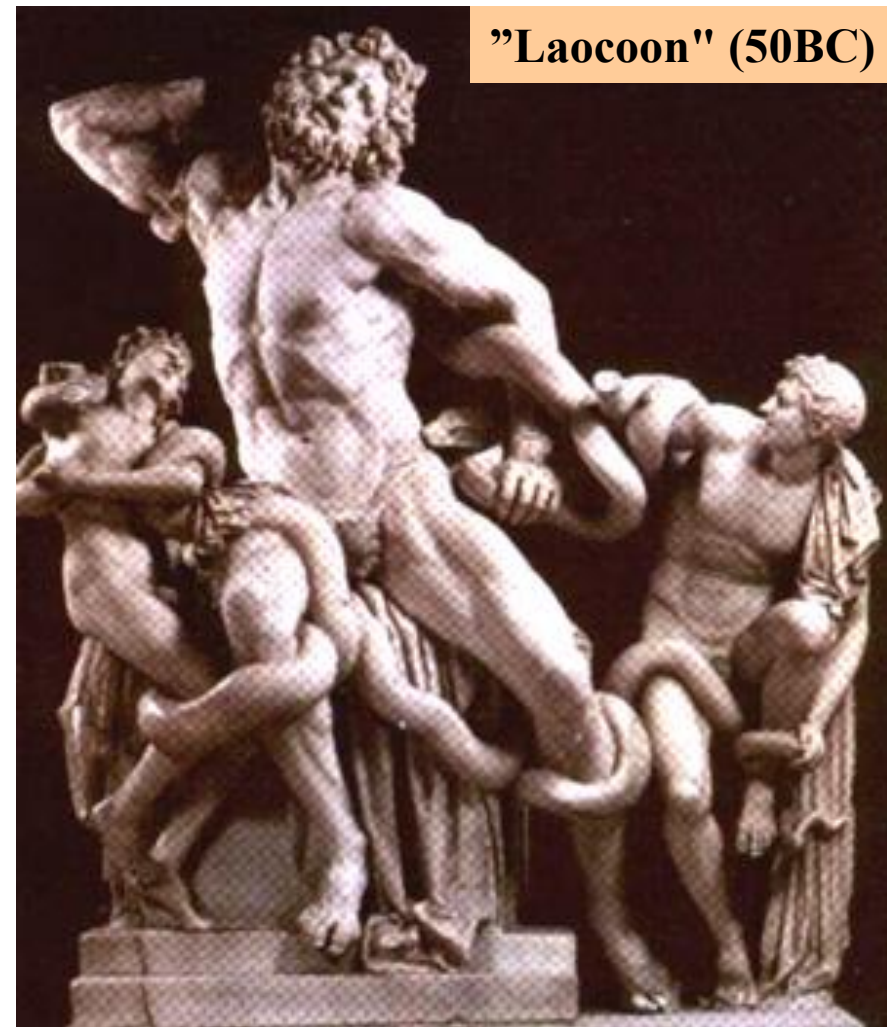


(Archeological Museum, Istanbul)



What the Greeks knew

- Harmony AND passion
- Idealism AND realism



Museo Archeologico, Napoli

Musei Vaticani, Roma

What the Greeks knew

- **Old Market Woman (2nd c BC)**



(Metropolitan Museum, New York)



Alexandros: "Aphrodite of Milo/ Venus de Milo" (150 BC)

(Louvre Museum, Paris)

What the Greeks knew

- Aphrodites and Pan of Delos (100 BC)

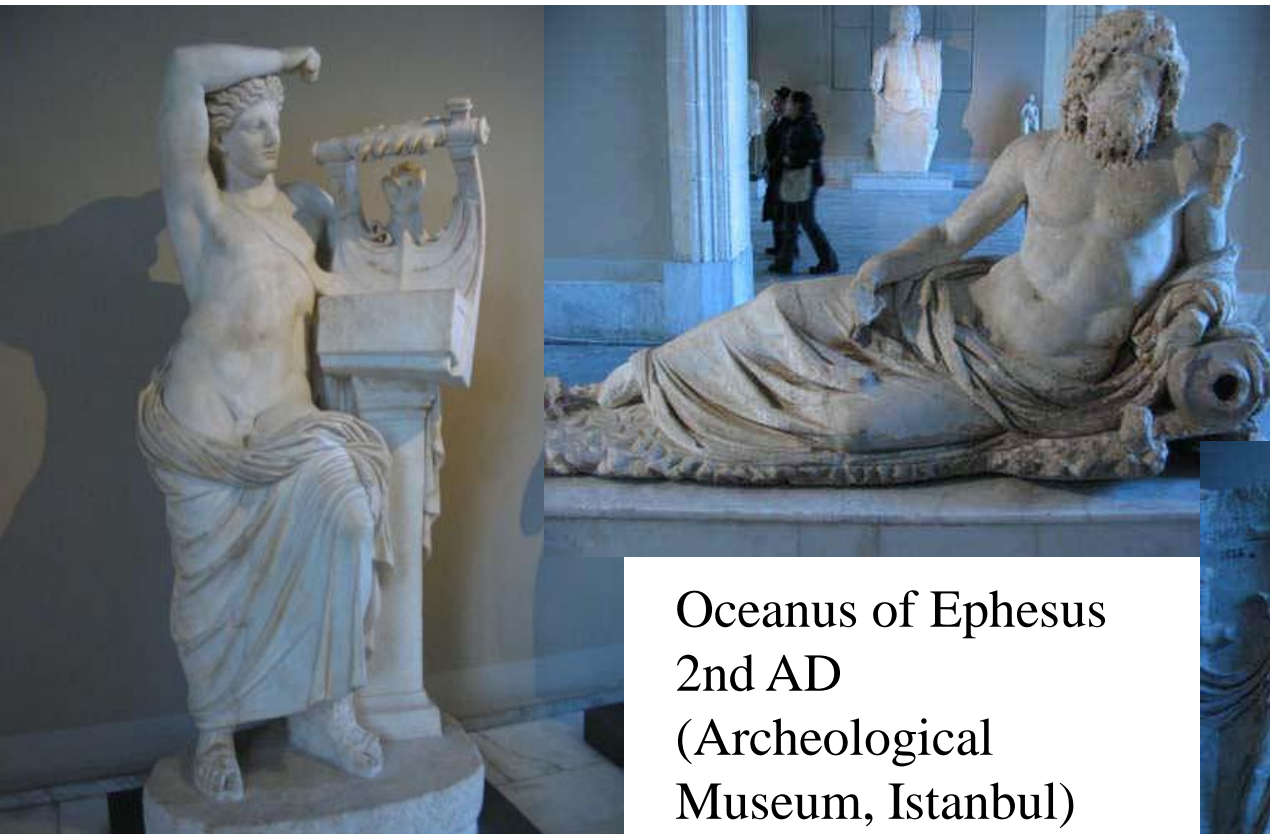


(Athens National Museum)



What the Greeks knew

- Three marble cities of Anatolia: Aphrodisias, Ephesus, Miletus



Athena of Aphrodisias
2nd AD
(Archeological Museum,
Istanbul)

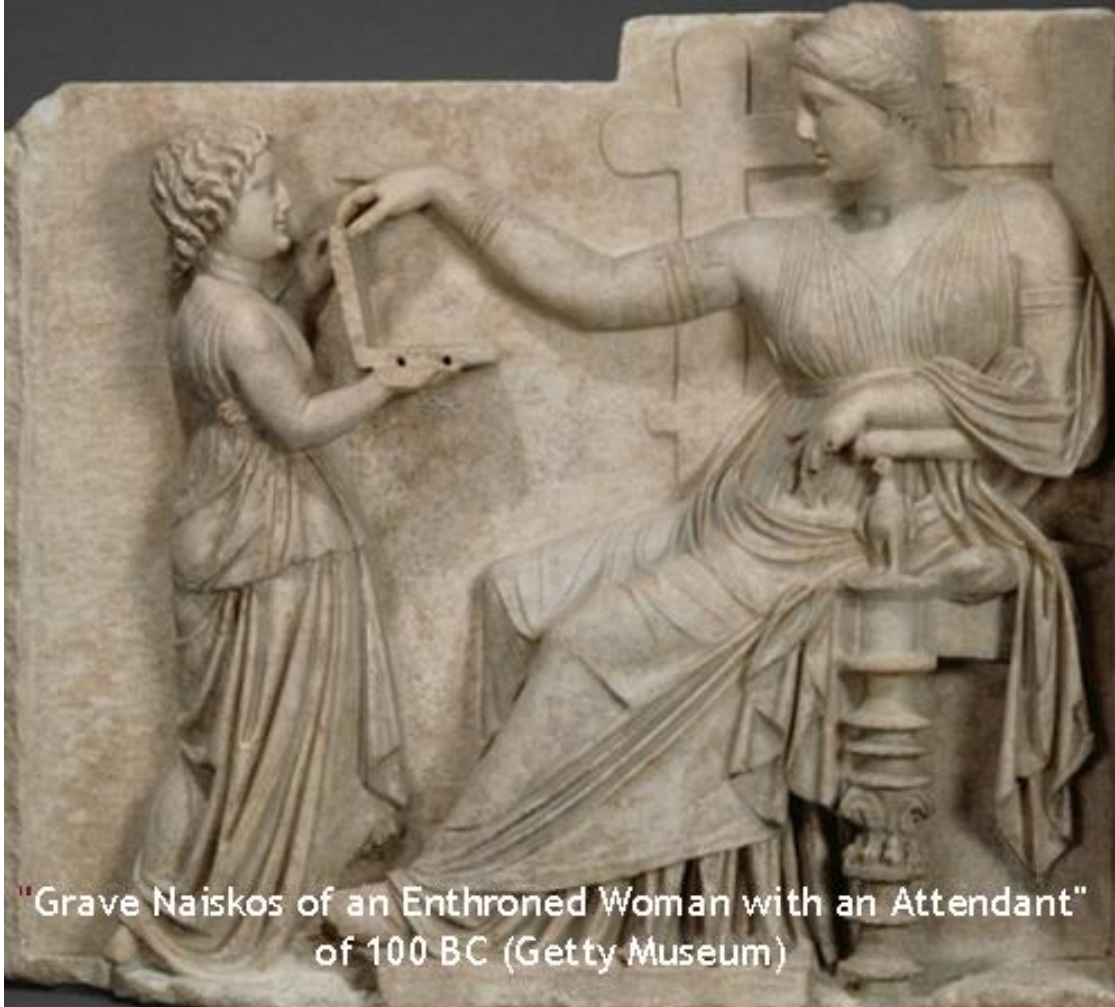
Oceanus of Ephesus
2nd AD
(Archeological
Museum, Istanbul)



Apollo of Miletus 2nd AD
(Archeological Museum, Istanbul)

What the Greeks knew

- Naiskos



"Grave Naiskos of an Enthroned Woman with an Attendant"
of 100 BC (Getty Museum)

What the Greeks knew

- Alexander's Sarcophagus

See [museums/topkapi.html](#)

(Archeological Museum, Istanbul)

What the Greeks knew

Colossal vase of 340 BC colossal (cartoon of mythological story, perhaps inspired by a theatrical play)



(Boston Museum of Fine Arts)

What the Greeks knew

- First realistic “portrait” statues representing individuals
(Egyptian statues of individuals were not meant to be seen: they were for the tombs)

What the Greeks knew

- Theaters
 - Built on a hill because no arches
 - Theater of Dionysus, Athens (330 BC)
 - Theater of Epidauros (320 BC)



Theater at Epidauros, 320 BC

What the Greeks knew

- Athens
 - The Western side of the Agora in the 2nd c AD



1. Stoa of Zeus Eleutherios
2. Temple of Apollo Patroos
3. Temple of Hephaestus
4. Metroon - Old Bouleuterion
5. New Bouleuterion
6. Tholos

What the Greeks knew

- Hellenistic Religion
 - Emphasis on salvation of the individual
 - Popularity of “mysteries” (Eleusinian, Dionysian), whose deities are closer to humans and promise salvation
 - Emphasis on deities that had undergone death and resurrection
 - Initiation to “mysteries” required
 - Initiation could happen any time of the year
 - Oriental mysteries: Osiris (from Egypt, 2nd c BC), Mithra (from Iran, 67 BC), Rhea/Cybele (from Phrygia, 205 BC)
 - 396: The Goths burn the sanctuary of Eleusis

What the Greeks knew

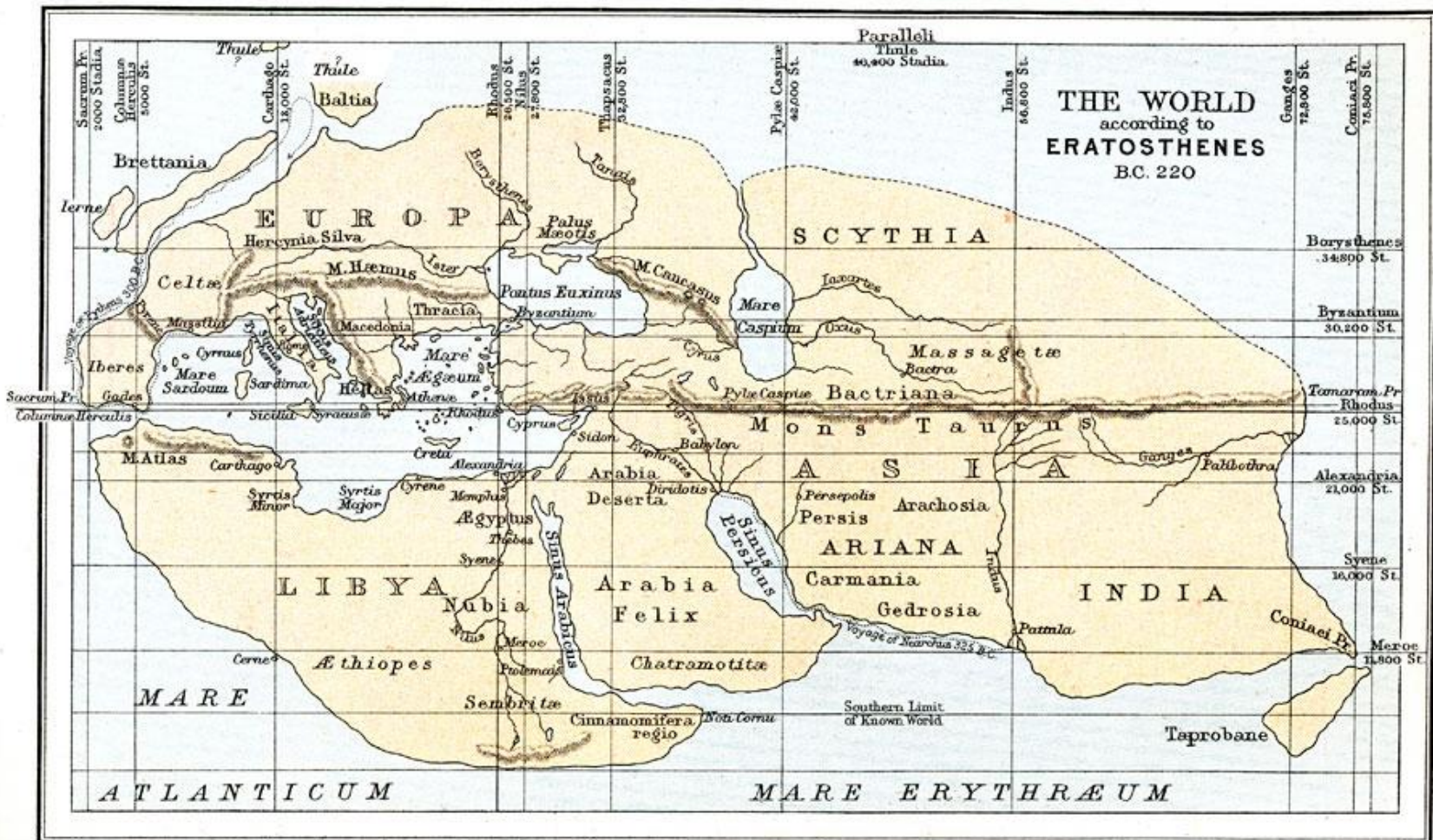
- Eudoxus of Cyzicus travels to India via the Indian Ocean and bring back spices (2nd c BC)

What the Greeks knew

- Sailors
 - Greek sailors discover how to navigate between the Gulf of Aden and India exploiting the two-way monsoonal winds

What the Greeks knew

- Eratosthenes (born 276 BC)
 - Map of the world



What the Greeks knew

- Seleucid Empire
 - Merging of Hellenic and Mesopotamic civilizations
 - Prototype of association of city states
 - Birthplace of religions: Mithraism, Christianity, Manicheism, Islam

What the Greeks knew

Myra (1st c BC)



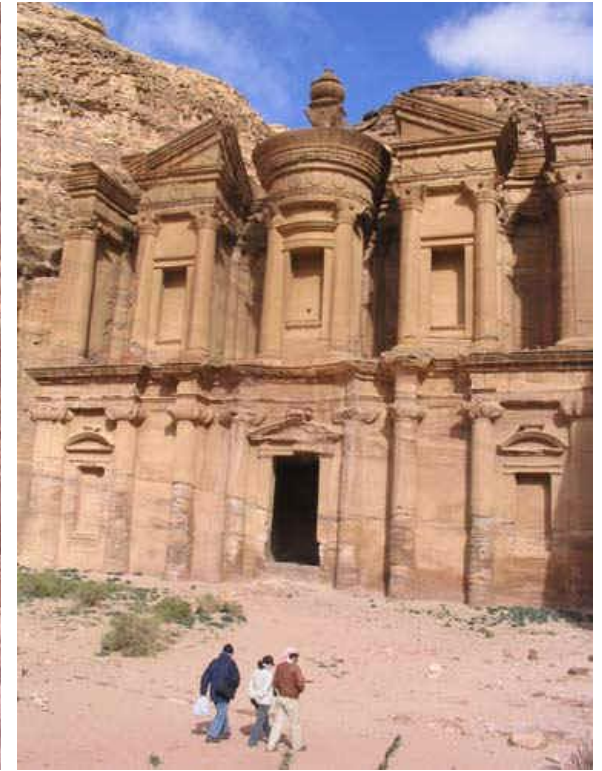
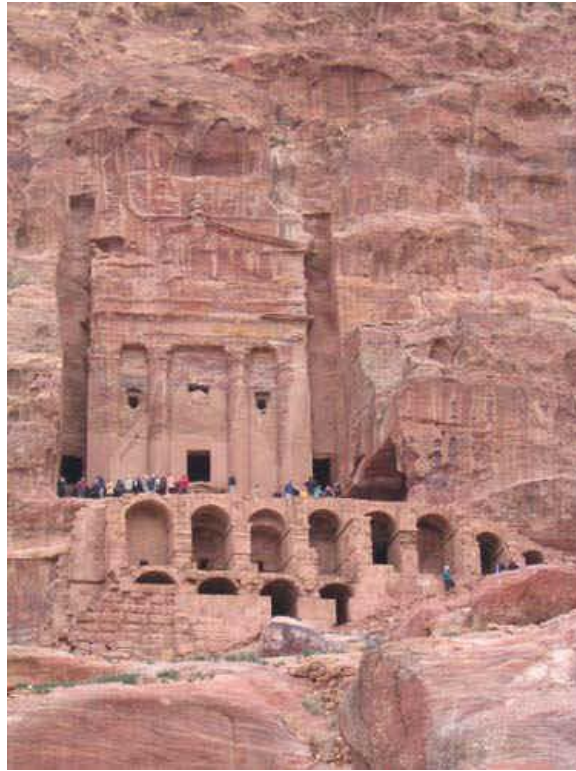
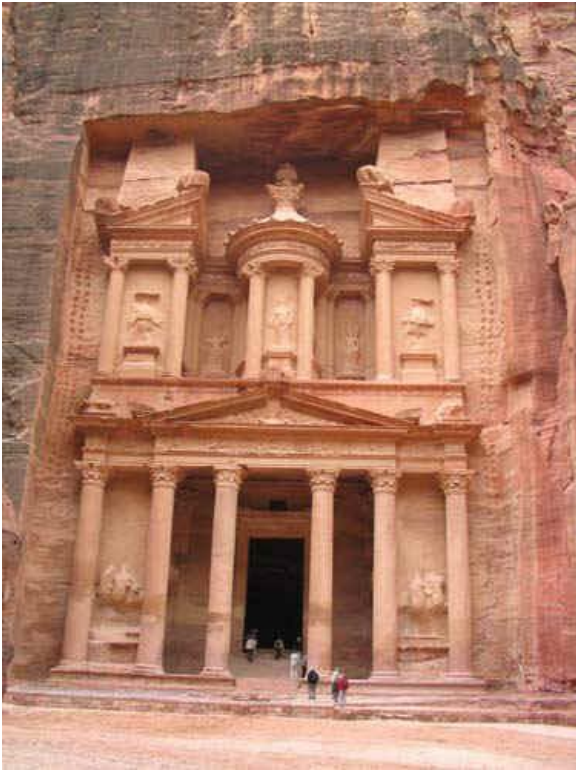
What the Greeks knew

- Nemrut (1st c BC)



What the Greeks knew

- Petra (3rd c AD)



What the Greeks knew

- Palmyra



Summary

- Trade
- Gods are vehicles of force
- Harmony
- Form and change
- Mathematics (Pythagoras, Zenon, Euclides)
- History (Herodotus, Thucydides)
- Physics (Archimedes, Aristarchus, Ptolemy)

Summary

- Sokrates: Philosophy of Man
- Herakleites: Everything changes all the time
- Parmenides: Nothing ever changes (the One)
- Anaxagoras: "Nous" as the universal organizing principle
- Democritus: Everything is made of atoms
- Platon: Reality vs appearance
- Aristoteles: Knowledge via logic and observation, Natural state is rest, God as the first cause of motion
- Cinicism: Abandon wealth and return to Nature
- Epicurianism: Accept that human life is pointless
- Sceptics: Reason leads to contradictions
- Stoicism: Happiness is acceptance of what "is"

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