

# CHAPTER 10

## TECHNICAL, SOCIAL, CULTURAL AND MENTAL EVOLUTION FROM THE ARCHAIC MIDEASTERN TO THE CLASSICAL GREEK AND ROMAN CIVILIZATIONS

### Towards the Liberation of Consciousness

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## 10.1. The Psychological Approach to the Study of Civilizations

**10.1.1. Rational, Mnemonic and Affective Factors.** The purpose of this chapter is to analyze the cultural configuration, or *ethos*, of a few civilizations in terms of the mental disposition, or *mindset*, of the people who have created, sustained and propagated them. We shall argue that all archaic and ancient civilizations—whether city-states, nations or empires—were distinguished from simpler and smaller nomadic and rural societies by having had a governing elite that used practical rationality, what the sociologist Max Weber called *Zweckrationalität* (Weber, 1947), to manage a complex social, economic and political order. All civilizations had a chief of the state, a king, a tyrant or an elected ruler; a hierarchically organized social and political system; a formal government that used some method of enduring record keeping; and a complex economy based on division of labor and occupational specialization. But beyond these shared utilitarian traits, the various civilizations differed from each other in their ideological (aspirational, moral) traits, their *Wertrationalität*, whether they were materialistically or spiritually oriented, militant or peaceful, offensive or defensive, individualistic or collectivistic, conservative or progressive. We attribute these differences in the ethos of civilizations to the mindset that people developed in response to challenges—opportunities and adversities—in their particular physical and social environment. We postulate in terms of our neuropsychological scheme described in the preceding chapter (Table 9-2) that there are three principal mindsets—the limbic dominated *affective/impulsive*, the temporo-cortical dominated *mnemonic/compulsive*, and the fronto-cortical dominated *rational/calculating*—and that these mental dispositions in their various qualitative and quantitative combinations influence not only the worldview of individuals but also the ethos of their civilization, the preoccupations and commitments they pass on from one generation to the next as an ideological legacy. Limiting our inquiry mainly (but not exclusively) to Near Eastern and European cultures, we shall discuss the ethos and mindset of two *archaic* civilizations, the Mesopotamian and the Egyptian, and two *classical* civilizations, the Greek and the Roman. In the next chapter we shall use the same neuropsychological framework to interpret the changing ethos and mindset of our Western civilization from the Dark and Middle Ages through periods of increasing rationalism: the Renaissance, the Reformation, the Enlightenment, and our evolving age of science.

*Archaic Civilizations.* Archaic civilizations arose in several regions of the globe when smaller, egalitarian nomadic or village societies became transformed into larger hierarchically organized states with a central government. The earliest of them formed in settlements between the Tigris and Euphrates in Mesopotamia about 5.5 m.y.a., and along the Nile and its delta in Egypt about 5.1 m.y.a. (Redman, 1978; Kemp, 1991; Kuhrt, 1995; Shaw, 2003). Childe (1936, 1952) called the momentous cultural transformation in Mesopotamia and Egypt the “urban revolution,” and Frankfort (1951) characterized it as the “birth of civilization.”

The economic foundation of the Mesopotamian and Egyptian civilizations was the rational design and construction of large scale irrigation and drainage systems that allowed the transformation of small subsistence economies into large agricultural ones. This innovation produced economic surpluses that allowed a governing elite to assume and maintain lordship over masses of toiling peasants and laborers. We shall argue that the emerging elite class combined two strategies to make this possible. First, they used novel economic and managerial

methods and a social and political organization to co-opt or coerce a large population to work under their command to better exploit available ecological resources. We may call this, from a psychological perspective, *practical rationality*. Second, in order to ensure the cooperation of the subordinated population, they formulated an *irrational ideology*, an elaborate mythology that made the toiling masses accept their fate. Kings and priests indoctrinated the credulous masses that they are acting as agents of gods, or are gods themselves, and buttressed that claim by erecting awe-inspiring monumental edifices for the gods and themselves and other visible displays of power and wealth. Megalithic archaic civilizations evolved not only in Mesopotamia and Egypt but also independently in Central America several thousand years later. They constructed pyramids, ostensibly the dwelling places of the dead kings' spirits or temples housing the state's gods (Fig. 10-1). Notably, however, as we shall describe briefly, not all archaic civilizations were of this agriculture-based megalithic type. The early Harappan civilization of the Indian subcontinent was based on commerce along trade routes; the Minoan civilization of Crete on seafaring and piracy; and the Hittite civilization of Anatolia on military conquest. The classical civilizations of Greece and Rome, which we describe in some detail, were altogether different from archaic civilizations. Greece and Rome changed autocracy to democracy, secularism began to replace clerical domination, and mythological thinking was challenged by logical reasoning.

## MEGALITHS OF ARCHAIC CIVILIZATIONS



**Fig. 10-1.** Pyramids as megalithic religious edifices of archaic agrarian civilizations. **A.** Pyramids of Giza, Egypt. **B.** Model of a Babylonian ziggurat. **C.** Mayan pyramid of Chichen Itza. (Google images)

**10.1.2. Quasi-Psychological Theories: Spengler, Sorokin, and Toynbee.** We have described earlier (Section 9.1.1) some older theories about the succession of civilizations, such as Thomsen's idea of technological advances from the Stone to the Bronze and Iron Ages, and Comte's idea of ideational advances from the theological age to the metaphysical and the scientific ages. We briefly review below three more recent quasi-psychological theories about the genesis, growth and decline of different civilizations, that of Spengler (1926, 1928), Sorokin (1957) and Toynbee (1957).

**SPENGLER: CIVILIZATIONS AS ORGANISMS.** According to Spengler (1926, 1928), different civilizations can be distinguished from one another as "organic species" by their distinctive life style, art, religion and philosophy. He asserted that civilizations, like living organisms, pass through four morphological stages: birth, growth, decline and death. Spengler also used the seasons of the year as a metaphor for the cycles of civilizations: identifying the awakening warrior aristocracies with spring; the rise of absolutist states with summer; the revolution of the masses with autumn; and the death of spiritual endeavor with winter. He identified eight civilizations ("high cultures") in the history of mankind: the Babylonian, Egyptian, Chinese, Indian, Mexican (Mayan/Aztec), Classical (Greek/Roman), Arabian, and Western (European/American). And he distinguished several culture patterns: the Magian (early Jewish, Christian and Muslim); the Apollonian (Greek and Roman); the Faustian (modern Western); and the Caesarian period that marks the death of a civilization. Magian civilizations are spiritualistic and make no distinction between civil and religious affairs, between state and temple. Apollonian civilizations are sensuous, dominated by heroes and pagan warriors. Faustian civilizations are rationalistic that have severed contact with nature (lost their "soul") by seeking power and technical mastery. Spengler maintained that the Faustian Western civilization is in the stage of decline and is bound to die. His pessimistic prediction made almost a century ago of the decline of Western civilization has not materialized, although he was certainly correct about the crises that this civilization has been and is still undergoing.

**SOROKIN: CIVILIZATIONS AS MORAL AGENCIES.** Sorokin (1957) approached the study of civilizations from a sociological and moral perspective. According to Sorokin, civilizations are dynamic systems responding to crises by adopting one of three different value systems: the sensate, the ideational, and the idealistic (integral). Sensate cultures are materialistic, utilitarian and hedonistic. In sensate cultures people seek comfort, pleasure, power and fame. Ideational cultures are spiritual, mystical, pious, altruistic and ascetic. In ideational cultures people seek transcendence, restraint of the body's egotistic demands and, motivated by love, pursuit of a virtuous life. Idealistic cultures are a rational reconciliation of the sensate and ideational, seeking an understanding of man and nature by learning from the lessons of history and the pursuit of philosophy and science. Rejecting Spengler's cyclical theory, Sorokin described the history of Western civilization as an irregular succession of sensate, ideational and integral culture patterns (Table 10-1). Western civilization, Sorokin maintained, began as sensate cultural invaders from the North occupied the Greek mainland and islands, and established colonies along the Anatolian coast. Greek civilization turned ideational during the Homeric period as it became more religious, and it turned idealistic as art, literature and philosophy began to flourish during the Classical age. The succeeding Hellenistic (Alexandrian) and Roman periods introduced a sensate phase into Western culture. Then, following the disintegration of

the Roman Empire and the interlude of the barbaric Dark Age, Western civilization underwent three cultural changes. The Medieval period (the Age of Faith) reflects the emergence of an ideational civilization; the Renaissance (the Age of Humanism) that of an integral civilization; and the Modern period (the Age of Industrial Revolution and Science) that of a sensate civilization. As a moralist, Sorokin rejected our materialistic civilization and advocated a return to the integral (ideational, spiritual, moral) cultural orientation of the Medieval period.

**Table 10-1**  
**Cultural Periods of Western Civilization**  
(according to Sorokin)

PERIOD	CULTURAL TYPE	BEGIN	END
Greek Dark Age	Sensate	1200 BCE	900 BCE
Archaic Greece	Ideational	900 BCE	550 BCE
Classical Greece	Integral	550 BCE	320 BCE
Hellenistic - Roman	Sensate	320 BCE	400 CE
Middle Ages	Ideational	600 CE	1200 CE
High Middle Ages - Renaissance	Integral	1200 CE	1500 CE
Rationalism - Age of Science	Sensate	1500 CE	Present

**TOYNBEE: CIVILIZATIONS AS CULTURAL RESPONSES TO CHALLENGES.** Toynbee (1957) argued that the units in the study of history should not be nation states but civilizations, cultures that share the same religious and moral traditions. He distinguished 21 civilizations in his survey of world history: the Egyptian, Sumeric, Babylonian, Syriac, Hittite, Minoan, Hellenic, Iranian, Ottoman and Arabic civilizations in the Near East; the Indic, Hindu, Sinic, Chinese and Japanese civilizations in the Far East; the Mayan, Yucatec and Andean civilizations in America; and the Orthodox Christian, Russian Christian and Western Christian civilizations in the modern world. Toynbee's thesis was that civilizations develop as a "response to a challenge," and they disintegrate when, due to their moral failure, the "creative minority" fails to initiate and carry out appropriate responses to the new challenges. Easy life is not conducive to the creation of civilization, it is adversity that motivates people to collectively follow a leader—a conqueror, a prophet or a politician—who offers a solution to the arisen challenge. The challenge may be physical, environmental opportunities or difficulties, or social, opportunities offered by the collapse of either an old way of life or of a neighboring civilization. When the priest-kings of Sumer organized Neolithic subsistence farmers to work together to drain the marshes of the Tigris and Euphrates, and build an extensive irrigation system, they established a new civilization by responding appropriately to an environmental challenge. When the Catholic Church enrolled the Germanic kingdoms into a single religious community, they responded to a social challenge—the chaos created by the collapse of the Roman Empire. According to Toynbee, it is not outsiders, the "external proletariat," that kills a civilization; rather, civilizations "commit suicide" due to the failure of their leadership and the destructive actions of their "internal proletariat."

**CRITIQUE OF THE THEORIES SPENGLER, SOROKIN AND TOYNBEE.** As Spengler's critics have pointed out, his identification of civilizations with organisms has no scientific foundation and much of his fanciful characterization of the periods of Western history does not withstand close examination of the historic evidence. While treating civilizations as organisms with a "soul," Spengler makes little or no reference to either the biology or the psychology of the individuals who create and sustain them. People are apparently puppets in a cosmic drama in which they play no role as aspiring actors with passions, convictions, and creative ideas. Spengler ignores the fact that the tools, utensils, weapons, roads and buildings, and paintings, sculptures, books, records, temples and schools, and all the other items that constitute a civilization are material things devoid of life or spirit. The artifacts of a civilization come to life and become a spiritual force when perceiving, learning and knowing individuals make use of them and become inspired by them.

Sorokin's theory does bring the mental disposition of human beings into his interpretation of the history of civilizations by distinguishing cultures as sensate, ideational and ideological. However, he fails to offer a psychological analysis of these concepts. There is no reference in his account of sensate cultures to our knowledge of sensation and perception, pleasure and pain, greed and envy, desires and yearnings—which are obviously elements of sensate behavior. Love and hate play an important role in his account of the rise and fall of civilizations but they are treated as moral dispositions rather than as passions based on our psychobiological constitution and as responses to needs, wants, and the stresses of life's vicissitudes. Sorokin does not discuss the role of mnemonic mechanisms in the formation of ideational cultures, how and why beliefs, convictions and creeds are acquired, and how the conventions and traditions implanted into our minds are the foundation not only of our moral conduct but also of our prejudices, superstitions and bigotry. Sorokin rejects our ideational culture because of its materialism, ignoring the real benefits that science and technology have produced and the potential benefits that could accrue from further improvements in the utilization of environmental resources and the benefits of modern medicine.

Toynbee's interpretation of the history of civilizations is also psychologically based. Challenge and response to what transpires in the physical and social environment are psychological concepts, dealt with by psychologists as trial-and-error learning and cognitive problem solving. Toynbee's emphasis on the role of creative individuals in the rise and advancement of cultures, and of the role of the mimesis and docility of the masses in the preservation of cultures is also a promising psychological hypothesis. He cogently argues that the hydraulic control of the waters of the Nile by the Egyptians, and of the Tigris and Euphrates by the Sumerians and Akkadians, and the wealth that that produced, was a successful response to a challenge by a managerial elite and the hard labor of the great masses. Likewise, the rise of the Hittite civilization was a successful response to a challenge, filling the power vacuum left by the Mesopotamians, by conquering whatever land they could. The Minoan civilization was a challenge offered to Cretans to become seafarers and transport and exchange goods along the Mediterranean coast. The Mayans displayed a successful economic response by transforming a tropical forest into a rich agricultural domain. However, Toynbee used the terms "challenge" and "response" mainly as slogans with little analytical detail. During the different periods of history, he failed to specify how particular emotions and passions, particular beliefs and creeds,

and particular ideas and ideals of the elite and the masses—the actors of a civilization—either produced or failed to produce adequate responses to challenges.

**10.1.3. A Biopsychological Approach to the Study of Civilizations.** Many factors play a role in the formation, flowering, decline and disintegration of a civilization—the physical properties of the inhabited land, antecedent social and political conditions, chance events beyond people’s control, and the way people go about exploiting opportunities and responding to adversities. Our purpose here is to dwell on the psychological factors that contributed to the development of a distinctive ethos in select civilizations rather than to list details of their history. Civilizations flourish if its leaders and the people following them are inspired to work hard and face adversities, and civilizations decline if that inspiration—enthusiasm, commitment and determination—languishes. And because of the importance of human agency, civilizations assume the character of the mindset of the people that create and preserve them.

The relationship between human mindset and the ethos of a civilization is reciprocal. On the one hand, there is very little that an individual can do by himself without cultural support. On the other hand, a culture will vanish if not supported and propagated by its people. Unlike a solitary young animal, e.g. a rat, that has a good chance to survive if it is left isolated from its conspecifics, a human child in the same situation would have a different fate. The rat, relying on its built-in behavioral capabilities, will closely resemble its socially reared peers as an adult. But the child so abandoned, if it could survive at all, would develop without most of the traits characterizing his peers. Civilizations serve both as life-support and mind-support systems, and we become who we are as a function of our inherent potentials and the culture in which we are reared. Our argument is that because cultures are created, maintained and propagated by human beings, they will necessarily exhibit traits that characterize the mentality of the people who produced them.

**THE ECOLOGICAL AND ECONOMIC FOUNDATIONS OF CIVILIZATIONS.** Civilizations do not form in areas where a large population cannot be provisioned and accommodated, and where it is not possible to amass enough economic surplus to support a governing elite to manage the state’s internal and external affairs. The economic wealth of a civilization may come from different sources: surplus yield of the cultivated land (the agrarian type); profits from the production and bartering of goods (the commercial type); taxing or collecting tribute from subjugated people (the martial type); or some variable combination of these three. In fertile lands the principal source of economic surplus is the harvested crop and the domestic animals raised and slaughtered. The surplus available in agrarian civilizations, such as Egypt, depended on favorable climatic conditions, good managerial practices, and the productivity of those who tilled the land. The governing elite’s method to appropriate the available surplus came from claiming ownership to the cultivated land or the right to a portion of its yield as a form of taxation. Because producing an ample crop requires an unending cycle of repetitive hard labor, the strict enforcement of that unwelcome burden by the ruling class is an imperative. Hence, the social and political organization of agrarian civilizations tended to be autocratic, regimented and conservative, and social mobility was discouraged. The principal source of economic surplus in commercial civilizations, such as Crete and Greece, was the profitable exchange of goods produced by local artisans and/or transported from one site to another.

Commercial civilizations, by virtue of the mobility of the people engaged in trade, and the constant interaction with people of different cultural backgrounds, tend to be more egalitarian, contractual, democratic and progressive, coupled with considerable social mobility as great fortunes are quickly made and lost. Martial civilizations, such as the Mycenaean, whose elite derived its great wealth from conquest and piracy, the collection of tributes and the taxation of a subjugated population, tended to be dictatorial, brutal, and arbitrary.

**THE HISTORICAL VICISSITUDES OF CIVILIZATIONS.** The formation of a civilization may be aborted before it has a chance to acquire an ethos of its own, it may flourish for a short period and collapse with little trace, or it may endure for a long time but undergo profound modifications in its characteristics. Civilizations may decline or disappear due to a variety of external and/or internal causes. A civilization may collapse if climate change, such as loss of fresh water, turns the land unproductive. This may have been one of the causes of the dissolution of the Harappan civilization of the Indus valley. Or the soil may become exhausted or salinized; this may have been one of the causes of the decline of the Mesopotamian civilization. Not producing sufficient staples to feed the population, and increasing difficulty in obtaining surplus, makes the starving people abandon the land and demoralizes the impoverished governing elite. The same may happen to a mercantile civilization if the raw materials of their crafts become scarce or if the goods produced and traded are no longer in demand. This may have happened to the Minoan civilization of Crete. A martial civilization will collapse if it is defeated by an enemy wielding more powerful weapons and using better strategies. This was factor in the disintegration of the Egyptian and Mesopotamian archaic civilizations that were conquered first by the Macedonian Greeks and later by the Romans.

**THE MENTAL ATTITUDE OF PEOPLE.** The study of human history suggests that civilizations endured and flourished when its inhabitants were inspired to work hard and battle adversities, and civilizations declined or collapsed when that inspiration slackened or disappeared as a driving force. The defeat of the mighty Persian empire by the smaller force of Alexander the Great, and the spread of Hellenistic culture to the Levant and Egypt, had a lot to do with the anomie of the oppressed people in those Archaic civilizations, and the exuberance of the freed people in the Classical civilizations. The same happened again when inspired Roman warriors took control of the lands along and beyond the Mediterranean coast looking not only for spoil but also to spread their idea of high culture. But then the Roman empire collapsed when the people's greed continued but their will to work and fight vanished, and the more highly motivated barbarians defeated the Romans. And as some civilizations fell and others arose, it was not only power and prosperity that shifted from one region to another, the carriers of the successive civilizations also developed and spread new ways of life and new ideologies. The Greeks and Romans developed a different idea of the good society than did the Egyptians and Persians, and they sought to spread that idea to the lands they occupied. But, again, when the Hellenistic civilization they created collapsed, new civilizations emerged with new ideas and ideals, as represented by Christianity in Europe and Islam in Asia and Africa. Our purpose here is to explore the role of mental forces—people's aspirations and endeavors, their mindset—in creating the distinctive ethos of different civilizations.

*The Role of Human Mindset in the Distinctive Ethos of Civilizations.* In the preceding chapter we characterized the mindset of Upper Paleolithic nomadic hunters as affective/impulsive, and that of Neolithic sedentary farmers as mnemonic/compulsive (Table 9-2). The *affective/impulsive* mentality of nomadic big-game hunters disposed them to be adventurous and aggressive, heroic and savage, and that mindset colored the tenor of life in Upper Paleolithic tribal societies. We do not know to what extent the affective/impulsive mental disposition in a hunting-based society was an acquired cultural trait—the product of character training and indoctrination, or an innate disposition—the outcome of selective evolutionary forces that favored the propagation of individuals with an inborn aggressive temperament. It was probably a combination of the two. The *mnemonic/compulsive* mindset of sedentary farmers, in contrast, disposes them to be docile and submissive, cautious and disciplined, and that became the ideal of conduct and tenor of life in Neolithic village communities. We also met the chiefs of consolidated villages, who began using people as means to an end, heralding the growing role of an elite class with a *rational/calculating* mindset. Civilizations emerged as autocratic kings and high priests and their managers and engineers introduced new ideologies, novel production methods, greater division of labor and social stratification. These leaders of men used a variety of means, coercive and inspirational, to induce peasants, artisans and merchants to work harder and more effectively to produce an economic surplus. That surplus became the property of the rulers that no longer engaged in manual labor.

**THE CHARACTERISTICS OF EARLY ARCHAIC CIVILIZATIONS.** The establishment and growth of this new social order had multiple consequences. First, the division of labor and occupational diversification led to technological advances that increased the quantity and quality of produced goods. Second, governmental rule required record keeping, and the invention of writing promoted the commercial exchange of goods and advances in education. Third, prosperity allowed the building of magnificent edifices and the development of the arts. These were positive outcomes, viewed from the perspective of growth in rationalism and potential improvements in the standard of living. However, there were also negative outcomes. The cities attracted a heterogeneous assortment of people from the outside. Some were hungry and poor peasants seeking greater opportunities than what was available in the villages, and they were willing to assume a subservient position in the social order. Others came with ill intentions, as slackers and thieves, raiders and plunderers. As populations grew, the gap between the prosperity of the elite and the destitution of the populace kept widening. Members of the upper classes, driven by the basic human affects of greed and self-aggrandizement, came to live in great luxury. They were attended by servants in palaces filled with luxuries, washed and perfumed themselves, dressed in finery, and acquired an education unavailable to the poor. Members of the lower classes lived in tenements in squalor, owned little or no property, and often went hungry. The rich came to look down on the poor, and the poor became resentful of those who had it so much better. To maintain social order, it became necessary to establish a dictatorial order headed by an autocrat and his court, and ideologically supported by a priestly class. These priests propagated the myth that the existing social order was the mandate of the gods who owned and watched over the city, and that the king, a descendant of the gods or himself a god, acted on behalf of the divinities. To turn this fiction into a conviction, the king and priests erected awe-inspiring monumental temples where, performing various rituals and ceremonies, they communicated with the gods to assure the welfare and

safety of the state. The bulk of the indoctrinated and credulous population came to believe in this mythology and considered their religious and moral duty was to serve the gods and the king. The outcomes in archaic civilizations were both good and bad. On the one hand, there were great advances in economic production and technical development. On the other hand, the institutional promotion of irrational mythologies discouraged any rational attempt to understand what transpires in the real world.

*Progressive Rational Evolution in the Technical Domains of Civilizations.* There has been a nearly linear evolution in the realm of technology since the birth of civilizations to our times, a steady improvement in using environmental resources to produce more goods of better quality. Archaic civilizations harnessed the raw muscle power of human beings, oxen, and asses, and later horses, to pull simple plows to till the land and carts on wheels to transport goods. The Classical period was associated with improved technologies to mine and smelt ores, and produce high quality bronze and iron tools, weapons and utensils. Medieval times introduced improved iron plows to cultivate hard soils, and machines with transmission gears driven by wind or water power to grind cereal, turn a lathe, and so forth. Modern times increased the use of physical and chemical sources of energy, beginning with the burning of wood and coal to produce steam, and later fossil fuels and other energy resources to produce electric power to drive a great variety of instruments with ever improved designs. Today we see the invention of electronically controlled automated machines that produce standardized, high quality goods cheaply and in immense quantities from new alloys and synthetic materials. These goods are distributed world wide by trucks, trains, ships and airplanes. We can attribute this steady technological evolution to the growth in the accumulated knowledge and the reasoning power of *Homo sapiens*, aided in particular by the invention of printing, the spread of literacy, and the lengthening of the formal education of the young in ever increasing numbers. However, we have not witnessed such a steady evolution in the ideational domains.

*The Tortuous Course of Rational Evolution in the Ideational Domains of Civilization.* Technological evolution was virtually a linear event in human history because the adoption of rational innovations is promoted by an evolutionary selection mechanism. Civilizations that have used more effective tools and weapons, and became more prosperous and more powerful, regularly subdued and in some cases eliminated civilizations that were economically and technically less advanced. However, evolutionary advancement has not been a linear event in the domain of social and political organization because irrational ideologies often served civilizations satisfactorily, and their leaders resisted the promotion of rational ideologies. It was the entrenchment of an irrational mnemonic ideology—the traditional obligation of all to serve the fictitious divine order and accept the social and economic division between the poor and the rich—that maintained the prosperity and stability of pharaonic Egypt for millennia. Conceivably, a more equitable distribution of wealth, the sharing of political power with a larger segment of the population, and the adoption of a more progressive ideology might have made Egypt stronger and survive longer. But the existing social order served the governing elite well and they resisted all attempts to abandon mythological thinking and adopt a more rational scientific worldview.

The Egyptians and Babylonians did make scientific advances. To aid tax collectors to determine the boundaries and size of cultivated fields to calculate yield, they developed geometry. Geometry also allowed engineers to design buildings, shape stones, and assemble them with considerable accuracy. Arithmetic developed to aid merchants to measure and quantify goods, and treasurers to assess the state's revenues and expenditures. Archaic seafarers learned about the constellations of stars as an aid to navigation, and astronomers studied the movements of sun and moon to produce a calendar that kept pace with the passing of the seasons. But all this was practical knowledge, lacking a theoretical and logical framework. The kings, governors, generals and bureaucrats were not intellectuals interested in knowledge for its own sake but only for the sake of seeking practical solutions to daily problems. The priests who provided the ideology for these myth-based civilizations were outright opposed to rational interpretations of the natural world. They resisted the idea that the cosmos we live in is an orderly world obeying natural laws that man could come to understand because they were committed to the ideology of a chaotic mysterious world run by the whim or will of mysterious gods whose actions were beyond human comprehension. The ancient Greeks did develop a love for rational discourse, logic and the pursuit of knowledge, and used to a large extent the data collected by the Babylonians to develop a critical philosophy and a theoretical science. But once their civilization collapsed, new theocracies returned that promoted mysticism and rejected rationalism. Even though the Greeks had empirical evidence to support the idea that the earth was spherical and revolved around the sun, that was rejected during the Middle Ages when the Christian priests returned to the ancient myth that the earth is a flat disc and the sky "above" is the abode of God, the angels and the faithful, while the faithless will burn in hell "below." It was not until the rise of the humanism during the Renaissance and of naturalism during the Enlightenment that scientific advance resumed again.

But notwithstanding the great scientific discoveries made since the Renaissance and the Enlightenment, rationalism as an ideology has yet to be adopted by large segments of the human population. Mnemonically propagated animistic and mythological explanations are easier to comprehend and are more comforting than are rationally based scientific explanations of the world. The immense macrocosm revealed by astronomers and the infinitesimal microcosm discovered by nuclear physicists using complex instruments and difficult mathematical calculations is not only incomprehensible to most of us but present a universe that is indifferent to what we desire, hope and dream about. Science has helped many of us to live more comfortably, alleviate disease and suffering, and live longer than it was possible in the past. But it does not give us comfort when we are hurt, frustrated, humiliated, hungry, or sick. It does not tell us we will be rewarded for suffering with immortality and eternal bliss in heaven. Our affects—hunger, fear and anxiety, hate, love, despair and hope—have worked since time immemorial against our reason. And our mnemonics—fictions, fantasies, delusions, prejudices, superstitions and dogmas implanted into our minds, threats of burning in hell or the enjoyment of great happiness after we leave this world if only we keep our faith—retain a tenacious hold on the way many of us think and reason.

## 10.2. The History, and the Practical and Ideational Ethos and Mindset of the Archaic Civilizations of Mesopotamia and Egypt

**10.2.1. The Social, Economic and Political History of the Archaic Mesopotamian Civilization.** Neolithic cultures existed in Mesopotamia—the alluvial valley surrounding the Tigris and Euphrates rivers—dating to about 8.5 k.y.a. (Nissen, 1988; Wilkinson, 2000; Matthews, 2003). These have been identified, based on the absence of pottery and then their emergence with different styles, as the Umm Dabaghiyah, Hassuna, Halaf and Samarra cultures. The earliest of these cultures consisted of scattered villages engaged in subsistence farming, the inhabitants harvested wheat and barley as staples, and raised goats, sheep and pigs. Later cultures were associated with larger village settlements, some larger public buildings, and burial in cemeteries. The inhabitants, whose ethnic identity is unknown, used mainly stone tools. About 5.5 k.y.a., city-states with irrigation canals began to emerge and were associated with the distinctive pottery of the Ubaid culture, marking the beginning of the Chalcolithic (copper) period. The earliest city-states—Eridu, Ur, Uruk, Umma and Lagash—were built by the Sumerians in southern Mesopotamia (Fig. 10-2). These cities, ruled by kings and high priests in the name of their city-gods, were administrative and religious centers with large mansions and temples. Their wealth was mainly derived from the cultivation of lands made fertile by large-scale irrigation systems and the adoption of advanced techniques in the production

### NEAR EASTERN SITE OF THE MESOPOTAMIAN CIVILIZATION



**Fig. 10-2.** The Fertile Crescent, the home of the archaic Mesopotamian civilizations of Sumerians, Akkadians, Babylonians, and Assyrians. (Wikipedia. From Karte Mesopotamien.png)

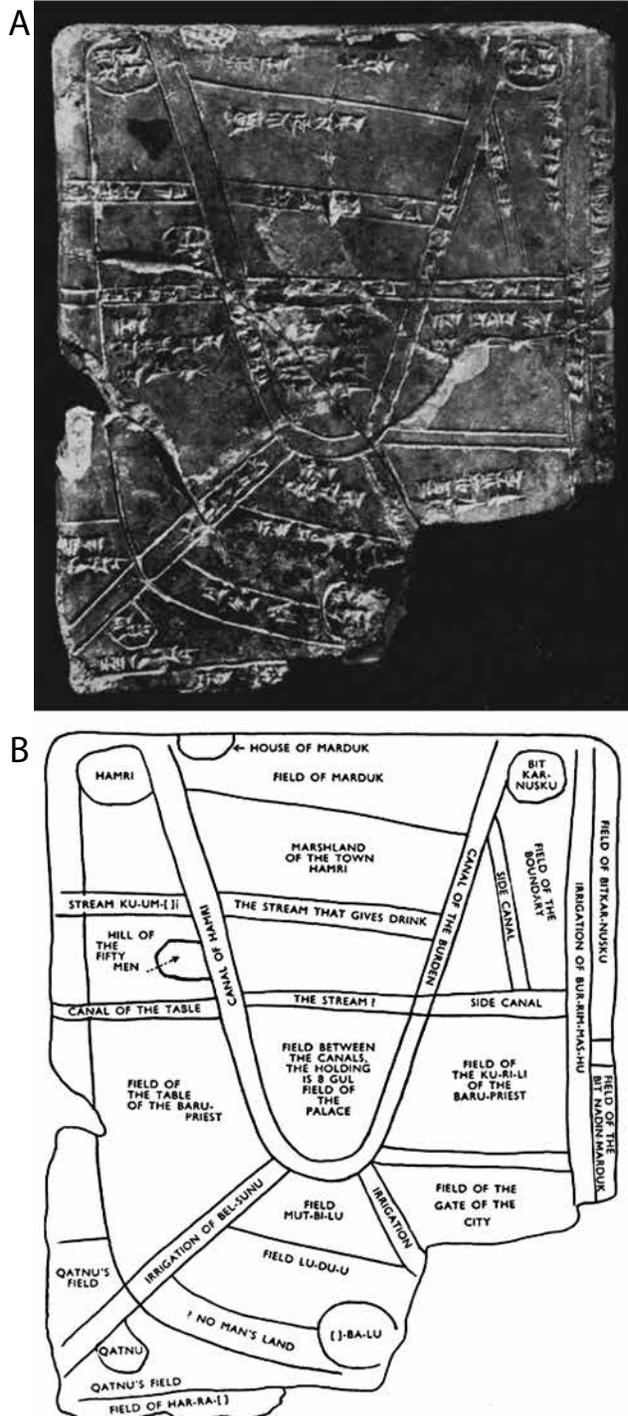
of material goods (Kramer, 1963; Oppenheim, 1964; Pollak, 1999; Matthews, 2003). The Chalcolithic period in the south was followed by the Bronze Age about 4.3 k.y.a., and in the north by the Iron Age about 3.0 k.y.a. The later ages were associated with improvements in the manufacture of tools, weapons, utensils, vehicles and luxury items.

From the outset, these city-states sought hegemony over each other and were plagued by endless wars, disputes over land boundaries and water utilization. That militancy and struggle for power came to characterize Mesopotamian civilization throughout its history. Early attempts to unify the states, such as the one by Gudea, who claimed to be the god of Lagash, did not endure. Sargon of Akkad was more successful who, by virtue of his military superiority, was able to unite southern Mesopotamia about 4.3 m.y.a. and extend his hegemony over northern lands. However, preserving the unity of this expanded multiethnic and multilingual empire proved very difficult, and the Akkadian dynasty fell after a few hundred years. In succession the Elamites, Paleo-Babylonians, Paleo-Assyrians, Neo-Babylonians and Neo-Assyrians established thriving kingdoms and empires with endlessly shifting boundaries and powers. This militant theocratic civilization endured with a relatively unchanged ideology until the Persian conquest in 539 BCE. When the Macedonians defeated the Persians in 333 BCE, the career of this archaic civilization came to an end.

*Rational Advances and Irrational Manifestations of the Mesopotamian Civilization.* Using wooden and stone tools, the early rulers of Sumerian city-states were able to drain marshes, dig irrigation canals, and build monumental edifices by organizing masses of people, relying basically on their raw muscle power. The production of agricultural surpluses promoted commerce and the invention of the wheel allowed the movement of goods in wagons along paved roads. And to keep records, the Sumerians invented a form of writing engraved in clay tablets. The introduction of metallurgy did not fundamentally change agricultural practices, but had profound political consequences as power shifted from one region to another due to the use of more effective new metallic weapons and the adoption of novel military strategies and tactics.

**AGRICULTURAL ADVANCES: IRRIGATION SYSTEMS.** There are two ways to produce a bountiful and reliable harvest in a fertile but rainless river valley: (a) dig a ditch to the depth of the river's normal water level and bring water to the cultivated plot along the river bank, or (b) construct an extensive irrigation system that carries annual flood waters to areas considerably distant from the river and store that water after the flood has subsided. The former can be accomplished by a few cooperating members of a small village community; the latter requires an engineering plan and a large labor force. Mesopotamia had little rainfall but the Tigris and Euphrates brought water from the melting snows of the northern mountains every spring. However, these floods came too late to water the spring crops, and too early for the winter crops, and some years there were catastrophic floods that destroyed the crops, while in other years the floods failed to materialize. The ancient Mesopotamians faced a challenge that required inventiveness and the cooperation of a large number of people. This was accomplished as powerful rulers of city-states organized masses of people to build irrigation and drainage systems consisting of deep canals, weirs and reservoirs that carried and stored water away from the rivers (Wittfogel 1956; Payne, 1959; Crawford, 2004). An ancient clay record of properties

## MESOPOTAMIAN CUNEIFORM TABLET OF AN IRRIGATION SYSTEM



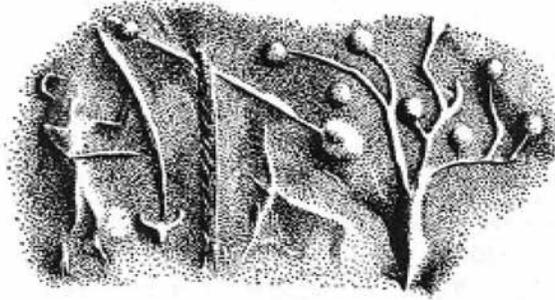
**Fig. 10-3.** Cuneiform tablet (A) and translation (B) of an irrigation system, and the ownership of plots of land, near Nippur, dated to about 1,300 BCE. (After Singer et al., 1954; from Google, lecture 9, Ancient Near East Cultures.pdf)

owned along these irrigation systems by the palace, priests and share croppers is illustrated in Fig. 10-3. In addition to the immense scope of these undertakings, the irrigation systems required constant repairs because of the small incline of the alluvial plain. Silting, water logging and salinization were additional serious problems. The reservoirs were also used for carrying drinking water and for watering orchards, using the pivoted *shaduf* with a bucket (Fig. 10-4).

**ECONOMIC ADVANCES: THE USE OF THE PLOW AND THE WHEEL.** The small plots cultivated by Neolithic subsistence farmers were worked by hand with digging sticks and hoes. To increase the yield of large irrigated fields, the Mesopotamians used a plow pulled by oxen. The earliest plows, known as scratch plows or ards, were simple wooden devices consisting of an upright pole held by hand, to which was attached an angled board to cut a furrow and a long pole with a bar attached to the oxen (Fig. 10-5A). An improved version of the ard had two upright poles as handles. In time, the Mesopotamians invented the seeder plow (Fig. 10-5B). This plow had a vertical funnel attached to the plow which allowed simultaneously to produce the furrow and drop seed into it as the plow moved forward.

In addition to using wheels for making pottery, perhaps as early as 5.5 k.y.a., the Sumerian and Akkadians used wheels for the transportation of goods, weapons, and people. The earliest wagon wheels were round discs made of planks and attached to an axle and were used either as two-wheeled carts or four-wheeled wagons pulled by donkeys (onagers) or oxen (Fig. 10-6A). The

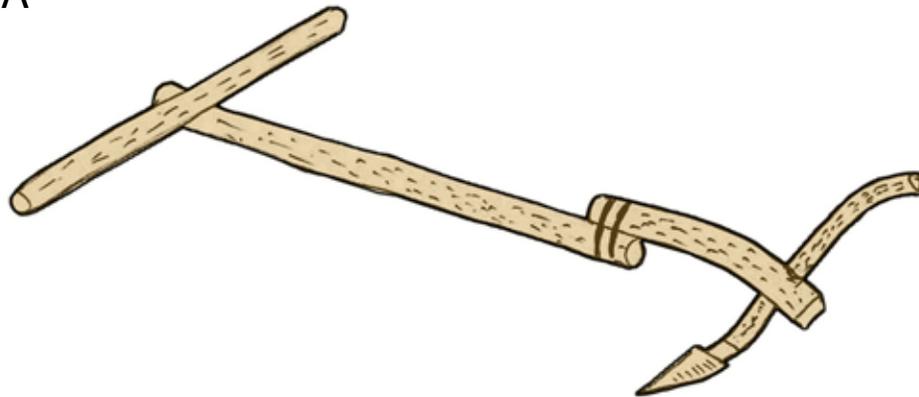
## EARLY AKKADIAN SHADUF



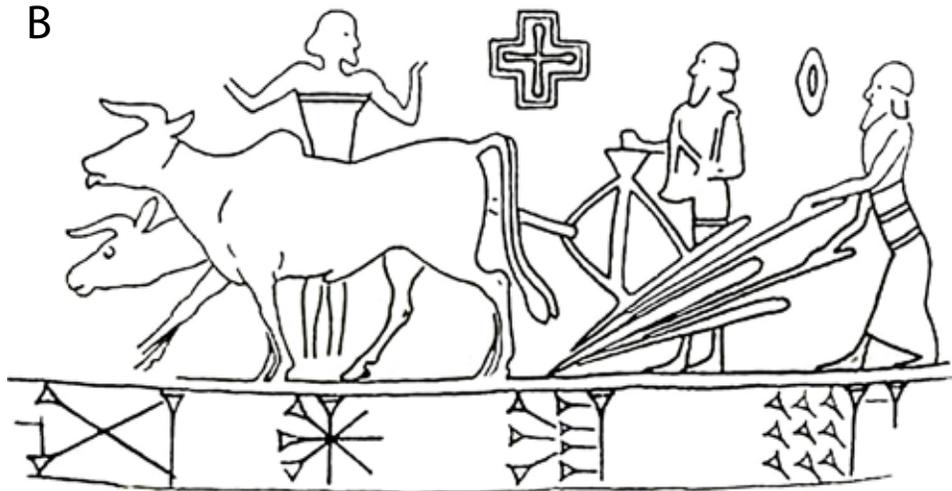
**Fig. 10-4.** An early shaduf, from the Akkadian period. (After Singer et al., 1954; from Google, lecture 9, Ancient Near East Cultures.pdf)

## MESOPOTAMIAN ARD AND SEEDER PLOWS

A



B

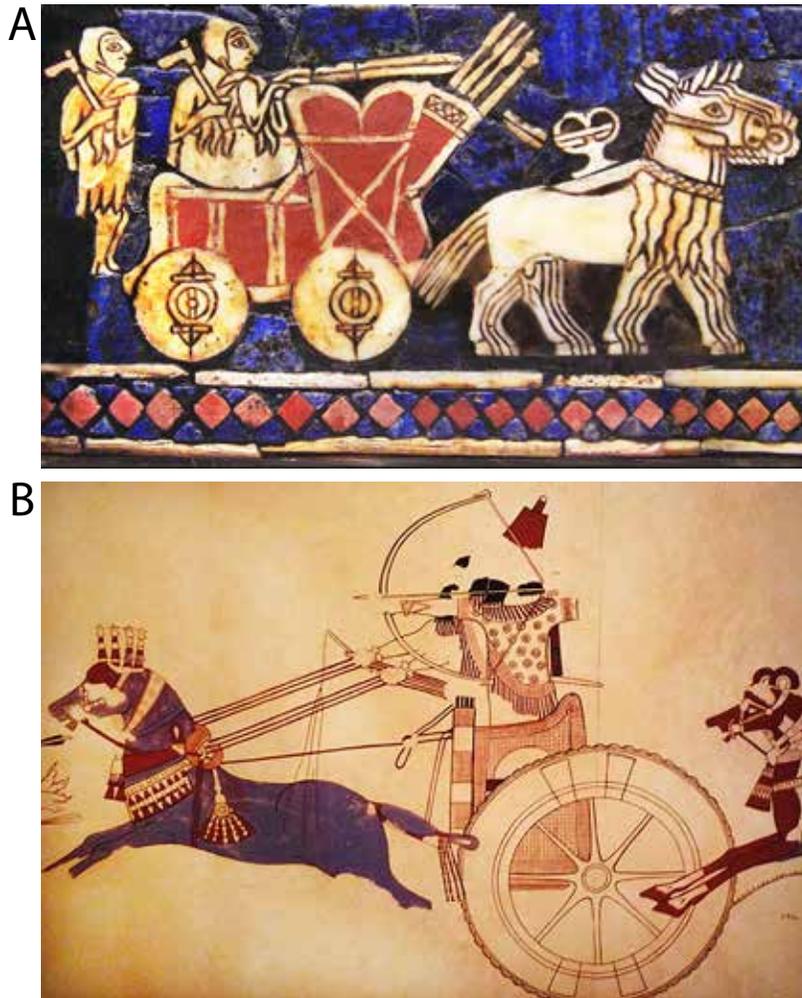


**Fig. 10-5.** A. Design of a simple plow, the ard. B. Mesopotamian seeder plow. (B, from cbgiraffe.weebly.com)

chariots produced later by the Babylonians and Assyrians for military purposes and recreation were lighter, with wheels made of wooden or metal spokes and rims, pulled by horses (Fig. 10-6B). These technical achievements—irrigation, the plow, and the wheel—greatly contributed to advance the Mesopotamian economy from subsistence farming to large-scale agricultural production. The agricultural surplus produced supported a new elite social class that no longer did manual labor but served as kings, priests and administrators. In time, other social and occupational groups emerged: engineers, land surveyors, tax collectors and scribes; potters, weavers, tanners, cobblers, carpenters, smiths, boat wrights, jewelers, educators, astronomers, sculptors, and painters.

**THE INVENTION OF METALLURGY.** The earliest metal used by man was gold (Tylecote, 1992). Gold nuggets are scattered in small quantities in some riverbeds and solid rock, and it is easily detected because of its glitter. Because it is malleable, gold can be hammered into any desirable

## SUMERIAN WAGON AND ASSYRIAN CHARIOT WITH WHEELS



**Fig. 10-6.** A. Early Sumerian heavy military wagon with solid wheels. B. Later Assyrian light chariot with spoke wheels. (A, from crystalinon.com. B, from the Louvre, photo by Karen Radner)

shape to produce cups, utensils, jewels and decorations. However, gold is too soft to be used as a tool or weapon. Copper is a somewhat harder metal and it, too, may be found as nuggets or by melting ores like cuprite, azurite or malachite. Like gold, copper can be hammered into a desired shape or smelted and poured into a mold. Copper was used to produce helmets in predynastic Mesopotamia. It was not until it was discovered that the alloy of copper and tin produces hard bronze, that a new era developed in the manufacture of tools, utensils and weapons. Bronze artifacts first appear in Mesopotamia and Egypt about 5.0 k.y.a., the Indus valley about 4.5 k.y.a., and China about 4.0 k.y.a. (Roberts, 2009). Copper was mined by 4.0 k.y.a in large quantities in the Taurus mountains in southern Turkey, the Sinai desert and in Cyprus, and it was widely traded to meet the increasing demand.

A metal that gradually became the favored raw material of tools and weapons was iron (Waldbaum, 1978). Occasional iron beads and rings, probably of meteoric origin, have been dated to about 4.5 k.y.a. The large scale mining of iron ores and their smelting was begun by the Hittites about 3.5 k.y.a., who hammered pig iron into various shapes. By 3.3 k.y.a., the use of iron spread to Mesopotamia and Egypt, by 3.2 k.y.a. to India, by 2.8 k.y.a. to Europe, and by 2.6 k.y.a. to China. Smelting of oxidized iron, which requires specially designed furnaces, was developed later. It was still later that it was discovered that pig iron could be cast at high temperatures into wrought iron or turned into steel to produce tools and weapons with sharp and enduring edges. Henceforth, iron and steel goods were produced by smiths throughout the Old World in large quantities and in an endless variety of forms: as knives, spoons, bowls, and saucepans for household use; as hammers, chisels, saws, pincers, chains, gears and nails for craftsmen; as axes, scythes, shovels, plows and cartwheels for farmers; and as arrow heads, clubs, daggers, swords, spears, shields, helmets, and armor for soldiers. Indeed, the rise of the Iron Age contributed to the downfall of the early Bronze Age civilizations because men with swords and lances, particularly if riding on swift horses, could effectively raid their settlements. The succession in the use of copper, bronze and iron in the production of weapons had a profound effect on the shifting of military power in Mesopotamia. The Neo-Assyrians, who built a powerful empire, were the first to use iron in spears and swords, against which bronze shields proved useless.

**TECHNOLOGY AND WARFARE.** From its beginning until its demise, Mesopotamian civilization was a militant one, professional city-state armies fighting each other endlessly in brutal wars. An early cuneiform tablet records how Enmebaragesi, the king of Kish in Sumer, defeated the northern Elamites and returned victoriously with spoils. The “Stele of Vultures” records in cuneiform script and graphically the victory of Eannatum, the king of Lagash, leading a phalanx of soldiers into battle against Umma (Fig. 10-7A). The upper part of the stele shows a phalanx of helmeted soldiers, led by the king, carrying square shields to protect the flank of the troop, trampling over the prostrate body of dead enemies. A lower fragment shows the victorious soldiers, four abreast, marching behind the king riding in his chariot. Another fragment with a cuneiform text shows birds of prey carrying the heads and body parts of the slayed enemy (Fig. 10-7B). Another record of Sumerian warfare is the “Standard of Ur,” a mosaic tablet discovered and reconstructed by Woolley (1956), showing scenes of a marching army. A portion of one of the panels (Fig. 10-8) shows soldiers riding in heavy chariots with the onagers trampling over the body of slain enemies.

## THE SUMERIAN "STELE OF VULTURES"



**Fig. 10-7.** Fragments of the Stele of Vultures. **A.** The king of Lagash leading his soldiers trampling over the dead bodies of the soldiers of Umma. **B.** Vultures carrying the dismembered body parts of the enemy. (Wikipedia, Stele of Vultures.jpg)

## THE SUMERIAN “STANDARD OF UR”



**Fig. 10-8.** Part of the Standard of Ur. Military wagons driven over slain enemy bodies. (Wikipedia, Standard of Ur.jpg)

Three thousand years of endless warfare led to a series of innovations in military technology and strategy. About 4.5 k.y.a., the Sumerian and Akkadian kings, and later the Babylonians and Assyrians, abandoned their role as high priests and became military commanders. They had at their disposal a well trained and equipped professional army. The soldiers wore metal helmets, held a metal shield in one hand, and a spear, arrow, sling or some other powerful weapon in the other hand. A battle may have begun with chariots rushing into an enemy column creating chaos, followed by the charge of a cavalry, and culminating with the onrush of foot soldiers engaging in a savage hand-to-hand combat. The Assyrians were also masters of siege warfare, using iron-headed battering rams to destroy defensive stone walls (Fig. 10-9). What might have motivated the rulers to spend so much of the state's resources, and so much effort and energy, to prepare for and embark on their military expeditions? What motivated rank-and-file soldiers to go into battle and sacrifice their lives? It is likely that city-states had genuine grievances over competing for dwindling water supplies caused by the building of local irrigation systems upstream. Other disputes arose over land boundaries and property rights. Conflicts may also have been generated by access to trade routes and sources of needed raw materials. Even when city-states were unified into large kingdoms and empires, the wars did not end. In fact, wars became more destructive as rulers with more resources now fought each other with better weapons and larger armies. The brutality of the armies, if anything intensified (Belibtreu, 1991). Assyrian pictures of brutality were perhaps used to intimidate the people in conquered lands; pictures advertised the brutality of the soldiers and the torture methods used against the enemy (Fig. 10-10A). Prisoners were beheaded and their heads were displayed as trophies (Fig. 10-10B). Other prisoners were chained and marched off to be sold as slaves (Fig. 10-10C).

*Mesopotamian Advances in the Ideational Domain.* The Mesopotamians may be credited with several rational advances. They created a complex logographic writing system, carried out arithmetic and geometric calculations, and kept accurate records of the movement of the sun, moon and planets. However, their arithmetic calculations served only practical ends;

## ASSYRIAN BATTERING RAM



Fig. 10-9. The Assyrian king, Tiglath-Pileser II, besieging a town, using battering rams.

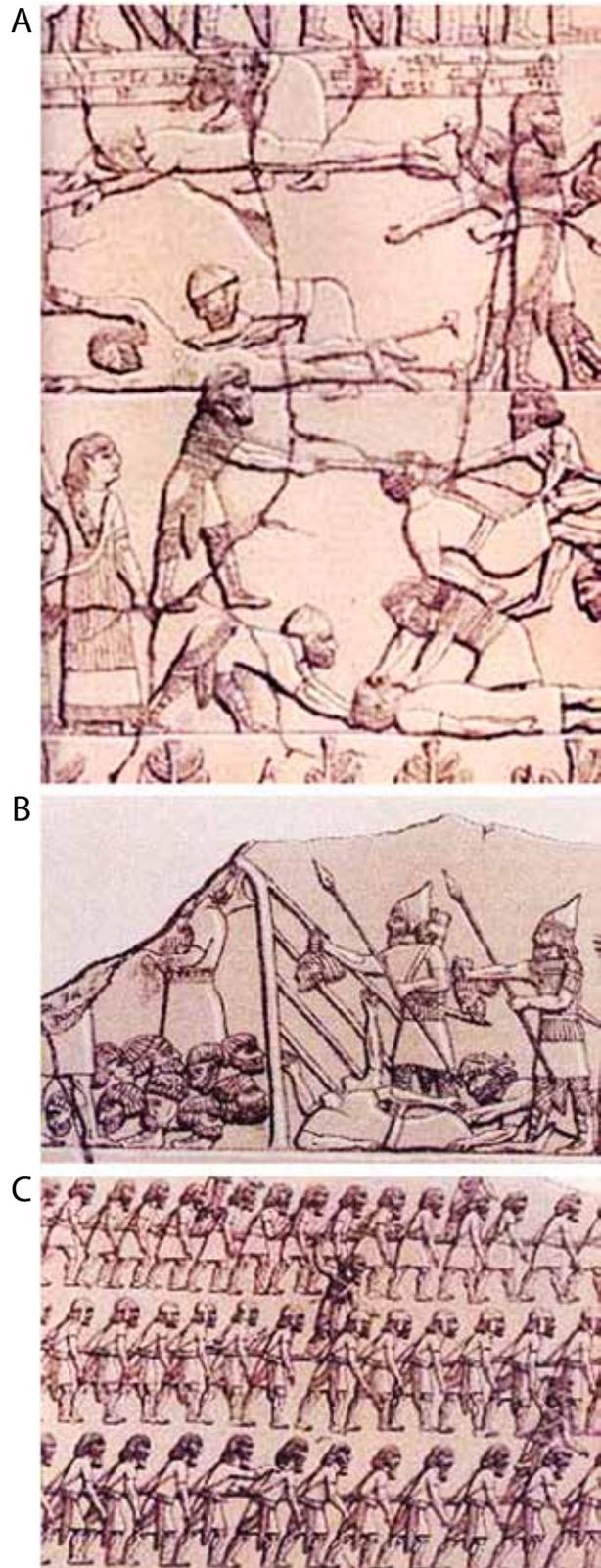
they failed to develop a logic-based mathematics. Their observations of seasonal changes in constellations of the stars were used to produce a calendar, but they failed to produce a realistic astronomical theory. Instead, their observations of the stars was turned into a pseudoscience (astrology) that was used to interpret and predict earthly affairs. The Mesopotamians developed a literature but that did not serve to enlighten people but only to promote their religious and militant social order.

**THE INVENTION OF WRITING.** The invention of writing, a major landmark in cultural and mental evolution, was closely associated with the establishment of formal governments, the development of large-scale agricultural production, and the growth of commerce. Managers of state warehouses had to record their inventories, and merchants had to record their business transactions. Kings and emperors had to broadcast their edicts and laws, and brag about their military exploits. Clerics sought to preserve their traditional creed by recording

ancient prayers, hymns and legends. Without exception, all cultures that advanced from rural communities to urban societies have evolved a script (Schmandt-Besserat, 1992; Houston, 2004). Some of the writing systems developed independently as indigenous inventions, others were modifications of previous scripts. The cuneiform symbols of Mesopotamia, the hieroglyphics of Egypt, the characters of the Chinese, the Mayan inscriptions of Central America, and the *quipu* system of the Incas were independent inventions. Hebrew, Greek, Latin, and several other phonetic scripts widely used today were derived from an ancient phonetic alphabet that was invented by the Phoenicians.

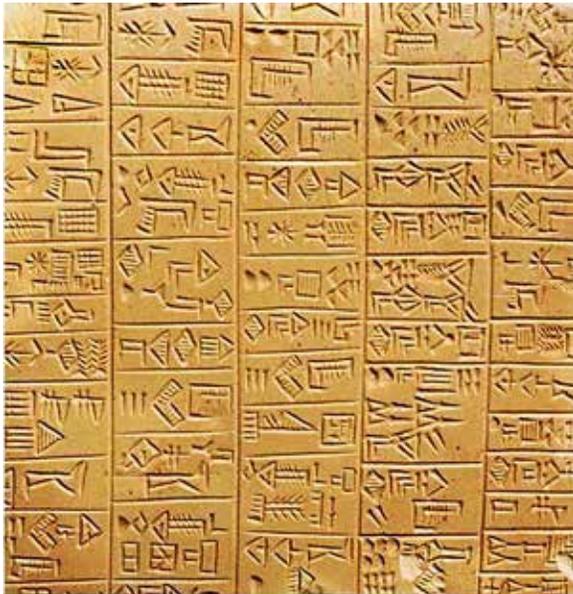
The first writing system was developed by the Sumerians about 5.2 k.y.a. (Glassner, 2003). It was called cuneiform because wedge-shaped symbols were engraved in clay with a stylus. Centuries earlier, Sumerian merchants used pictograms (schematic images) pressed into wet clay to record the number and kind of goods they bought or sold, which turned into enduring records once they became dry and hardened. In those pictograms, the schematic picture of a cow referred to a “cow” as an idea, and four lines next to it, implied “four cows.” However, in order to turn writing into a more versatile medium of information transfer and preservation, it was also necessary to

### ASSYRIANS ADVERTISING THEIR BRUTALITY



→  
**Fig. 10-10.** Assyrian soldiers torturing the enemy (A), cutting their heads off as trophies (B), and overseers whipping marching prisoners chained together (C). (From Belibtreu, 1991)

## EARLY SUMERIAN CUNEIFORM TABLET



**Fig. 10-11.** Early Sumerian cuneiform tablet, dated to about 2,600 BCE. (Wikipedia, Sumerian 26<sup>th</sup> c Adab.jpg)

create symbols for relational and abstract ideas that cannot be depicted. To that end, the pictograms were replaced by combinations of wedge-shaped lines and figures that were symbols of an increasing variety of objects. There were also ideogram symbols that stood for abstract ideas, and logogram symbols that stood for words used in daily discourse (Fig. 10-11). Much of that was based on the rebus principle. To illustrate that in English, we can use the pictures of a “bee” and a “leaf” to communicate the idea of “belief.” With some modification the Sumerian cuneiform script was officially adopted by the rulers of the Akkadian, Babylonian, and Assyrian empires. Thousands of cuneiform tablets have been recovered and deciphered in the 19th and early 20th centuries. They contain business contracts and accounts, correspondence between

rulers, prayers and hymns, mathematical tables and exercises, astronomical records, literary works, and legal documents.

**LITERATURE AND HISTORIOGRAPHY.** A revealing aspect of Mesopotamian literature was the conservation of Sumerian as the literary language throughout the millennial history of this civilization. To aid the Semitic-speaking Akkadians, Babylonians, and Assyrians to understand the ancient Sumerian texts, bilingual cuneiform tablets were accompanied by lexicons and commentaries (Fiero, 1965). Large collections of these clay tablets were housed in palace and temple archives and school libraries. In addition to recording commercial and diplomatic transactions, these tablets contain characterizations of the powers of the mighty gods; exaltation of the ruling kings with accounts of his power, wisdom and victories; prayers and hymns to the gods and descriptions of magic practices and omens. In addition, there are several extant texts of long epics of high literary quality. One of these, the Sumerian *Epic of Gilgamesh*, perhaps the oldest surviving literary work, describes the trials and tribulations of a king by that name, part god and part man. As the mighty king of Uruk, he kills men and rapes women but is dissatisfied with his life. Upon meeting a wild man of the forest who, by a magic act, becomes civilized, and defeats him in a fight, the two embark on an adventure to learn about the world and the gods, and search for immortality. After various fantastic adventures with monsters, wild beasts and a god, the king’s companion dies. Gilgamesh moves on, and after further adventures he finds the plant that would make him immortal. But he fails a test, loses the plant, and returns home and dies. Another epic, the Babylonian *Enuma Elish*, is the fantastic story about the civil war among the gods and how Marduk, the patron god of Babylon, becomes the chief god and creates the world. “At the beginning” there was the god Apsu, representing fresh water, and Tiamat, the goddess representing chaos. Apsu is killed, his son Eu becomes

the chief god and with his consort Damkina, he has a son, Marduk. All sorts of battles ensue among the different gods and monsters, and Marduk, the new chief god, eventually becomes victorious and creates the sky, the sun, the moon, the stars, the earth, and mankind. Marduk was a Babylonian and Assyrian god, and this story served the political ambitions of kings to justify their hegemony over much of Mesopotamia.

**LAW AND JUSTICE.** There are Sumerian cuneiform tablets that contain edicts and laws issued by different kings. The first comprehensive compilation of civil and criminal laws known to us is the Code of Hammurabi, king of Babylon, dated to about 1,750 BCE (Johns, 1904; Driver and Miles, 2007). Hammurabi claimed to have received these laws from the god Marduk and had 282 of them engraved in clay tablets. They were also preserved in a diorite stele. The Code of Hammurabi is a good source of information not only about the principles of Mesopotamian justice but also about prevailing social conditions. A few of the laws appear reasonable. For instance, one civil law states that if a lazy farmer fails to keep his dam in good condition and the dam breaks and floods the property of his neighbors, he shall compensate them for the loss or else his property shall be divided among them. Others appear to be highly discriminatory, punitive or outright barbaric. One law states that if a wine seller shortchanges a paying customer, he shall be thrown into the water; if he drowns, he is assumed to have received deserved justice. If a noble steals an ox or sheep from a temple, he shall pay thirtyfold but if he is a commoner and cannot pay, he should be put to death. If a man knocks out the eye of a noble, his eyes should be knocked out but if he knocks out the eye of a commoner, he has to pay the victim one mina of silver. If a surgeon removes a noble's cataract with a bronze lancet and cures him, he is entitled to ten shekels of silver; if he operates on a slave, the owner shall pay two shekels. If the surgeon operated on the noble and he died, his hands shall be cut off; if he has done that to a slave, he shall render the owner another slave. If a slave says to his master, "You are not my master," his master can cut off his ears. If a brander removes the mark on a slave without his owners consent, his hands shall be cut off; if a man helps a slave escape, he shall be put to death. Maintenance of the hierarchical social order was evidently far more important than the right of the individual: a noble had different rights than a commoner, and a slave had no human rights at all.

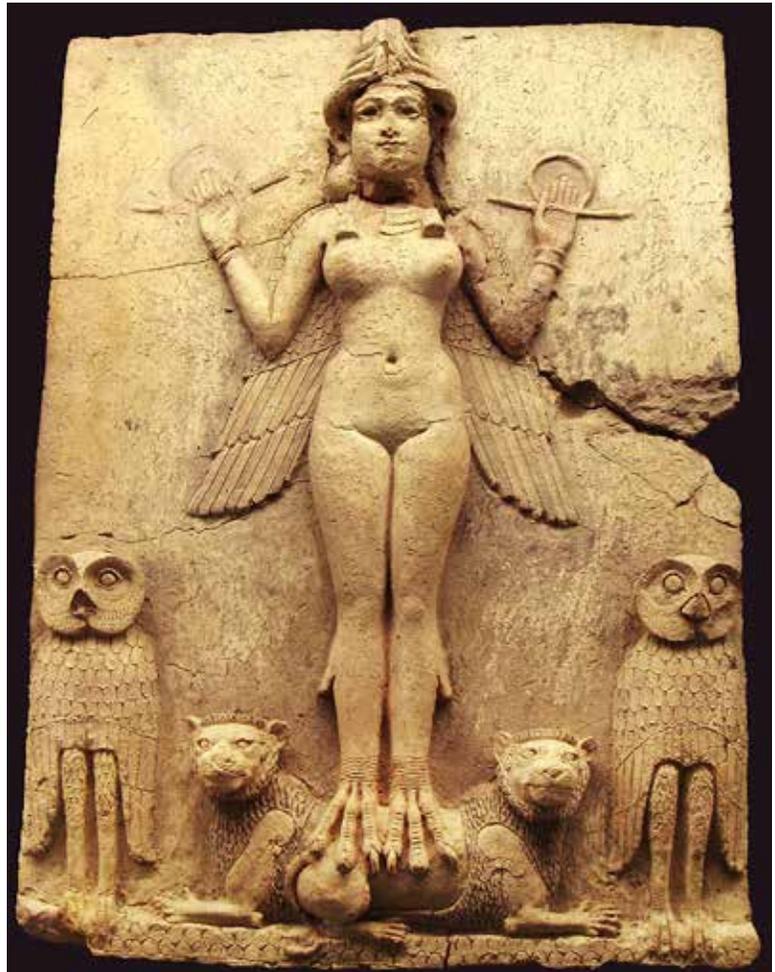
**MATHEMATICS AND ASTRONOMY.** While a high proportion of the Mesopotamian cuneiform tablets record business transactions, some of them are pre-calculated tables designed for land surveyors and engineers to deal with practical problems. A few of them are mathematical exercises designed for students, such as how to calculate fractions and solve equations (Neugebauer, 1969). In many of their commercial dealings, the Babylonians used a decimal (base 10) counting system. However, professionals preferred the cumbersome sexagesimal (base 60) system, dividing the hour into 60 minutes and the minute into 60 seconds, and the circle into 360 degrees and 60 arc minutes. This legacy that has endured to our day. So did the 7-day week, as the Babylonians divided the lunar month of 28 days into four quarters and celebrated the 7th, 14th, 21st and 28th as a holy day. As good observers and meticulous record keepers, the Babylonians could predict eclipses of the moon and the sun, knew that Venus, Mercury, Mars, Saturn and Jupiter were planets, and recorded the periodicity of their movements. However, their interest in the movements of the heavenly bodies was not to uncover the laws of nature but the esoteric enterprise of divination; they were astrologers not

astronomers. The Babylonians identified the sun with the god Shamash; the moon with Sin; Jupiter with Marduk; Venus with the goddess Ishtar, and so forth. Earthly events were presumed to be dictated by the gods and observation of the movements and constellations of heavenly bodies, their godly embodiments, was believed to provide revelations and messages about their intentions. A set of tablets, known as *Enuma Anu Enlil*, lists 7000 celestial omens, based partly on past records of a coincidence between earthly events (floods, droughts, pestilence, etc.) and the constellation of the stars.

**CRAFT, ART AND ARCHITECTURE.** Before establishing urban centers, the Sumerians produced simple, unpainted clayware for daily use as well as high quality painted and baked vases, bowls and urns of a distinctive style as luxury items. These products were distributed by traders along the Mediterranean coast and as far on land as Anatolia. The early Sumerians also produced jewelry made of copper, gold, silver and precious stones. By the Dynastic Period, Sumerian artists also produced cylinder seals, high quality wares made of wood and ivory, some inlaid with shells or encased in silver and gold (Woolley, 1956; Saggs, 1988). Among the products of skilled Mesopotamian artisans were well-crafted chairs, tables and beds; vases made of stone and glazed pottery; fine cloth, embroideries and rugs woven of wool; and utensils and swords made of bronze; and jewelry made of copper, silver and gold. They also produced terra cotta bas reliefs and stone and bronze statues of gods, goddesses, kings and dignitaries. Music must also have been appreciated, as they possessed such instruments as pipes and drums, the lute and the harp. With regard to architecture, because stone was scarce, the Sumerians used mainly brick, adobe or sunbaked, to erect large edifices—ziggurats, temples and palaces—with facings of fired brick, some glazed in different colors. One of the earliest ziggurats was that in Ur, built by the Sumerian king Ur-Nammu about 2,100 BCE. As many as 30 ziggurats have been identified in Iraq and Iran; the last built about 600 BCE. Most of the Mesopotamian buildings did not last well and were periodically razed and new buildings were erected on top of them. This led to the formation of mounds in the plains of Mesopotamia, known as tells. The kings of late Babylonian and Assyrian empires also erected stone buildings with columns and plastered the walls of their palaces and temples with glazed brick and terracotta slabs and ceramic frescoes.

Commissioned by kings who ruled by divine right, the principal purpose of Mesopotamian art was to promote the political and military enterprises of the kings and the mythology that supported their ambitions. In laudatory inscriptions, the rulers identify their undertakings as the commands of the gods or portray themselves in hyperbole as mighty king of kings and the invincible rulers of the universe (Ataç, 2010). An early example of the veneration of mythic divinities is the “Queen of Night” (Fig. 10-12) a large terra cotta relief of a naked woman, perhaps Ishtar, the goddess of love, dated to about 1,720 BCE (Collon, 2005). With the headdress of a deity, the rod and ring of justice, spread wings, talons of a bird of prey, standing on the shoulders of two lionesses, and guarded by two owls, this fine artwork must have conveyed some mythic story known to contemporaries. Other sculptures, from a much later period, exalted an Assyrian king’s bravery, strength, and prowess as he kills a lion (Fig. 10-13).

### THE BABYLONIAN WINGED GODDESS OF LOVE



**Fig. 10-12.** Babylonian terra cotta relief of Ishtar, the goddess of love and fertility. (Wikipedia, Lilith Periodo de Isin Larsa y Babylonia.jpg)

### ASSYRIAN KING KILLING A LION



**Fig. 10-13.** Assyrian king, thrusting his sword through the belly of an injured lion. (Wikipedia, Loewenjagd-645-535 Niniveh.jpg)

**10.2.2. A Mindset Analysis of the Archaic Mesopotamian Civilization.** To transform scattered village subsistence economies into a large centralized city-state requires that the laboring class produces enough surplus to adequately provision the non-laboring ruling class. The Mesopotamian archaic civilizations achieved this by building extensive irrigation systems that greatly increased crop yields. Digging irrigation ditches is an arduous back-breaking task that requires many workers. What strategy did the ruling class use to accomplish the recruitment of these workers? A rational way might have been to distribute equally what the community cooperatively produced to maintain the city-state. Another way might have been to equip aggressive and savage armies with powerful military weapons to go on raids and capture able-bodied people and turn them into slaves. The archeological evidence suggests that the most likely strategy was that the ruling class developed an irrational ideology that it was the moral obligation of the laboring class to work hard for little reward. The formation of city-states was preceded by Neolithic settlements with small irrigation systems, presumably supervised by a village chief. That chief might have passed on his social status and wealth to his descendants and they, in turn, by virtue of their economic advantage could accumulate greater wealth by acquiring more land, employing the landless as laborers, and use the surpluses to barter and trade. While this is a likely scenario of how social stratification into a ruling class and a laboring class might have developed, the following question remains. Why did the bulk of the population accept their subordinate status and the heavy burden imposed on them by their masters? In small villages, the farmer was more or less an equal member of the community, and his crops belonged to himself and his family. Now, as a member of the city-state, he lost his freedom and had to part with much of what he produced as a tax. Those who owned no land became servants and had to be satisfied with whatever wages they got in exchange for their toil. To explain this fundamental social transformation, we have to invoke the operation of a new mindset that developed among the rulers and the ruled.

Archaic Mesopotamian societies made great strides in advancing rationalism in the practical domain by improving the use of ecological resources. However, they contributed little to the advancement of rationalism in the ideational domain; that is to better understand the real nature of the world. As we have described earlier in some detail, our thoughts and actions are guided not only by empirical reasoning, what we directly experience and logically deduce from them, but also by affective and mnemonic mental mechanisms. Many of the emotions—such as hunger and thirst, fear and anger, greed and lust, love and hate, envy and resentment—are egocentric and induce us to be selfish and take advantage of others. But there are other emotions that are allocentric. *Mnemmons* are early learned experiences that teach us about our world and our place in society. *Mnemmons* are implanted into our minds during childhood and greatly influence what we do throughout the rest of our lives. These early ideas and preconceptions guide us in what is right or wrong, proper or improper, true or false. The mindset analysis of the archaic Mesopotamian civilization suggests that the ruling class was able to sustain their power and status quo by creating a mnemonic belief system that justified their supremacy over the masses by promoting mythical ideas of their unique power.

**MESOPOTAMIAN RATIONAL ACCOMPLISHMENTS.** With the Tigris and the Euphrates flooding the rainless alluvial plains of Mesopotamia once every year, the opportunity existed to use rational means to expand land cultivation and increase the yield of the plots. That challenge was met

by the rational effort of enterprising leaders who designed irrigation systems and organized masses of people to dig canals, build dikes and reservoirs and store and distribute the flood waters to areas farther away from the river banks. To further enhance agricultural yield, the Mesopotamians used plows pulled by animals and wagons with wheels to transport the goods to far away markets for bartering. They also used geometry to make accurate measurements of land and productivity, invented a script to keep records of business transactions, and made astronomical observations to create an annual calendar and use it for the rational planning of daily and seasonal activities.

**THE PROMOTION OF AN IRRATIONAL MNEMONIC IDEOLOGY.** However, the overall tenor of Mesopotamian life was far from being rational because the hierarchic social and political order and the unequal distribution of the wealth of the state required the propagation of an irrational ideology. The discrepancy between the wealth of the few and the poverty of the many was justified by the propagation of the myth that the stratified social order was a divine design, that the rulers were the gods' agents, and to undergird that ideology, the rulers wasted immense economic resources to erect awe-inspiring edifices to house the imaginary gods and build sumptuous palaces to exalt the ruling class. The founders of the Mesopotamian city-states attributed their higher social status to a fictitious claim that they were descendants of powerful deities and could interact with them on behalf of ordinary people. Beginning in Predynastic times, Mesopotamian kings and nobles buried their dead in elaborate tombs accompanied by precious goods and built shrines and temples to honor their deities. Ancestor worship, belief in spirits and deities were also part of the cultural heritage of the commoners, hence the kings and high priests had to convince the commoners that the city-state deities were superior to theirs. The ruling elite was successful in that. While the esoteric deities and the myths surrounding them do not exist in the objective world, they were implanted into the minds of the people as *mnemons*: imagination- and indoctrination-based "visions" and "voices"; illusions and delusions; preconceptions and convictions; and a priori premises of thinking and reasoning. Brought up in a faith-based, religious culture, and surrounded by idols, shrines, and temples the average credulous person had no means to distinguish between fancy and fact, authentic evidence and claims by authorities, hence they uncritically assimilated the institutionally propagated mythology.

**MESOPOTAMIAN RELIGION AND MYTHOLOGY.** The details of Mesopotamian state-sponsored religion changed as political power shifted from Sumer to Akkad, and then back and forth between Babylonia and Assyria (Jacobsen, 1976; Bottéro, 2001). However, the polytheistic nature of Mesopotamian religion, and its sacrificial rather than devotional character did not change for millennia. In the early Sumerian period, each city was centered around a temple dedicated to its patron god or goddess. The temple dominated daily life, with priests conducting ceremonies and performing rituals, such as washing, anointing, dressing and feeding the statue of the divinity and offering sacrifices to it. Sumerian was retained to the end as the language of religion, even though the divinities changed with the shifting political dominance of different ethnic groups and kings. Among the chief Sumerian gods was An, the sky god; Ki, the goddess of the earth; Dumuzi, the fertility god and his consort, Inanna, the goddess of love; and Enlil, the god of storms. The Babylonians replaced Enlil with Marduk as the chief god, and Ishtar became the goddess of love. Ashur, a war god, became the Assyrian's chief deity. Most of

the gods were anthropomorphic, visualized as human-like. The gods feasted and got drunk, fought and copulated, some died but others were immortal. They were not characterized as compassionate or endowed with sublime moral qualities, and they were feared rather than adored, propitiated with sacrifices rather than praised and worshipped. Religious tablets describe which particular god one ought to turn to in times of trouble, what rituals one had to perform and sacrifices to make to appease them. Priests, or “seers,” also engaged in divination, such as examining the liver of the sacrificed animal to foretell the future. An extant clay model of a liver shows how its different features may be interpreted as “signs” or “omens.” For instance, two finger-shaped bumps were interpreted as omens of imminent anarchy.

The core beliefs of a Mesopotamian city-state mythology went something like the following. The rulers attributed their higher social status to the fictitious claim that they were descendants of gods and therefore had privileged access to powerful deities. The land they lived in was the property of the gods, not the people who lived there. The gods communicated with the people through the king and the priests, and only they could petition the gods for the safety and security of the city-state. The king came to be seen not as an usurper or a tyrant but as a demigod himself, not an ordinary mortal. The high officials acting on his behalf were not seen as brutes but as functionaries carrying out divine commands. To support these beliefs, the rulers wasted immense economic resources to erect awe-inspiring edifices honoring these imaginary gods. These included temples built on top of monumental ziggurats, as “Platforms Between Heaven and Earth,” where statues of the gods were displayed and where priests performed elaborate rituals and ceremonies to assure the god’s support. They also built sumptuous palaces for the king, his court, and his descendants, and royalty was buried in elaborate tombs. While there may have been some deception on the part of the rulers who created this mythology, we presume that in time most of the rulers themselves came to believe in the fantasy. Similarly, while some of the commoners may have initially resented their subordinate position, in time they came to accept their fate as a divinely ordained just system. It must be noted, however, that parallel to honoring the state gods as a political obligation, commoners also had their own gods and ancestors that they truly worshipped, as indicated by the ubiquitous amulets found in the remains of their houses and cemeteries.

**THE PROMOTION OF AN IRRATIONAL AFFECTIVE SAVAGERY.** Initially, the kings of the Sumerian city-states were high priests as well as secular rulers. In time, most of them became military commanders, spending much of their energy and the state’s resources in preparation for wars. As the city-states were consolidated, the empire-building Akkadians, Babylonians and Assyrians established well-equipped professional armies, consisting of tens of thousands of infantrymen, thousands of cavalymen and charioteers. On a regular basis, they fought pitched battles with neighboring states and sought to conquer distant lands. And, as we noted, they coupled this militancy with the utmost savagery—torturing their prisoners, cutting off their heads as trophies, killing women and children, burning their crops and villages, and razing cities. This was not the frenzied behavior of battling soldiers but a matter of policy, indicated by the fact that the kings left records of all this in engravings and sculpture.

Violence, as we described earlier, is part of our neuro-endocrinological endowment but we are also endowed with altruistic emotions. Hence the question, why were the Mesopotamians

so brutal? Moreover, we know that there were other archaic civilizations (and we will describe below the Egyptian civilization as an example) that pursued a far more peaceful policy. Why did the Mesopotamians promote savagery as a masculine virtue? We can invoke many causes. First, we know that from the outset, the small Sumerian city-states engaged in endless battles with one another. We assume that these started with conflicts over land boundaries and water rights, damages produced by broken dams and flooded lands, and disputes over wayward or stolen cattle. Fighting typically engenders more conflict; the victor demands tribute and the vanquished seeks revenge. Second, as powerful kings succeeded in uniting cities into larger states, conflicts arose between them about sovereignty over trade routes and access to sources of needed raw materials. Third, because Mesopotamia had a heterogeneous population with different backgrounds and languages—Semitic and non-Semitic—conflicts must also have arisen due to difficulties in communication. Fourth, Mesopotamia is an open plain surrounded by people not only with different cultural backgrounds but also different economic resources—coastal Levantines, grassland Anatolians, montane Iranians, Bedouins of the Arabian desert, and others. Those with less resources must have been drawn to wealthier lands with more resources. An arms race developed, and to finance larger and better equipped armies, ambitious kings attacked other states to obtain booty and tribute. They sought to expand the boundaries of their empires to increase their taxation-based revenue. Successful, kings began to rule a restless heterogeneous population. The military tasks expanded to not only defend distant borders but also to quell internal rebellions. Individuals with an aggressive mindset adopted savagery as a cultural norm, and fighting and oppression became a way of life.

We are endowed with affects that dispose us to be brutal or gentle, and we can be trained to cultivate one at the expense of the other. The Mesopotamians developed an ethos that opted for the cultivation of brutality (Belibtreu, 1991). The kings portrayed themselves as great warriors and hunters (Figs. 10-6B, 10-9, 10-13) and their soldiers were depicted as torturers (Fig. 10-10). Some of the Mesopotamian kings propagated savagery as a divinely-ordered ideal and boasted about it. Thus Sennacherib, king of Assyria, left the inscription:

At the command of the god Ashur, the great Lord, I rushed upon the enemy like the approach of a hurricane ... I transfixing the troops of the enemy with javelins and arrows ... I cut their throats like sheep ... My prancing steeds, trained to harness, plunged into their welling blood as into a river; the wheels of my battle chariot were bespattered with blood and filth. I filled the plain with corpses.

(Healey, 1991, p. 47).

Ashurnasirpal II, conquering his enemies, boasted similarly:

Of some I cut off their feet and hands; of others I cut off the ears and noses and lips; of the young men's ears I made a heap; of the old men's heads I made a marinet ... The male children and the female children I burned in flames; the city I destroyed, and consumed with fire.

(Healey, 1991, p. 7).

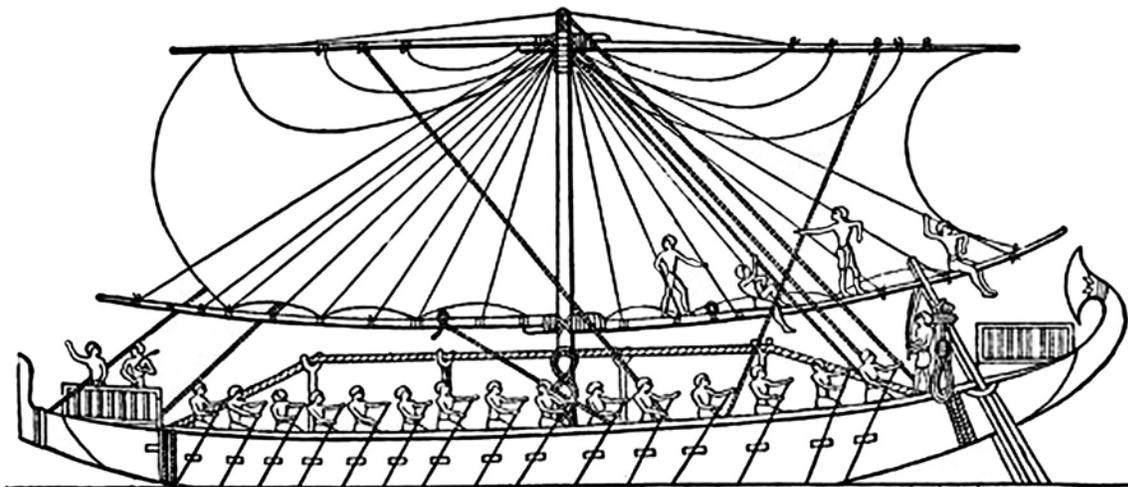
We presume that the Mesopotamian ethos was not unlike that of the Upper Paleolithic hunters who embarked with bravado on big game killing expeditions. In the Mesopotamian wars, the victims were not animals but people.

### 10.2.3. *The Social, Economic and Political History of the Archaic Egyptian Civilization.*

Egypt is a desert virtually without rainfall with human habitation largely limited to the valley of the Nile and its delta. During its annual inundation, the Nile deposits mineral-rich water along its course, producing a narrow fertile strip of land in the south, Upper Egypt, and swamps along its delta to the north, Lower Egypt (Fig. 10-14). These sites, teeming with fish, birds and mammals, attracted people from the surrounding desert from Paleolithic times, and later induced Neolithic farmers to settle and grow crops. Prosperous settlements arose in Upper Egypt, known as the Badari culture, and in Lower Egypt, known as the Naqada culture (Kemp, 1991; Grimal, 1992; Shaw, 2003). This phase in Egypt's development is referred to as the Predynastic Period. The Neolithic people living along the Nile faced a serious challenge: some years there were no floods to water the cultivated lands, in other years high floods washed away their settlements. The solution that Egyptian farmers came up with was to tame the Nile with dikes built to protect their land from high waters, and digging canals and reservoirs to irrigate areas some distance from the bank. The earliest evidence for the building of a larger irrigation system, dated to about 3,500 BCE, comes from a relief on a mace head showing a Predynastic Egyptian king holding a hoe and cutting a ditch into a grid network (Butzer, 1976).

**THE POLITICAL UNIFICATION OF EGYPT.** The unification of Upper and Lower Egypt into a single kingdom about 3,100 BCE has been attributed to a pharaoh named Menes who established what is called the Early Dynasties (Breasted, 1905; Petrie, 1920; Wilson, 1951). A later king, Djoser, is credited with establishing the Old Kingdom and building a step pyramid about 2,600 BCE. The first true pyramid was built soon thereafter under Snefru, and that was followed by the erection of the Great Pyramid of Giza (Fig. 10-1A). Egypt unification may have been aided by the rational consideration of the economic advantage of having a single government supervise the construction of the dikes and irrigation canals along the Nile. The tamed Nile could also serve as a navigable waterway for large boats with rowers and sails, capable of carrying grain, cattle, and stone, as well as officials and soldiers as far as the First Cataract (Fig. 10-15).

## ANCIENT EGYPTIAN BOAT



**Fig. 10-15.** Model of an ancient Egyptian boat, with its rowers and sail. (Google images; Egyptian Boats-3.jpg)

ANCIENT EGYPTIAN  
CITIES ALONG  
THE NILE



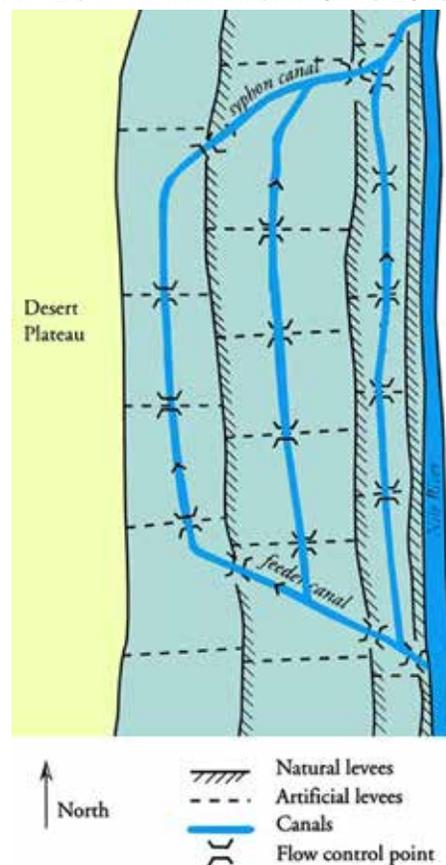
Fig. 10-14. Ancient cities and archeological sites along the Nile.

**THE BUILDING OF PYRAMIDS.** From the very outset, the Egyptians invested much of their economic resources and considerable manpower building economically useless monumental pyramids, an irrational facet of the preoccupation of this prosperous civilization. That commitment was based on the mythology that the kings were gods and that the preservation of their mummified bodies in pyramids would assure the king's immortality and the fortune of the nation. The economic burden of monument building and periods of severe droughts and pestilence led to the collapse of the Old Kingdom about 2,200 BCE. In the First Intermediate Period that followed, provincial governors assumed power and intermittently fought one another. The central government was restored about 2,000 BCE by pharaohs of the Middle Kingdom. While building pyramids slowed, the pharaohs continued to build large temples and monuments. The collapse of the Middle Kingdom about 1,700 BCE has been partly attributed to invasion by Asians (the Hyksos). After the Second Intermediate Period, the New Kingdom was established, which lasted from about 1,600 to 500 BCE, when the Persians occupied Egypt. While Egypt continued to remain a rich agricultural land, its political power declined steadily and it was occupied by the Macedonian Greeks in 332 BCE and by the Romans in 30 BCE.

*Egyptian Economic and Industrial Advances.* We start out by describing the agricultural, economic, and social organization of ancient Egypt. Their advances in the production of goods reflects a momentous accomplishment in the history of human pragmatic rationality. We follow that by a description of the Egyptians' ideational irrationalism, which led to the stagnation of their civilization and its eventual demise.

**RATIONAL ORGANIZATION OF AGRICULTURAL PRODUCTION.** The Egyptian economy was based on an efficient irrigation system that was simpler than the Mesopotamian and more enduring. Referred to as a basin system, levees and a network of canals were built along the banks of the Nile and water was channeled into the canals when the river flooded (Fig. 10-16). The water was allowed to stand in the canals for a month or so after the river level fell, saturating the adjacent plots of land. Thereafter the water would be drained and seed was sown into the furrows dug with a hoe by hand or with a plow drawn by animals. The seeds germinated in the waterlogged soil and, if necessary, the crop would be periodically watered, using a shaduf to draw water from wells, much as it was done in Mesopotamia. The main crops produced by the Egyptians were barley and emmer wheat, which were harvested with sickles and threshed by cattle or asses. The Egyptians also produced a great variety of other agricultural products, such as

#### AN EGYPTIAN IRRIGATION DESIGN



**Fig. 10-16.** A typical irrigation system with levees, feeder and siphon canals, and weirs. (After P.J. Brand, *River Valley Civilizations*.pdf)

lettuce, onions, beans and lentils, dates, figs, pomegranates and grapes, and flax for linen. They also raised goats, pigs, and cattle in large numbers. The ample surplus that was produced in good years allowed for tiding over in bad years, and bartering for essential and luxury goods that were not available in Egypt, such as lumber from Lebanon, spices from the Somali coast, gold from Nubia, and copper from the Sinai and Cyprus.

**RATIONAL ORGANIZATION OF THE EGYPTIAN ECONOMY.** The Egyptian economy was a rationally organized command system, with everybody having an assigned job. Workers were obligated to deliver part of what was produced as a tax to the king's warehouses. There was an annual or biennial census where officials recorded arable land, number of cattle and amount of goods produced. Surveyors used a tape to measure the land that farmers had to cultivate (Fig. 10-17), and calculated a prospective yield before harvest time. That inventory was used to assess tax payable in kind. After harvest time, tax collectors carrying a whip or a stick (perhaps as symbols of authority) took possession of whatever the farmer was assessed to deliver, grain, vegetables and grapes, fish, fowl, and cattle. The collected produce was weighed and recorded, again supervised by foremen with a stick (Fig. 10-18). In a similar manner artisans were taxed according to the size of their enterprise, and they were obligated to deliver a part of whatever they produced—ceramic goods, textiles, leather ware, jewelry—to the king's warehouses. Peasants and artisans delivered their tax to the local mayor who, in turn, conveyed what he collected to the governor of the province, who then transferred what he collected to the kings

#### OFFICIALS MEASURING CULTIVATED LANDS



**Fig. 10-17.** Surveyors measuring a cultivated field. From a tomb at Thebes, dated about 1,400 BCE. (After Singer et al., 1954; from Janick, 2002)

#### DELIVERING AND RECORDING PRODUCTS OF THE LAND



**Fig. 10-18.** A. Delivery, measurement and recording the delivery of agricultural goods. B. Recording and storing grain. C. Sorting and recording barrels of grapes. From Old Kingdom tombs. (Drawn from several sources, after Janick, 2002)

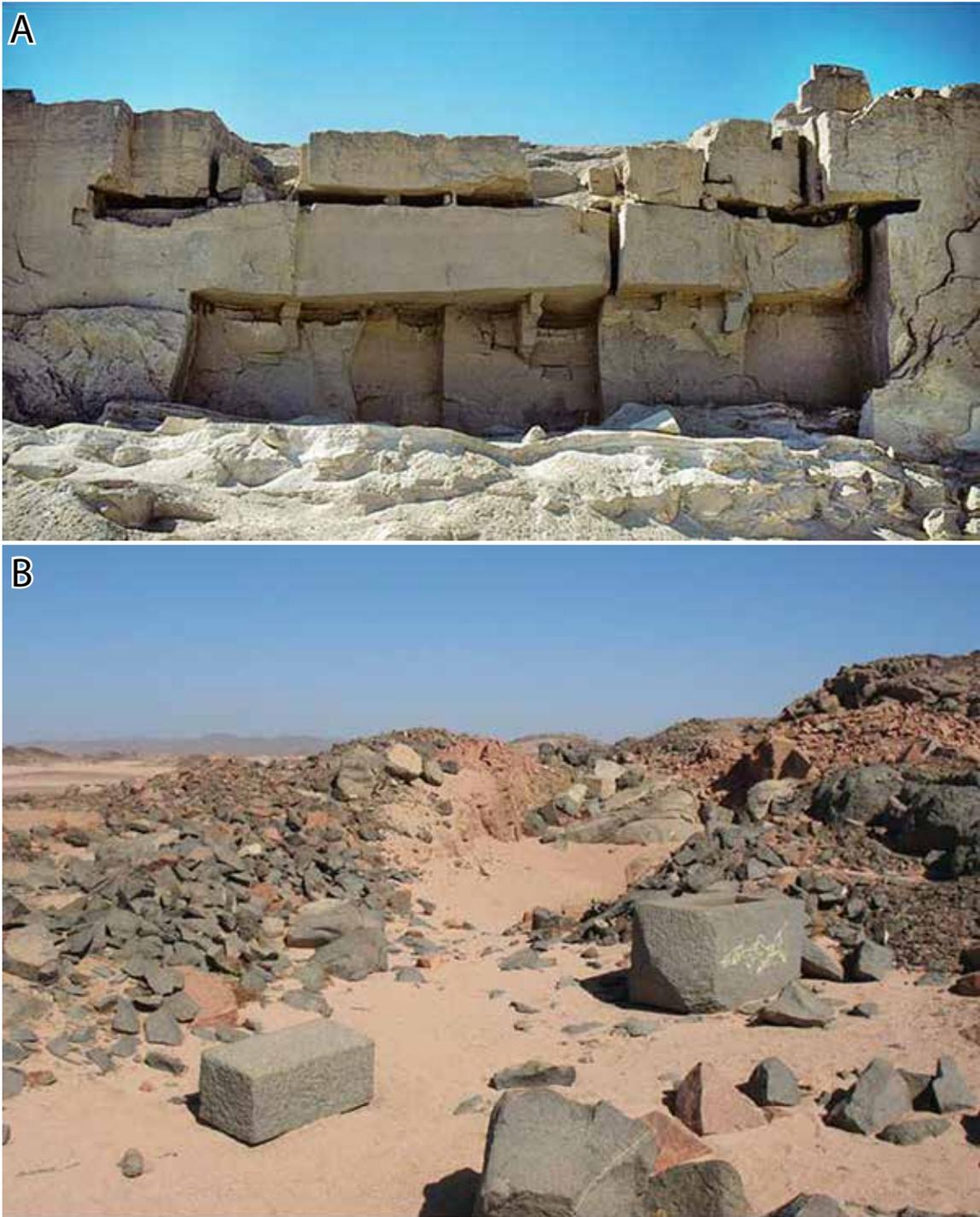
treasury. The king, as the official proprietor of all that was accumulated, had agents who exchanged the surplus produce with goods brought by boat from Phoenicia, Crete and Cyprus by foreign traders. Coins were unknown. Commercial transactions were based on barter, with values assigned to different items in terms of pieces of metal of standard sizes. While the population greatly resented the heavy taxation, and in times of drought and famine may have rebelled and caused a temporary breakdown of the social order, the principle of this fiscal policy was never challenged as being unjust, and endured unchanged for three thousands years.

**EGYPTIAN ARCHITECTURAL ADVANCES.** In contrast to Mesopotamia where stone is scarce and brick was the primary building material, stone was abundant in the hills surrounding the desert in Egypt and primarily stone blocks were used to build enduring edifices. Over 200 quarries have been identified in Egypt; many of them were used continuously from the late Predynastic to the Roman period (Arnold, 1991; Harrell and Storemyr, 2009). Large galleries were cut into the hills to obtain high quality stone (Fig. 10-19), initially using stone tools and later, in succession, copper saws, bronze chisels, then iron chisels. Wooden wedges were driven into the cut slots, and wetted to expand and split the rock. Ramps were built to lower the blocks to the level ground, which were then lifted onto sledges and pulled by ropes to nearby building sites. Blocks were placed on barges in the Nile for transport to distant building sites, then transferred to sledges and hauled again. This was arduous work, carried out with great skill and perseverance.

The canon of stone architecture was established in the early centuries of the Old Kingdom and construction methods and architectural style were not substantially modified thereafter. There were tombs (mastabas) for kings and nobles, temples dedicated to the gods, and monumental statues of royals carved into the mountain side (Fig. 10-20). The temples were either dedicated to a god or were mortuaries of deceased kings and nobles. Many of them had elaborate entrance ways with stone statues, and the walls were decorated with carved and painted scenes and inscriptions. The construction of temples continued throughout the history of Egypt up the Ptolemaic period. The buildings, decorations and inscriptions are testimonials to the fine workmanship of masons, sculptors, engravers and scribes. While the Mesopotamian ziggurats may have inspired the Egyptians to build their pyramids, the Egyptian pyramids were different in design, and served as tombs rather than temples (Fig. 10-1A). The pyramids of Giza and the temples at Thebes are among the largest and most impressive structures ever built by man, and all of it was done by the muscle power of men using simple tools with sophisticated and still not fully understood working methods (Lehner, 2008). The ancient Egyptians did not use wheeled vehicles and compound pulleys; it is assumed that they built sloping earthen ramps to maneuver the heavy blocks, some weighing 5 to 10 tons. The blocks were lifted to great heights by a combination of cradles, sledges, ropes, and levers. It is estimated that the construction of the pyramid of Giza, which contains over 2 million stone blocks, took 20 years to complete, employing tens of thousands of laborers.

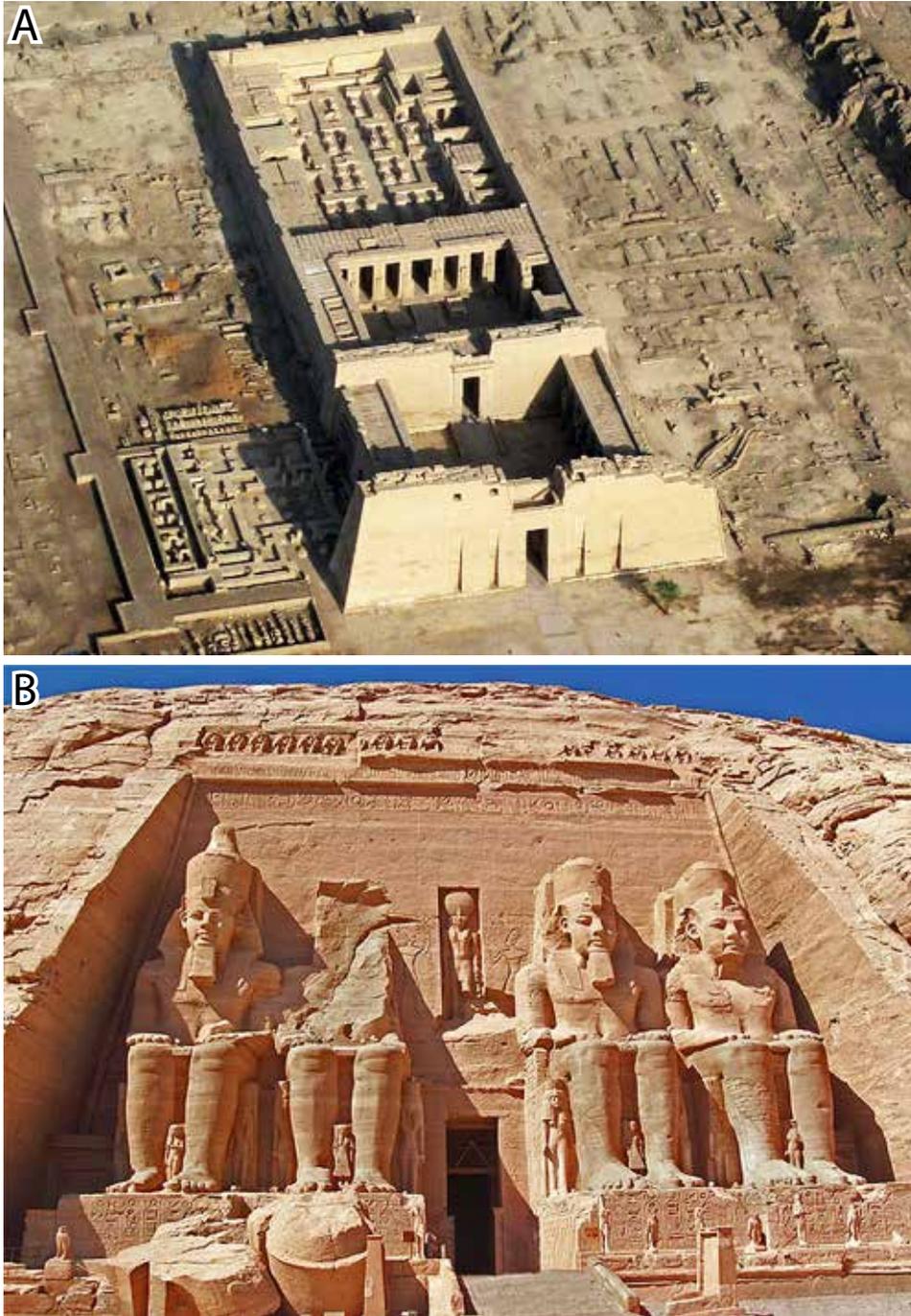
**ADVANCES IN CRAFTSMANSHIP AND ART.** Thanks to the tradition of furnishing tombs with precious goods, many examples of Egyptian craftsmanship have been preserved (Singer et al., 1954). Although wood was scarce in Egypt and good lumber had to be imported from Lebanon and Syria, cabinet makers manufactured high quality chairs, stools, tables, beds, head rests,

## EGYPTIAN STONE QUARRY AND WORKING SITE



**Fig. 10-19.** A. Stone quarry used from the New Kingdom to the Roman period. B. Site where stonemasons shaped the quarried rocks. (After Harrell and Storemyr, 2009)

## NEW KINGDOM ARCHITECTURE AND SCULPTURE



**Fig. 10-20.** A. Temple complex of Ramses III and necropolis in Thebes. B. Massive statues of Ramses and Nefertari at the entrance of a carved out temple at Abu Simbel. (From Google, Wikipedia)

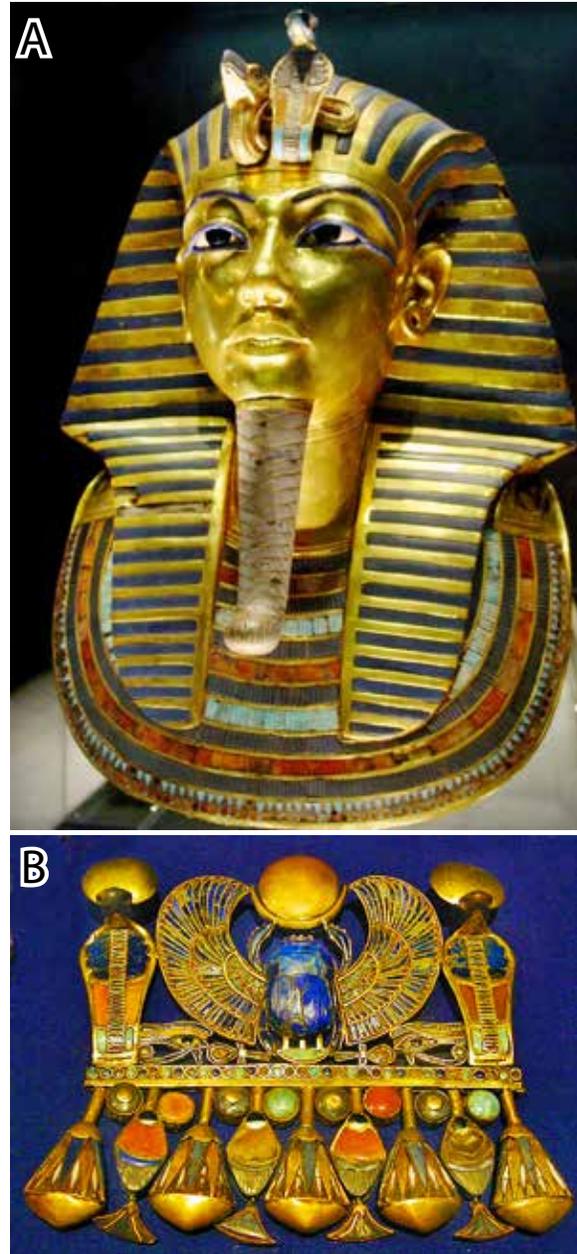
and other pieces of furniture (Fig. 10-21). Assembled with joints that are still used today, these items had fine carvings, such as legs ending with animal claws, and were ornamented with inlays of wood veneers, ivory, pearls and precious stones. The Egyptians discovered how to produce colored glass and enameled earthenware. They also made extensive use of alabaster and faience to craft vessels, beads, figurines and statues. Leather workers used advanced tanning methods and tooled their products with designs, and linen cloth woven by Egyptian textile workers on primitive looms are comparable to those produced by modern methods. By about 1,500 BCE, they learned how to use bellows for smelting and mixed tin with copper to produce bronze. Copper, bronze, silver and gold were widely used as rings, bracelets, necklaces and diadems, and the quality of jewelry crafted by the Egyptians was never surpassed, as illustrated in the golden mask and emblem of Tutankhamen's mummy, the young king of the 18th dynasty, made about 1,300 BCE (Fig. 10-22).

#### WOODEN CHAIR FROM THE TOMB OF TUKTANKHAMEN



**Fig. 10-21.** A. Decorated chair from the tomb of Tutankhamen. (Google, Tut.pdf)

#### EGYPTIAN ART AND JEWELRY



**Fig. 10-22.** Burial mask (A) and winged scarab (B), from Tutankhamen's tomb. (From Tutankhamun Egyptian Museum.jpg)

The Egyptian artist, particularly in his mural engravings, paintings and drawings, was not allowed to represent things as he saw them or use his imagination to emphasize certain features of what he perceived. As a servant of the king and the priesthood, art was a medium of royal propaganda and clerical indoctrination, not a creative artistic expression. The artist or artisan had to obey a traditionally established canon how to portray the king or depict the different gods. The king was always represented as young, strong and bigger than anybody else. There were also strict rules how to portray the human body, with head and one eye in profile, shoulder and arms presented frontally, the torso twisted, and the legs and feet in profile (Fig. 10-17). Commoners were represented as stereotypes not as individuals, although there was some realism in illustrating what they were doing (Fig. 10-18). The rules for sculpting statues and figurines were more lax than the rules for painting or drawing. Adherence to this artistic convention had the advantage of making the intended message unambiguous and easy for all to understand. This artistic tradition was adhered to (with rare examples of authentic representations) for over three thousand years.

*Organization of the Autocratic and Theocratic Egyptian Civilization.* When Upper and Lower Egypt were unified, the country became a profoundly religious nation ruled by a divine king with absolute power (Breasted, 1905; Frankfort, 1951; Wilson, 1951; Linton, 1955). The king was served by a class of nobles and priests, and conjointly they governed a large population of laboring subjects who were heavily taxed and had to perform all the hard labor to sustain the economy.

**THE KING AND THE GOVERNING CLASS.** The whole land was considered the pharaoh's personal property and because he was divine, his dictates had to be obeyed by all without any reservations. Like everybody else, the king had duties to perform. He participated in daily rituals and ceremonies that were believed to assure the fertility of the land, the safety of the people, and the preservation of the sacred moral order (see below). Affairs of the palace and the state were run by a hierarchically organized government. The palace retinue consisted of members of the king's family, intimate advisors of the king, known as the "honored ones," and officials that carried such titles as "director of the king's dress," "director of oils and unguents," "keeper of the king's wigs." The queen and members of the royal harem were also served by a large staff. A vizier was in charge of the kingdom's finances, public works, and social order. He also officiated as the supreme judge in litigations that reached the court. His ministers carried such titles as "seal bearer of the king," "treasurer of the king," "master of livestock," and so forth. Beneath these ministers were the governors of provinces, the lords of large estates, and the mayors of villages. These officials, in turn, were served by a lower echelon of scribes, land surveyors and tax collectors, and engineers, architects, supervisors and foremen.

**THE NOBLES, PRIESTS AND SOLDIERS.** Three other groups served the king: the nobility, the priesthood, and the army. The nobility consisted partly of descendants of the chiefs of the different lands (nomes) before Egypt was unified; they were typically owners of large estates. While the kings sought to limit the powers of the nobility, they were useful to him because they were knowledgeable about local conditions and had many followers. When the king's power and central authority declined, as it did periodically, the nobles often resumed their ancient powers. The role of the priesthood was just as important. There was a hierarchy of priests. The

high priests were guardians of large temples and were in charge of elaborate annual festivals that were mostly attended by members of the elite class. Other priests performed daily rituals in local chapels that served the commoners. Unlike the Mesopotamian kings, the pharaohs (with a few exceptions) were not warriors and Egypt was not a basically militant civilization bent on conquest. Hence the army played a defensive rather than offensive role; serving in the military was not a prestigious occupation. Because the desert served as a good barrier to intruders, most cities had no defensive walls. Garrisons of lightly equipped soldiers prevented incursions of small bands from Nubia and Lybia (Fig. 10-23). When well-equipped armies attacked from the sea, as did the Hyksos, the Egyptians were easily defeated. Some kings, such as Rameses II, did embark on foreign expeditions, using chariots borrowed from the Hittites, but foreign military engagements were rare in Egypt's long history.

## OLD KINGDOM SOLDIERS

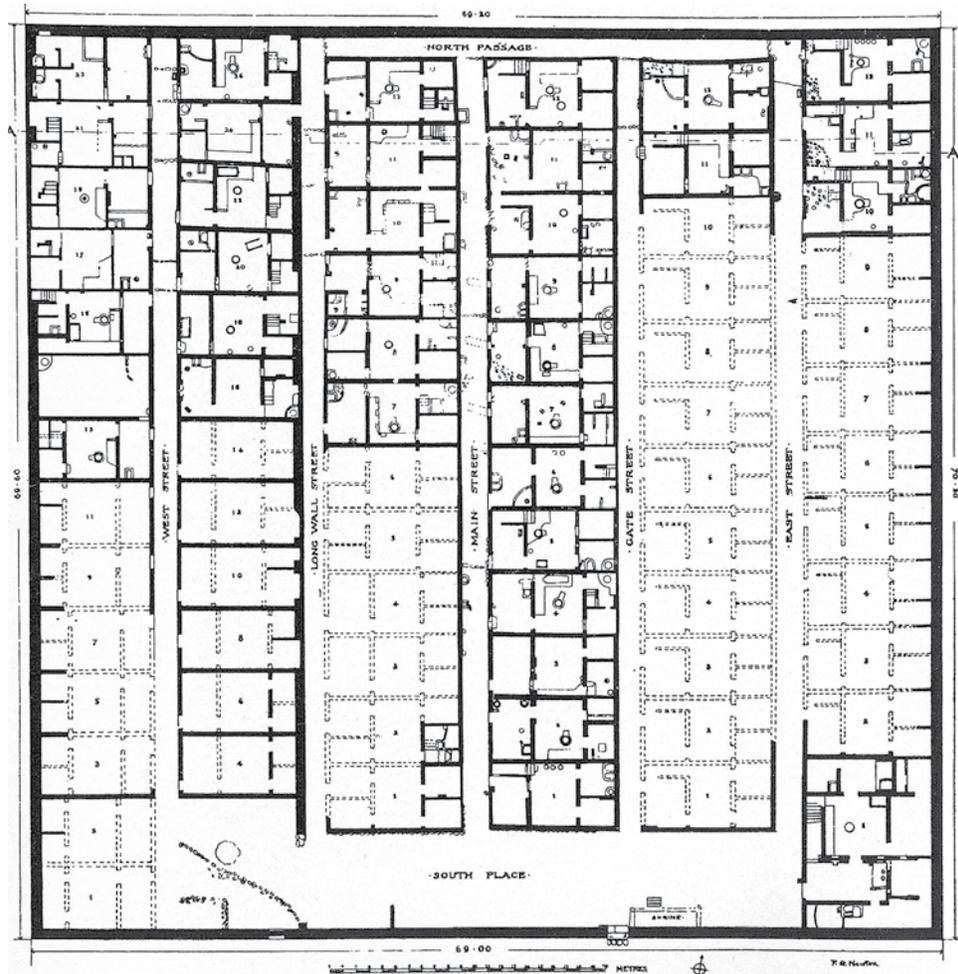


**Fig. 10-23.** Models of lightly equipped Nubian archers; Old Kingdom. (Egyptian Museum, Cairo; Mesehti Soldiers.jpg)

**THE LABORERS AND ARTISANS.** The principal task of the autocratic and hierarchical Egyptian government was to assure that the great masses of working people—farmers, stone cutters, builders, warehouse attendants, soldiers, sailors—performed their assigned obligations as planned. The burden imposed on this laboring class was multifold and very heavy. First, the muscle power of farmers and laborers was the principal energy source needed to till the land and keep the irrigation system in good repair. Second, the toiling farmers were excessively taxed in order to finance the luxurious life style of the royals and nobles; farmers also supported the priests and officials who performed their daily duties without engaging in manual labor. Third, the laboring people were also burdened with the arduous task of building monumental pyramids, temples and tombs. The latter task had no practical purpose but served as a visible embodiment of the the majesty, divinity and immortality of the king, the fictional ideology that justified his autocratic rule and sanctified a social order built on exploitation.

Much of the work performed by the peasants and laborers was based on raw muscle power. As the seasons changed, the same people may have worked successively on the irrigation canals, cutting stones in quarries, moving large stone blocks from a quarry to building sites, and helping lift the heavy blocks and place them as designed by architects. As we noted earlier, thousands of men were needed to build the pyramids, working in the heat of the day with primitive tools, and they were overseen by supervisors with whips in their hands. Was this only symbolic of their status or did the supervisors actually use the whips, treating people like the oxen that pulled the plows? Inhumane treatment is indicated by barracks unearthed near some building sites. One of these at Amarna, measuring 210 by 210 feet, contained over 70 small apartments surrounded by a wall, with access by way of a single, guarded gate (Kemp, 1987; Fig. 10-24). Evidently, the laborers lived there with their families and animals under extremely crowded conditions. Soldiers also had a hard life with responsibilities for defending the borders, for participating in trade expeditions, for marching on foot and carrying goods over long distances. Many craftsmen were employed in royal shops where they were watched over by supervisors, with scribes recording what they produced. Merchants in port cities may have had an easier life.

### A WALLED LABORERS' VILLAGE



**Fig. 10-24.**  
Foundation of a  
walled laborers'  
village at Amarna.  
(From Frankfort, 1951)

*Egyptian Ideational Advances.* Possessing wealth and leisure time, members of the social elite acquired the taste to live in a refined manner. They learned to read and write not only to qualify for government positions but also for edification and entertainment. While most of the texts dealt with religious themes and political or business matters, several works survive that were composed by contemplative sages or by parents seeking to instruct their young (Wilson, 1951, 1954; Allen, 1999; Adkins, 2000).

**EGYPTIAN WRITING AND LITERATURE.** The invention of writing in the Near East is generally attributed to the Sumerians, since they used cuneiform engravings centuries before the Egyptians began to use another notation system, known as hieroglyphics. From the outset, however, the Egyptians used a different method by using a brush and ink or paint on papyrus, walls or other surfaces. Hieroglyphs consist of an admixture of three elements: phonetic symbols that stand for consonants; logographs that stand for morphemes; and semagrams, symbols that specify or clarify the meaning of phonemes and morphemes. The picture of an eye could stand for the sound of “i”, the first person “I,” or for an “eye.” By the time of the Middle Kingdom, there were as many as 800 hieroglyphs in use, and that number increased to 5,000 by the Macedonian period.

Surviving hieroglyphic texts from the Old Kingdom include prayers, hymns and magic spells, annals and chronicles of events during the reign of a particular king or a high official, and some literary works. Throughout Egypt’s history, kings continued to commission inscriptions boasting about their divine power and their relations with the gods, and scribes left behind records of the succession of kings and dynasties. However, the Egyptians did not write histories in the modern sense of the term, sequential accounts of particular events or periods. To their mindset things happened because of the whim or will of inscrutable gods not because certain antecedents had necessary consequences. Initially, familiarity with the complex hieroglyphic script was limited to the ruling elite, priests and scribes but, in time, another writing, called demotic, became widespread and literacy became more widespread. While priests continued to use the more complex hieratic script, official and business transactions were recorded in the simpler demotic script. Literature began to appear during the Middle Kingdom, and these were copied and popularized by scribes of the New Kingdom. This literature included canonical texts used to educate the youth of the elite class, wisdom literature by sages, and moral exhortations by parents addressing their young. To succeed in life, the young was advised to rise early in the morning, follow the rules of society, be respectful of his superiors, speak only when asked, and speak well. This literature was preserved for thousands of years. Following the Roman occupation, the use of both hieroglyphic inscriptions and demotic writing was gradually abandoned. It was not until the Rosetta Stone, an engraved record written in hieroglyphic, demotic and Greek was discovered by Napoleon’s troops that these ancient script, was deciphered by Jean-François Champollion.

**EGYPTIAN MATHEMATICS AND SOLAR CALENDAR.** Egyptian mathematicians used a decimal arithmetic, with seven different symbols for the numbers ranging from one to a million (Fig. 10-25). However, they had no symbol for zero, did not use a place-value notation, and used repeated addition for multiplication. Nonetheless, they could make complex calculations, as indicated by papyri in which students were given the task how to solve various practical

problems involving fractions and equations. In a cumbersome way, they could calculate the area of rectangles, triangles, polygons and circles, and the volume of cubes, pyramids and spheres, and with that knowledge succeeded in building monumental structures with small margins of errors. Architects using cumbersome mathematics could estimate the number of blocks of various sizes required to erect large edifices and build them with small margins of error. Egyptian priests making accurate astronomical observations and keeping records succeeded in creating a solar calendar by determining that it takes 365 days for the sun to return through the seasonal cycles to the same position in the sky. (They ignored the fact that that was not an exact estimate.) However, like the Babylonians, they never developed a rational scientific system. What transpired in the world was always thought of as due to the inscrutable activities of supernatural agents; there was no inclination to arrive at abstract principles or inquire into the cause-effect relationship of events, conceived as lawful natural phenomena.

### EGYPTIAN DECIMAL SYMBOLS

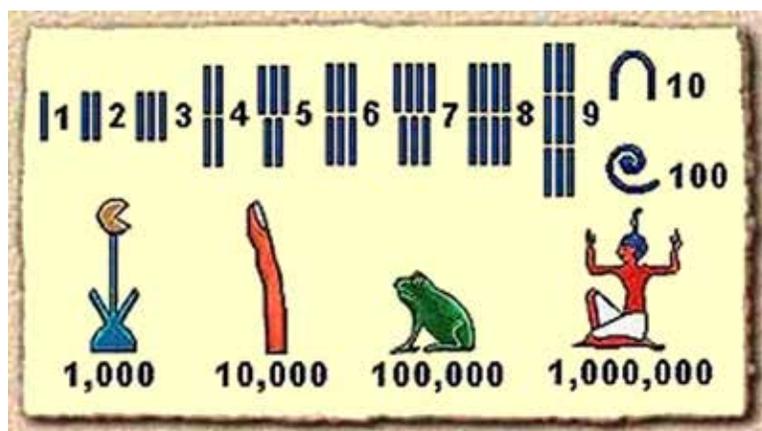


Fig. 10-25. Egyptian decimal number symbols. (Google, Egyptian numbers.jpg)

**EGYPTIAN MEDICINE.** Our knowledge of Egyptian medicine and surgery comes from medical texts written by physicians and depictions of surgical instruments (Fig. 10-26). The Egyptians had an established medical profession from the earliest times, and they had hospitals, known as Houses of Life (Nunn, 1996). The physicians had some understanding of human anatomy, such as the connection between the heart's beating and pulse, and they appreciated the importance of diet and cleanliness in the maintenance of health. Bone and skull surgeons used knives, saws, drills, pincers, and hooks to perform operations, including tumor removal, and they also used prosthetic devices for amputees. However, most of the medications prescribed had no curative value and some, like the widespread use of dung to cover wounds, was outright harmful. The principal means of healing the sick and helping patients was the use of incantations and sympathetic magic, as in other primitive societies. Examples of sympathetic magic ("similar with similar") was the healing of a skull fracture by acquiring an intact ostrich egg; or remedying baldness by using an amulet of a hedgehog. There was no attempt to understand how the body worked in health or disease because what happened to a person, much as what happened in the world, was not considered a lawful natural process but a mysterious one, the evil work of demons and spirits and the helpful acts of magic and ritual. As a consequence, there was

### EGYPTIAN SURGICAL INSTRUMENTS



**Fig. 10-26.** Egyptian surgical instruments. (Yahoo; After Asis K. Chatterjee)

little advance in medical art. Scribes kept copying old texts and medical students memorized them to qualify as practitioners. In summary, while the Egyptians made advances in applied mathematics, recorded celestial phenomena and used medicine, they never developed a logic-based theoretical science.

*Religion: The Institutional Promotion of an Irrational Ideology.* The ideational foundation of Egyptian civilization was an elaborate mythological religion that is difficult to describe because it has never been systematized as a unified theological doctrine. Egypt originally consisted of several dozen provinces (nomes), each with its own gods, myths, mysteries, and magical and ritual practices. The kings of different dynasties often identified themselves with regional deities, and as the dynasties changed with the pharaohs coming from different regions of the Two Lands, different gods came to be officially worshipped at different times.

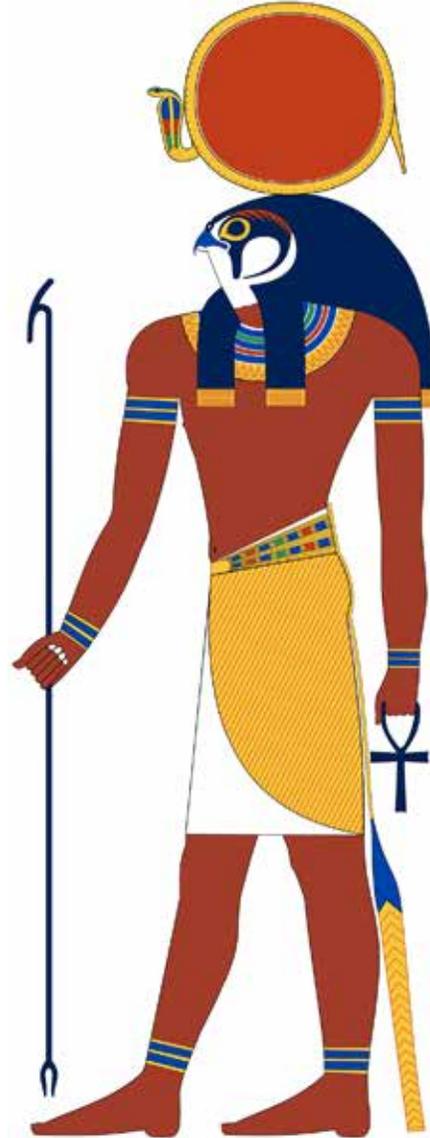
**THE GODS OF THE PHARAOHS.** The different Egyptian gods were variably identified with heavenly bodies, animals, or depicted as beings with animal heads and human bodies. They were inconsistently characterized with different features, powers and properties. In one versions of the myth, Atum was the first god, the creator of the world. Ra was he sun god, the source of light. Beneath Ra was Osiris, the ruler of the abode of the dead. The son of Osiris and his sister, the goddess Isis, was Horus, the god of protection and security. According to another tradition, Horus was the rising sun; Ra, the mid-day sun; and Atum, the setting sun. Thoth was the chief deity at Hermopolis. Ptah was the chief god of Memphis. Amon-Ra (or in some versions Horus-Ra) was identified with the head of a falcon and the disc of the sun resting on his head (Fig. 10-27). He was the god of fertility and prosperity, holding the ankh, the symbol of eternal life, in one hand and a crook, the symbol of majesty, in the other. The mythic gods were born, mated, changed their character, gender or family relations, died and were reborn. If all this does not make any logical sense, no matter. It was the essence of Egyptian ideology that the ways of the gods and the nature of the universe were beyond human comprehension. It was only once in the history of Egypt that this polytheistic mélange was challenged by a pharaoh. An autocratic ruler of the 18th dynasty, Akhenaton, with his sister-

wife Nefertiti, sought to change the culture and religion of Egypt. He built a new capitol, tried to replace the conventional priestly art style with a more naturalistic one, and declared that there was only one god, Aten. When he died, the priesthood saw to it that Akhenaton's heresy was eradicated.

Typically the gods were believed to be creatures with immense powers but devoid of any moral qualities. Enormous resources were spent on building temples and sanctuaries dedicated to the different deities and on the upkeep of these sacred facilities. The temples were not places where commoners worshipped but the exclusive domain of the ruling elite and priests. The king or a high priest led a procession periodically through a series of columnar passage ways through several halls to a sanctuary where the statue of the god was housed. The procession symbolized the passage of gods' elect few from the mundane world to the world of mysteries. Entering the sanctuary, the high priest washed, anointed and dressed the statue, presented it with gifts, chanting and reciting traditional incantations. The rituals were performed to placate the god on whose goodwill the prosperity of the kingdom depended.

**THE PHARAOH AS A GOD.** The pharaoh served as an intermediary between the gods of the land and the people. The pharaoh claimed to be a descendant of gods, and to retain the purity of that ancestry it became a tradition that he married a sister or a half-sister. According to one myth, the pharaoh ascending the throne became Horus, the sun god, and when he died, was transformed into the god Osiris, the god of the underworld. The pharaoh's palace was like a temple and, at least officially, he was the high priest of the land and it was his sacred duty to perform a series of daily rituals. One of these was known as the "Rite of the House of the Morning." The king was bathed in water brought from a sacred pool, anointed, dressed and handed the royal insignia. He was then taken to the shrine of the royal sanctuary where priests performed an elaborate ritual. The pharaoh's daily activities continued as prescribed by hallowed tradition, supervised by priests who often assumed undue powers by virtue of their secret knowledge of the rituals. The

## EGYPTIAN SUN GOD



**Fig. 10-27.** Aten-Ra (or Horus-Ra) with falcon head. He holds the disc of the sun on his head and has the insignia of eternal life (ankh) in one hand and a crook, the symbol of majesty in the other. (Wikipedia; Re-Horakhty.svg)

king's role in maintaining the sanctified social order did not end with his death. While still alive, a pyramid was built for him, where he was mummified and laid to rest. The expense and manpower involved in the construction of a pyramid, and the amassing of all the precious goods that accompanied the mummified pharaoh in its sarcophagus, attest to the powerful role of this elaborate fiction. It became an established conviction that the king continued to exercise his power on behalf of his people when he was entombed in this impenetrable abode that pointed toward the sky. Priests continued to perform rituals to prevent snakes and scorpions infesting his tomb, and made offerings to nourish and please his spirit. Most people probably believed all this gobbledygook but when social order broke down, as it did periodically, looters typically carted away the precious goods hidden in the pyramids.

**10.2.4. A Mindset Analysis of the Archaic Egyptian Civilization.** Egyptian civilization, like that of Mesopotamia, came into existence when a group of individuals succeeded in forming a government that coordinated the economic, social, and political affairs of a large population. The governing elite initially consisted of creative and enterprising individuals who were able to induce masses of people to build and maintain an extensive irrigation system in order to increase food production and, using the surplus produced, they created an urban economy with craftsmen manufacturing high quality goods and traders engaged in commerce. How, then, did it come about that the evolution of this new rational way of living was coupled with a parallel development of an irrational ideology? How could reasonable people accept the absurd idea that their king was an *immortal god* when he was obviously a *mortal human* much like themselves? How could they believe that after the king *died*, and was embalmed and entombed in a colossal stone edifice, he went on *living* and continued to influence the affairs of the state? Indeed, why would villagers who formerly lived as *free* individuals in an egalitarian society assent to becoming *serfs*, and toil and sweat all their lives to sustain an elite class to live in luxury and splendor? How can we reconcile this regressive cultural development, this flourishing of a delusional irrationalism with the idea that mental evolution is a progressive phenomenon? Our answer is that the society created by the founders of this agricultural civilization necessitated the promulgation of an irrational ideology.

**THE INSTITUTIONAL PROMOTION OF AN IRRATIONAL IDEOLOGY.** Just like the founders of archaic Mesopotamian civilizations, the founders of the Egyptian civilization faced a difficult task when they undertook the construction of an extensive irrigation system to tame the Nile because the only energy source available to them was human muscle power. Hence, they had to recruit masses of people to undertake this enormous construction project. But how was that to be accomplished? The available evidence suggests that the rulers of Egypt were not ruthless warriors and most of Egypt's laboring people were not slaves. One strategy to recruit laborers from a society of free men might have been to reward them with equal shares of the increased crop yields. Perhaps this method was used in some regions in Predynastic times. However, if that did happen, it did not last long because there is evidence that by the time the mastabas were built, there was an enormous gap between the wealth of the ruling and laboring classes. Much like the Mesopotamian's, the Egyptian elite created an irrational ideology to trick everybody into believing that it was their duty to dedicate their lives to a divinely ordained social order. The essence of that ideology was that the land of Egypt belonged to the gods, and it was everybody's sacred duty to dedicate their lives to the service of the gods.

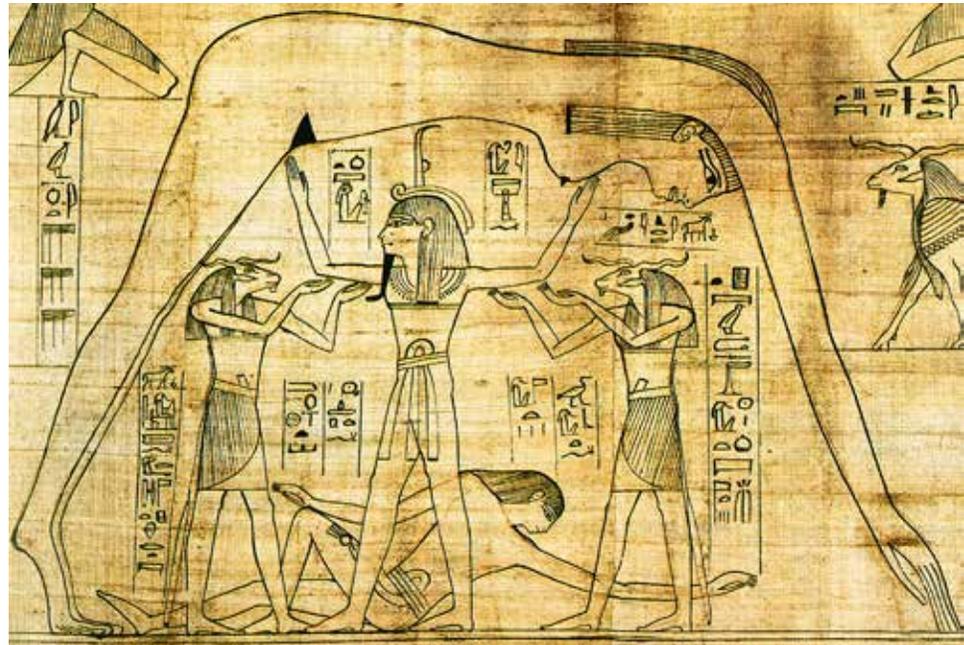
In Predynastic times, the villagers along the untamed Nile lived in a chaotic world, with good harvests and plenty of fish and wildlife in some years and droughts or devastating floods in other years. The taming of the Nile changed all that by greatly reducing these environmental uncertainties and hazards. We assume that the bulk of the population was initially not coerced by the ruling class to dig and keep the dams and channels in good repair but did so voluntarily. That is suggested by the fact that the pharaohs, unlike the kings of Mesopotamia, are always depicted in a serene pose, never as tyrants wielding weapons. Nor is there any evidence that the Egyptian nobility was a military class. It is likely that from the outset the governance of Egypt was supported by a shared ideology that the land was owned by their gods and the farmer's sacred obligation was to keep it fertile. Changing from village to urban life, the kings and priests had to convince the populace that in this new social order, they had to transfer their allegiance from their own gods to the god or gods of the state, to whom the ruling elite had privileged access. We do not know to what extent the ruling elite really believed in what they were preaching and to what extent that was a ruse to make the people assent to pay taxes and perform the heavy labor that the new social order demanded. The available evidence suggests that the bulk of the indigenous population—credulous and illiterate people without access to contrary ideas—allowed themselves to be indoctrinated by the new ideology and passed that on from generation to generation.

**THE EGYPTIAN MINDSET AND THE OSSIFICATION OF ITS ETHOS.** The quest to understand why the world is at it is, how it came about, what the future holds, the meaning of life, the purpose of living, and what happens when one dies, are ubiquitous traits of all thinking humans. But there is no obvious answer to these questions and the perplexed tend to turn to the authorities, like children to their elders, to provide the answers. To alleviate that need, the leaders of Egyptian civilization created an elaborate animistic mythology. It was an ideology that served their privileged status well, and once they found that it worked, the kings and priests saw to it that the mythology endured. The most direct way of perpetuating any traditional belief system is by verbal instruction and indoctrination, and the best way to consolidate them is through rehearsal and recitation. These are mnemonic mechanisms. Children and naive people have no way of telling the difference between claims based on facts and fiction, between assertions based on perceptual experience and phantoms of the human imagination. And to aid the assimilation of a fanciful ideology, what is imagined can be reified—make them visible and tangible by rendering them in paintings, sculptures and written texts, and making them come to life in ceremonial re-enactments and rituals. As national wealth accumulated, the pharaohs, priests and nobles built enduring pyramids, temples and palaces, and lavishly decorated them with artworks accompanied by inscriptions proclaiming the majesty of the pharaohs and their intimate relations with the gods. The mundane landscape was transformed into a sacred one.

**EGYPTIAN MYTHOLOGY, MA'AT, AND THE MORAL ORDER.** The Egyptians left written and pictorial records about their belief regarding the origin and structure of the universe and man's place in it. Their queries were rational but the answers they came up with were not logical ideas or hypotheses but fanciful, imagery based narratives—dreams, nightmares, fairytales, legends, and stories—that were initially mnemonically preserved and later put into writing, and passed on from one generation to the next as absolute truth. Based partly on naïve perceptual experience, the Egyptians believed that there were several domains in the universe: the earth

was a flat expanse that was the abode of the living; the sky arching over the earth was the dwelling place of some of the gods; the air between the two and the mysterious underworld were the sites where the dying sun moved to at night and was reborn at dawn (Fig. 10-28). Put in more concrete mythological form, they claimed that the earth was the god Geb (or Ta); the sky, the goddess Nut; the two were separated by Shu, the god of air; and the underworld, was the god Duat.

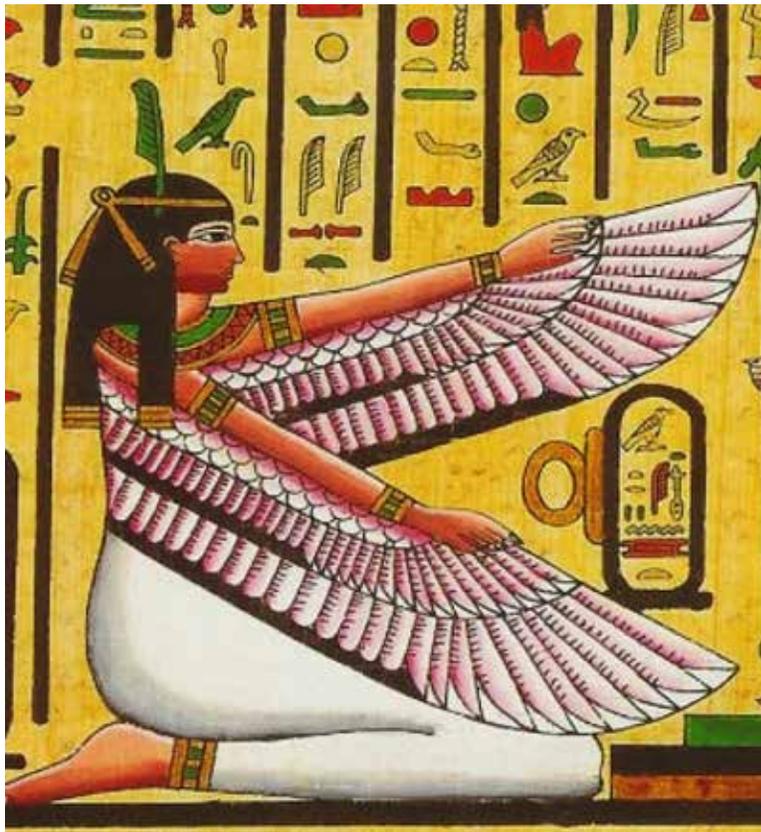
### THE MYTHOLOGICAL EGYPTIAN UNIVERSE



**Fig. 10-28.**  
The Egyptian mythological imagery of the universe: the sky goddess Nut, the air god Shu, with other gods, holding up the sky; and the god of the earth, Geb, stretched below. (Wikipedia; Geb, Nut, Shu.jpg)

The world was originally a chaos, surrounded everywhere by water, then came order, Ma'at (Lichtheim, 1997; Karenga and Assmann, 2006; Lazaridis, 2008). An ill-defined abstraction, Ma'at referred to the intimate linkage between a mythic conceptualization of the heavenly order, the order of the land, and the moral duty of man. In the cosmic realm that order was a recurrent daily cycle: the sun, the god Ra, died every evening, was reborn at night, and emerged in the morning to spread light on the land. This cycle was not a physically determined natural phenomenon but an uncertain animistic one. Ra had to overcome all sorts of obstacles to re-emerge at dawn, fighting the serpent god, Apep, and other obstacles. In the earthly realm, that order was the annual resurgence of the flood waters of the Nile, replenishing the soil's fertility and enabling people to feed themselves and their families. But the Nile did not flood every year, or it failed to do that in time, if the gods so willed. To assure the recurrence of these heavenly and earthly cycles, it was the moral duty of people to perform daily rituals and lead a life that supported the order of the cosmos. Ma'at in the life of people meant the unending cycle of birth, death, and rebirth, and in daily life it meant the individual's obligation to act

## MA'AT THE WINGED GODDESS



**Fig. 10-29.** Ma'at depicted as a goddess with spread wings. (Wikipedia)

morally. Ma'at meant support of the natural order by moral conduct: each person, pharaoh, noble or commoner, rich or poor, had to carry out his ordained duties to prevent drought, pestilence, famine and breakdown of the social system. Significantly, although an abstract concept, Ma'at is depicted as a goddess with spread wings (Fig. 10-29).

The ancient Egyptians did not have a formal ethical theory but virtuous behavior and good manners were constantly stressed as the ideals of conduct. Fearing heavenly punishment, obituaries on mortuary walls consisted of the deceased's insistence that he did good deeds and was not an evil person. As a positive statement, an official of the Old Kingdom states:

I spoke Ma'at and I did Ma'at.  
 I spoke well and I reported well.  
 I rescued the weak from the hand of one stronger than he when I was able.

I gave bread to the hungry, clothing [to the naked], a landing to the boatless.  
 I buried him who had no son.  
 I made a boat for him who had no boat.  
 I respected my father, I pleased my mother, I nurtured their children.  
 Another mortuary inscription addressed to Osiris, and put negatively, reads:  
 I have not done crimes against people.  
 I have not mistreated cattle.  
 I have not blasphemed a god.  
 I have not robbed the poor.  
 I have not done what the god abhors.

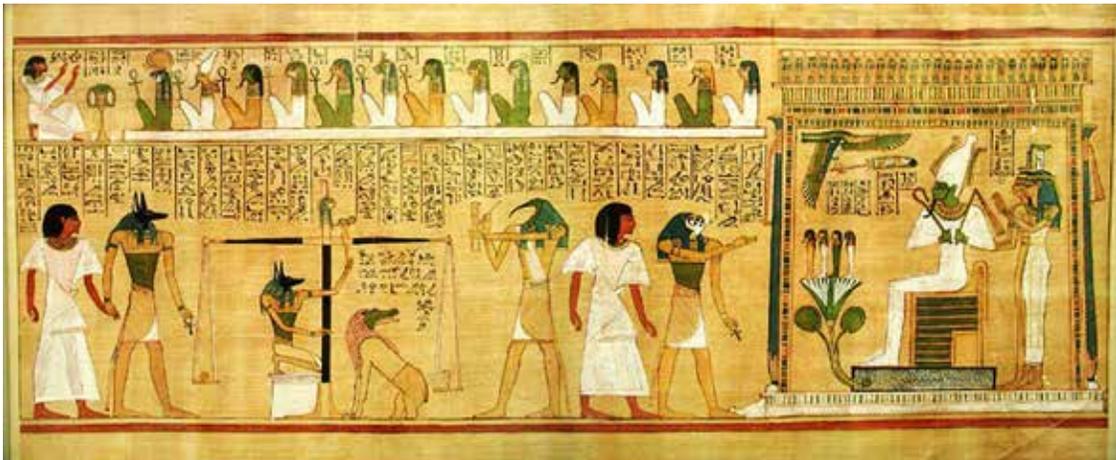
Ma'at in daily life referred to good manners and the ideal of subservience. That is evident from the "Maxims of Good Discourse" by the vizier Ptahhotep (van den Dungen, 2012):

If you want your conduct to be perfect ... combat against the greed of the heart.  
 Don't let your heart get big because of your knowledge.  
 If you meet your peer ... make your excellence exceed his by silence.  
 Do not scheme against people, for god punishes accordingly.  
 Guard against slanderous speech ... keep to Ma'at ...  
 How good for a son to obey his father!  
 Do not oppose a great man's actions.  
 Bend your back to your superior, your overseer from the palace.

Ma'at, evidently is the inner voice of one's conscience as well as a guide to decency and civility. However, we do not know how this ideal became manifest in daily life. There was a judiciary in Egypt that dealt with litigations but no records survive of a written legal codex or what principles guided their judgments. An interesting literary source of how the law might have worked is the "The Tale of the Eloquent Peasant" (Shupak, 1992). This is the story of the peasant whose donkey and other goods were confiscated by a low-ranking official. The peasant takes his grievance to a steward, then to a local judge, who in turn refers the case to a higher official, and the case eventually reaches the king. The peasant's property is duly returned to him. The king is apparently the final arbiter of all disputes and since his judgments are the law of the land, it is likely that legal principles changed as kings with different attitudes succeeded one another.

**THE SOUL, THE SPIRITUAL WORLD AND THE FINAL JUDGEMENT.** The foundation of Egyptian concept of the soul was that it was immortal, it continued to exist after the body perished. In addition to the moral force of Ma'at, the Egyptians also believed in two other psychic entities, Ka and Ba. Ka, a person's double or soul, was born with him but lived independently during his lifetime. But when the person died, Ka rejoined him and continued to dwell with him in his tomb. This belief in Ka required ancestor worship, periodic sacrifices and libations offered by descendants to nourish and appease the deceased. In return, the family expected Ka to protect them and provide them with assistance when requested. Ba, in contrast, parted with the body at the moment of death and entered the underworld where it was subjected to the "Judgment of the Dead" (Fig. 10-30). Proceeding through a series of passageways and gates of the underworld, Ba was haunted by demons and aided by angels along the way. Finally, facing

## JUDGMENT IN THE HALL OF DOUBLE JUSTICE



**Fig. 10-30.** The judgment of a person's soul (Ba), his heart put on a scale (left). If judged evil, his Ba is devoured, if judged good he is admitted to heaven (right). (From the British Museum Collections)

Horus and Osiris, Ba was judged by weighing the owner's heart to determine whether he was a good or bad person in his lifetime. If judged a sinner, the heart was devoured by a monster; if virtuous, Ba was admitted to heaven. To aid Ba's passing through this test, the dead were often buried with the "Book of the Dead." That was a scroll containing magic formulae and incantations that offered assistance to Ba at different sites and stages of its journey to heaven.

**THE EGYPTIAN MNEMONIC ETHOS AND MINDSET.** Ancient Egyptian ideology was an elaborate mythology based on fiction rather than reality, but it contributed greatly to the endurance of an economic and social order intended to serve the ruling minority at the expense of the toiling masses. How did it come about that the disenfranchised and exploited masses accepted that fiction? Undoubtedly there was some coercion involved and also some deception. A police force and overseers may have seen to it that the masses did not violate basic rules but there is no evidence that they were heavily armed or exercised undue force. Some of the brightest members of the elite may have been disingenuous in upholding appearances and in their protection of their class privileges. For instance, a vizier may have known that the pharaoh he was serving was not a god but someone with little or no comprehension of what transpired in his kingdom, and used ruses to keep that a secret. But the available evidence suggests that the majority of Egyptians genuinely believed that the pharaoh they served was a divine being, that the world they lived in was run by mysterious gods and that, therefore, it was their duty to serve the pharaoh and worship the gods. In line with our mindset hypothesis, we propose that given the cultural indoctrination that everybody received from infancy onwards, mnemonic mechanisms, or mnemonons—rehearsed and recited preconceptions, imitation and social facilitation, *idée fixe* and traditional ways of interpreting things, and the inner voice of one's conscience—assured that the established ideology was assimilated by most people, from the king and nobles down to the masses of laborers and peasants.

Once the educational system of Egyptian civilization became established, members of the royal family and the nobility came to genuinely believe that they were members of a superior stock, legitimately entitled to all the privileges they enjoyed. Not only were they indoctrinated to believe that but they were visibly different from the toiling masses. Unlike the poor, they were clean, scented, well dressed and decorated with precious jewels, spoke well and had good manners. But how did it come about that the peasants and laborers came to accept the idea that it was their duty to toil for the select few and hand over a good portion of what they produced as a form of taxation? Were they coerced or did they accept their servile status in society as their fate? Our argument is that they did accept their fate as they learned and believed the value system of their society. They were not encouraged or equipped to be critical thinkers; they obeyed and lived by the dictates of Ma'at. As a consequence, the social order endured in spite of the institutional curtailment of rational advances but it collapsed when challenged by rationally more advanced civilizations, that of the Macedonian Greeks and the Romans.

**10.2.5. A Brief Review of the Ethos of Some Other Archaic Civilizations.** Civilizations arose in several other regions of the globe after the formation of the Mesopotamian and Egyptian civilizations. Some of these civilizations were influenced by contacts with Mesopotamia and Egypt, while others evolved independently and acquired an ethos and mindset altogether different. Among archaic civilizations that had contact with Mesopotamia and/or Egypt was the Harappan of the Indus Valley, the Hittite of Anatolia, the Minoan of Crete, the Mycenaean of Greece, and the Phoenician of the Levant and North Africa. Among those that developed independently were the Chinese civilization, and several civilizations that emerged in America at a much later date, beginning with the Maya. They all shared a set of archaic traits that distinguished them from the Classical and Modern civilizations but also differed from each other by their adaptations to different environmental conditions and challenges. We begin with the Mayan civilization.

*The Agricultural Mayan Civilization.* The archaic Mayan civilization of Central America had many similarities with the Egyptian and Mesopotamian civilizations even though it developed independently several thousand years later and was separated from the latter by a vast ocean (Coe, 1999; Demarest, 2004; Beach et al. 2011). It was an agricultural civilization that developed in a dense inhospitable rainforest, not along large rivers in grassy or desert plains as the Mesopotamian and Egyptian civilizations.

**MAYAN ECONOMIC AND POLITICAL ORGANIZATION.** Neolithic Mayan settlements with fired clay pottery and figurines have been dated to about 3.8 k.y.a.; it is referred to as the pre-Classic period. The Classic period of Maya civilization began about 200 CE. Farmers in the flat land dug canals to collect rainwater from ponds and drain wetlands using a slash-and-burn agricultural technique. The cleared land provided a good harvest for several years; eventually, the land was exhausted and the farmers moved on and cleared new land. Those farming on mountain slopes, laboriously built stone-walled terraces designed to conserve water. The Mayan's staple was maize, but they also cultivated manioc, squash, sweet potato, tomato, avocado, chili pepper, vanilla beans, and cacao. They raised turkey, ducks and dogs for meat, and hunted deer, boars, and rabbits. Although artisans produced gold, silver and copper ornaments and jewelry, the Maya had no metallic tools or draft animals, and were unfamiliar

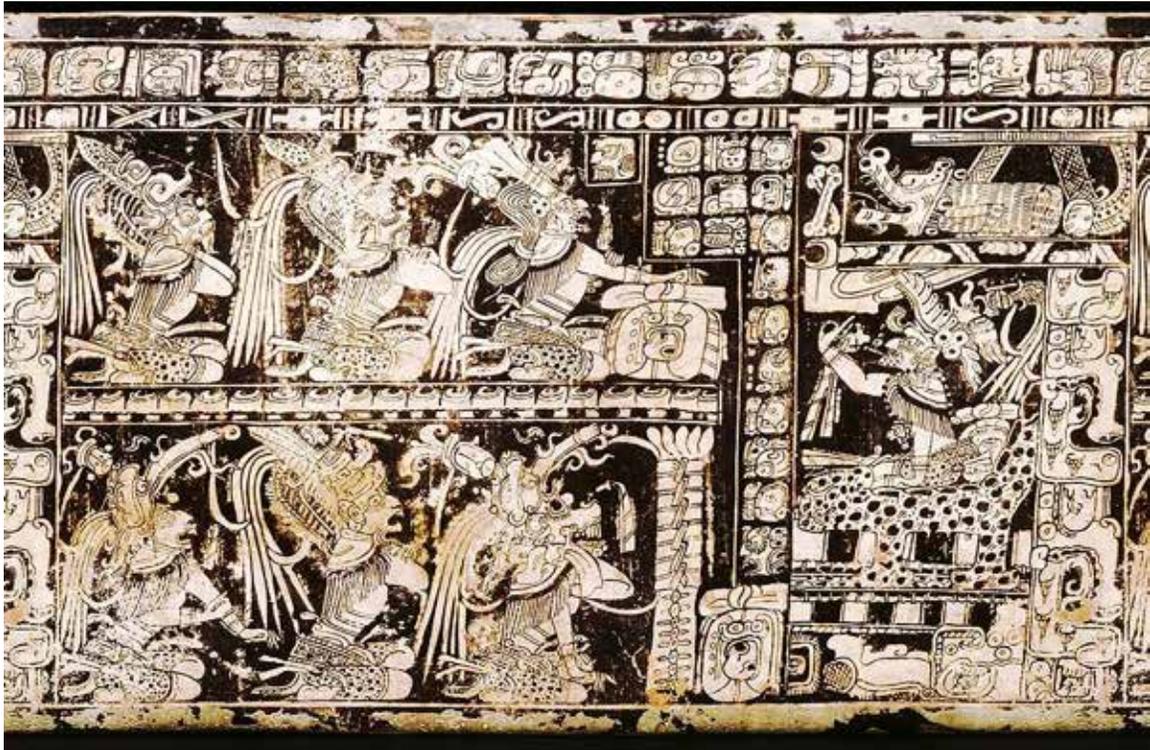
with the wheel for transportation. The heavy stones they used to build pyramids and palaces were laboriously carted by peasants and slaves.

The Mayan city-states were ruled by a king with a class of nobles and priests. Elaborate headgears, jaguar pelts, fancy dresses, jade ornaments and jewelry worn by the king and nobles distinguished them from the commoners. Monumental edifices—pyramids, temples, government buildings and palaces erected on cleared plazas—mark the center of these states, and can be seen to this day at Tikal, Palenque, Copán, Calakmul, Uxmal and several other sites, extending from southern Mexico, through the Yucatán Peninsula, to Guatemala and Belize. The cities were principally ceremonial centers, and the plazas were sites for the gathering of people on festive occasions. The commoners lived around the city center and in scattered villages. The Maya developed a writing system with more than a thousand glyphs (phonetic symbols and logograms), and a numeric system and calendar for recording the dates of important events (Coe, 2005). Some texts describe religious rituals, divination and prophecies; others record the actions of kings; and still others are records of astronomical observations. The kings claimed to be of divine descent and were buried in enduring tombs furnished with valuables. Priests carried out elaborate rituals to the gods to appease them and assure the prosperity of the state. The purpose of astronomical observations was divination, advising the rulers which days were propitious to plant, harvest, or go to war. By about 900 CE, Mayan civilization began to decline and most of the cities were abandoned by 850 CE. It is currently thought that a combination of endless wars between the city states was a major cause of the collapse.

**MAYAN ETHOS AND MINDSET.** The Maya were an extremely religious people, believing that everything that happened depended on the malevolent or benevolent actions of the gods. Kings and priests had to interact with the gods to assure the cities survival and prosperity. Priests formulated an elaborate mythology about the origin of the universe, the nature and activities of the gods and man's interrelations with them. All that was recorded on stelea, wall paintings, and codexes. The most famous creation myth is known as Popol Vuh (Freidel et al., 1995; Tedlock, 1996). At the beginning, the world was empty, quiet and motionless. But, then, the gods decided to create humanity so that they will become known and worshipped. First they used mud to mold man, but that fell apart. Then they used wood, but that disintegrated. Finally they used maize, and humanity was established. There were many gods, and they formed a hierarchy. The sun, moon and planets were sky gods; thunder, lightning and rain were the work of gods that dwelled in the mountains; maize, fertility, and love had their earthly gods; and the spirits of ancestors and demons dwelled in caves, lakes and waterholes. The gods were created in the image of man—they were born, grew, married, fought and died—but they were much more powerful than humans. Most of them are represented with a ferocious look (Fig. 10-31). On festive occasions the king, priests and nobles wore face masks and costumes to represent the deities, pretending or believing that they became transformed into the gods and acquired their power. To propitiate the gods, lay people and priests tortured themselves by fasting and abstinence, cut their ears, tongue and genitals, and offered the collected blood on a plate to the gods (Schele et al., 1992). In addition to the daily practice of offering meals and drinks to the gods, humans were sacrificed in large numbers on certain occasions. Their hearts were torn out and offered as an appeasement to the gods. The consumption of hallucinogens and alcoholic

beverages was common to bring about visions. Seen from a biopsychological perspective, Mayan efforts to pass from the mundane to the sacred world relied on mnemonic mechanisms to create the illusion and delusion of communion with the gods.

## MAYAN VASE OF THE SEVEN GODS



**Fig. 10-31.** Six Mayan gods with different head-dresses sitting cross-legged in front of a cigar-smoking chief god sitting on a throne. (Photo of a vase by Justin Kerr)

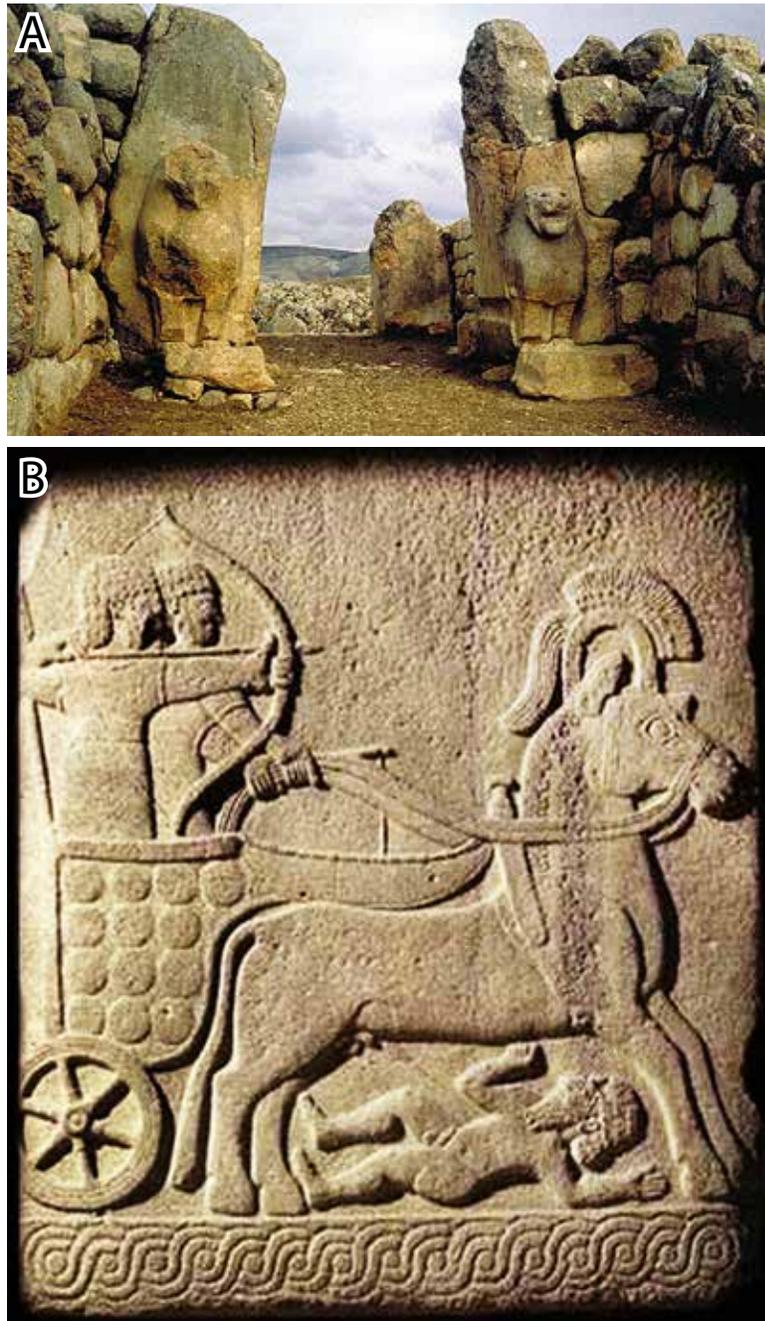
*Two Martial Civilizations.* Two archaic Bronze Age civilizations that closely resembled the Mesopotamian were the Hittite and the Mycenaean, relying greatly on warfare and conquest, and the exaction of tributes from the occupied lands, as a source of economic riches.

**THE MARTIAL HITTITE CIVILIZATION.** The available archeological evidence suggests that the Hittites, who originally lived around the Caspian Sea, began the occupation of Anatolia about 4.2 k.y.a. (Bryce, 2002). By about 3.9 k.y.a., Hittite kings, who acted as high priests and expected to be worshipped as gods, ruled from their capital, Hattusa, over an empire extending as far south as Upper Mesopotamia and as far west as the Aegean Sea. Hittite kings built

palaces and temples in heavily fortified cities (Fig. 10-32) and left behind cuneiform clay tablets recording their diplomatic correspondence, business transactions, legal rules, and religious rituals and oracles (Neve, 1996). The military strength of Hittites came from being pioneers in the use of light and swift horse-drawn chariots in warfare and the use of iron weapons. They mastered the Anatolian invention of smelting iron ores by using bellows and hardening the pig iron by hammering it over charcoal to become alloyed with carbon. The use of chariots and iron weapons enabled them to defeat large infantry units using bronze weapons. However, the lands occupied by the Hittites never became fully integrated into their empire and its boundaries shifted back and forth depending on the military skills of a succession of kings. By about 3.2 k.y.a., the Hittite empire collapsed and the Iron Age Assyrians came to dominate the Near East.

**THE MARTIAL MYCENAEAN CIVILIZATION.** Major cities of this Bronze Age civilization along the Aegean Sea were Mycenae, Athens, Tiryns, Pylos, and Thebes. It flourished from about 3.9 to 3.1 k.y.a. Most Mycenaean towns were built on hilltops and were heavily fortified (Fig. 10-33). They were probably military and administrative centers. The Mycenaean cities were ruled by a king and a militant elite, possibly the Achaeans of Greek tradition, who as fighters, pirates and traders commanded much of the Mediterranean. Tombs

## A HITTITE STRONGHOLD AND ARCHERS



**Fig. 10-32.** A. Entrance to a fortified Hittite city. B. Hittite archer and charioteer. (From Turkey-Hittite.jpg)

have revealed that some warriors were buried equipped with a bronze helmet and cheek plates, and bronze neck, shoulder, chest and shin guards, accompanied by precious metal objects. While this indicates respect for the dead, and Linear B tablets refer to Greek gods, such as Zeus, Hera and Poseidon, the Mycenaeans did not build temples and there is no evidence for a priestly class. In addition to commanding a large fleet on the sea, they also used light chariots on the land, presumably lording over peasant villages. They maintained commercial contact with Cyprus, the Levant and Egypt, and Mycenaean art objects, such as pottery and bronze, have been found along the Mediterranean as far as Sicily, Italy and Spain. The Mycenaeans occupied Crete about 3.4 k.y.a. but the civilization disintegrated within a few centuries. It is believed that the Mycenaean strongholds were destroyed by invading Iron Age Greeks from the Balkans. The Greeks of the Classical period remembered the Mycenaean civilization as their heroic age.

### LION GATE TO THE CITADEL OF MYCENAE



**Fig. 10-33.** Lions Gate of the fortified city of Mycenae. (From Wikipedia; Lions-Gate-Mycenae.jpg)

*Three Mercantile Civilizations.* Altogether different from the autocratic, agrarian and religious civilizations of Egypt and Mesopotamian, and the militant civilizations of the Hittites and Mycenaeans were the mercantile civilizations of the Harappans of the Indus Valley, the Minoans of the island of Crete, and the Phoenicians of the eastern and southern shores of the Mediterranean.

**THE MERCANTILE HARAPPAN CIVILIZATION.** The archaic Harappan civilization of the Indus Valley occupied a large area in what is now Pakistan (Marshall, 1931; Wheeler, 1966; Kenoyer, 1998; Wright, 2010). Archeological remains indicate that the region was occupied beginning

about 9.0 k.y.a. by pre-ceramic farmers, and by farmers with ceramic goods by about 7.5. k.y.a. An early urban settlement, forming about 5.3 k.y.a., was Harappa on the banks of the Upper Indus. The much larger city of Mohenjo-daro along the Lower Indus was established about 4.5 k.y.a. Mohenjo-daro was a planned city with houses of fired and mortared brick built along grid-like streets (Fig. 10-34). The city had two parts: the citadel with public buildings and the lower district with residential buildings and a public bath. Most of the houses were of similar size, with inner courtyards, wells, a room for bathing, and a drainage system. There were no monumental edifices in Mohenjo-daro like the Egyptian pyramids or the Mesopotamian ziggurats. Nor is there evidence there for a palace occupied by a king, or for tombs and elaborate burials. The Harappans may have cremated their dead.

### THE CITY OF MOHENJO-DARO



**Fig. 10-34.** Mohenjo-daro of the Indus Valley, with the citadel and residential district. (Wikipedia; Mohenjo-Daro. jpg.)

A stone statue of an unknown man with a simple head-dress gives the impression of a prosperous citizen, perhaps a mayor rather than a king (Fig. 10-35). Seals and tablets indicate that the Harappans had a writing system, as yet undeciphered, and standardized weights to measure goods. Miniature wheeled carts with bullocks suggest transportation of goods by

farmers and traders. Although docks have been found, there is no indication that they had an extensive agricultural irrigation system. The prosperous Harappan civilization must have been based on commerce, with hinterland farms supplying staples. A recent study suggests that the cities of the Indus Valley were abandoned about 1.5 k.y.a. when, due to climate change, the monsoon-fed rivers dried out (Giosan et al., 2012). Nothing is known about the religion of the Harappans or their relationship to the later evolving Hindu civilization.

**THE MERCANTILE MINOAN CIVILIZATION.** The archaic Minoan civilization arose on the island of Crete, where farming communities were dated to about 9.0 k.y.a. (Dickinson, 1994). Cretan farmers grew wheat, barley, chickpea, and fruits. They raised cattle, sheep, goats and pigs. Then, about 4.9 k.y.a., Crete became a maritime power, trading extensively with Egypt, Mesopotamia and the Greek islands (Castleden, 2005). The stone buildings of Knossos, Phaitos, Malia and Kato Zakros were dated to about 4.2. k.y.a., and following their destruction, perhaps by a volcanic eruption, they were rebuilt about 3.9 k.y.a. The buildings, many of them multistoried, were palaces serving as residences, administrative centers and as storage sites for goods. Commerce appears to have been the principal occupation of the ancient Cretans. Major items of Minoan trade were copper and tin, and luxury goods. The Minoans must have had an effective navy to defend the island because there is little evidence for fortifications. They used an early writing, still undeciphered, that suggests Egyptian influences (Fig. 10-36). By about 3.4 k.y.a. the Island was struck by some catastrophe and Crete was subsequently occupied by the Mycenaean Greeks. The Cretan Linear script A was replaced by Linear script B written in archaic Greek.

## A MOHENJO-DARO PRIEST-KING



**Fig. 10-35.** Stone figurine of an unknown person, from Mohenjo-Daro. (Wikipedia; Mohenjo-Daro Priesterkönig.jpg)

## CRETAN DISC WITH WRITTEN TEXT



**Fig. 10-36.** One side of a Minoan clay disc from the palace of Phaistos with pictograms and hieroglyphs. (Wikipedia; Disque de Phaistos A. jpg)

In contrast to the religious ethos of Egyptian civilization, preoccupied with unearthly matters, and the introspective mindset of Egyptians concerned with righteous behavior, Cretan civilization appears to have been a down-to-earth one dominated by an extroverted people seeking to have a good time, living in the-here-and-the-now. The Minoans did not build temples, and the tombs tended to be simple. We know little about their religion; it appears that they have worshipped goddesses. There is little evidence how the commoners lived, but the elite lived in great luxury in open air palaces, decorated with frescoes with scenes of daily life. One of these frescoes shows women elegantly dressed with elaborate hairdos (Fig. 10-37), another painting shows a group of men and women enjoying a day on the water in a flotilla of pleasure boats (Fig. 10-38).

## MINOAN LADIES



**Fig. 10-37.** Frescoes of three Minoan women, from the palace of Knossos. (Wikipedia; Knossos fresco women.jpg)

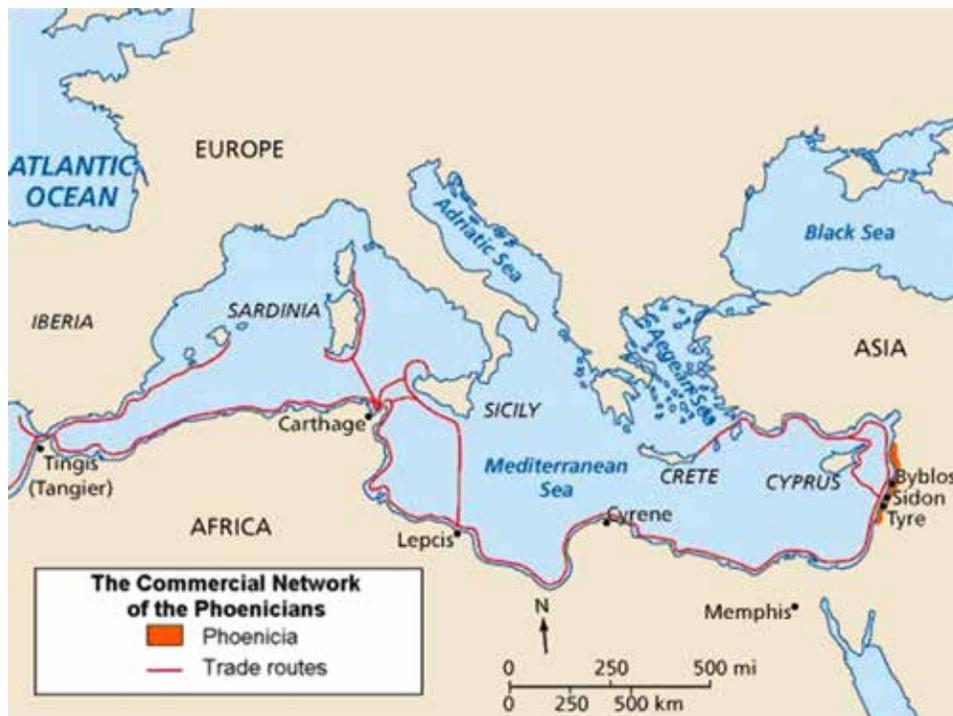
## MINOAN LUXURIOUS LIFE



**Fig. 10-38.** Fragment of a Minoan frieze, from Akrotiri, Greece. (Wikipedia; Minoan Miniature Frieze.jpg.)

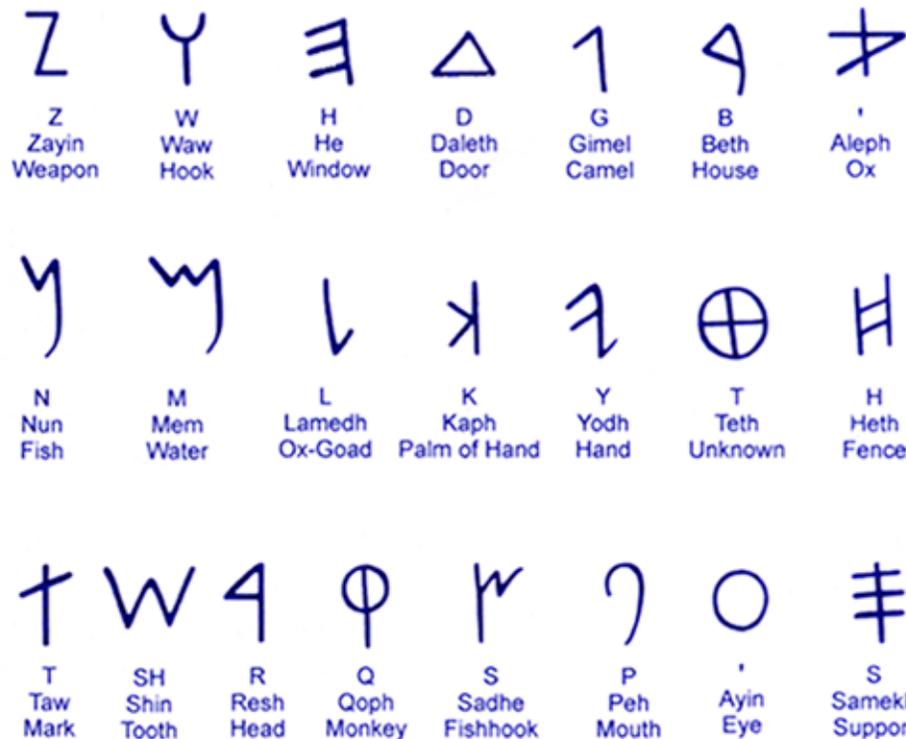
**THE MERCANTILE PHOENICIAN CIVILIZATION.** Phoenician civilization began as a number of politically independent cities, such as Byblos, Tyre and Sidon, the Canaanites of the Bible in the region that is now Lebanon (Fig. 10-39). These cities were established by a maritime people who are believed to have originated in Arabia along the Red Sea (Mosati, 1965; Markoe, 2000). In time, the Phoenician colonists established cities along the southern coast of the Mediterranean, such as Carthage, and trading posts previously dominated by the Cretans and the Mycenaeans. In addition to being traders, the Phoenicians were good architects, skilled metal workers, jewelers and they produced rare dyes and fine textiles. The Romans, seeking naval domination of the Mediterranean were bent on destroying Phoenicia (*Carthago delenda est*; Carthage must be destroyed.) While the Phoenician navy was initially larger than that of the Romans, they had no standing army but used mainly mercenaries – Numidians, Berbers and Iberians – to fight the Romans during the Punic Wars (Goldsworthy, 2010). Phoenician civilization disappeared with little trace when the Romans destroyed Carthage in 146 BCE. Little is known about Phoenician material and ideational culture because, in their fury, the Romans razed their cities and either mercilessly killed the people or sold them into slavery. However, the Phoenicians did leave behind a momentous legacy, a non-pictographic script with 22 symbols for consonants, the foundation of our alphabet (Fig. 10-40). In a modified form, this writing was adopted by the Hebrews, Greeks and Romans, and since it is a much simpler tool for information recording and transmission than the cuneiform and hieroglyphic writing, and easier to master, it has contributed greatly to the spread of literacy in the wide population and contributed to the democratization of society in the new civilizations of Classical Greece and Rome.

## PHOENICIAN CITIES



**Fig. 10-39.** Phoenician cities and trade routes. (Wikipedia; PhoenicianTrade.png)

## THE PHOENICIAN ALPHABET 1400 BCE



**Fig. 10-40.** The twenty-two consonants of the Phoenician alphabet, read from right to left. (Google)

**10.2.6. Summary: The Organization, Ethos and Mindset of the Different Archaic Civilizations.** There were both similarities and differences in the organization and ethos of the different archaic civilizations, and the presumed mindset of the people that created and sustained them.

*Shared Traits of Archaic Civilizations.* Among the organizational similarities were the following. (a) They all had urban centers as the seat of a formal government that used rational means to administer the political, social and economic affairs of the state. (b) Their societies were hierarchically organized politically and were stratified socially, as attested to by class differences between rulers and ruled, and the discrepancy in the wealth of the governing elite relative to the laborers and serfs. (c) All had an economy based on division of labor and they all promoted the trades and barter-based commerce to increase the state's prosperity. (d) They all developed or adopted a writing system to record in an enduring form ongoing economic transactions; past or present political events; hymns, myths and the proper performance of religious rituals, and so forth. (e) All commissioned art works to embellish their habitat, boast about their political and military accomplishments, and engage in state propaganda. (f) All developed rudiments of an applied science, such as arithmetic, geometry and astronomy, and they used standardized measures, but none, as far as we know, developed a logic-based system of philosophy or a theory-based rational science.

*Differential Traits of Archaic Civilizations.* However, there were also significant economic, political and ideational differences among the different archaic civilizations. (i) Some were principally agricultural (Mesopotamia, Egypt, Maya); others were martial (Hittite, Assyria, Mycenaea); others were commercial (Harappa, Minoa, Phoenicia). (ii) Some agricultural civilizations (like Egypt) were peaceful, others (like Assyria) belligerent. (iii) Each had a different pantheon, performed different rituals, and developed different mythologies. (iv) Each civilization developed different but enduring architectural and artistic styles. (v) Each developed a different writing system. Some of these differences are attributable to ecological and geopolitical factors. Mesopotamia and Egypt were agricultural civilizations because they developed along large rivers that flooded every year, and taming the rivers by collective effort produced immense wealth. Egypt tended to be peaceful because it was well protected from outside invasion by the surrounding desert; exposed Mesopotamia, in contrast, was martial because it was subject to constant incursions from neighboring lands and could survive only by endlessly engaging in warfare. The mercantile civilizations of Minoa, Mycenaea and Phoenicia came into existence because as mariners along the shores of the Mediterranean, they could profitably carry precious goods from one site to another. Still other civilizations arose opportunistically, either by being situated along trade routes or by filling vacated niches.

*Differences in the Ethos and Mindset of Archaic Civilizations.* In addition to these shared and differential traits in economic, social and political development, each archaic civilization developed its own distinctive ideational character, or ethos. We attribute the ethos of a civilization to the ideology, convictions and commitment, or mindset, of the people who created and sustained that civilization. We postulated in the preceding chapter, three biosychologically-based mindsets, what we have called the affective/impulsive, mnemonic/compulsive, and the rational/calculating (Table 9-2). In this chapter we argue that all archaic civilizations displayed considerable advances in practical rationality but differ in their ideologies. We identified the ethos of agricultural civilizations, as best exemplified by ancient Egypt, as mnemonic/compulsive; martial civilizations, as best exemplified by Babylon and Assyria, as affective/impulsive; and mercantile civilizations, displayed the dawn of the rational/calculating ethos.

*Archaic Agrarian Civilizations and the Mnemonic Ethos and Mindset.* Farm work without machinery is a labor intensive occupation. Cultivating the land by hand—whether digging with a hoe, holding on to a plow, harvesting with sickle or scythe—is strenuous work. And breeding and raising domestic animals—taking them to pasture, watering them, guarding them and keeping them clean—requires unceasing attention. As primates, we are not naturally disposed to engage in hard labor or work continuously, as do ants. Our Paleolithic ancestors, hunters and gatherers, became active when hungry or lured by some appetizing delicacy, and celebrated, socialized or rested when sated. They lived from hand to mouth, seeking affective gratification with little concern about the tomorrow. All this changed when changing ecological conditions forced our Neolithic ancestors to develop the habit of working hard and continuously for delayed rewards. Arduous tilling the land and sowing seed in the spring, watering and weeding plants in the summer have no immediate benefit. Harvesting the crop in the fall, and putting aside enough grain for the winter and for planting next year delays gratification as well. This new pattern of behavior involved control of affects by mnemonic mechanisms: the acquisition of the compulsive habit to work regularly day in and day out, getting up at dawn and not going

to rest until dusk; the self-discipline of working hard, freezing in the morning and sweating in the heat of the day; performing daily routines and carrying out unpleasant chores rain or shine. To a large extent this new mindset was supported by a prevalent Neolithic mythology that the cultivated land belonged to ancestors, whose spirits dwelled in or around the house and demanded the preservation of the inherited land. In exchange for their labor and ancestral worship, the family's safety, health and prosperity was assured by these spirits.

That mnemonically based ideology had to be modified when the tillers of the land were compelled to deliver to the state a good part of what they produced as a form of taxation. The new ideology took the form of worship of the state's divinities. The kings and priests developed the mythology that the city-state belonged to a god or gods, and in order to assure divine protection it was the responsibility of all to do their part to work for the state. The kings propagated the myth that they were either descendants of gods or themselves gods. To visibly support that claim, they spent much of the state's resources erecting temples to the gods and building palaces for themselves. To finance these projects, they had to heavily tax the population. To assure compliance of the working people, they had to indoctrinate the populace that a divinely ordered system justified the economic, social and political inequities.

Institutional indoctrination is the foundation of the solidarity and integrity of civilized societies. Children are motivated to learn as much as they can about the world they live in and much of what they learn is based on an admixture of what they perceive and what they are taught. The child that grew up in a closed society like Egypt—where the desert did not allow travel to distant lands whose people entertained other beliefs, and where the caste system did not allow much social mobility—assimilated what he was taught about the nature of the universe and of society and considered it the absolute truth. In a child's mind, mnemonic mechanisms turned invisible gods into images; amulets and idols made these phantoms tangible and visible. The sun perceived as a hot disc became the visage of a god, and the flickering stars turned into the eyes of gods. The prince that a child saw from a distance was someone much like himself but those princely robes clothed an evidently superior creature. Children were denied education and were compelled to spend much of their time performing chores. The minds of children closed early, and they continued to believe what they had been taught as they grew into adults. Likewise, the noble boy may have perceived that he was not all that different from the poor boy in rags carting a pail of water, but he, growing up in luxury, came to believe that he was from superior stock. With the mnemonic mindset of its people and its entrenched formalism and traditional ethos, ancient Egypt survived as a prosperous civilization for millennia. But because of its inflexibility and compulsiveness, Egyptian society became ossified and could not resist the onslaught of a more rationally advanced civilizations like the Hellenized Macedonians and the Romans.

*Archaic Martial Civilizations and the Affective Ethos and Mindset.* For much of its evolutionary history, the Paleolithic human male was a nomadic hunter, and his survival and prosperity depended on adventurousness, aggression, valor and ferocity, traits that we have identified as affective/impulsive. And as he developed improved weapons and strategies, he became so effective as a killer that in many regions of the planet he exterminated the prey he hunted. That forced him to settle down and become a farmer, breeder and herder. That

modification in life style led to settling in favorable locales, eventually forming rich villages and cities. People that lived in the surrounding steppes, mountains and deserts developed a predatory attitude toward these rich settlements. They had a new opportunity to turn from hunting animals to fighting and terrorizing settled people and plunder. In response, the occupants of villages and cities built walls to prevent these barbarian incursions. Some succeeded in defending themselves while others succumbed to the attackers, who became their overlords. In time, the character of some agricultural civilizations changed by developing a strong army and acquiring a martial ethos.

The difference between the Egyptian and Mesopotamian civilizations illustrates the development of this martial ethos. The pharaohs are rarely rendered in painting and sculpture as armed warriors and Egyptian armies rarely sought to extend their territory and occupy distant lands. Egypt was not a militant civilization. In contrast, the kings of Sumer, Akkad, Babylon and Assyria typically presented themselves as mighty warriors, fought each other endlessly, and sought hegemony over neighboring lands. Mesopotamian civilization was militant. Harshness characterized the relations of the rulers and the ruled at home; occupied people were always treated with cruelty. Geopolitical factors can account for the differences between the ethos of the Egyptian and Mesopotamian civilizations. Although the distance from one end of the Nile to the other is considerable, Upper and Lower Egypt were united early in Egypt's history with little evidence of warfare. Egypt's unification was probably aided by the ethnic homogeneity of the population and the relatively easy and safe travel by boat along the navigable Nile. Once unified, Egypt could retain its sovereignty without military might because the surrounding desert offered natural protection from invaders. Although the Mesopotamians could, likewise, sail along the Tigris and Euphrates from one end of their territory to the other, the inhabitants were of a more heterogeneous stock and unification was more difficult to achieve. Mesopotamia had potentially more arable land than Egypt, and desire for territorial expansion created conflicts between the city-states. Moreover, the widespread Mesopotamian irrigation system was far more difficult to maintain due to silting and salinization, and it was a challenging task to defend the trade routes from bandits and invaders. From the outset, city-states fought each other, and once they were united into larger kingdoms, the kings and later the emperors engaged in an arms race that turned this civilization into a very militant one.

Martial civilizations are led by ambitious kings who seek glory in battle and riches from their victims. Their soldiers hunger for opportunities to loot and rape. The ethos of a martial civilization is sustained by a mindset that is based on greed for profits from conquests and satisfaction from subjugating others to prove their superiority. Whereas the establishment of a peaceful civilization requires the inhibition of egotistical affects, the establishment of a militant civilization requires the facilitation of those affects. Children are naturally prone to outbursts of anger and violence. Many adults take great delight in observing violent activities like boxing or listening to stories about battles in war. Some children become aggressive only when deprived or frustrated; others grab, shove and push to get something they desire, while still others hit and bite and destroy things without any evident provocation. Parents may seek to control these outbursts by pacifying the child or punishing him. There is scientific evidence for a consistent relationship between harsh discipline and the development of aggressive behavior later in life, particularly in males (Farrington, 1991; Boutwell et al., 2011). Militant societies

sought to foster aggression in children and adolescents by exalting bravery and heroism, and used harsh discipline in the training of soldiers to turn them into fierce and brutal warriors.

*Archaic Mercantile Civilizations and the Dawn of the Rational Mindset.* We have characterized the rational mindset as a disposition to use perceptual evidence and logical reasoning to control mnemonic compulsion and affective impulsivity in thought and action. In terms of its expression in the ethos of civilizations, rationalism becomes manifest as a move toward secularism and pacifism: the replacement of magic and ritual by effective engineering and management to solve technical problems; questioning the veracity of mythological narratives and entertaining theoretical interpretations to describe natural phenomena; and the move toward justice and peace rather than force and oppression in trying to solve social problems. The creation and maintenance of a mercantile economy requires a rational/calculating mindset because success in business is achieved through astuteness and mental flexibility: buying low and selling high; estimating potential risks and gains; moving from place to place as interest dictates; and the ability to negotiate with people of different cultures. In the ideational domain, fostering the rational/calculating mindset requires the ability to critically analyze preconceptions and prejudices by using logical reasoning. We have no evidence that the latter has been achieved in any archaic civilization.

The archaic mercantile civilizations that we know about are the Harappan, Minoan and Phoenician. Unfortunately, we have only fragmentary information about their ethos and mindset. Development of practical rationalism in Harappan society is suggested by the planned layout of Mohenjo-Daro, the apparent egalitarianism of its prosperous population and their peaceful, civic lifestyle. We have no knowledge about their religion, but the absence of temples and mortuaries suggests an ideational move toward secularism. The lifestyle of the Minoans, as rendered in their art, also suggests a move towards secularism and naturalism. The Phoenicians were the most successful of the archaic mercantile civilizations but, again, we know little about their ethos and mindset, and the information we have comes mainly from their bitter enemies, the Romans. A move towards rationalism is indicated by their invention of the alphabet and the early adoption of metal coins to facilitate business transactions. On the other hand, there is archeological evidence that they worshipped a pantheon of gods that they borrowed from the Mesopotamians and Egyptians, and offered to them animal (and possibly also human) sacrifices. The development of critical thinking and logical reasoning as a mindset that altered the ethos of a civilization had to await the formation of the Greek city-states.

### **10.3. The History, and the Practical and Ideational Ethos and Mindset of the Classical Civilizations of Greece and Rome**

#### ***10.3.1. The Social, Economic and Political History of the Classical Greek Civilization.***

Greek civilization underwent a fundamental transformation after the dissolution of the Mycenaean civilization (Durant, 1939; Bowra, 1957; Hooper, 1967; Boardman, 1986; Martin, 1996). It is believed that the Mycenaean citadels were destroyed by invaders about 1,200 BCE, presumably Dorian Greeks from the Balkans. People who could write disappeared, hence we have no written record of what transpired during the period between the collapse of Mycenaean civilization and the dawn of the Classical Greek civilization about four

centuries later. This interim period is referred to as the Dark Age. Cities disappeared and the archeological evidence suggests that poor peasants and herders continued to live in the countryside in scattered villages. Then about 900 BCE larger settlements were beginning to form. That change was associated with the emergence of iron tools and weapons in tombs. Iron, if properly worked, is sturdier and holds a sharp edge better than bronze. Iron was also locally available and cheaper to produce since tin had to be imported to make bronze. By about 850 BCE Greek agriculture recovered considerably and the Greeks became literate again, modifying the Phoenician alphabet. Legends transmitted orally of the heroic past was now put into writing by Homer, or some unknown bards. These stories told about fierce men fighting one another to defend their cities and to gain personal glory. But by 600 BCE a new civilization was emerging that was discovering the merits of a rational approach to organizing society and interpreting the nature of man and the world.

*The Economy of the Greek Mainland, Islands and Colonies.* Unlike Egypt and Mesopotamia, the mountainous Greek mainland and scattered small islands have little fertile flatland to grow large quantities of wheat, and raise large numbers of cattle and horses. Farmers grew barley and oats in the valleys, and supplemented their meager diet by raising goats and sheep in the mountains, growing olives and grapes on the hillsides, and fishing in the sea. Population growth was a serious problem from the outset. In response to that challenge, the Greeks learned to sail along the coastline and later ventured into the “wine-dark” sea to carry olives, wine, pottery, and other products to distant harbors along the Black Sea and the Mediterranean to barter for grain. Small metal foundries began to produce weapons and shields, and ceramic workshops made fine pottery for international commerce. To facilitate trade, they began to mint coins of silver that were mined in Attica. Many Greeks moved from the farms to the cities and became artisans and traders. Turning from just bartering, adventurous Greeks began to establish colonies along the Black Sea, in Ionia along the coast of Anatolia, in Sicily, and farther west along the Mediterranean coast, in what is now southern Italy, France, and Spain. In some places the colonists may have been welcomed as traders of valued merchandise; at other sites they may have used force to establish and defend themselves. In many cases luxury goods were delivered in high quality ceramic containers which were prized by landlords, chieftains and kings, as far as southern Russia, the Balkans, and other European sites. Colonization, initially an economic necessity, brought great prosperity to the Greek city-states. But most important, colonization brought the Greeks into close contact with peoples of different cultures, greatly expanding their intellectual horizon.

*The City-State and its Changing Social and Political Organization.* The mountainous terrain of mainland Greece, the insulation of scattered Aegean islands, and the proliferation of distant colonies favored the emergence of independent city-states. Much like the archaic city-states, such as those of Sumer, the Greek *poleis* consisted of an urban center surrounded by a countryside. But the Greek city-states had a different social and political organization. Their inhabitants were free citizens governed by constitutional, civil and criminal laws rather than subjects ruled by the arbitrary decisions of a monarch. The first prosperous Greek city-states with this new type of economic, social and political organization were developing in Ionia; one of them, Miletus, became particularly prosperous and founded its own colonies. Because most of our knowledge about the social and political development of Greek city-states is based

on the history of Athens, our focus will be on the development of Athenian social and political organization.

**AUTOCRACY, PLUTOCRACY, AND DEMOCRACY.** The original rulers of Attica were kings supported by a landed nobility. But commerce gradually replaced land ownership as a major source of wealth, and businessmen and craftsmen without a noble pedigree increasingly demanded and gained a larger role in state government. The kings were deposed by about 650 BCE and either a single person (tyrant, autocrat) or an alliance of nobles and rich (plutocrats) assumed power and issued legal codes by which the citizens were ruled and judged. Greek historians mention among the tyrants, Draco, who drew up what most Greeks considered harsh laws that greatly favored the “well-born” (eupatridae). About 600 BCE, Solon introduced a more lenient legal code (eunomia), denying the plutocrats many of their privileges. The debts of poor farmers were cancelled; Athenian citizens could no longer be sold into slavery; and enslaved citizens were set free. Solon also established two constitutional innovations. First, he introduced a fourfold social grading system based on the monetary wealth of Athens’ citizenry. Second, he established a people’s assembly (boule) of eminent citizens selected by lot to which any citizen could appeal to contest the verdict of a magistrate (archon). However, Greece was not yet a democracy. Only the knights (hippes), the rich who owned horses and served in the cavalry, and the prosperous farmers (zeugitai) who owned a yoke of oxen and could equip themselves to serve as hoplites in the infantry were qualified to hold public office; the craftsmen and traders (demiurgoi) laborers (thetes) could not. About 500 BCE, Cleisthenes introduced a more democratic administrative system. He subdivided Athens into 10 voting precincts (demes) and registered all citizens as “tribal” members (philai) of the demes. Annually, every deme selected 50 individuals by lot to serve in the Council of 500 (areopagus). This admixture of participatory and representational government by all citizens was the first rational experiment we know of that was designed to create an egalitarian (democratic) government.

**THE EXCLUSIVENESS OF ATHENIAN DEMOCRACY.** Significantly, however, the new political order was not intended to be a universal democracy. Women were excluded from public deliberations and so were non-citizen males, a large segment of the population that could not claim Athenian descent. Free males from other Greek states or elsewhere (metics) who resided in Athens, and their descendants, had legal rights but were not eligible to vote, and slaves had no legal rights at all. This exclusiveness had serious repercussions and was one of the factors that led to the failure of the Athenian democratic experiment.

Why were all Athenian males, regardless of noble or common descent, prosperous or poor, become enfranchised but those of non-Athenian parentage barred from that right? An explanation that has been invoked is the military strategy that the Greek cities developed to defend their state and fight enemies, often other Greeks. By the sixth century BCE, the Greeks developed a heavily armored infantry of citizens, the hoplites, to replace the elite cavalry of Bronze Age warriors as the major fighting force (Fig. 10-41). Young males were trained from childhood in gymnasia to acquire physical strength and endurance and learn discipline, and at the age of 17 they had to join an army unit to train together to fight in a tight, interlocked formation, known as a phalanx. In this formation, the shield of each hoplite protected the

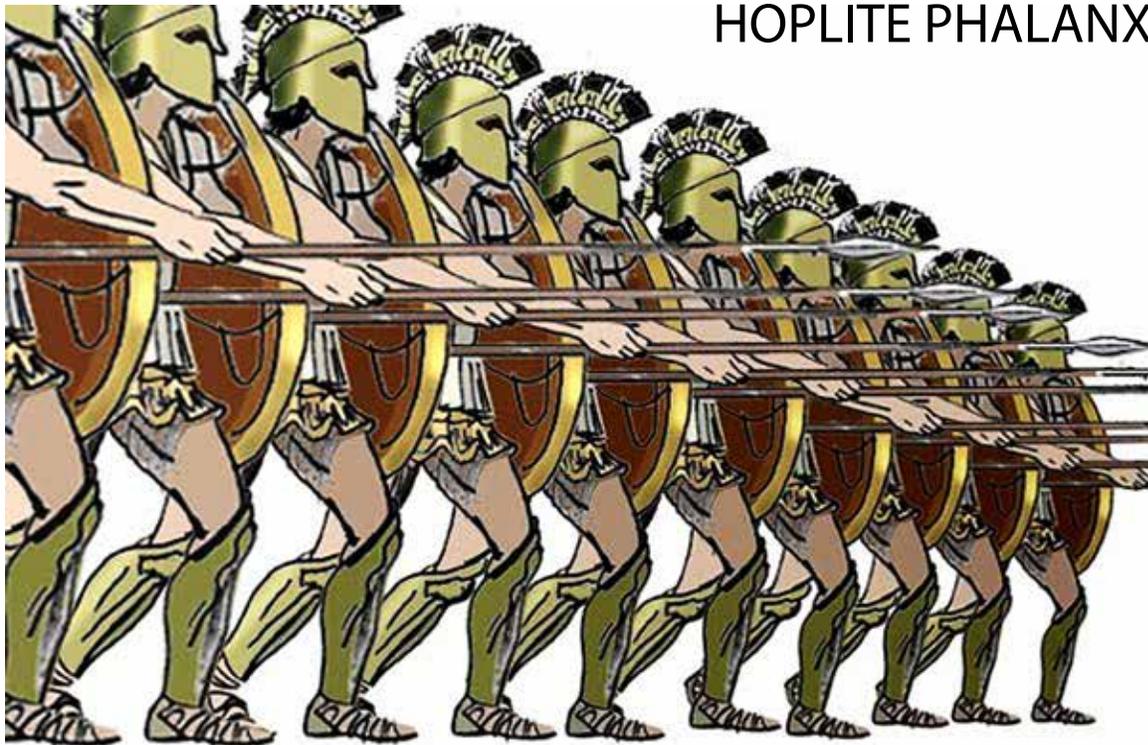
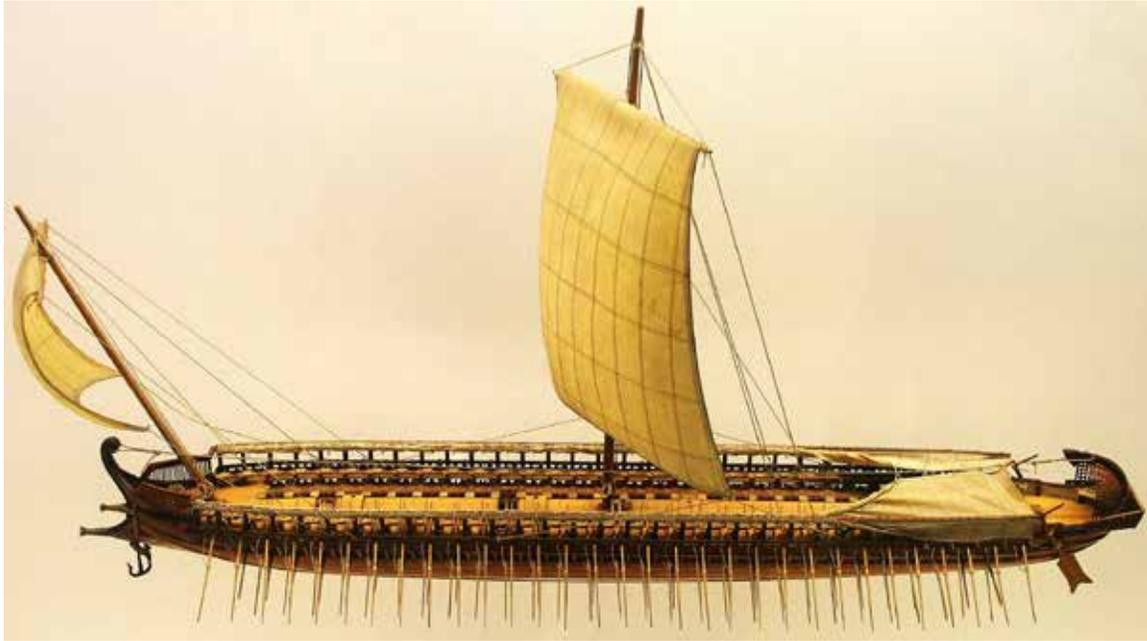


Fig. 10-41. The Greek phalanx formation. (Wikipedia)

left half of his own body and his comrade's right side in the line. Charging and maneuvering in perfect unison, the shields formed a protective wall that could stop warriors on horseback and easily defeat an infantry fighting in a loose formation. The prolonged training and shared military experience of the hoplites, irrespective of their social background, created a sense of solidarity among them as comrades-in-arms, and fully cognizant of their important contribution to defending the state, all hoplites could insist on participation in state government. Initially, most hoplites came from prosperous families who had the money to equip their sons with the heavy armor they wore into battle. But, then, as Athens developed a large army, the hoplites' weaponry was supplied by the state. When Athens built a large navy, many citizens were needed to row the warships, called triremes. These were sleek boats equipped with a metal spearhead and carried a crew of about 200 sailors and hoplites (Fig. 10-42). Over a hundred oarsmen were seated at multiple levels. By rowing in unison to propel the boat forward at high speed, enemy ships were rammed with the bow. At the height of Athens political supremacy, Pericles used state revenues to pay citizens with limited means for their naval service. Henceforth, these poor citizens also felt entitled to have the right to vote and fill government positions. Thus all Athenian male citizens became a privileged social class, a status that was rarely extended to non-citizens without a military or naval background, irrespective of their wealth or education.

**THE STATUS OF WOMEN AND SLAVES IN ATHENIAN SOCIETY.** Societies that exalt the militant lifestyle tend to treat women as servants or inferior to themselves. In the Greek city-states women were delegated to raise the children at home and take care of domestic chores, and were excluded from participation in public affairs. The women occupied interior rooms in the house

## GREEK TRIREME



**Fig. 10-42.** Model of the Greek trireme. (Wikipedia)

where they could socialize with other women but male visitors were barred from entering these rooms. While women were secluded in their homes, men moved about freely, spending time in exercise clubs (*gymnasia*) and at gatherings of men (*symposia*) where they were drinking, engaged in conversation, or being entertained. While women were expected to be faithful to their husbands, men were allowed to have sexual relations with slave girls or professional call girls (*heitara*). An unusual aspect of this masculine orientation was the idolization of the naked male body and acceptance of sexual relations with young boys.

Participation in governmental affairs presumes leisure time, something that was not available to commoners—farmers, artisans and laborers—in archaic civilizations. Slaves in archaic civilizations were typically owned and employed by the state, or by landlords, not by commoners. While slaves were also employed in Greece by the state, such as those employed in large numbers in the silver mines of Athens, many farmers and tradesmen as well as other people, had a few slaves whose task was to perform daily chores in the field, the shop, and around the house. That allowed the owners to spend time in the gymnasium watching the young exercise and to aggregate in the agora to listen to orators discuss politics or engage in philosophical discourse. As elsewhere, the slaves had no civil rights and their owners could treat them as they wished. However, many of the slaves were educated Greeks captured in battle and they were often used at home as tutors of the young, as skilled craftsmen in the shops, and as entertainers at public festivals. They may have become prosperous but they could not change their civic status. Metics or slaves could not marry Athenians, and the children of citizens sired by or born to metics or slaves out of wedlock were denied full citizenship.

**THE FAILURE OF GREEK-CITY STATES TO ACHIEVE NATIONAL UNITY.** At the height of its power, Athens sought to dominate and exploit the other city-states for gain and glory. Both Athens and Sparta were fully aware of the need to unite Greece, particularly in light of the Persian attempt under Darius and Xerxes to subjugate them. They defeated the much larger Persian forces by cooperating for a short period. But then, each seeking to dominate Greece, they turned against each other in a prolonged war. Animosity was inevitable because the ethos of Athens and Sparta were irreconcilable. Due to ecological and historic antecedents, Sparta developed a fundamentally different social organization and political system than Athens. Sparta, farther removed from the sea than Athens and with far more arable land remained until the end an agricultural society, and early in their history the Spartans, considering themselves equals (homoroi) but superior to their neighbors, the Laconians, subdued the latter and turned them into slaves (helots). Economically exploited and without any civil rights, helot rebellion was a constant threat. In response, the Spartans single-mindedly dedicated themselves to a martial lifestyle to prevent any uprising. If judged to be a weakling, a male newborn was taken to the mountainside and left to die. The healthy boy was taken away from his mother at the age of 7 and trained in barracks by older soldiers under strict discipline to become an invincible fighter. He learned to swim, run, jump, wrestle and box, and maneuver with others in rhythmic unison to the tune of music and martial songs. He probably remained illiterate, but was drilled to memorize Homer's epics and all the state laws. The Spartans themselves produced no literature or any art. The austere lifestyle and anti-intellectual mindset of the Spartans and the easygoing lifestyle and intellectual mindset of the Athenians were irreconcilable and that created misunderstanding and endless conflicts between the two. Being better organized militarily, Sparta defeated Athens in the long Peloponnesian war and Athens collapsed as a political power in 404 BCE. For several decades, Sparta became the dominant force in Greece but it was, in turn, defeated by the Thebans and eventually Greece lost its independence.

**ALEXANDER AND THE DEVELOPMENT OF THE HELLENISTIC WORLD.** Exploiting the power vacuum, Alexander of Macedonia, using a combined force of hoplite infantry and aristocratic cavalry, occupied Greece in 336 BCE. Then, joined by Greek soldiers and acting as a standard bearer of Greek civilization, Alexander proceeded to conquer a large portion of Asia and Egypt and built Hellenistic cities, such as Alexandria in Egypt and Antioch in Asia. After Alexander's death in 323 BCE, his empire was partitioned by his competing generals, and their descendants—the Seleucids, Ptolemies, Antigonids, and Attalids—ruled the Hellenistic world until the Roman conquest three centuries later. Paradoxically, Greek cultural influence increased after losing political power in the undemocratic Hellenistic cities. One reason was that the Macedonian kings depended on Greek soldiers, administrators, and merchants to run the affairs of the occupied countries. The other was that ambitious locals opted to attend Greek schools, learned to speak a Greek dialect (koine), exercised in gymnasia, and gradually assimilated other facets of Greek culture. In time this new elite became more cosmopolitan and sophisticated than the citizens of particular Greek city-states. Still another factor was that the Macedonian kings, to aggrandize themselves, spent considerable sums of money to support the preservation of Greek literature and art, and the promotion of science.

**10.3.2. *The Ethos and Mindset of Classical Greek Civilization.*** During the relatively short Classical period, Greek civilization underwent a phenomenal transformation not only

in its social and political organization but also in its ethos and mindset. We can distinguish in that transformation a modified affective/impulsive trend and a growing rational/calculating evolution.

**AFFECTIVITY AND RATIONALISM IN THE EVOLUTION OF GREEK CIVILIZATION: A PREVIEW.** Greek civilization began as an Archaic social and political order that can be characterized as affective/impulsive in its ethos. The Bronze Age Mycenaean city-states, as we described earlier, were ruled by a martial elite, kings and nobles who governed the hinterland from fortified citadels, and whose prosperity derived from their domination of the trading centers of the Mediterranean coast as seafarers. After the collapse of this civilization and following centuries of a Dark Age, Iron Age Greeks from the Balkans penetrated the mainland and settled as farmers and herders. Lacking enough arable land to provision the growing population, many Greeks became mercenaries or sailors again, carrying goods from harbor to harbor and, aided by their military skill, occupied islands and gradually establishing numerous colonies along the Mediterranean and Black Sea coast. Many of the Greek city-states became prosperous by producing olive oil and wine, manufacturing high quality pottery for transporting and storing these prized products, and selling them for needed staples and raw materials.

The mindset that led to the growth of old and the formation of new Greek cities is attributable to affective factors. First, as an enduring cultural tradition, the youth of Greece was inspired by recitations of Homer's heroic poems to consider physical fitness and bravery the greatest of manly virtues, inducing them to participate in competitive games and the honing of martial skills. Second, Greek fighters developed a new military formation, the hoplite phalanx, enabling a small disciplined group of infantryman to withstand the onslaught of large armies led by nobles on horses and less capable foot soldiers. Third, with their training as warriors, many of them opted to become mercenaries of Near Eastern kings and satraps, further developing their military skills and familiarity with foreign lands. Serving as a hoplite or a sailor, or as a veteran, each individual, irrespective of his social or economic background, came to consider himself a distinguished member of the city-state, claiming the right to vote and eligibility to hold public office. Fourth, Athens, and some other city-states, built a large navy and any rower of the swift triremes, including the poorest citizens, could claim the right to full citizenship. However, the cultivation of this affective/impulsive mental disposition—arrogance (*hubris*), combativeness and a sense of superiority—also had negative consequences. The *hubris* of the warriors of each city-state led to an ideology of clannish and parochial exclusiveness. Citizens of one city-state became disdainful of citizens of other city states and contemptuous of vanquished “barbarians.” Although living amongst them for generations, the haughty soldiers, sailors and veterans of the city-state considered themselves superior to noncombatant women, and to all other male residents of the city, whether merchants, artisans, laborers or slaves, who could not trace their ancestry to the original inhabitants. As a consequence the city-states, instead of uniting, endlessly fought each other. Productive members of each city-state became disenfranchised and alienated. Eventually, the Greek city-states were subjugated by the Persians, and later by the Macedonians and the Romans because they were not able to establish a unified Greek nation with a large citizenry.

However, the affective arrogance of the Greeks also had positive consequences. It led to the evolution of the idea of the dignity of man. The Greeks came to view themselves as powerful individuals who could mold their own destiny by cultivating themselves and reorganizing their society. And their independence, as we describe later, led to the irreverent questioning of authority in the realm of ideas, the development of logical reasoning as something superior to spinning imaginary tales, and the audacity to critically examine the nature of the cosmos and man's place in it by using observation and logical reasoning.

**GREEK HUBRIS AND MILITANCY.** We have identified in the preceding chapter (Table 9-2) arrogance, bravery and extroversion as affective-impulsive, limbic system traits. The mindset of the proud individual is to distinguish himself by exertion, bravery and extraordinary accomplishments. These traits—to push oneself to the limit of one's abilities, overcome obstacles, and prove oneself superior to anybody else—were elements of the Greek cultural tradition (Bowra, 1957; Robinson, 1948). The *Iliad* portrays Achilles as the handsomest, strongest and swiftest of the warriors, and an honorable man. He joins his fellow warriors to free Helen, the wife of Agamemnon's brother, who eloped with Paris, the son of the Trojan king, Priam. The Greek army sails to Troy, but the siege does not go well, partly because Achilles, angered by an affront to his honor, sulks and refuses to fight. But when Patroclus, his best friend, is killed by Hector, the Trojan prince, Achilles is driven to take revenge. Achilles does not fight for his city but for his individual honor and the anger caused by his friend's death, and Hector knows that he will be killed by the stronger and swifter Achilles, but he leaves the citadel and fights because that is what honor dictates. Achilles kills Hector mercilessly and, then, using a ruse by hiding in the belly of a wooden horse, the Greeks get inside the gates of Troy and mercilessly burn it down.

Of course, life in the new Greek city-states was different from that in Mynenaean times. In the realm of economics, the affective mindset of the Greeks came to be expressed by people leaving the countryside and seeking to become prosperous by engaging in commercial enterprises, braving the open sea in small boats to ship goods from harbor to harbor, founding new colonies in distant lands, and endless engagement in wars. We know very little about Greek education in the early days of the founding of city-states, except that Homer's legends and Hesiod's poetry were put into writing and everybody was expected to memorize them. The new Greek education (*paideia*) combined the ideal of physical strength and daring in warfare with dedication to the polis, to achieve honor by defending the city against all and, if necessary, die for it. To foster this patriotic militancy, the state supported gymnasia where the young exercised to become physically fit and it provided open-air drill grounds where soldiers were trained in martial skills. The Greek city-states went to war with each other as a matter of daily routine. They fought each other to expand their territory, to loot and obtain more slaves, in response to real or imagined affronts, or just for the thrill of the battle and the glory of victory.

**THE BATTLE FOR EGALITARIANISM AND HUMAN DIGNITY.** The feisty individualism of Greek citizens led to the political transformation of many of the city-states from the rule of a tyrant or the select few to a novel experiment in participatory democracy. Greek politics was initially harsh and violent, with periodic open class warfare and the banishment (*ostracism*) or execution of dissenters. But gradually class warfare turned into the battle of wits and oratorical

skill became a highly prized political trait. Ambitious young men affiliated themselves with a mentor who gave speeches in the agora, addressed the assembly, or defended a client in the courts. If talented enough, the apprentice then entered the public arena as a successful orator, built a group of faithful followers that voted him into the office he sought. The ability to speak well, display familiarity with the subject discussed, and use logical arguments to convince the audience of the validity of the points made, could turn anybody, irrespective of his social background or economic means, into a successful leader. The importance of linguistic skill, knowledge of a subject matter, and the deft use of logical arguments to acquire social influence and political power were factors that led to the evolution of Greek rationalism. But, as we describe below, there were also several other contributing factors.

*The Origins of Greek Rationalism.* A profound transformation began in Greece by the sixth century BCE as the archaic religious, supernatural and mythological worldview gradually changed into the secular, naturalistic and more rational Classical ethos and mindset.

**THE ARCHAIC LEGACY: GREEK RELIGION AND MYTHOLOGY.** Like all archaic people, the Greeks believed in a multiplicity of gods as the supernatural rulers of the cosmos, and engaged in ceremonies and rituals in order to propitiate them (Guthrie, 1955; Parker, 1986). Like other prelogical people, they believed that dramatic events, such as thunder, lightning, storms and earthquakes, were due to the displeasure or wrath of gods, and attributed events beyond their control, such as failure of crops, disease, death, dreams, nightmares, to supernatural agencies. Zeus was the god of thunder; Apollo, the god of light; Poseidon, the god, and Aphrodite, the goddess, of the sea; Hera, the protector of children; Dionysus, the god of ecstasy, and so forth. They built shrines and temples to house statues of the gods and made sacrifices to them. In addition, each city had its protecting divinity, such as Athena of Athens. The Greeks were also superstitious and consulted “seers” about the meaning of dreams and omens, and sought oracles to foretell their future. However, unlike the Egyptians and Mesopotamians, they did not have an influential priesthood, a corpus of dogmas or an established theology, and their gods were imagined as far less mysterious than the Near Eastern gods. The gods of the Greeks were not portrayed as unfathomable and monstrous deities with animal heads or bodies and exotic attributes but much like themselves. The gods fought each other, interacted with people, were wily and had sexual escapades, and were not beyond raping the wives of human beings. But the gods were far more powerful than themselves and immortal. As Heraclitus wrote: “The wisest man is an ape compared with god, just as the most beautiful ape is ugly compared with man” (Bowra, 1957, p. 60). Moreover, Greek religion was not a matter of pious and humble communion with the gods, not a sacrosanct occasion but a ceremonial one, manifested in public life as a series of festivities punctuated by athletic contests, recitation of poetry, feasting, music and dancing. The citizens were expected to participate in these affairs as an expression of civic solidarity and communal rejoicing.

**FROM MYTHOLOGICAL TO RATIONAL THINKING.** The universe we live in is bewilderingly complex and our desire to understand why things are the way they are, and why they change the way they do, is frustrated by that complexity. Primitive man mitigated that quandary by using his creative imagination to invent a story, a confabulation based narrative, for what he could not interpret or account for logically. Where do those successive flashes of lightning

and thunder come from and why? An imaginary answer is that they are the thunderbolts shot by a deity; in the case of Greek mythology, that of the angered Zeus. As a specific example, the *Iliad* describes how the Cyclopes gave Zeus thunderbolts to vaporize the Trojan Coast and force Poseidon, the god who helped the Greeks, retreat to Mount Olympus. Once a poet invents a narrative like this and passes that on to others sitting around the campfire, the story turns into a collective myth.

Most myths are based on innocent confabulation rather than deception because they do not originate to misinform people but to help them to comprehend what is perplexing or bewildering to them. Narrators tend to pass on what they experienced (“I saw that”) and what they were taught (“as I was told”) and the uncritical listener cannot distinguish between the veracity of the two. Language is a great deceiver because without the critical effort by the narrator and the listener to ascertain and spell out the origin of an assertion, it is difficult to distinguish between the factual and the fictional. People growing up in a closed society, such as was ancient Egypt, in which free discourse is discouraged, most people come to believe whatever they were taught as children, what everybody else believes in, and what they hear and read about and see enacted in ceremonies. Tales about one’s heroic ancestors or compatriots fraternizing with the gods satisfies a person’s self-regard. Listening to stories of adventures and exploits stimulates the imagination of children as well as grownups. The situation is different in an open society where critical thinking and free speech are encouraged, where traveling abroad and fraternizing with visitors acquaint the curious person with different myths and beliefs. When Herodotus questioned an Egyptian priest about the source of the Nile, he was told that its water came from bottomless springs in two hills, called Crophi and Mophi (Robinson, 1948). Egyptians may truly have believed that but Herodotus thought that the priest was just making a joke. An Ionian Greek listening to a Babylonian friend telling him about the fantastic adventures of Gilgamesh, king of Uruk, part-god and part-man sleeping with maidens on their wedding night, and fighting monsters as he embarked on a search for the elixir that would assure his immortality, must have concluded that he was listening to a fairytale. Correspondingly, the Babylonian might have felt the same way about the mythic adventures of Odysseus, king of Ithaca, battling with Cyclops and avoiding sirens and monsters on his long way home. Learning to think critically, it was in Ionia, not in their homeland, that the Greeks began to question the veracity of their own myths. What sort of divine creatures are the Greek gods that raped women, deceived and cheated one another, and harassed decent people? The traditional mindset that one should accept recited stories as true was gradually replaced by the new mindset that one ought to question the evidence for the truth or falsehood of widely accepted beliefs.

**GREEK EDUCATION AND LITERATURE: ENTERTAINMENT AND ENLIGHTENMENT.** Education was limited to a small elite class in the archaic civilizations; in Greece it was readily available to every citizen. With the adoption of alphabetic symbols for writing (graphemes standing for phonemes, the basic units of a language) it became relatively easy to become literate. The young aspiring to advance economically and socially in the city, and become eligible for public office, learned to read and write. The ideal of Greek education (*paideia*) was excellence (*arête*), “becoming the best one can be,” and the model for that was thorough familiarity with the character and activities of Homer’s heroes. While the heroic lifestyle portrayed in the *Iliad*

and the *Odyssey* had nothing to do with daily life in the city, the young were inculcated in that affective/heroic ethos because they were expected to become brave soldiers whenever called up to defend their city threatened by invaders. Homer's heroes struggled for personal glory and gain; the Greek citizen of the classical age was expected to combine personal freedom with the enthusiastic performance of public obligations.

Ongoing education was provided by regular theatrical performances. Greek theater was not a business enterprise, as it is today. Large theaters were built at public expense (Fig. 10-43) and the performances were sponsored and financed by the state and could be attended free by all citizens. Theater originated as a religious ceremony dedicated to Dionysus, but it gradually changed its character from a sacred festival to secular entertainment and enlightenment. Playwrights were commissioned to write comedies that made people laugh, and tragedies that made them commiserate with the misfortune of heroes and heroines. The plays were performed by male actors wearing masks reflecting the role they played, accompanied by a chorus reciting poetry and singing. The comedies were mostly bawdy and sarcastic. Aristophanes criticized demagogues and war profiteers, and showed subjugated women to be brighter than men. He made fun of generals like Lamachus, politicians like Cleon or Pericles, and philosophers, like Socrates. Free speech was taken for granted; the Athenians had no laws of slander or libel. The audience liked comedies because they could laugh at those who were supposed to be superior to them. Dramas, like those of Aeschylus, Sophocles and Euripides, had a more serious intent. They portrayed the vulnerability of ambitious historic or fictitious individuals

## EPIDAUROS THEATER



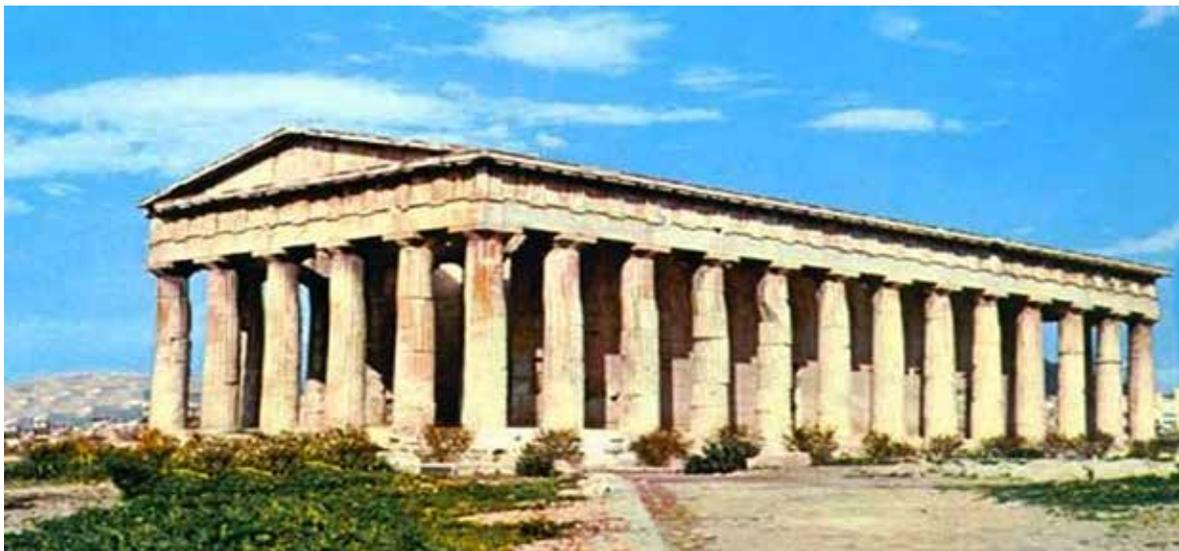
**Fig. 10-43.** Greek theater in the small city of Epidaurus. (Upper row of seats added by the Romans).  
(Wikipedia; Epidaurus Theater 07.jpg)

who suffered misfortunes as a consequence of the gods' disapproval, the force of destiny, or as punishment for their hubris. The Greek's exaltation of heroic endeavor was contrasted with their acute awareness of uncontrollable fate. The audience liked tragedies because, as Aristotle argued, that led to emotional purgation (catharsis) by empathizing with the hero's misfortunes. Tragedies made the audience reflect upon the vicissitudes of the human life—love and loss, hope and frustration, ambition and failure, life and death. Greek drama made lasting contribution to our understanding of the human condition.

**GREEK ARCHITECTURE AND SCULPTURE: FROM FORMALISM TO NATURALISM.** It was from the Egyptians that the Greeks learned how to use stone columns to build temples and public edifices but they soon improved on that style by adding external colonnades and making the buildings look lighter and aesthetically more pleasing. Although always dedicated to a god or goddess, Greek temples were not sites where ritual sacrifices were performed by priests or where worshippers gathered to pray. Rather they served as visible testimonials to the sovereignty and prosperity of a city and were typically financed by the state or professional guilds. The Parthenon on the Acropolis was commissioned by Pericles with the aim to advertise the might of the Athenian Empire. The construction of the Parthenon was mainly financed by the Delian League and for a time it served as its Treasury. The Temple of Hephaestus in Athens was dedicated to the patron god of metalworkers (Fig. 44). Its beautiful marble columns and friezes of the temples were to be admired from the outside and the columns were tall to make the temple visible from a long distance.

Much of Greek sculpture, which began as an imitation of Egyptian works, aimed to portray individuals with personal traits engaged in some activity and, as such, the formal and static archaic Egyptian style was changed into a dynamic one. The individuals rendered were often described as gods but they were portrayed as humans, using the best models available.

## TEMPLE OF HEPHAESTUS



**Fig. 10-44.** Greek temple in the Agora of Athens dedicated to the god of metalworkers. (Google; Theseion Temple.jpg)

The early sculptures of boys (kouroi) and girls (korai) were stiff and formal (Fig. 10-45A). Greek artists presented men naked, because they idealized the powerful lean masculine body with well-formed muscles. In time, Greek artists mastered the art of rendering individuals in marble or bronze in a naturalistic style, in different poses with outstretched arms and legs (Fig. 10-45B) or engaged in a particular activity (Fig. 10-45C). The women remained initially clothed because they were seen as modest and chaste, but then they were also rendered as nudes. The best products of artists of the classical period, like those of Myron, Praxiteles and Phidias, have never been surpassed.

## GREEK SCULPTURE



**Fig. 10-45.** A. Archaic Greek statue of a kouros from Attica. B. Apollo Belvedere. Roman copy of the bronze original by the Greek sculptor, Leochares. C. Roman copy of the bronze original by Myron. (A. Metropolitan Museum. B. British museum. C. Vatican Museum)

*The Growth of Greek Rationalism: Greek Philosophy.* Mythology reflects contemplation, the attempt by primitive humans to understand the origins of their society and the world. Due to their animistic thinking and a fertile imagination but limited factual knowledge, they created supernatural narratives, attributing whatever was incomprehensible to the action of spirits, demons and gods. These myths were then elaborated and codified in the emerging archaic civilizations to serve the interests of kings who claimed to be of divine descent and had privileged access to the gods and sought divine approval to rule their subjects. To regulate the affairs of the state, in particular such economic activities like crop planting and religious activities and scheduling religious festivals, the rulers had a corps of astronomers who collected a large body of information about the movements of the sun, moon, and the planets to create an annual calendar. It is unlikely that the small Greek city-states had astronomers but the Greeks that established colonies in the Near East, the Ionians, learned from the Babylonian

about the lawful regularity of the movement of celestial bodies, and with their rational mindset they sought to formulate a naturalistic account of that. Their knowledge base was very limited and much of what they proposed was little more than naïve speculation, but it was speculation guided by analytical and logical reasoning rather than the slavish reiteration of hallowed ancient myths.

**THE NATURAL PHILOSOPHERS: FROM THALES TO DEMOCRITUS.** Abandoning fanciful irrational narratives, some early Ionian thinkers with a rational mindset set out to interpret in naturalistic terms what they learned from the Babylonian astronomers and what they could themselves directly observe. These thinkers came to be known as the Presocratic philosophers (Diels and Kranz, 1903; Guthrie, 1962; Curd, 2012). Thales of Miletus (born about 620 BCE) proposed that all material things are reducible to water and that “all things are full of gods.” Presumably he was a dualist who fancied that the cosmos consists of that primal liquid and, with the aid of a spiritual force, water was transformed into the great multiplicity of things through rarefaction and condensation. His successor, Anaximander, postulated an indefinite essence (apeiron) as the original (arche) of all things. He gave a fanciful account of how cosmic order arose out of chaos by a natural process of parts becoming assembled into wholes. His student, Anaximenes, observed that clouds are formed from air and their condensation turns into water; hence he argued that the original substance of the cosmos was air. At a later age, Empedocles of Sicily argued for four elementary constituents of nature—earth, air, fire and water. Anaxagoras, proposed that the sun was a large fiery body and that a lunar eclipse is the earth’s shadow falling on the moon, and a solar eclipse is the moon’s shadow falling on the earth. Leucippus followed the Ionian tradition by proposing that visible matter is reducible to minute particles, what he called atoms. Greek atomic theory was developed by Democritus (born about 460 BCE) who maintained that the cosmos consisted of a hypothetical substance, the atoms, rather than perceptible things. The atoms are invisible and indivisible small particles of different sizes and shapes. They move randomly about in a void, collide with each other and become combined into the great multiplicity of perceptible things. The soul, too, was material in nature, only composed of finer atoms than ordinary matter.

**THE EARLY MENTAL PHILOSOPHERS: FROM XENOPHANES TO PROTAGORAS.** Building on these naturalistic speculations, Xenophanes (born about 570 BCE) ridiculed the ancient view that humans were the puppets of the gods and argued for the role of reason in human conduct. He made the distinction between belief and knowledge and called attention to human ignorance. “The gods have not revealed everything to men from the beginning, but men by searching found out better in time” (Bowra, 1957, p. 171). Indeed, Xenophanes argued that the gods were nothing else but products of human imagination. Ethiopians say that their gods are snub-nosed and dark, whereas the Thracians say that they are gray-eyed and red-haired. And if horses, oxen and lions could speak they would imagine their gods to have equine, bovine and feline features. In the same manner, Heraclitus insisted that knowledge about real things (physis) must be based on direct observation and interpreted on the basis of rational explanation (logos). He wrote: “To think is the greatest virtue (arête) and wisdom consists of speaking what is true and acting in obedience to nature.” Parmenides (born about 515 BCE) argued that to ascertain the truth, one must rely on sense perception but combine that with critical reasoning (logos) by distinguishing between appearance and reality, what things look like and

what they really are. Protagoras (born about 490 BCE) stressed the subjective nature of human reasoning, stating that “Man is the measure of all things,” and took an agnostic stance about the existence of the gods. “When it comes to the gods, I am unable to discover whether they exist or not, or even what they are like in form. For there are many things that stand in the way of this knowledge—the obscurity of the problem and the brevity of man’s life” (Bowra, 1957, p. 182). The argument of these early mental philosophers was that instead of seeking imaginary supernatural explanations of human conduct, such as Muses being the source of human creativity and knowledge, the advancement of human knowledge might be fostered by promoting critical thinking and reasoning.

**EARLY SOCIAL PHILOSOPHERS: FROM THE SOPHISTS TO SOCRATES.** By the fifth century BCE, a new group of teachers became popular in Greece, known as the sophists. They were secular educators who, for a fee, taught the children of prosperous families how to become effective officeholders and politicians in the new democratic society. They taught the young how to speak grammatically and eloquently, think and reason logically, and use convincing arguments to succeed in public debates. As teachers preparing the young to be effective orators, their lectures dealt less with natural and mental philosophy and more with social competence, how to create the impression of being bright, educated, and knowledgeable in the public arena. The sophists were in great demand but were accused by many of “sophistry,” the promotion of opportunism regardless of the moral merits of an argument. Reacting to the sophists’ amoral attitude, Socrates, an Athenian commoner, challenged anyone who would listen to him in the Agora to be honest and truthful when engaged in conversation or discussion. Socrates never wrote anything but, according to the dialogues of Plato, he challenged his listeners to define their terms, defend the views they held, and clarify the logical merit of their arguments. What do you mean when you use the term “virtue,” “truth,” “courage,” “temperance,” “perfection,” “love,” or “happiness?” Socrates insisted that he himself did not know how to define these abstract terms, and there is no evidence that he developed a theory of valid reasoning. He was only a missionary of rationalism who asked his listeners to examine the motives behind their beliefs and actions; that is, seek self-knowledge and practice logical reasoning. The Athenian democratic order was in the process of disintegration, and Socrates did not develop a program to reorganize it. That caused the conservative citizens of Athens to accuse Socrates of corrupting the youth by encouraging them to question ancient beliefs and traditions, and sentenced him to death.

**PLATO’S IDEALISTIC RATIONALISM.** A great admirer of Socrates, Plato (Plato, 1952, 1953), developed both a mental theory about our power of reasoning and a social theory how to create an ideal society. Plato maintained that the abstract ideas, or universals, we entertain are not products of human reasoning about particulars, the things we perceive, but Forms or Ideas (eidos) of supernatural origin that allow us to perceive material phenomena. The Ideas are spiritual templates that enter our intellect (nous) at birth and through a process of matching allow us to comprehend what our senses inform us about things and events in the external world. Moreover, the intellect is but one component of our hierarchic mental constitution. Associated with three compartments of the body, the head is the seat of reason and intelligence, the heart of courage and emotions, and the bowels of instincts and gut functions. In line with this tripartite theory, Plato proposed to reorganize Greek society by dividing it into three castes:

rational individuals trained in philosophy, mathematics, and science should be the “guardians” or rulers; courageous individuals with martial training, the “auxiliaries” or soldiers, should defend the state; and diligent farmers and artisans, the “producers,” should perform all the necessary menial tasks. Plato’s philosophical system was an admixture of rationalism and spiritualism. He believed that the cosmos is a rational and moral system, and through the cultivation of the intellect and philosophical contemplation we can come to understand the nature of man and might be able to create an ideal society. However, Plato was a poet, not a scientist, and his idealism led to the resurgence of mysticism, as explicitly promoted by the Neoplatonists of the Hellenistic era. And had his antidemocratic political ideas been adopted, the Athenians would have come to live as prisoners in a totalitarian society.

**ARISTOTLE’S EMPIRICAL RATIONALISM.** Aristotle did not fully abandon Plato’s idealism and spiritualism but undertook to develop an empirically-based perceptual theory of knowledge. He argued that our knowledge of abstract ideas is the joint product of sensory experience and our cognitive faculties. Universals (concepts) do not have an independent extra-personal existence as cosmic Ideas, but are derived from the cognitive power of generalization or abstraction from particulars. More specifically, by using categories—such as substance and shape, quality and quantity, place and time—the intellect engages in logical reasoning (obeying the laws of syllogism) and gradually forms concepts that allows sorting the great multiplicity of things into smaller aggregates of related entities. While Aristotle considered himself a scientist, his speculative hypotheses had mixed impact on the development of science. On the negative side, he considered the celestial spheres as ethereal “quintessences” rather than physical objects, and argued that the laws of physics apply only to matter in the “sublunar” world. His physics rejected the atomic theory and reverted to the four elements of the ancients which he endowed with teleological properties. Earth (the ground) serves as the foundation of the cosmos; water (the seas and oceans) surrounds the earth; air (the atmosphere) has its place above land and water; and fire (the firmament) hovers above them all. Earth and water are inherently heavy and, due to their gravity, they “seek” the ground and will fall if elevated. Air and fire are inherently light and, if trapped underground, they will “seek” the sky and rise due to their “levity.” “Up” and “down” became absolute reference points in this perceptually-based geocentric universe. On the positive side, Aristotle contributed to scientific reasoning by going beyond the Presocratics, most of whom were concerned mainly with statics, or “being,” by arguing for the importance of dynamics, or “becoming.” According to Aristotle, becoming involves moving from potentiality to actuality by the power of four causes. The first, the material cause, arises from the distinctive physical property of a given object. The second, the formal cause, arises from an object’s particular configuration. The third, the efficient cause, is the process by which the transformation comes about. And the fourth, the final cause, is the goal that the object seeks to achieve. Aristotle’s cosmos is not a random world but a purposive one guided by design, and he conceived of both physical and organic phenomena as characterized by development. In the organic world, fertilization of an ovum is the material cause that initiates embryonic development; the type of ovum is its formal determinant; the course of the morphogenetic process is the efficient determinant and that, finally, makes possible the achievement of its goal, the generation of a mature animal. In the physical world (and here Aristotle thinks of artifacts rather than natural things), wood is the material cause of the properties of a chair; its design is its formal cause; the carpentry work that goes into its production is its efficient cause;

and its final cause is its suitability for sitting. As described in his *De Anima*, the mind is also characterized by development and evolution, advancing from the vegetative soul of plants, to the animated soul of behaving animals, to the cognitive soul of human beings.

**THE HELLENISTIC SOCIAL PHILOSOPHERS: THE STOICS AND EPICUREANS.** Hellenistic philosophy, reflecting the troubling times after the collapse of Greek independence, turned more and more from speculations about the nature of the cosmos to the use of reason to lead a contented and meaningful life. Stoicism, originally advocated by the presocratic Zeno, was developed by Chrysippus (born about 279 BCE). The Stoics advocated the merits of a tranquil life of self-discipline through the rational control of emotions and passions—anger, envy, jealousy. They advocated the virtue of conscientious performance of one’s social obligations, and the virtue of resignation rather than fighting when facing adversities. In contrast, Epicurus (born 341 BCE) and his followers advocated the merits of happiness as the aim of good life, the pursuit of modest pleasures, affiliating with good friends, avoiding suffering, and not fearing the gods and death. Accused of hedonism, Epicurus defended his position by writing to a friend: “When we say that pleasure is the goal, we mean...being neither pained in the body nor troubled in the soul...[not] a string of drinking bouts and reveries.” As a materialist, he claimed that if the gods exist, they do not concern themselves with human affairs and that death means total extinction.

*From Philosophy to Science: Advances in Rationalism During the Hellenistic Era.* While Athens remained the center of philosophical schools after losing her political independence, it is noteworthy that most of the ancient Greek scientific advances were made in the succeeding centuries in Hellenistic cities elsewhere (Lloyd, 1973). A reason for that may have been that scientific research is an expensive enterprise that needs dedicated institutions, and these would not be supported by the citizens of small city states but could be subsidized by monarchs with great resources. The most famous and successful institutions were the Library and the Museum in Alexandria, founded about 300 BCE by Ptolemy Soter, the first Egyptian king of the Macedonian dynasty. During the reign of the second monarch, Ptolemy Philadelphus, these two institutions numbered about 100 salaried scholars and scientists, and the Library grew to contain about 500,000 scrolls and books (Clagett, 1955; Mason, 1962). The Museum had an astronomical observatory, botanical gardens, a zoo, and a dissecting room for anatomical studies. Hellenistic scientists made notable advances in mathematics and astronomy, physics and engineering, and made some enduring contributions to anatomy and physiology. The scholars produced authoritative and annotated literary texts with biographies of the authors. Other Hellenistic cities also supported libraries; a example is the partially surviving Library of Pergamum (Fig. 10-46).

**ASTRONOMY AND GEOGRAPHY.** Hellenistic astronomers made extensive use of Babylonian records, turning them into a scientific account of the movements of heavenly bodies as physical objects. Eudoxus (born about 410 BCE) devised an elaborate theory how the sun, moon, planets (Mercury, Venus, Mars, Jupiter and Saturn) and the fixed stars, attached to ethereal spheres, rotate around the Earth in concentric circles at different speeds. To account for the available observations, Eudoxus needed a total of 27 spheres: one for the fixed stars; three each for the sun and the moon; and four each for the five known planets. In the case of the planets, the first sphere accounted for their diurnal rotation; the second for their movements

## REMAINS OF A HELLENISTIC LIBRARY



**Fig. 10-46.** Façade of the Celsus Library in Ephesus. (Wikipedia)

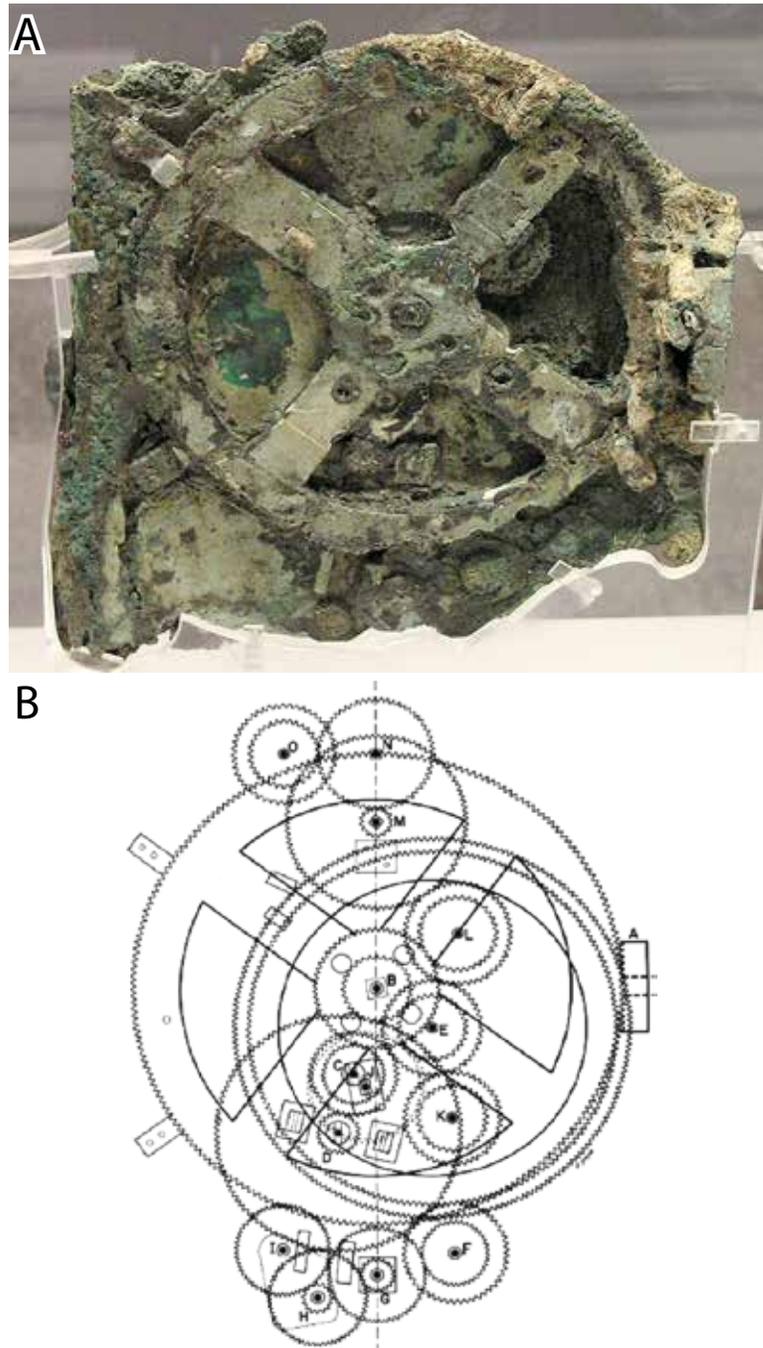
along the zodiac; and the third and fourth spheres explained the apparent retrograde motion of the planets. However, his elaborate concentric model could not account for the changing luminosity of the planets. Aristarchus and Apollonius modified the concentric geocentric theory by postulating eccentric circles and epicycles within the cycles. In contrast, Aristarchus (born about 310 BCE) proposed a heliocentric model, according to which the earth and the planets move around the stationary sun in concentric circles. However, his contemporaries rejected that theory not only because they could not reconcile it with the perceptual evidence that the earth is stationary but also because it failed to “save the phenomena,” that is, provide an accurate account of the precise movements of the planets. Several centuries later, Claudius Ptolemy, the astronomer, turned the geocentric theory into a dogma that was not abandoned until modern times.

Eratosthenes (born about 276 BCE) measured the circumference of the earth by comparing the shadow cast by the sundial at two locations in Egypt, Syene and Alexandria. He introduced the geographic concept of latitude and longitude, produced a map of the known earth, showing it to be surrounded by a continuous ocean, and suggested that it might be possible to circumnavigate the globe by sailing around Africa and India. Hipparchus (born about 190 BCE)

improved on the application of trigonometry to calculate the distances of the moon and sun from the earth, and came closer than his predecessors to estimate the great mass of the sun. He compiled an atlas of the stars, discovered and estimated the precession of the equinoxes (the changing orientation of the axis of the rotating earth) and could accurately predict lunar and solar eclipses. A gear-based machine with 30 wheels found in a wreck off the island of Antikythera (dated to about 80 BCE) may have been designed to reproduce the motion of the sun and moon against the background of the fixed stars (de Sola Price, 1974; Fig. 10-47).

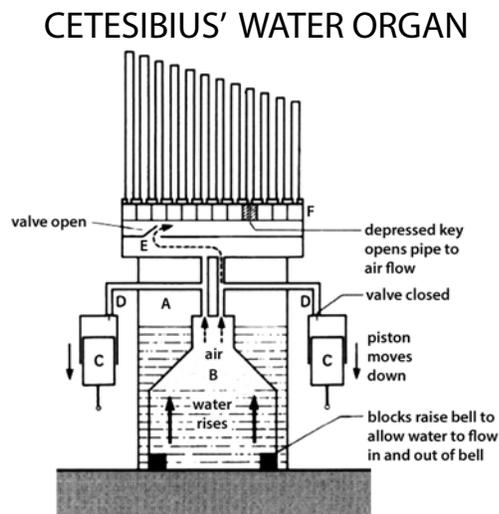
**MATHEMATICS, PHYSICS, AND ENGINEERING.** Euclid (born in Alexandria about 325 BCE), relying on the works of Eudoxus and Theatetus, presented geometry as a formal discipline based on logical definitions, postulates, axioms, and propositions. “A point is that which has no parts” or “A line is a length without breadth” are definitions. “Given two points, there is one straight line that joins them” or “A straight line can be extended to any distance from its two ends” are postulates. Axioms are self-evident truths. For instance, “The whole is greater than its parts”; “All right angles are equal.” The propositions are established theorems. For

## A GEAR-BASED CALENDAR



**Fig. 10-47.** A. Remains of a geared-based rotating mechanism. B. A model of the original. The mechanism may have been used as a calendar on the basis of the position of the sun and moon against the fixed stars.  
(NAMA Machine d'Anticythère 1.jpg)

instance, “In any right-angled triangle, the square described on the hypotenuse is equal to the sum of the squares on the two sides.” Euclid accepted only a limited number of axioms as a starting point on which he sought to erect an integrated system of geometry. Euclid’s textbook, *The Elements*, has remained in use as a textbook of mathematics for over two millennia. Archimedes of Syracuse (born about 287 BCE) was both a great mathematician and a physicist. He calculated the value of pi and devised methods to calculate the areas and volumes of circles, spheres and conic sections. He was also the founder of hydrostatics, the science of equilibrium in fluid systems. His most famous scientific discovery was the hydrostatic principle, according to which a body immersed in water is made lighter by an amount equal to the displaced water. Archimedes also contributed to advances in engineering (Drachmann, 1967; Landels, 2000). He studied the physical principle of how levers work: “Magnitudes are in equilibrium at distances reciprocally proportional to their weights,” and is reputed to have remarked that “Give me a place to stand on, and I will move the Earth.” He determined that compound pulleys allow the proportional reduction of the force needed to move an object as a function of the number of rotating wheels. He invented the snail pump and the Archimedes screw to lift water to a higher elevation, and possibly also the worm-and-wheel gear. Ctesibius of Alexandria (born about 285 BCE) is credited to have invented the first compressed air pump, consisting of a cylinder and a plunger to raise water and drive a water clock (clepsydra). He also made a compressed air organ with pipes of different lengths operated by a keyboard (Fig. 10-48). Finally, Hero of Alexandria (born about 19 CE) described in his *Mechanics* the physical principles by which a given weight is moved by a given force in devices like the lever, the wedge, the wheel, the axle, the screw, and the composite pulley. In his *Pneumatics* and *Automatic Theater*, Heron described how hot air and steam can be used to operate a clock, an organ and various toys.



**Fig. 10-48.** Model of an Alexandrian key-operated musical organ. (Google. Ctesibius' water organ.htm)

**MEDICINE, ANATOMY, AND PHYSIOLOGY.** The advocacy of rationalism in medicine began with Hippocrates (born about 460 BCE). Hippocrates, who practiced medicine on the island of Cos, is credited to having taught that disease is not due to punishment by the gods but a consequence of natural causes, and he is said to have advocated “the healing power of nature” (Singer and Underwood, 1962). The surviving Hippocratic texts are believed to have been written by members of his school extending over several centuries. An example of the Hippocratic belief in the natural origin of diseases was the rejection of the idea that epilepsy is due to “seizure” by demons by postulating that it was a brain dysfunction. However, there is no evidence that members of the school did any anatomical or physiological research on the brains of epileptics. Instead, the Hippocratics came up with a fanciful materialistic theory of four “humors” of the body (blood, phlegm, bile and black bile), vaguely related

to the four physical elements. They taught that the particular blending (tempering) of these humors in a particular individual was responsible for his temperament (sanguine, phlegmatic, choleric, and melancholic), and that the abnormal accumulation of one of these humors produced physical and mental abnormalities.

Medical research began during the Hellenistic period. Herophilus (born about 335 BCE) is believed to have been the first to systematically dissect the human body at the Museum in Alexandria. Herophilus recognized that the brain is the central organ of the nervous system. He distinguished the cerebrum and the cerebellum; identified some of the cranial nerves; distinguished between sensory and motor nerves; and taught that the brain rather than the heart was the seat of the intellect (Clark and O'Malley, 1968). Erasistratus (born about 304 BCE), a pioneer of physiological research, distinguished between veins and arteries; recognized that the heart was a blood pumping mechanism; and postulated that nerves were a conduit of "animal spirit" (pneuma) from the brain to the nerves. Hellenistic medicine culminated in the work of Galen (129-199 CE) who did extensive anatomical and physiological research in Alexandria. He provided a detailed description of the skeletal and muscular systems of the human body and developed an elaborate speculative physiological theory. He distinguished between the "natural spirit" of the liver responsible for nutrition and growth; the "vital spirit" of the lungs responsible for breathing; and the "animal spirit" of the brain ventricles producing different sensory, motor and mental functions.

*Summary: The Mindset and Ethos of Ancient Greek Civilization.* The development of a naturalistic and secular orientation during the Classical period of Greek civilization was a giant forward step in the evolution of human rationalism. The exaltation of the human body in the arts, training of the young in gymnasia, secular education provided by the sophists, and freedom of expression in public discussions in the agora and in plays performed in theaters, contributed greatly to the advancement of free thinking and critical reasoning. Pioneers in natural philosophy abandoned the archaic mythological worldview that the world is governed by unfathomable and capricious gods, demons and spirits, and is therefore incomprehensible. Myths perpetuated by mnemonic mechanisms—indoctrination, memorization and reiteration—were replaced by hypotheses based on observation and rational interpretations of the gathered evidence. Much of the effort of the Greek natural philosophers and scientists was to provide a rational interpretation of available astronomic observations made by the Babylonians. Greek mathematicians constructed various mathematical models of the movements of the sun, moon, planets, and stars, and formulated hypotheses about the forces that governed the behavior of physical matter. Then, social and mental philosophers began to analyze human nature and conduct, the merits of different social systems, political systems, and moral values. All that effort, however, failed to rescue the Greek democratic experiment. The collapse of Greek independence may be attributed to irrational, affective factors. Although Panhellenism was an ancient ideal, as attested by the long tradition of cyclical Olympic games, the partisanship and bellicose patriotism of the city-states—what is currently called chauvinism or jingoism—prevented the Greeks from uniting into a single nation, even when that was necessary for their survival. Due to envy and greed, bravado and resentment, the city-states turned against each other and were easily defeated first by the Macedonians and then the Romans. It is of great significance, however, that their political defeat did not mean a total loss of their ideational

achievements. Both the Macedonian and the Romans rulers were great admirers of the Greeks and adopted and broadcast many of their ideals far and wide.

### ***10.3.3. The Social, Technical, Economic and Political History of the Roman Civilization.***

The origin and growth of Roman civilization is traceable to indigenous developments as well as to Etruscan and Greek influences (Grimal, 1963; Crawford, 1967, 1986; Haywood, 1967; Rawson, 1986; Alföldy, 2011). Latin farmers settled in Italy about 2,000-1,500 BCE, and grew wheat in the plains, cultivated grapes, olive and fruit trees on the mountain slopes, and pastured sheep, goats, pigs, cows, and horses. The villages of the Alban hills that were later to form Rome were settled about 750 BCE. By that time, seafaring Etruscans from the Mideast set up colonies along the Mediterranean coast and gained control of Campania, the region between Rome and Naples. A culturally more advanced people than the indigenous Italian farmers, the Etruscans occupied Roman villages about 600 BCE. Situated along the Tiber and close to the salt works of Ostia, Rome was a valuable site because salt merchants traveled through this territory by way of the Via Salaria (the salt route) to the territory of the Sabines and beyond. Ruled by Etruscan kings, Rome gradually turned into a city. The marshes were drained and increasingly more and more Romans became tradesmen, merchants and seafarers (Rostovtzeff, 1926; Frank, 1929; Greene, 1990). Then the Romans rebelled and succeeded in expelling the Etruscans.

After the Romans defeated the Etruscans and Sabines, there followed a series of battles with neighboring states, and between 500 and 270 BCE Roman legions succeeded in occupying all of Italy. During this period, the Romans assimilated Hellenistic culture but proved themselves far more rational in managing their political and practical affairs than the Greeks. While not excelling in the arts or philosophy, they learned a lesson from the political failure of Greece by establishing a professional government and widening the boundaries of the state by gradually granting citizenship to the people in the conquered lands. No less important in the rational organization of their society, they turned into excellent civil engineers, built a network of good roads, provided cities with amenities to improve living conditions, and promoted international commerce and industry. That enabled the Romans to enlarge their armies, establish a prosperous Republic and then replace it with a powerful Empire. Enduring for several centuries, the Roman Empire finally disintegrated because of their irrational greed, the predatory rather than productive nature of their economy, and the wasteful wars they endlessly fought.

*The Political and Social History of Rome.* Several epochs have been distinguished in Roman history. The founding of the city of Rome; the early period of Roman expansion in Italy below the Po river; the occupation of Greece and the “barbarian” (Gaul, Iberian, German) lands in Europe, and “civilized” lands in the Near East, Egypt and northern Africa during the Republican period; the establishment of the Empire and the Romanization and defense of the occupied lands; the decline and, finally, collapse of the Empire.

**THE ORGANIZATION OF THE ROMAN GOVERNMENT.** The city-state of Rome was formed about the eighth century BCE by kings uniting several villages into a political unit. The kings ruled as autocrats with the aid of an assembly of elders, the senators. The last king was deposed toward the end of the sixth century BCE and the senators formed a committee. This committee

of initially one hundred members (*Comitia centuriata*), later expanded to several hundred, elected two consuls to serve as chief magistrates for the period of one year with the legal power of *imperium*. One consul typically served as the city administrator, the other as the army commander. The consuls had to resign at the end of the year and thereafter served as influential magistrates. According to tradition, the senators sent a commission to Greece about 450 BCE to study their system of government, and the first Roman legal constitution, known as the Twelve Tables, was formulated. The Romans took several important rational steps to keep track of their population. A census was taken of the growing population. The city was divided into wards for purposes of civic organization, tax collection, and voting. Rules were established to regulate property rights, payment of debts, fairness in court trials, and so forth. In terms of military obligations, the citizens of Rome were divided into different classes: men of property had to provide horses and fight in the cavalry; those who could afford to purchase heavy armor became infantrymen; and the poor became noncombatant auxiliaries.

Belonging to the senatorial class was hereditary. Importantly, a person had not only to be a wealthy patrician but he also had to pass through a series of hurdles before getting a Senate seat and become a member of the ruling oligarchy. To qualify, the aspiring young noble had to pass through a competitive *Cursus honorum*. That began with service in the army, followed by the successful passage through a series of civil posts. That advancement may have begun as a *quaestor*—serving as a police officer or treasurer, then as an *aedile*—acting as a supervisor of public works or a shrine priest, then a *censor*—who had the responsibility for organizing the census or managing some other important undertaking. The ultimate achievement was to become a *praetor* or a consul. The aspiring patrician also had to have a following, known as *clients*. To gain election into higher and higher office required making an authoritative impression on others, displaying civic virtue and generosity—which might be gained by contributing to the construction of a temple, a statue, a theater or a bath—and aiding those in need. Initially the patricians reserved all power to themselves but gradually commoners (*plebeians*) formed committees of kin, tribe and ward groups, the *Comitia curiata*, the *Comitia tributa*, and the *Concilium plebis*. The plebeians selected officers known as *tribunes*, who sought to counterbalance the power of the senators. At the outset the tribunes had no legal power, they served merely as spokesmen for plebeian rights and grievances. But about 285 BCE, the Hortensian law established that the resolutions of tribunes, as representatives of the people, had legal force. In time, higher and higher offices came to be administered by individuals without a noble background and a power-sharing relationship was established that came to be known as the *Senatus Populusque Romane* (SPQR; the Senate and People of Rome).

**ROMAN MILITARY EXPANSION.** The Etruscan cities were occupied between 400-380 BCE, incorporating them into the Roman state. As a rational political decision, the Etruscans were granted Roman citizenship instead of being subjugated, with the obligation that they had to serve in the army. As the army expanded, other neighboring Latin lands were successively attacked and then incorporated into the state. Military roads were built in all directions (Fig. 10-49) and by about 350 BCE, Rome was in control of all of Italy below the Po river. The occupation of the merchant cities of southern Italy, brought Rome into conflict with Carthage and that led to the Punic Wars. In preparation for this war, the Romans built a large navy and occupied Sicily and Sardinia between 264 and 241 BCE. They destroyed Carthage in 146 BCE. The subsequent

## MAP OF ROMAN MILITARY ROADS



Fig. 10-49. Ancient military roads connecting Rome with the cities of Italy. (Map of Roman Roads in Italy.png)

military effort turned into intensified wars with the Gauls and the Iberians, and Julius Caesar completed the conquest of southern Europe by the end of the Republican era. The conquering Romans mercilessly burned and razed some of the conquered cities and beheaded or enslaved their defenders; other cities were acquired by political meddling and bribing the local elite. During the Empire, the Romans preserved control of their occupied lands by building fortifications along the borders, periodic military expeditions to outposts, and persuading the local population to become cooperative members of the vast state.

**ORGANIZATION OF THE ROMAN ARMY.** The great wealth of the Roman state depended on her army. Initially the Romans adopted the Greek phalanx formation (copied from the Etruscans), but then they changed to the use of a combination of units with a cavalry and an infantry. The law required all Roman citizens between the ages of 17 and 46 to serve in a legion. As Rome expanded, the number of legions increased greatly. A legion consisted of about 8,000 fighting men, divided into smaller units (century, maniple, cohort) with noncombatant auxiliaries. Each legion consisted of a cavalry and an infantry division, equipped with a standardized set of weapons and armor and trained men to assume a specific role in battle. The cavalrymen, mostly aristocrats, served as a shock troop; the infantrymen hurled projectiles at the enemy and engaged in hand-to-hand combat. There were slingers, archers, and pikemen, and those assigned to war machines, such as battering rams to break gates and walls, and catapults to hurl rocks into citadels (Fig. 10-50).

Initially, citizens were expected to finance their military equipment. Later, as the state and adventurous generals became wealthy, plebeians were supplied with arms and received payment for their service. Discipline in the Roman army was extremely harsh. The legionary took an oath to serve under the standard of a general. That gave the general absolute right over the life of the legionary, and violation of any regulation or command called for corporal punishment or death. If an entire unit failed to carry out its assignment, the unit was assembled and, drawn by a lot, every tenth soldier was executed (decimated). But soldiers who distinguished themselves were duly rewarded, receiving medals, increased pay, and a share in the acquired booty. After the end of a long a march, a rectangular camp was set up in a suitable area with a forum,

## ROMAN SIEGE ENGINE



**Fig. 10-50.** Model of Roman catapult used to hurl rocks into fortifications.  
(Crystalinks.com Rome Science.html)

headquarters for the officers, and rows of tents along straight streets. Sentinels guarding the camp required passwords to move about, and any soldier that abandoned his post or fell asleep was severely punished or summarily executed. The harsh treatment of the legionaries turned them into ferocious and ruthless fighters. To a considerable extent Rome's wealth was derived from the booty and tributes collected in conquered lands. The best way for a general to become rich and famous, or to gain political prominence, was to return from a successful military expedition and be granted by the Senate an elaborate ceremony known as the triumphal march. Preceded by senators and magistrates, the victorious general, wearing a laurel wreath and a gold-embroidered purple tunic, entered Rome in a chariot and proceeded along a sacred route to a temple to give thanks to the gods. The general was followed by his officers and soldiers in their finery, horn-blowers and singers, and carriers loaded with looted bronze and marble statues, gold and silver vessels, and other precious booty. The carriers were followed by the leaders of the enemy and other captives in chains, and some more soldiers singing the praises of their honored general.

**THE REPUBLIC AND CIVIL WARS.** Initially, Rome's patricians monopolized all important offices. The erosion of their dominance began as soldiers of plebeian origin returning from successful wars demanded the right to have their voice heard in public affairs. Many of the soldiers were farmers who, because of their prolonged absence and consequent neglect of

their land, became debtors and lost their property to large landowners. Some veterans were compensated by being allocated land in the colonies. But even these had a hard time to make a living because they had to compete with the large landowners whose fields were increasingly plowed and harvested by slaves, and they could not beat the price of cheap grain imported from the conquered areas. Landless villagers moved in large numbers into Rome and other cities, and those who could not find employment turned into rebels, causing social unrest and periodic civil wars. The first civil war was led by a tribune, Tiberius Gracchus; he was assassinated in 133 BCE. Other civil wars were led by politicians or generals competing with each other, such as that between Lucius Sulla and Gaius Marius (88-87 BCE), Pompey and Julius Caesar (49-45 BCE), and Marc Antony and Octavius (32-30 BCE).

**THE EMPIRE AND EFFORTS TO ESTABLISH LAW AND ORDER.** The victorious Octavius became officially *Princeps senatus*, first man of the Senate, and *Pontifex maximus*, high priest of the Roman state religion. De facto, he ruled as the first Roman emperor under the name Augustus for over 40 years (from 27 BCE to 14 CE) and was successful in limiting the patricians' power, pacifying the plebeian masses, and Romanizing not only all of Italy but also Iberia and Gaul. Augustus reorganized the Senate and established formal rules for membership in the equestrian order. A candidate had to be freeborn, prosperous, and had to have served in the army for several years. He was then entered into a list, given a public horse, a gold ring, and qualified to have a purple stripe on his toga. Membership in the equestrian order entitled a man to become a magistrate or hold some other important public office. The emperor also appointed an advisory body, the *Consilium principis*, that regularly met in a building called the *Curia*. It consisted of senators and select equestrians and magistrates from the provinces. Their task was to draft legislation and administer justice. In principle, Rome came to be ruled by laws not men. A person with grievance could turn to an advocate with experience in handling legal cases, who approached a praetor and he, in turn, summoned the accused party and set up a court hearing. Codified by Hadrian (reigned 117-138 CE), annual edicts of praetors and records of their judgments came to form the foundation of the enduring Roman legal system.

Augustus also sought to pacify the restless masses by employing them to erect new buildings and repair or embellish old ones, build bridges, and improve the roads. He freed Roman citizens from the burden of paying taxes and also began to provision the poor with free bread and entertainment. This privileged way of life continued under many of the succeeding emperors. He also encouraged magistrates, professionals and merchants of Iberia, Gaul and other regions to assimilate the Roman way of life. This new elite, as well as commoners who served in the legions, were eventually granted Roman citizenship. International trade and commerce flourished and there was considerable local support for the Roman presence in many of the provinces because order, security and prosperity created what came to be called *Pax Romana*. The rational policy of seeking to pacify the conquered lands proved to be one of imperial Rome's great achievements. During the reign of Trajan (98-117 CE) the Roman empire reached its greatest extent (Fig. 10-51). However, as time went on, Roman rule became more and more burdensome to the peasants and laborers of the annexed lands because of levies and taxes. Gradually, Rome's rule began to weaken. Trajan's successor, Hadrian adopted a new policy of defending the occupied lands rather than trying to extend the empire any farther. Initially an offensive force, the legions now became a defensive force obligated to guard the long borders

## THE ROMAN EMPIRE



Fig. 10-51. The Roman Empire at its greatest extent.

and keep rebellious people in the conquered lands subdued. After the death of Marcus Aurelius (180 CE), the Roman empire began to disintegrate.

**THE DECLINE OF THE ROMAN EMPIRE.** Many factors have contributed to the decline and fall of the Roman empire. One of them was the failure to devise a rational method to elect emperors with the requisite intellectual abilities and social skills to fill that difficult position. Since the emperors were autocrats with limitless powers, their policies and style of governing had serious short-term and long-term consequences.

Several emperors sought to assign a son, a close relative or an adopted person as a successor, who was typically approved by the subservient Senate. A few of the emperors were talented and hardworking individuals who governed successfully. But the majority of the approximately 150 emperors who ruled the Roman empire over a period of 500 years, were intellectually and temperamentally unqualified to run the affairs of this extremely complex and large empire. Emperors often wasted resources for personal gain or glory. There were no term limits for an emperor. Some ruled for a long time until they died of natural causes, others ruled for a short period, being assassinated by family members, rivals or conspirators. As the role of the Roman Senate declined and army legions became more independent and powerful, an emperor was often chosen by the head of the Praetorian Guard or a powerful commander of a legion.

But economic factors also played an important role in the decline of the Roman empire. The expansion of Rome during the Republic and the Empire was driven to a large extent by the need to sustain the state's solvency by the predatory exploitation of the resources of conquered provinces. The coffers of the treasury were sustained by looting, appropriating the land and mines of the occupied territories, the collection of taxes, and the extraction of tributes. The gold, silver and other metals mined in Iberia and Gaul allowed the minting of high quality coinage that fostered commerce, and the expanding population could be provisioned with cheap grain supplied by Syria, Egypt, and Africa. There was also much wasting of resources on provisioning a large army, feeding and entertaining the masses, and the lavish lifestyle of the ruling elite. As further military expansion through conquest became no longer an option, the emperors found themselves unable to finance the army and feed the people. Gradually the imperial coffers became depleted, the coins became debased, and by the time of the assassination of Commodus (192 CE) the treasury had virtually no more money. When the

emperors could no longer finance large indigenous army units, they increasingly recruited foreign mercenaries—Germans, Celts, Armenians, Syrians, and others—to fill the ranks of the legions. In time, many of these mercenaries returned home, took their military experience with them and turned around to harass the Romans.

**THE FALL OF THE ROMAN EMPIRE.** Severus, a native of North Africa, was chosen in 193 CE as Rome's emperor by an army unit in the Rhine. He succeeded in establishing his imperium by defeating two other emperors chosen by other legions. Increasingly thereafter, pretenders or usurpers used their legions to fight each other, and imperial succession became even more disorderly than before. While some of the chosen emperors were Romans, others were of German, Syrian, Arab or other stock. The weakening of Roman rule became evident to all along the borders, and that led to battles with Parthians, Persians, and several German tribes with variable outcomes. Rome did survive for a while and Marcus Aurelius succeeded in re-establishing order. He built a wall around the city of Rome to defend it against raiders, and improved living conditions in the city by distributing food. But his rule ended when he was murdered in 275 CE. Diocletian, elected by the praetorian Guard in 285 CE, co-opted three other rulers to better defend different regions of the empire. He had a census taken to reform taxation, increased the state's revenues by nationalizing industries that produced tools, weapons and clothing for the army, set the wages of officials and workers, and the prices of food items to halt inflation. But it was too late to re-establish Rome's prosperity. In 330 CE Constantine transferred the empire's capital from Rome to the site of old Byzantium in the East, establishing a city that came to be called Constantinople. To assure orderly succession, he executed one of his sons and several nephews, and appointed three sons to be in charge of the Western, Levantine and African regions of the empire. He took an important step in changing the legacy of the Roman empire by converting to Christianity. The Eastern (Byzantine) part of the empire survived for a long time but assumed an altogether new character. The Western (Italian) part suffered much more. The Huns and Vandals sacked Rome, and by the end of the fourth century, the king of the Ostrogoths, Theodoric, became the de facto ruler of Italy. The social and political order that the Romans created came to an end, and a new chapter began in the history of Western civilization.

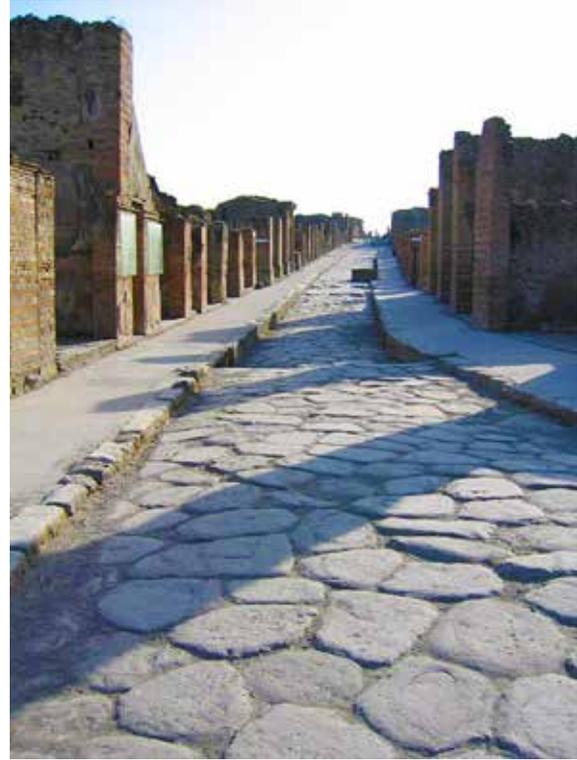
*Technological Advances and the Economics of the Roman Civilization.* Guided by practical rationality, the Romans made great advances in technology, particularly in civil engineering and architecture, and were able for centuries to promote international commerce and industry by safeguarding land and sea routes for the transportation and distribution of goods. They failed eventually in sustaining that order because they became increasingly dependent on aggression, greedy exploitation, and wasteful use of resources in occupied lands to feed an unproductive populace at home.

**ADVANCES IN CIVIL ENGINEERING.** The Romans were masters of civil engineering and great builders. They built sturdy roads that radiated from Rome to all the Italian cities and on to distant lands. They paved streets in large cities with sidewalks (Fig. 10-52). They built roads using a rational procedure of several steps. First, they surveyed the land; second, they removed the ground along a designed course and filled it with sand, gravel and crushed rocks; third, they paved it with slabs of hard rock. At some sites, hills were leveled, and

ravines were filled with dirt to make the route shorter and easier to pass. They built arched bridges across rivers. Initially, roads were built for military and official purposes to allow swift communication over long distances by using relays of horses. Later, roads were built for heavy carts to transport goods to various destinations. The local responsibility of a district was to maintain the roads. To carry fresh water from mountain springs to large cities by gravity, the Romans built aqueducts that, depending on the terrain, went below ground under hills, and were supported by arches and arcades over deep valleys (Fig. 10-53). In the cities water was collected in tanks and distributed by pipes to public fountains and baths and to private homes. The public baths had cold, tepid and hot pools, and toilet facilities.

**ROMAN ARCHITECTURAL ADVANCES.** The early stone edifices of Rome were post-and-lintel temples constructed in Greek style with heavy stone blocks and marble facing or, under Etruscan influence, terracotta decorations. But

## PAVED ROMAN STREET



**Fig. 10-52.** Paved street and sidewalk in Peompeii. (Wikipedia. Pompeii Street.jpg)

## ARCHED ROMAN AQUEDUCT



**Fig. 10-53.** Roman bridge and aqueduct over the Gardon river that carried water to the colony of Nîmes (France). (Wikipedia. Pont du Gard.jpg)

then the Romans increasingly shifted to using arches to support doorways and ceilings in public buildings, and replaced stone blocks with a combination of rubble and cement as the structural element. Kiln-dried brick was the exterior facing (Fig. 10-54). The Romans discovered the cohesive strength of mortar made of volcanic earth known as *pulvis puteolamus*, a concrete product that allowed the development of a new construction technique, that of vaulting. Trajan's Market Hall in Rome (attributed to the architect, Appolodorus of Damascus), is an example of a large building that used cross-vaulting, a series of barrel vaults that allows the weight of a ceiling to be borne by piers at intervals instead of the entire length of a side wall. The greatest Roman architectural accomplishment was the erection of the Parthenon with its immense concrete dome (Fig. 10-55). It was a temple built around a central vertical axis with a single opening, which provides the viewer with the awe-inspiring illusion of the immense spherical sky above.

### ROMAN MULTISTORY BUILDING



**Fig. 10-54.** House in Ostia, showing Roman technique of house construction. (Wikipedia. Ostian Insula.jpg)

**THE CHANGING ROMAN ECONOMY.** Italy has good soil and climate, and farmers living in scattered villages survived for thousands of years in a subsistence economy producing cereals as a staple and raising domesticated animals for their milk, meat and hide. The Italian economy began to change about 700 BCE as Etruscans in the north and Greeks in the south founded mercantile cities along the Mediterranean coast. Etruscans living in the Roman hills along the Tiber and the salt route from the harbor of Ostia to the interior, subdued the Roman villages and changed their economy by planting olive trees and vines to produce olive oil and wine for overseas

## THE PANTHEON OF ROME



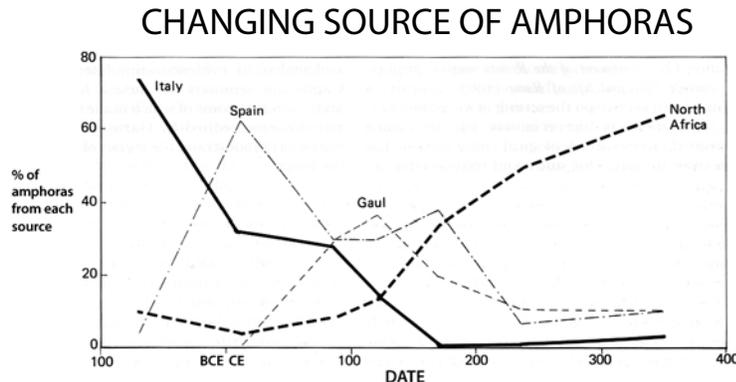
**Fig. 10-55.** The Pantheon in Rome, with its large concrete dome.  
(Wikipedia. Pantheon Panini.jpg)

trade. As the economy changed, some enterprising Romans became prosperous landowners and in time they succeeded in expelling the Etruscan kings and establish their oligarchic rule. Following that, the landed aristocracy proceeded to develop a disciplined army and began to annex neighboring lands. For a while, agriculture remained the principal source of Rome's wealth but then as Rome began to conquer lands beyond the borders of the Italian peninsula, her economy gradually changed from the productive agricultural type to the predatory and exploitative one, deriving immense wealth from periodic looting and the regular collecting of tribute and taxes in kind (precious metals, grain, etc.) from the occupied provinces and client kingdoms.

That change in the economic system had profound social consequences (Rostovtzeff, 1926; Frank, 1929; Greene, 1990; Scheidel et al., 2007;

Alföldy, 2011). On the positive side, Rome's expanded might created favorable conditions for international economic growth by establishing safe land and sea routes for distributing goods far and wide. Economic growth was further fostered by Rome's appropriation of the silver and gold mines of the provinces and minting precious coins that circulated throughout the known world. The wealth flowing into Rome turned a small town into a large and prosperous city, with imposing public buildings and private residences, and amphitheaters and circuses for the edification and entertainment of the population. However, that conquest-based predatory economy combined with the increasing hedonistic ethos could not be sustained. To begin with, many of the farmers who were the original source of Italy's prosperity, were conscripted into the army, initially to serve as soldiers to conquer new lands and later to defend the borders of the vast empire. The farms became neglected and increasingly many of the small landowners became debtors and lost their property. In response to their demand for land, some veterans were allocated newly acquired land in the provinces but others moved to Rome, expanding the growing population of the unemployed and poor. The big landowners were better off for a

while, as indicated by remnants of spacious houses they built with oil and wine presses, sheds for animals, and huts for the serfs and slaves they employed. But these enterprises became less and less lucrative as far cheaper agricultural products were brought in from the conquered lands. This economic downturn is suggested by the archaeological evidence that the source of amphorae (ceramic vessels used for the transport of oil and wine) found in Ostia, Rome's harbor, shifted from Italy to Iberia about 100 BCE, then to Gaul, and then to Africa (Fig. 10-56). With the passage of time, as the number of soldiers in the legions and idle people in the cities grew, more and more grain had to be imported to Rome to feed the population. That led first to the necessity to conquer new lands, then to the increased exploitation of available resources, which reduced the fertility of the cultivated lands and increased the plight and resistance of the conquered people. As Rome changed from a producing nation to a consuming one, and once territorial expansion came to an end, the emperors turned to the debasement of the minted coins. The nearly pure silver denarius, which was the principal currency of Rome's international trade for a long time, began to lose its silver content by the late first century, and became worthless by the second half the third century. As Rome's treasury became exhausted, the economy collapsed and the might of the empire vanished.



**Fig. 10-56.** The changing regional source of amphorae excavated in Ostia from about 75 BCE to about 359 CE. (After Greene, 1990)

contributions to spiritual and intellectual mental evolution was less noteworthy. They built temples but they were generally speaking a superstitious, not a pious people. For instance, they agreed that emperors of little or no merit were gods and bowed to their statues when that was required. Following Greek models, they developed a fine literature and a sophisticated language, which remains part of our cultural legacy, but they showed little originality either in the representational arts or in philosophy. In daily life, they initially displayed respect for the laws and adherence to a strict moral code. However, as life became easier, they rapidly adopted an affective/impulsive, self-indulgent, hedonistic and vulgar life style to the point of becoming callous and inhumane both at home and abroad.

**ROMAN RELIGION.** As part of their ancient heritage, most Roman homes had a household shrine to which family members offered libations (Beard et al., 1998; Rüpke, 2007). There were also neighborhood shrines attended by local people on certain festive days. In addition each city had a protector god or goddess, whose statue was housed in a temple, and Rome had several temples dedicated to different state divinities. Among them were temples dedicated to Jupiter, the sky god; Janus, the earth god; Mars, the war god; Saturn, the god of agriculture;

**10.3.4. The Religious, Educational and Social History of the Roman Civilization.** Because the Romans created a highly developed social and political organization, were master builders, and accomplished civil engineers, they greatly contributed to practical rationalism in mental evolution. However, the Romans were not, generally speaking, a contemplative people and their

Juno, the patron goddess of Rome. Although the worship of traditional gods was retained to the end, the Romans were ever ready to incorporate into their pantheon foreign gods that people from the conquered lands brought with them to Rome. They built temples dedicated to the Etruscan Minerva, and such Greek divinities as Venus (Aphrodite), Bacchus (Dionysus), Apollo and Hercules. One of the reasons for Roman religious tolerance was that they lacked a powerful priesthood to enforce a dogmatic creed. They had priests that took care of their temples. The college of Vestal Virgins had an archaic origin and kept the sacred fire going to assure Rome's security. Flamens of the temples made sacrifices to the gods on certain occasions, and augurs interpreted omens before

important undertakings. Priests were either elected by the Senate or appointed by the emperor, and frequently the same individual who served as a praetor or consul also served as a flamen, augur, or pontiff. Another reason for Roman religious tolerance was that they practiced their religion as a daily routine, a social obligation and as an occasion for periodic festivals rather than as a deeply felt reverence for and devotion to mysterious supernatural powers. The gods that the Romans worshipped were visualized as beings much like themselves only more powerful. Hence it made sense to mollify them by daily rituals and occasional sacrifices (Fig. 10-57). *Do ut des*, "I give, so that you might give." Instead of being pious, the Romans were superstitious, and even brave generals turned to augurs to interpret omens of the divine will—such as the flight pattern of birds, unusual cloud formations, or the entrails of sacrificed animals—before embarking on an expedition.

#### IMPERIAL SACRIFICE TO JUPITER FOR SUCCESS IN WAR



**Fig. 10-57.** Relief of Marcus Aurelius' sacrificial offering to the god in the Temple of Jupiter after defeating some German tribes. (Wikipedia)

Ancient Roman religious practices changed with the whims of politicians and generals of the republic, and later emperors came to use religion as a social tool to foster social solidarity and political unity. While the ceremonies that took place at these temples included ancient religious ceremonies they were gradually becoming more and more secular affairs, such as a bidding farewell to a departing consul and his staff to a province or depositing captured statues and other precious items after a triumphal march. Roman religion turned into a device used by leading politicians and later emperors to give divine sanction to whatever they decreed or sought to achieve. In archaic Egypt, the function of the state was to serve an esoteric religion, in classical Rome the function of religion was to serve the state. As Ovid remarked: "It is convenient that there should be gods, and that we should think they exist" (Durant, 1944, p. 225). Augustus, although a skeptic, became the Pontifex maximus and as a political realist, deified Caesar. When Augustus died, the Senate declared him to be a god and established a new religious college, the Augustales. The Roman emperors were tolerant of all religions, except those that denied the divinity of the Roman emperors, such as Judaism and Christianity. But as Roman power and prosperity declined, the time of troubles came to be associated with the spread of Oriental mystery religions and the growth of piety. Popular cults were the Hellenistic mysteries of Dionysus and Demeter, and the Egyptian mysteries of Isis, Osiris and Sarapis. Christianity, the best organized of all religious sects, in time became adopted by Constantine as the state's official religion.

**ROMAN EDUCATION AND LITERATURE.** There were no elementary schools in Rome and no formal educational requirements to qualify for public office. The ability to read and write, acquire good manners, and the leadership skills required for higher offices were learned at home (Bonner, 1977). Public education of the young during the early Republic consisted mainly of physical training in the Campus martius, which included running, jumping, hurling the javelin, riding, and jousting. A patrician who wanted his son to receive advanced education hired a Greek tutor or sent him to attend a school in Rhodes or Athens. As public offices were later becoming available to commoners, prosperous families began to send their children to private teachers (Fig. 10-58). The young learned not only to read and write but also how to speak grammatically and eloquently, and they acquired skills to impress others as being persons with moral qualities who could succeed as a political orators, advocates, judges or magistrates.

In Rome's early days the language of literature was Greek, not Latin (Grimal, 1963; Haywood, 1967; Brown, 1986). The annexation of Greek settlements in Italy and Sicily brought Greek literature (and other works of art) to the attention of Romans, and Greek teachers poured into Rome. Around 250 BCE, Roman writers began to translate Greek works—Homer's *Iliad* and *Odyssey*, the tragedies and comedies of Euripides, Aristophanes and Menander—into Latin. That required the enlargement of the Latin vocabulary. Early Roman writers—Naevius, Terence and Plautus—drew upon the repertoire of Greek writers, and plays were performed in open air theaters that were copies of Greek themes. Later writers, such as Horace, began to deal with Roman subjects, but Cicero and Seneca could still complain about the poverty of Latin and made contributions to its improvement. The most celebrated Latin literary work was Virgil's *Aeneid*, commissioned by Augustus. Clearly serving imperial propaganda, it created a new Roman heroic legend, based on Homer's *Iliad* and *Odyssey*. In this fantasy, Aeneas, the prince of Troy, leaves the destroyed city and, after a series of adventures, reaches Italy and

## PRIVATE TEACHER WITH PUPILS



**Fig. 10-58.** Roman teacher with pupils holding scrolls.  
(Crystalinks.com/Roman School.jpg)

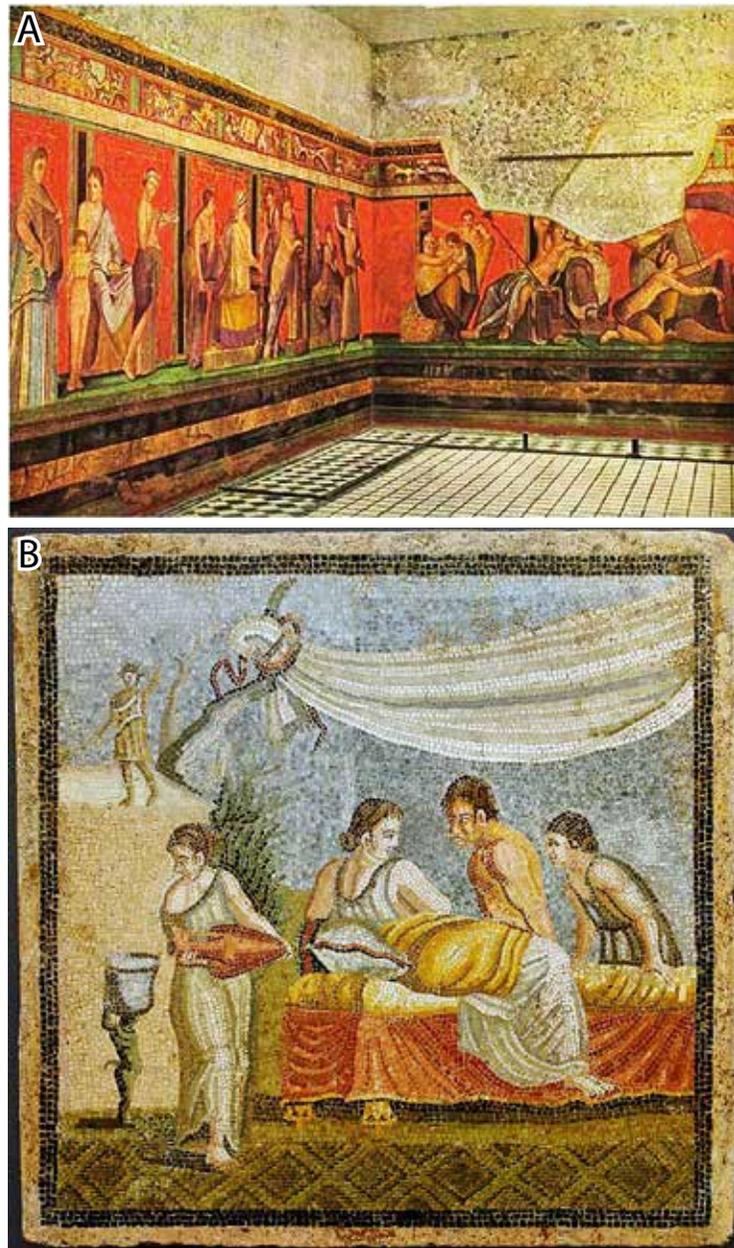
proceeds to Rome where he helps to found the city. The Romans who thought of the Greeks of their day as effeminate people inferior to themselves, began to present themselves as heirs of the heroic Greeks, charged with the mission of advancing human civilization. Gradually, Latin became a literary language and Rome replaced Alexandria as the center of high culture. In the course of time, the ideal of education changed from the intellectual and parochial Greek *paideia* to the more moralistic and universal Roman *humanitas*.

**ROMAN MORALITY.** Early Roman society was composed of a small class of elite patricians and a populace of common plebeians. Due to the considerable chasm between the wealth and educational level of the two, and because the nobles depended on the manual services of the commoners and the commoners depended on the protection of the nobles, class-specific moral codes developed for the two groups. The goal of the moral education of the young noble was to acquire *virtus*, such manly (*virile*) qualities as physical strength, pride and bravery, and the public display of *gravitas* by acting justly, honorably and magnanimously. It was the moral duty of a young aristocrat to uphold the good name of the family, and in order to accomplish that he had to serve and excel in the army, learn to manage the family's property efficiently, and advance through the ranks in the civil service and gain public approval. The goal of the moral inculcation of the plebeians—peasants in the countryside, soldiers in the army, merchants, artisans and laborers in the city—was to turn them into docile subjects, willing to work hard, and uncritically serve the established social order. To facilitate the cooperation of the two classes, the Romans developed a unique form of mutualism, the patron-client relationship. The moral obligation of the patrician was to act as the patron—benefactor, sponsor, advocate and protector—of his clients, and his social standing grew as he acquired more loyal clients. The moral obligation of the client was to serve his patron, work and run errands for him, spread his good name, and vote for him as he sought to advance socially and politically. This basically duty-based (deontological) moral order began to break down and turned into a

pleasure-based (hedonistic) moral order as Rome's economy turned from a productive into a predatory system. Both rich and poor Romans acquired a hedonistic value system. The generals and soldiers plundered foreign lands and brought home booty. Governors collected tribute and taxes. Silver and gold flowed into the treasury from the appropriated mines. Cheap grain became available from the conquered lands to feed the masses. Slaves from the conquered lands replaced the plebeians as the principal workforce. Productive agriculture and industry languished, and wheeling-dealing became the principal source of wealth. The once duty-bound members of the ruling class turned to a life of opulent luxury, and the industrious working class people insisted on being fed and entertained by the predatory state.

There is ample archeological and historical evidence for this drastic moral transformation of the Roman people as they became the rulers of the known world. To display their riches, emperors, victorious generals, retired governors, and prosperous merchants moved into marble-clad palaces, mansions and villas decorated with looted or commissioned sculptures, paintings and mosaics, some depicting classical scenes, others portraying erotic ones (Fig. 10-59). The rooms were furnished with couches and tables inlaid with ivory, silver and gold, and high prices were paid for good wine served in silver and gold goblets. Prostitution became legal and widespread, and it was acceptable for men to have homosexual relations with adults or minors. Cato reported that men paid a price which exceeded the cost of a farm to own a pretty boy (Durant, 1944, p. 89). Instead of themselves engaging in hard work, large segments of Rome's population increasingly relied on slaves

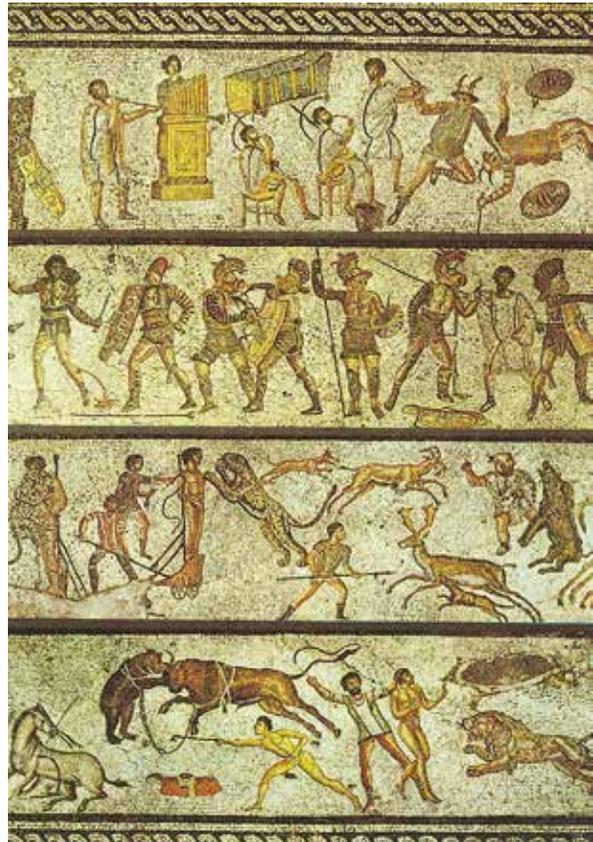
## ROMAN RESIDENTIAL ART



**Fig. 10-59.** A. Wall painting of a classical theme in a Pompeii house. B. Mosaic of a love scene from Rome. (A. Wall Paintings of Pompeii.jpg. B. Centocelle Rome.jpg)

to carry out daily chores. Having gained much leisure time, the state built baths, amphitheaters and hippodromes to keep the idle population content. There were different factions at chariot races—Blues, Greens, Whites, Reds—each with its public followers (Grimal, 1963). Aristocrats identified themselves with the Blues, plebeians with the Greens. The chariot was a thin box mounted on two wheels; collisions were often fatal, with the body of the charioteer being dragged along the track by the racing horses. The victory of one charioteer exalted one group and turned the other into despair. The erstwhile brave Romans who fought wars themselves now gained vicarious pleasure by watching gladiators fight one another until one was maimed or killed (Fig. 10-60). In addition to heavily armed professional gladiators, lightly clad prisoners of war, slaves and convicted criminals were thrown into cages of hungry leopards or lions that tore them to pieces. During the reign of Augustus, public entertainments were presented on 77 days a year; by the reign of Marcus Aurelius that increased to 135 days. During the day of a game, daily life in the city came to a halt, with thousands proceeding to the amphitheater or circus. The Circus maximus in Rome could seat as many as 150,000 spectators; the Colosseum about 50,000 spectators. Whereas the befuddlement of the masses in Pharaonic Egypt was achieved by elaborate religious rituals, it was accomplished by vulgar entertainment in imperial Rome. The hitherto self-disciplined Romans turned into self-aggrandizing egotists and self-indulgent hedonists.

## VIOLENCE OF GLADIATORS



**Fig. 10-60.** Mosaic of gladiators fighting beasts and men, and people exposed to wild animals. (Wikipedia. Bestiarii.jpg)

**ROMAN ART.** Roman art began under Etruscan rule, producing stylized and stereotypic terracotta reliefs and statues reflecting Near Eastern influences. The annexation of Greek cities in southern Italy brought Hellenic and Hellenistic art to the attention of Romans as conquering generals brought home pillaged statues to embellish public buildings and private residences. Greek artworks rapidly became popular in Rome, and soon they were copied in large numbers, probably by Greek artists and artisans. To advertise their wealth, wealthy Romans filled their gardens with statues and had the walls of their rooms decorated with paintings. In sculpture portraiture was the dominant genre, with marble and bronze busts substituting for statues. Elaborate mosaics became popular for the decoration of floors and walls. While Roman art was principally imitative, there were some innovations both in technique and style, and the representation of people became more realistic and less idealistic than in Greek art.

**ROMAN PHILOSOPHY AND SCIENCE.** The founders and leaders of Roman society were not contemplative but practical individuals, living in the here and the now with little interest in cosmology or metaphysics. The Romans did not have natural philosophers like Thales or Democritus; social philosophers like Socrates, Plato, or Aristotle; mathematicians like Euclid; scientists like Archimedes. Not only were philosophers not in great demand in Rome at the height of the republican and imperial periods but influential and educated people, such as Cato the Elder, outright opposed the spread of Greek philosophy because they felt it corrupted the young. The few Romans who were interested in philosophy had to consult Greek originals or turn to popular reviews of Greek philosophy, such as Cicero and Seneca's essays on Stoicism and Lucretius's poem on Epicureanism. Cicero, politician, linguist and foremost orator during the late republic, introduced a Latin vocabulary for Greek philosophical terms and adopted an eclectic philosophical stance (Hunt, 1954), and Seneca wrote about the nature and control of emotions and the pursuit of a rationally guided meaningful life (Griffin, 1976). The Stoics were little concerned with cosmology or metaphysical issues but rather how to live a good and meaningful life, one led by the control of emotions and passions (Bellio, 2009). Stoicism was a rational response to the turbulence and violence of the times, as reflected by the fact that Cicero was murdered in 43 BCE, and Seneca, tutor and advisor to Nero, was forced to commit suicide by the emperor. Marcus Aurelius, while espousing high Stoic ideals in Rome, spent much of his time on the frontiers fighting invaders.

In his epic and didactic poem, *De Rerum Natura*, Lucretius (2001) provided a popular account of Greek atomic theory and a materialistic theory of the universe and of the mind. However, his primary goal, much like that of the other Roman philosophers, was to offer guidelines for how to achieve a good and meaningful life (Smith, 2001). The thrust of Lucretius' exposition of Democritus's atomic theory and the philosophy of Epicurus was the argument that man can achieve peace of mind by casting off the fear of gods and of death. Lucretius did not deny the existence of the gods but maintained that they were a tranquil lot with little or no interest in human affairs. The soul and spirit, he argued, are corporeal in nature, born with the body and perishing with it at death. When the body disintegrates, the fine atoms of the mind are dispersed, and that ends sentience, the sensations, feelings and consciousness that constitute the soul. Lucretius expressed pity for the ignorance of his contemporaries and their adherence to a religious belief that condoned violence and evil. It is unknown how much attention the majority of Romans paid to the Stoic and Epicurean philosophers.

But as the empire was disintegrating and life became more precarious, both Stoicism and Epicureanism were abandoned. Disenchanted and bewildered people sought solace in irrational mystic cults. That mysticism was expressed in philosophy by Plotinus (204-270 CE). In his *Enneads*, Plotinus (1991) rejects materialism both as a philosophical doctrine and as a way of life and advocates an otherworldly spiritualism that became known as Neoplatonism. Plotinus' philosophy reflects Persian and Indian mystical influences that he sought to reconcile with Plato's metaphysical system. Plotinus' cosmos is a fantasy world of the One, identified as the Sun and Light and the exalted attributes of Truth and Beauty. An emanation of the One is Nous, the world spirit or intellect, and a less perfect emanation of it is the embodied human Soul. The senses only provide appearances; to know reality requires contemplation of the One. The soul may let the body govern one's conduct, but that results in the person's corruption by

emotions and passions; or the soul may seek union with the one and thus find true happiness. Although Plotinus was a pagan, the early Christians readily embraced his philosophy because it supported their ideal of shunning earthly materialism and seeking spiritual salvation. The Classical Age marked by self-aggrandizement, arrogance, competition, the pursuit of power, wealth and earthly gratification came to an end, changing into the Age of Faith, marked by the ideals of self-debasement, humility, cooperation, charity, and the seeking of salvation by eliminating sinful bodily desires and gaining divine grace.

#### **10.4. Ideational Evolution from the Archaic to the Classical Civilizations: A Summary**

**10.4.1. The Ethos and Mindset of Archaic and Classical Civilizations.** On the basis of current neuropsychological evidence, we distinguished in humans between instrumental mental processes, those concerned with accomplishing practical ends, and ideational mental processes, those seeking understanding and meaning. With regard to the latter we have distinguished three prototypic dispositions, attitudes and thoughts, or *mindsets*: those dominated by feelings, emotions and passions; those dominated by memories, habits and compulsions; those dominated by perceptual observation, critical reasoning and interpretation (Table 9-2). With regard to the cultural configuration, or *ethos* of societies, we distinguished between the ethos of earlier preliterate cultures (chapter 9), and the ethos of subsequently evolved literate civilizations (present chapter). Finally, we distinguished between earlier *archaic* and later evolving *classical* civilizations. The archaic worldview was founded on imaginary mythological narratives while the classical worldview made significant advances by being based on perceptual evidence and rational interpretation.

In the preceding chapter we proposed that the practical mindset of Late Paleolithic man—the nomadic large-game hunter—was affective/impulsive, characterized by aggression, bravery and savagery; the practical mindset of Neolithic man—the sedentary farmer—was mnemonic/compulsive, characterized by impulse control and the habitual performance of daily chores and rituals. In this chapter we argue that a new stage arose in human mental and cultural evolution when enterprising leaders abandoned village life and subsistence farming. These calculating leaders recruited large numbers of people to build large-scale irrigation systems that greatly increased crop yields with enough surplus to feed them and an urban governing class. Governmental organization required record keeping which led to cultural advancement because written records store and accumulate knowledge for future generations. However, record keeping in archaic societies was based on a complex writing system—Mesopotamian cuneiform notation and Egyptian hieroglyphics. These complex scripts had serious negative consequences because literacy remained the preserve of the ruling class (nobles, priests, and their scribes) while the great masses of people remained illiterate. Exclusive literacy allowed the ruling class to create an irrational mythology that fostered only their special interests, while they exploited the illiterate masses. When simpler alphabetic notation was adopted in the classical Greek and Roman civilizations, literacy became more widespread and liberated the minds of more people. The poetic fancies of the myths were questioned; scientists arose to formulate rational interpretations of what transpired in the external world; philosophers generated ideas about the nature of society and the place of the individual in society.

*The Institutional Promotion of a Mnemonic, Mythological Irrationalism in Egypt.* The social relations of people living in Neolithic village communities was regulated by traditional norms and values without a formal government. Although society was not fully egalitarian—there were differences in the rights and duties of men and women, the young and the old, and those who owned more or less property—everybody was familiar with his social obligations. Tradition and public opinion guaranteed that everybody did their part. The social relations of people who found themselves living in the novel urban civilizations, as in archaic Egypt, were different. Individuals working together no longer had a shared value system because they often came from different regions. Living in a new society, they had to assimilate social norms and moral values that were different from where they grew up. As members of a rigidly stratified political order, people had to accept obligations imposed on them by their ascribed status in society. For instance, a person born into a peasant family had to accept that it was his duty to hand over a fair portion of what he produced to the state, as something called taxation, and periodically he had to leave his village to work on some state project as ordered. The same applied to people belonging to all other classes; everybody had his assigned obligation which they had to accept as their fate.

Egyptian civilization was a theocratic dictatorship, headed by a king, the pharaoh, who also served as a high priest. He was considered to be of divine descent, and was declared a god when he died. To support that claim, an elaborate religious mythology was developed that obligated everybody to worship the state divinities and dedicate their lives to the service of the pharaoh as the earthly representative of the gods. To give concrete support for that fiction, the pharaohs had temples built to exalt the gods they represented and erected mortuary edifices for their mummified bodies when they died. The mummy of the pharaoh was buried with clothing, cosmetics, jewelry, and even books, so that his surviving spirit was furnished with all its needs or wants, thus enabling him to watch out for the welfare and safety of Egypt and its people. From a rational and scientific perspective all this was nonsense, devoid of any objective validity. The pharaohs were ordinary mortals, some dedicated and competent rulers, others without any qualification for their singular job. The gods they represented were figments of the imagination, many of them with traits that did not deserve admiration or veneration. When the pharaohs died, their mummified bodies entombed in a pyramid or mastaba could not possibly have exerted any influence on what transpired in the outside world.

How could such an irrational mythology come to be accepted by the Egyptian people as the sacred truth? What induced them to work hard and endlessly on useless projects, such as building pyramids, and how did it come about that their civilization endured for millennia? The psychological answer is that we tend to accept as true whatever we are *taught* from childhood onward much in the same way as what we personally *perceive*. The stories we are told, the pictures and concepts that are implanted in our minds, the dogmas we are indoctrinated in, and then rehearse and reiterate, become not only major components of our fund of knowledge but also determine how we think. As inquisitive creatures, all of us want to comprehend what the world is like, who we are, our place in society, and what happens when we die. But most of what we learn about the world, and the ideas we form, do not come from individual experience but from what is passed on to us from early childhood. And what we are taught may be based on imaginary narratives or on empirically based evidence and logical reasoning. Going to

secular schools and encouraged to think critically, we acquire a mindset that inclines us to ask for evidence of what we are told. But that was not the case in archaic Egypt. The poor did not receive any education at all, and the rich were taught by clerics who discouraged their pupils to ever question what they were told or read. Most clerics were ignorant about what really transpired in the world around them. It is likely that these clerics believed what they were taught was the sacred truth, and that it was their obligation to preserve and pass those truths on to the next generation. Living in a closed society during a prescientific age, they accepted the mythic stories about the origin and nature of the world, the fantasies about the nature of the human mind and soul, and the morality of their highly stratified social order where the rich exploited the poor.

Ancient Egyptian civilization survived for millennia because its influential priesthood succeeded in formulating a comprehensive mythological narrative that served them well in both good and bad times. According to their cosmology, the world was originally chaotic and dark. The pharaohs, with the help of mysterious gods, created light and order. To sustain that order, everybody had an assigned religious obligation. The pharaoh had to constantly intercede with the gods on behalf of the people by participating in elaborate rituals, and his subjects, rich or poor, had to obey and faithfully execute his dictates. The Egyptians believed that the individual is a composite of a perishable body and an immortal soul, and it is the individual's obligation to sustain the moral order (Ma'at) of the world by conscientiously doing whatever his station demands. When an individual died, his soul (seated in the heart) was weighed on the scale of justice. It was in everyone's best interest to faithfully perform their duties while alive, or else the soul would be devoured by underworld demons and never enter the gates of heaven. This mythological narrative was solidified through mnemonic transmission into a compulsive dogma and became an enduring element of the ethos of Egyptian civilization.

Mnemonic cultural transmission is a powerful force that molds the ethos of a people because most people find it more convenient and reassuring to believe what they are taught than to think for themselves. For instance, a large segment of the population in all societies uncritically accepts the religious dogmas they are taught. But how did it come about that members of the educated Egyptian elite, people who displayed a great measure of practical rationality in managing the affairs of a complex society, and who had ample leisure time to think and reason, could assent to a patently nonsensical mythology and spend a substantial portion of their wealth and the nation's resources to sustain that social order. How could they believe the story that the sun was a god who died every evening, struggled with demons in the underworld, and was miraculously reborn every morning because of rituals performed by the priests? Did not their eyes clearly inform them that the sun is just a fiery body that apparently circles around the earth once every day? How could they tolerate that profound cognitive dissonance between what their senses revealed and what they were told to believe? Indeed, there is a wisdom literature indicating that Egypt had contemplative sages; however, there is no evidence that the sages ever expressed doubts about their irrational mythology. We have to conclude that, with the prevailing mnemonic ethos, nobody felt comfortable to question what they were taught and memorized. Royal propaganda, clerical obfuscation, formalism in art, obedience and submission as ideals of good behavior, combined perhaps with some oppression, created a mnemonic yoke that kept everybody feeling and thinking alike. The final

collapse of the ancient Egyptian civilization was not caused by rebellion of the masses or of the sages. Instead, the stagnant and ossified Egyptian social system could not overcome the onslaught of the superior powers of more advanced civilizations.

*The Institutional Promotion of an Affective, Militant Irrationalism in Mesopotamia.* Initially, Mesopotamian civilization shared many traits with Egypt. Villages were turned into urban centers along the tamed waters of the Tigris and Euphrates, headed by kings who served not only as rational managers of an irrigation-based, surplus-producing agricultural economy but also as mythmaking high priests, claiming to rule on behalf of the city gods. As in Egypt, the kings erected impressive, monumental temples to house the statues of gods, and built lavish palaces to advertise their own majesty and wealth. But the governing of the Mesopotamian city-states, and later their unification, proved to be a far more difficult undertaking than it was in Egypt. Mesopotamia had a more heterogeneous population; far more land for potential cultivation; greater difficulties in maintaining the elaborate irrigation system along the silting Tigris and Euphrates; and, above all, it was a land exposed to intruders. From the beginning, the city states fought one another and had to defend themselves against raiders. As a consequence, the priest-kings turned into warrior-kings, and became aggressive fighters leading armies that sought to defeat their enemies. While the power of the priesthood remained strong, sovereignty increasingly depended on military might. Thus, Mesopotamian civilization became extremely belligerent and much of the energy and wealth of the Sumerians, Akkadians, Babylonians and Assyrians were wastefully spent on fighting endless wars. As a consequence, thriving cities were destroyed and their irrigation canals and farmlands were neglected. The archeological remains of settlements built on top of one another and buried in tells bear witness to the endless warfare among the Mesopotamian city states and nations. This development created an irrational affective/impulsive ethos and mindset, a dominant trait that came to characterize Mesopotamian civilization until its very end.

Fighting when frustrated or hurt is a basic affective reaction of ours traceable to our reptilian and simian forebears. Aggressive disposition and savagery became a survival imperative when our nomadic human ancestors had to hunt, kill and butcher animals in order to survive. Our violent temper is engendered by specific hormonal and brain mechanisms that, as an inborn disposition, is manifest from birth onward. However, we are also endowed with altruistic and gregarious affects that counterbalance our antagonistic disposition. These emotions allow us to become members of closely-knit family units and cooperate with peers and members of our community. Either of these dispositions can be facilitated or inhibited by education and training, hence the mindset of a people is greatly influenced by the ethos of the culture in which they are raised. While the Egyptians tended to be peaceful, the Mesopotamians became militant. That was manifested not only by unceasing warfare and brutality towards enemies but also by the tyrannical rule of Mesopotamian kings who imposed harsh laws to regulate domestic life. The native population were executed if they broke these laws and had their hands cut off for minor offenses. Mesopotamian art was dedicated to advertising the power of the king, the might of his army, and their ferocity and cruelty. The kings were depicted as the slayers of lions, the soldiers as ruthless warriors who mercilessly tortured and cut off the heads of their enemies. If he was not killed, the enemy was put to work in chain gangs on monumental projects or sold into slavery.

The profound cognitive dissonance that we noted in the Egyptian ethos, also prevailed in Mesopotamia, with the ruling elite displaying an admixture of rational managerial skills, fostering industry and trade, as well as promoting irrationalism, spending precious resources on building monumental temples and palaces and wasting resources on warfare. Building ostentatious palaces may have been driven by a combination of greed and the drive for superiority. But the zeal of kings and high priests to erect monumental temples and preserve the old religious tradition also served the political end of keeping the mindset of their populace under government control. The temple that the Sumerians erected was "god's house" and the land they worked was "god's land." Sumerian religion played a pivotal role in the maintenance of later Mesopotamian religions. After the Sumerians lost their political power, their Akkadian, Babylonian and Assyrian successors retained Sumerian as their liturgical and ceremonial language and faithfully reiterated much of the Sumerian mythology. As in Egypt, the small ruling class was literate. The literature that was passed on from generation to generation over millennia consisted of ancient mythologies, liturgical and astrological matters, records of epic poems, and the "wisdom" of sages. It is notable that the wisdom literature increasingly dealt with moral issues, encouraging their readers to help the poor, the weak and the oppressed, and be compassionate and charitable. However, the Babylonians and Assyrians never questioned their irrational traditional myths, the divine rights of kings, and the political justification of the prevailing autocratic social order.

*Towards Rationalism: The Changing Ethos and Mindset of Classical Greece and Rome.* The civilizations of Greece and Rome differed in their formative stages from the archaic civilizations of Egypt and Mesopotamia, and the two shared some novel features. Politically, the history of both civilizations began with the rejection of the autocratic rule of kings and their replacement by an assembly of nobles. And in both civilizations the plutocratic rule of the nobles was checked to some extent at a later stage of development by a democratic assembly of citizens of common origin. Economically, there was a trend in both civilizations to supplement the agricultural base with a prosperous money-based commercial system. Socially, there was a trend in both civilizations to grant civil rights to male citizens of the state. Artistically there was a trend to replace formalism by a naturalistic rendering of the gods and humans. And ideationally, there was an ongoing effort in both Greece and Rome to critically examine the veracity of mythological narratives and replace them with naturalistic speculations and theories. Collectively, we may characterize these changes as a growing trend towards rationalism.

**THE MINDSET AND ETHOS OF CLASSICAL GREECE.** Classical Greek civilization was an heir to a militant archaic civilization, the Mycenaean, that disappeared centuries earlier. Greek-speaking peoples from the north settled in the vacated land and began farming. But, then, forced by the shortage of arable land and population growth, many of them took to the sea. Perhaps spurred by the persisting heroic lore and aided by their seafaring skills, adventurous Greek mariners established more and more trading posts and cities along the coasts of the Mediterranean and the Black Seas. Coming into contact with people of different cultures and the need for sophistication in engaging in mercantile transactions with different groups of people, the Greeks began to cultivate a rational and critical mindset. They adopted and modified the Phoenician alphabet, learned to mint valuable coins, and undertook to govern themselves as free people by granting civil and voting rights to all male citizens. Prosperous

merchants began to support artists who were experimenting with rendering the gods and people naturalistically as individuals, and some of them, the earliest philosophers, began to question the veracity of mythological accounts of the nature of the world and began to entertain rational hypotheses.

**THE MINDSET AND ETHOS OF CLASSICAL ROME.** Unlike the Greeks who could look back on the rich cultural heritage of the Mycenaean heroic age and the orally transmitted Homeric poems, the Romans had no such legacy. The Romans, and their kindred in central Italy, were peasants with no aristocratic tradition to cherish. Indeed, their legend that Rome was founded by Romulus and Remus—abandoned twins nursed by a she-wolf and raised by shepherds in a small hut—suggests a vague memory of humble origins. But the Roman peasants were a hardworking lot, cultivating fertile lands and expanding their holdings by draining marshes along the Tiber. Soon they supplemented the cultivation of annual crops on the plains by planting olive trees and grape vines on the hillsides, which take a long time to mature but are far more profitable in the long run. In time, some farmers became prosperous landowners, while others became merchants, trading with the Etruscans and Greek colonies along the Mediterranean coast. Rome, initially the confederation of a few villages, gradually turned into a city, and its leaders began to adopt elements of Greek political ideas and military technology. While the Romans did not excel in philosophy or science, they did contribute to the spread of rationalism by promoting political ideas and establishing civil laws that fostered the expansion of an educated middle class.

*Advances in Rationalism from the Archaic to the Classical Civilizations.* The changes in the ethos of civilizations and the mindsets of people from the archaic to the classical age have made the following contributions to rationalism. In both classical Athens and Rome, education and literacy ceased to be the prerogative of the ruling elite and the clergy. Commoners learned to read and write, and instead of being concerned mainly with royal propaganda and liturgical matters, a growing corpus of the literature was dedicated to secular subjects. In both civilizations a new class of people—lay teachers, playwrights, and philosophers—began to influence what people talked about and how they thought. In both civilizations, people were changing from being servile subjects to becoming liberated citizens, insisting on their right to express their views in the agora or forum and play a role in governmental affairs. And in both, people were granted freedom of speech that allowed questioning or even rejecting the validity of ancient creeds and myths. The outcome of these changes was a momentous advance in rationalism. A sizable educated public acquired the ability to think critically and insisted that statements made by others, whether orators or philosophers, be backed by evidence and logical reasoning.

**FROM AUTOCRACY TOWARDS DEMOCRACY.** Mesopotamia and Egypt had autocratic governments, headed by a king with absolute political power. Autocratic governments work well if the ruler is a rational and wise person because he (rarely, she) can mitigate the conflicts that necessarily arise among different social groups and individuals competing with one another for power, influence and gain. Some of the Egyptian and Mesopotamian kings were competent rulers. However, throughout history, royal rule has been plagued by the vainglory and megalomania of monarchs and the problem of royal succession. Repeatedly, unwise monarchs wasted the resources of their country and burdened their people with excessive taxation trying

to fill the emptied coffers of the treasury. Contrary to the ancients' ideas about inheritance, the laws of genetics do not guarantee that a capable ruler will sire capable descendants. Dynasties kept changing even in such a stable civilization as Egypt, and kingdoms collapsed because of the follies of their autocratic rulers. An elite class of nobles with social and economic privileges, the plutocrats, ruled in Greece and Rome. A plutocratic system of government allows rational deliberation in a committee before making important decisions, an advantage over the irrational whims of an autocrat. However, quite frequently plutocracies ended with the usurpation of power by an individual, a victorious general or a demagogue, who became a tyrant. Tyranny often led to rebellion and civil war, and a new system of government was gradually established both in Athens and Rome, one based on participation of concerned citizens or their representatives in making political decisions.

In principle, democracy is a more reasonable form of government than all the others because free citizens need not be coerced to obey dictates coming from above ("them") but voluntarily cooperate in whatever they themselves ("we") initiate. The early flowering of Athens and Rome is undoubtedly due to the enthusiasm of their free citizens who were working and fighting for what they perceived as a common cause. However, neither Athens nor Rome were able to sustain this novel system of government for long. Powerful irrational forces led to the collapse of this first democratic experiment in both places. Some of these factors in Greece were the belligerence and cantankerousness of individuals; their shortsightedness in refusing to extend citizenship to a large segment of their own population; and their inability, notwithstanding calls for Hellenic unity, to treat people of the other Greek city-states as equals. The Greeks failed to compromise and form a single national government when that became a prerequisite for their survival as an independent people.

Rome was more generous in extending citizenship to all Italians and to some of the peoples of the annexed lands. But other irrational factors led to the collapse of the Roman democratic experiment. To begin with, Rome's prosperity was based on conquest that was often achieved by free-lancing generals who, in an attempt to gain political power, promoted civil strife and occasionally fought each other outright in pitched battles. As riches began to flow from the conquered lands into Rome, the Romans failed to resolve the growing class conflict between the wealthy patricians and the growing number of poor plebeians who moved from the countryside to the city. To avoid civil wars, increasingly Rome's poor were fed and entertained at the state's expense. But this economic change drastically modified the Roman ethos and mindset. Beginning with the Punic wars, landowning equestrians became ambitious generals bent on conquest to enrich themselves by plunder and tribute; productive peasants cultivating the land turned into legionnaires looking for adventure and loot; and industrious artisans and merchants became corrupt international wheeler-dealers. The Romans began their civilization as hardy farmers and brave soldiers, then as great political and technological organizers. The Romans ended their civilization by turning into brutal occupiers, greedy exploiters of foreign lands, and hedonistic consumers of what other people produced. The rich began living lavishly beyond their means; more and more of the poor relied on handouts by the state; and erstwhile brave fighters came to vicariously experience the excitement of war by watching gladiators in amphitheaters fighting each other to death and convicts being torn apart by lions. Political order was temporarily restored by turning the democratic republic into an autocratic empire.

But the ethos and mindset of the Romans had changed. Increasingly, the defense of the empire was handed to mercenaries, and heavy work and the performance of chores was passed on to slaves. After centuries of great prosperity, the empire's treasury ran dry, the economy collapsed and mighty Rome, abandoned by its citizens and ran over by barbarians, became a ghost town of ruins and remained so for several centuries.

**THE STRUGGLE FOR HUMAN EQUALITY.** Human inequality, viewing and treating some people as less worthy than others, has ancient roots. In hunting-based nomadic societies, women were considered inferior to men and were burdened with taking care of the children, carrying out domestic chores, collecting fruits and berries, and digging for roots. Men accepted responsibility for periodic exertions by organizing hunting expeditions and following game and killing them; however, they were reluctant to carry out monotonous daily routines or engage in steady hard labor. The braves gathered in men's clubs in their spare time, from which women were excluded, reminiscing about the past and discussing future plans. When land cultivation began on a small scale, it was generally women who took care of a small plot around the house, using a digging stick or a hoe. This gender relationship changed when large plots of lands were beginning to be cultivated with plows drawn by oxen, as that heavy task necessarily fell to the males with stronger muscles. This adaptation suited men who could develop the self-discipline required for hard and steady work but not those who retained the affective mindset of hunters, desirous of adventure and challenge. Some of the brightest among these men got the idea that a good living might be made without hard labor by claiming property rights to large plots of lands and subjugating other men, sharecroppers or peons, to perform all the necessary physical labor. This innovation, the domestication and subjugation of some males by other males, was the economic foundation of the archaic Egyptian and Mesopotamian civilizations. Acquiring land by building extensive irrigation systems, using new methods of cultivation and putting masses of people to work, greatly increased the quantity of food produced, and that made possible the provisioning of a ruling class that henceforth refused to engage in manual labor.

In the archaic social system, great social and economic disparity developed between a small class of landowning royals and nobles and a large class of laboring people. The small elite class came to live in hitherto unheard of luxury, mercilessly exploiting the working class whose living conditions greatly deteriorated as a consequence of heavy tax burdens. Economic and social disparity was less pronounced in the classical civilizations of Greece and Rome. From the beginning and later on, war veterans and merchants came to form a propertied middle class. However, because the prosperity of the classical civilizations was not based on increased local food production but on a predatory exploitation of other people—the tributes collected by governors, the loot gained by the conquering soldiers, passing the hard work on to slaves, and profits gained by international trading—the trend toward egalitarianism could not endure. Preservation of this predatory economic system required the support of a large army and endless warfare. The Roman economic and social system came to be based on irrational features—the combination of economic exploitation and the maintenance of large, unproductive military forces—that were major factors in its demise.

**FROM IRRATIONALISM TOWARDS RATIONALISM.** While the Egyptians and Mesopotamians displayed considerable practical rationality in organizing and maintaining the integrity of

their complex civilization, they needed an ideology that provided moral justification for their discriminatory and exploitation-based social order. The ideology that they developed had deep roots in the animistic belief of all primitive peoples, i.e., that the world is ruled by mysterious supernatural agents—ancestral spirits, ghosts, demons, gods—who have to be propitiated to assure success in a dangerous hunt, avoid a storm in the open sea, to bring rain to produce a good crop, and to and be spared from disease, calamities and catastrophes. The autocratic rulers added a new set of supreme gods to the animistic agents. Now these gods owned the land of the state and only the king and priests had privileged access to them. In addition to erecting monumental edifices that housed the statues of the gods and palaces that advertised their own majesty, the rulers had to see to it that their subjects transferred their spiritual allegiance to the new gods. This was accomplished by creating an elaborate fictitious narrative about how the great gods changed the primal chaos and created an orderly world; that the kings and priests have privileged access to the gods to intercede with them on behalf of the people; and how it is everybody's moral obligation to support the established social order in accordance with their divinely-ordered status in society.

Learning by rote was the principal aim of archaic education. The young of the literate ruling class had to memorize as many of the traditional myths as they could; aspirant priests learned verbatim the traditional hymns to the gods and were drilled in the accurate performance of rituals and ceremonies; and those trained to be professionals learned the basics of mathematics, engineering, medicine, and so forth, as described in ancient texts. In contrast, the laboring masses were illiterate and received no education at all, except that they were expected to worship the gods, be subservient to their superiors, and faithfully perform their assigned jobs regardless how onerous. Living under wretched conditions, exhausted by endless labor and suffering from diseases, the poor took solace from the prevailing religious myth of a better life awaiting them in heaven as a recompense for the hardships endured on earth in the service of the pharaoh and the gods. Both the Egyptians and Babylonians had “sages” and a “wisdom” literature. But judged by surviving records, they did not question the justice of the autocratic rule of the Pharaohs, the veracity of ancient myths, the efficacy of the rituals, or the morality of the discriminatory social order. The wisdom literature consists of proverbs and fables and, in particular, instructions to the young how to succeed in life and become worthy and respected members of society. The elite youth was advised to worship the gods, be respectful of their superiors, work diligently, be frugal, avoid drinking, cheating, boasting, arguing, and so forth. While this practical wisdom served the interests of the ruling class and contributed to social harmony, it stifled any progress towards gaining a more realistic view of what transpires in the natural world. The archaic sages were not critical thinkers, reformers, philosophers or scientists but mnemonic believers of the prevailing social order, and thus they lent support to the institutional promotion of the irrationalism promoted by the priests and the ruling class.

An enduring contribution of classical Greece was the liberation of the minds of educated people from the yoke of irrationalism. Both Greeks and Romans began their historic careers in believing in a pantheon of gods who created and ruled the world and who held in their hands the fate of the individual and society. However, as the Homeric epics reveal, the Greeks conceived of their gods as anthropomorphic beings with superhuman powers rather than as mysterious beings, and they did not have a powerful priesthood that coerced people to

worship the gods. Traveling far and wide and dealing with people of different cultures, the Greeks acquired a mindset that was open to novel ideas. This included influences exerted by the Egyptians and Babylonians. Early Greek architecture and art were copies of Egyptian models; however, the Greeks abandoned the yoke of rigid formalism and developed a superior naturalistic style. Greek astronomy was based on Babylonian work; however, they changed that discipline from an irrational astrological pursuit into a scientific enterprise. And Greek philosophy and science was an altogether new development. Instead of making up stories based on hearsay, fantasy, confabulation and wishful thinking, the Greek philosophers and scientists began to offer naturalistic interpretations of what they observed. They came to consider the celestial world—the sun, moon, planets and stars—as material objects rather than esoteric gods, and they developed theories about their movements. They analytically sought to reduce the great multiplicity of earthly objects to a few elements or atoms with distinct properties. Social philosophers began to study the nature and merits of different political organizations—monarchy, oligarchy, tyranny, democracy—and took a stand which of them they considered better suited for harmonious living. Finally, mental and moral philosophers began to distinguish between elements of the mind—emotion and reason, memory and imagination—as properties of behaving individuals that influence their personal and moral character.

#### ***10.4.2. Primitive Consciousness: From the Yoked Will Towards the Free Will.***

Consciousness or awareness is the mental process that enables us to form a subjective (internal) representation—percept, image, concept, idea—of the things that exist in the objective (external) world and the events that transpire therein. Much of that consciousness is *implicit*, given to us directly without reflection or contemplation. When I look up the sky and see a bird flying, I do not say to myself, “I have the perceptual impression of a bird flying out there” but rather I perceive that directly as a given fact. This is sometimes called naïve realism. But it is our human endowment that we are also able to reflect upon our experiences, and when we do that implicit awareness becomes *explicit*. When we focus our attention and think about what we experience, we become explicitly aware of what transpires in our consciousness. We can reflect and meditate because we can form higher-order abstract ideas of whatever we experience and link those ideas with verbal symbols to *re-represent* in our consciousness not only what we sense and perceive, think and remember, but also what we desire and want, hope and fear, endeavor and plan, and so forth. In contrast, higher animals lacking linguistic abilities cannot reflect upon what they experience, hence their awareness is always an implicit one. And the same may apply to the early humans who lacked a language, or had a simple language devoid of abstract terms. But if so, when and how did explicit awareness emerge in the course of human mental evolution?

**THE ONTOGENY OF SELF-AWARENESS.** We display explicit self-awareness whenever we believe or assert that what we did or abstained from doing was by our own volition. Had we so willed, we could have done otherwise. Explicit self-awareness has an ontogenetic history and it is linked with the gradual development of our concept of selfhood. Initially, the child may say in imitation of others, “*Jane* is hungry,” but soon that changes into “*I* am hungry,” using the first person pronoun (Allport, 1955). That early concept of *I* or *me* originates from bodily sensations: the infant’s pleasure of sucking its fingers; the joy of kicking and seeing the legs moving; the pain and hurt after a fall; the pleasure felt after being able to stand up

by holding on to a chair; the feeling of pride when the child can finally walk by herself. The child seems to be saying to herself, “this is *me*,” “I can walk by *myself*.” Another evident manifestation of the child’s self-concept and her volition occurs when she responds with “yes” or “no” to instructions or throws a temper tantrum when she cannot have her way. But much of this is affective volition not a rational choice based on deliberation. The child may say “no” because she is angry, or say “yes” because she received a candy a few seconds earlier. This early concept of selfhood arising from bodily sensations is the affective foundation of the more elaborate self concept that develops in parallel with the child’s cognitive growth. As the child starts to pay attention to her own mental states, she begins to attach the first person pronoun to her own wishes, aversions, plans, and thoughts. “I want some ice cream,” “I don’t like spinach,” “I want to see Grandma,” “I don’t believe you.” Gradually, the affective self is joined by the rational intentional and knowing self, as conscious mental states begin to influence the child’s behavior: “I am bored, let’s play,” “I don’t want to see Paul, he hurt *me*,” “I’ll be the nurse, you’ll be the patient.” Finally reflection, meditation and introspection are powers added to the mind and begin to play a role when the adolescent and maturing person chooses a course of action or a set of beliefs. These include moral norms and values, feelings of shame and guilt, gratitude and obligation, dreams, ambitions and aspirations, calculations of the cost and reward of achievement goals, and, finally, who I am, what I believe in, what I can do, and who I want to become.

This cognitive facet of our self-concept has important ramifications because it is the basis of our belief that whenever we are not constrained by external forces and allow our consciousness to choose what we do, we are acting by our own *free will*. However, our will cannot be construed to be *free* unless we can describe what the circumstances were when we made a choice. Can we specify the motives of our actions, the information available to us, the parameters of our moral values, the limits of our understanding, and so forth? That is, reflection and introspection by itself, without self knowledge, will be of little use if we cannot realistically specify why we opted to go one way rather than another way. And to be able to do that we have to have a vocabulary of empirically based, valid psychological concepts, such as the gamut of positive and negative feelings and emotions that govern our behavior, the contribution of sensations and perceptions to what we know, the difference between dreaming, wishful thinking, and logical reasoning, the difference between prejudice and rational judgment, and so forth.

**THE EVOLUTIONARY HISTORY OF SELF-AWARENESS.** Did the people of the archaic and classical civilizations have an explicit self-concept and did they believe that they had a free will? In light of the foregoing considerations we propose that even the sages of Egypt, as attested by their writings, not only lacked a self-concept but sought not to exercise their free will. And while the educated people of classical Greece had an implicit self-concept and exercised their free will in daily life, they lacked an explicit idea of the freedom of the human will.

Influenced by scientific considerations, we consider the mind as part of ourselves as individuals, a product of the workings of our living brain. The Egyptians’ concept of the mind was quite different. An ill-defined spiritual force that permeated the universe, Ma’at, was thought to be the basis of the moral order of the world, and two psychic entities, Ka and Ba,

affected the individual, inducing him to live in harmony with the dictates of Ma'at. While Ka was born with the individual, it was really his double with an independent life; it returned to the buried individual when he died and was worshipped by the family as the spiritual ancestor. Ba was part of the living body (housed in the heart) but it departed when the individual died and proceeded to the underworld to be judged by the gods. If the scales indicated that he lived largely according to the dictates of Ma'at he was admitted to heaven; if he failed that judgment he was devoured by a monster. Ma'at was the ideological foundation of the strict moral code of the Egyptians, and it obligated every individual to live in accordance with his fated station in the hierarchic social order. That ingrained moral code ("follow-the-heart") determined what action was considered virtuous or sinful, praiseworthy or blameworthy, true or false, just or unjust, decent or indecent, polite or impolite, and so forth. In appealing to the gods for mercy, the epitaphs of notable Egyptians did not refer to the good deeds they performed in life, which would suggest an exercise of personal will, rather, they declared their obedience and subservience, emphasizing over and over again that they did not do any evil (isfet). Exercising one's own will, doing what one felt like, or making free choices, was to challenge the cosmic and social order, and thus was anathema. When the perplexed Egyptian turned inward and contemplated his fate, he might have felt that he was not engaged in personal soul-searching but was instead consulting the spirits or communing with his gods. Believing that, he cannot be said to have had free will.

As in Egypt, so also in Greece, the ancient idea that the fate of the individual was governed by supernatural forces precluded the formulation of an explicit concept of free will. Indeed, a major theme of Greek tragedy was how men, in their hubris, thinking of being in charge of their affairs were, in fact, just toys in the hands of the gods who determined their fate. In fact, however, the adventurous and enterprising Greeks, taking to the dangerous sea, colonizing foreign lands and engaging in international commerce, were implicitly exercising their free will. When intellectuals and philosophers in classical Greece began to question old beliefs about the gods, the veracity of the Homeric epics, and come up with novel ideas about the nature of the physical world, they were evidently glorifying their rational powers to think for themselves. As we noted, a clear concept of free will presumes an understanding of what goes on in one's mind when one opts to choose one course of action rather than another. And the question is: did the Greeks have an adequate psychological framework and vocabulary to allow a veridical analysis of their chosen actions? As we now understand it, self awareness requires an appreciation of the competing mental forces that underlie behavior. When confronted with a difficult choice in life, emotions and passions may incline us to choose one course; habits, beliefs, prejudices and preconceptions another course; and our fund of empirical knowledge and critical reasoning still another course. The Greeks were fully aware that to create a new social order based on a secular ideology required self awareness. The maxim "Know thyself," inscribed at the entrance to the Temple of Apollo at Delphi, was repeatedly voiced by Socrates in Plato's Dialogues, reminding his listeners that without self-knowledge their judgments were of little merit. However, the Greek philosophers failed to formulate an adequate psychological theory of the dynamics of the human behavior, and they never fully subscribed to the idea of free will. Plato and Aristotle understood the conflict between passion and reason but they tended to identify the affects with the individual's somatic functions and the intellect with a supernatural force. In his *Nichomachean Ethics* Aristotle uses terms such as "up-to-us," "willing," and

“choice”; and discusses matters for which one can or cannot be held responsible (Dihle, 1982; Frede, 2011). However, there is no reference to egotistical and altruistic emotions as motives of conduct; convention- and faith-based beliefs and creeds; illusions, delusions and wishful thinking; embarrassment, guilt and shame; empirically verified and unverified knowledge; and so forth. Moreover, both Plato and Aristotle, as well as the Stoics, took away from the individual the agency that is most crucial to his exercise of free will, the intellect, and assigned it to a divine source. Our notion of free will is predicated on the idea that our intellect is our personal property and it has the power to influence what we choose to do.

**10.4.3. Our Archaic and Classical Legacies.** Egyptian and Mesopotamian civilizations greatly influenced classical Greek and Roman civilizations. The latter, in turn, have made immense contributions to the cultural development of Modern civilization.

(i) *The invention of record keeping.* Going beyond oral transmission to recording historical events, commercial transactions, skills, and knowledge is the foundation of all civilizations. While the Mesopotamian cuneiform and the Egyptian hieroglyphic scripts were abandoned as too cumbersome, the alphabetic notation that they gave rise to in Greece and then in Rome is the basis of our enduring writing system.

(ii) *Hierarchic social organization.* The social organization of civilizations to this day is based on a hierarchic system of a smaller elite of rulers and a larger population of the ruled. While the fiction that the rulers governed by divine right, or were gods themselves, has been abandoned in most civilizations, the conflict between rulers and ruled has yet to be fully resolved. Repeatedly throughout history, democracies have collapsed and dictators or oligarchs have taken the reins of governments into their own hands.

(iii) *Division of labor.* All civilizations depend on a complex economic and social organization, with highly trained laborers and professionals performing ever more specialized functions. Ancient innovations in construction techniques, architecture, weaving, jewelry making, and other industries remain our precious legacies to this day. An unfortunate legacy, the use of forced labor and slavery for the performance of onerous tasks, has yet to be fully abandoned.

(iv) *Rule by laws.* Rules in the archaic civilizations were generally made by men rather than codified laws. Some rulers issued legal codes but they were based on arbitrary decisions rather than on judicial or legislative deliberations. Rule by written laws was an ideal developed by the Romans, who had jurists record past legal decisions and advised magistrates in judging litigations and issuing edicts. However, the Romans failed to formulate a constitution that checked the arbitrary power assumed by many emperors.

(v) *Secular education.* The Greeks and Romans founded schools of elementary and higher education, teaching the young how to read, write, perform mathematical calculations, learn the history of important events, and know some facts about the physical and organic world. The Greek ideal of *paideia* and the Roman ideal of *humanitas* have had a great influence on the revival of secular education and rationalism towards the end of the Middle Ages.

(vi) *Literary development.* Archaic literature was concerned primarily with religious and mythological matters. Playwrights of classical Athens and Rome turned to secular subjects. Comedies were performed mainly to entertain people; tragedies dealt with serious subjects, in particular the vicissitudes of life. Both contributed to continuing adult education.

(vi) *Artistic development.* Painting and sculpture were highly prized in the ancient world. The formulaic, static and stereotypic art of the archaic civilizations, which served mainly didactic purposes, was changed by the Greeks and Romans into a naturalistic style, extolling the beauty of the human body in action.

(vii) *Growth of individualism.* There was little respect for individuals, the dignity human beings, in the archaic civilizations. The royals and nobles, as superhuman beings, were adored and respected. The masses of people were subjects, who existed only to serve the ruling class. They were important as chattel because in the absence of machines they were the principal energy source to perform all the necessary hard labor. In contrast, the civil societies of Greece and Rome educated the people who demanded and received respect as individuals.

(viii) *The democratic experiment.* Granting voting rights to citizens of the state was an important social and political contribution of Athens and Rome. Citizens participating in the governance of their society are liable to contribute more to its survival and prosperity than do coerced subjects. However, this rational experiment in reordering the social system failed both in Athens and Rome. One of the reasons for this failure was that citizenship rights were reserved for a privileged segment of the population; those excluded could be exploited, enslaved or even killed with impunity.

(ix) *The birth of philosophy.* The greatest contribution of classical Greece to the growth of rationalism was philosophy, the introduction of free discourse and logical argument by educated individuals about anything they thought important—be it the nature of the physical and organic world, the organization of society, the existence or nonexistence of the gods, the foundations of moral behavior, and so forth. The questions they raised and the solutions they offered remain elements of modern philosophical discourse.

(x) *The invention of science.* The Greek philosophers of the classical age used available knowledge to answer questions by logical reasoning. Scientists of the Hellenistic age turned to research to discover new facts. They made fundamental contributions to mathematics, astronomy and mechanics, and some contributions to biology and medicine. However, the ancient world collapsed before the scientific method could be fully developed.