

## EARLY GREEK CIVILISATION

For reasons which are not at all clear, the roots of modern science really lie in the philosophical schools which developed in Ancient Greece, and which in turn led to a remarkable flowering of mathematics at this time. Not all of the essential ingredients of modern science were then available (in particular, it was to be another 2000 yrs before the importance of experiment was to be realised), but many of the most important ones were. Probably the most important contribution of the Greek philosophers was to divorce speculative inquiry from religion, to emphasize the open-ended nature of this kind of inquiry, and to develop a methodology of inquiry which is still the basis of much of modern science. Note that technological accomplishment was in no way important for this- indeed, the example of Chinese civilisation (which for 3,000 yrs was many centuries ahead of the West in most technological spheres) shows this very clearly. What was crucial in the development of Greek philosophy and early science and mathematics was the idea of unfettered theoretical speculation.

### (i) REMARKS on ANCIENT GREEK SOCIETY

These remarks will be very brief. After the end of the Mycenaean civilisation (around 1200 BC) a kind of "Dark Age", about which we know little, came down on the emergent Greek (Dorian and Ionian) peoples, from which they began to emerge some time before Homer (c. 750 BC). Amongst the most important features of this re-emergence was a slow expansion of the Greeks over the period from 800-500 BC, to colonize large areas around the Mediterranean and in the Black Sea coastline (cf Map on slides). These can be thought of as small trading centres, and small city states- although some of them became quite big (eg., Miletus, Chalcis, Eritrea, Corinth, Megara, Phocaea, etc). At the time of Thales (c. 580 BC), Miletus was an important city-state. Many of these centres are still extant, and some even grew to great cities (eg., Byzantium, Syracuse, Massilia (Marseilles) or Neapolis (Naples)). Thus by 550 BC important colonies existed in Sicily and Southern Italy (Magna Grecia), Thrace, and the "Euxine Sea" (Black Sea), and even beyond. This coastline civilisation lived alongside the trading civilisation of the Phoenicians, based initially in the Middle East (Tyre, Sidon, etc), and later in Carthage and the Carthaginian empire (founded 810 BC).

Around 500 BC the rise of the Persian empire created a threat to many of the Mediterranean civilisations. After initial defeats (eg., at the famous battle of Thermopylae), the Greeks actually succeeded in beating off the Persians. After this began the great 'Golden Age' in Athenian history- the time of the later pre-Socratic philosophers and of Socrates. However in 431 BC the Peloponnesian War between Sparta and Athens began, and raged until the victory of Sparta in 404 BC. After this the power and influence of Athens was eclipsed. It might well have been forgotten if not for Alexander the Great, who by conquering vast stretches of the Middle East and Asia as far as India, would vastly extend Greek influence and knowledge of Greek culture, and ensure that Hellenistic ideas did not completely die out after the fall of the Greek and Roman empires.

The Greek religion was heavily mystical, and prehistoric in origin. Each city had its local gods and other deities, and there were many local cults, with their attendant myths, oracles, and rituals (including ritual human or animal sacrifice). There was no concept of SIN as modern Christians know this- the worst possible fault was excessive pride (HUBRIS), which was punishable by NEMESIS. The Greeks admired, amongst other things-

-Competition (games, sport, etc), in the right spirit (cf. 1st Olympiad in 776 BC- which ran every 4 yrs until 385 AD; to be revived again 1896 AD)

-Courage and Enterprise

-Music (cf. the Orphic cult beginning 7th Century BC)

-Learning and Wisdom (cf Apollonian cult)

-Mystic Insight (this is seen in many aspects of Greek life and legend)

The relationship between the Apollonian ideal of wisdom and the Dionysian mystical and orgiastic cult was well embodied in the myths and cult surrounding the oracle at Delphi. By legend this began when Apollo killed the god Python, and established the oracle. Delphi was supposed to mark the spot where the "Omphalos" (navel stone) or exact centre of the World was situated. On the 7th day of every month the high priestess (Pythia) of the oracle would sit on a tripod above a gaseous chasm in a cave, and in a trance would await enquiries. This oracle had a major influence on Greek events for many centuries. Some held that Apollo only held sway in the summer, relinquishing Delphi for the winter to Dionysus.

The feeling of a "Greek identity" really dates from the Persian wars, which occurred initially during the reign of Cyrus the Great (from 558-529 BC). The battles of Marathon (490 BC), and Thermopylae (480 BC) are described in great detail in Greek history and theatre, sometimes by participants (eg., Aeschylus, who fought at Marathon). The

ideals supposed to be Greek were of Liberty, freedom, and democracy (NB- note that these were ideals applying to the small free fraction of the population, ie., not the slaves or any visiting "barbarians"). The period between the end of these wars and the murderous Peloponnesian war (mainly between Athens and Sparta), from 431-404 BC, is sometimes called the "Golden Age" of Athens. Note that a young Plato lived through this war, and an old Socrates was executed at the end of it.

To live in Greece then was to live in a region dominated by the sea, by a harsh landscape, and by weather unremittingly sunny in the summer but with occasionally violent storms in the winter. Even now the light in the Greek islands is famous for its clarity, and the sea for its limpidity. The land was forested (pines, poplars) in mountainous areas (of which there were many), but deforestation was a big problem even then. Olives, grapes, etc., were cultivated along with goats. If one can imagine California scattered into islands, or the Gulf Islands and Vancouver Island moved quite a way south, this gives a vague idea of the climate and landscape (but not the lifestyle).

LITERATURE: Although Homer did not write the first Epics (Gilgamesh from Assyria was earlier), the Iliad and Odyssey are certainly crucial to the development of Western literature. A whole slew of poets followed: Hesiod (c. 700 BC), Xenophanes (c. 570-480 BC) Sappho (612- ), Pindar (518-438 BC) Simonides (556-468 BC), Theocritus (300-260 BC), etc. Poetry and Music were intimately connected- a common instrument was the 7-stringed lyre. Great playwrights such as Aeschylus (525-456 BC), Sophocles (496-406 BC), and Euripedes (480-406 BC) founded the modern theatre as we know it, more or less. Thus was tribal myth and legend, plus a dose of history, politics, and tragedy, turned to dramatic art and literature. Comedy emerged in, eg., the work of Aristophanes (450-385 BC).

Connected with all of this was the development of a tradition, both in the theatre and in oratory, which we now associate with the Greeks (so that when Humanism emerged during the Renaissance, writers like Erasmus looked to the Greeks for inspiration and guidance). This tradition was also emergent in the art of Rhetoric- which was associated with a profession in those days, as well as written guides by people like Corax of Syracuse or Demosthenes (384-322 BC). Rhetoric was employed in courts and political assemblies- and to the dislike of Athenians, by Socrates in his philosophical teaching.

ART and ARCHITECTURE: For some of this see the slides. The development of sculpture was quite extraordinary, so that by the 3rd century BC one sees "naturalistic" sculpture in full flow, with the problems of dynamic form largely solved, and quite extraordinary compositions. These appeared in bronze (almost none of this is left, except a few rare finds), in stone and in pottery, and the occasional frieze or wall-painting. You are referred to books for more details on all of this. The same is true of architecture- it is clear that this embodied not only a remarkable engineering expertise, but also ideas about the aesthetic quality of certain forms that were developed partly in conjunction with mathematical ideas (cf., the Golden Mean). For details go to books.