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THE DARK AND MIDDLE AGES

Today's concept of "Dark Ages" as a period of sustained ignorance continues to be relevant to the early history of western civilization. As explained by Joseph McCabe, the notion of a deprived period of history was initiated by Cardinal Baronius as early as 900 A.D., later adopted by Petrarch, and thereafter featured by such intellectual historians as Gibbon in the eighteenth century and Hallam and Buckle in the nineteenth century. [McCabe, p. 132] In the twentieth century, Bertrand Russell, Will Durant, A.L. Kroeber, and even the *Cambridge Medieval History* have continued to use the term "dark" to describe an epoch of theoretical deprivation beset with poverty, illiteracy, reduced population, relentless warfare, and a remarkable lack of cultural sophistication. Joseph McCabe quotes Inge's description of the Dark Ages in his book *Christian Ethics and Modern Problems* to the effect that this period amounted to, "several centuries of unredeemed barbarism, the most protracted and dismal retrogression which the human race has suffered within the historical period." [1930, p. 13] By most accounts this period of severe deprivation lasted for as many as six hundred years between the fifth and the mid-eleventh centuries A.D., roughly comparable to the length of time that had elapsed between Thales and Cicero. By the sixth century, A.D., ancient philosophy was mostly forgotten except for Plato's dialogues supposedly confirmed by Aristotle, and Rome's free schooling had been eradicated without any substitute course of secular education having been instituted. Few outside religion could read or write, and it did not matter anyway. Little was taught beyond the necessity of salvation, and too many of the monks themselves lacked the knowledge of Latin to fathom the incantations they read aloud to their congregations. For at least half a millennium the remnants of classical civilization were accordingly devoid of skeptics as well as scientists and outspoken atheists.

A brief period of intellectual recovery might seem to have occurred during the so-called Carolingian renaissance of Charlemagne (742-814), but this interlude was too transitory to amount to anything suggestive of high civilization. Rote learning encouraged among Charlemagne's subjects was superficial, and significantly, he himself was able to read but not to write. Far more important in his reign was his relentless warfare against other societies with the pretext of converting pagans to Christianity. The virtues of Christ's Sermon on the Mount presumably enforced by the threat of eternal hellfire supposedly justified a brutal interpretation of God's violent injunctions in Luke 14:23, "compel them [i.e., pagans] to come in," as would seem to have been confirmed by God's demand in Deuteronomy 7:1-6 to exterminate as mortal enemies all subjects unwilling to abide by this compulsion. Medieval armies were bloodthirsty in this effort, and the general turmoil across Europe resulting from Charlemagne's campaign was devastating.

It was only beginning with the reign of Gregory VII (1073-85) that there was improved stability in the medieval world. The nine Crusades from 1095 to 1272 helped to consolidate Papal authority in competition with feudal monarchy, and the Inquisition beginning in the twelfth and thirteenth centuries reinforced this advantage as well as providing a useful source of funding through the confiscation of heretic assets. And thus the advent of the Middle Ages was linked with the inception of two of the most inexcusable Medieval practices, an unjustified sustenance of brutal hostilities among competitive societies and the horrendous use of torture as punishment of countless individuals almost all of whom were innocent of any crimes to speak of by any modern standard of justice. Greed and the centralization of power under the authority of the Pope were important during the eight Crusades between 1095 and 1271, less than two centuries later against Arab societies that possessed a relatively advanced level of civilization. Fighters recruited for this purpose were apparently lured by the rhetoric of Pope Urban II and others to engage in righteous battle against Arabs as "an accursed race wholly alienated from God." Also relevant to this promotion of Christian belief was the Inquisition whose

establishment by the year 1273 as a “permanent part of the machinery of the Church” seems to have occurred as a byproduct of the Crusades. [Lea, vol. 1, p. 335]. The first stirrings of this collective effort can be traced as far as back as the fourth and fifth centuries A.D., most notably when Pope Leo I promoted the execution of Manichaeans as heretics by burning them at the stake. At the turn of the twelfth century hundreds of thousands were massacred under Pope Innocent III, many of them during the so-called Albigensian Crusade, when the entire city of Beziers was destroyed--man, woman, and child. Reminded that some of its butchered inhabitants might have been innocent, the papal legate Abbot Arnaud Amalric famously replied, “Kill them all. God will know his own.” [Lea, vol. 1, pp. 153-55]

As later insisted by Thomas Aquinas in Question 11, Articles 3 and 4: “the sin of heresy separates man from God more than all other sins, and therefore it is the worst of sins, and is to be punished more severely.” [fn quoted by Lea, vol. 1, p. 236] A more recent apologist has minimized the Inquisition’s extravagant cruelty with euphemistic jargon on the very first page of his text: “Certain elements of the Roman legal procedure” . . . [were] “employ[ed]” . . . “in order to preserve orthodox religious beliefs from the attacks of heretics.” [Peters, p. 1] Specifically, the “elements” that were put into use for this purpose involved torture deemed essential in order to punish them for their disbelief. And thus the fate of dissenters who refused to confess their doubts about received orthodoxy--exquisite torture followed by the *auto-da-fé* and guaranteed eternal perdition in the bowels of hell. The total destruction of life by the mid-seventeenth century is difficult to calculate, especially if those imprisoned in dungeons with life sentences are included in the count. Confiscated records of the Spanish Inquisition alone indicate that over 340,000 Spaniards were killed, and it has been estimated that at least 30,000 witches were killed across Europe between the fourteenth and seventeenth centuries. [FN Lea, 549, McCabe 317-21]

In effect Christian proponents rejected secular philosophy derivative of both ancient skepticism and secular cosmology by having imposed uncompromising orthodox belief linked with the Inquisition, the Crusades,

and, not least, the intricate casuistry of scholastic philosophy essential to the advance of Christianity as well as the suppression of secular disbelief. Torture and outright persecution were imposed as early as the fourth century, and were institutionalized at the turn of the thirteenth century by Pope Innocent III as later codified by Saint Thomas in *Summa Theologica*, his grand synthesis of Christian theology published in 1273. By then the unfettered dependence on skepticism promoted much earlier by Arcesilaus and Carneades had been entirely suppressed by the use of torture unto the death of disbelievers as practiced by the Inquisition. Persuasion as honest dialectic inquiry, the cornerstone of ancient Greek civilization, had given way to torture and the death of all individuals who dared to challenge Christian orthodoxy for one reason or another.

Described as heretics, most victims of the Inquisition can also very likely be described as skeptics in the sense that they somehow fell into conflict with received doctrine. Their numbers are difficult to determine, since records were neglected if not intentionally suppressed. Nevertheless, estimates of those killed by the Inquisition range from the total of 16,000 to as many as ten million individuals identified as heretics. The modern secular scholar Joseph McCabe (a de-frocked Franciscan priest) suggested this total as an approximation by combining the victims of the medieval inquisition, the Spanish inquisition, the Roman inquisition, and the witchcraft trials. For the Spanish Inquisition alone, McCabe tells of its disillusioned General Secretary Llorente having publicized in the early nineteenth century the death as many as 341,042 victims during earlier centuries. But how many were killed in the other regions of Europe? The question is more germane than it might seem, for with the Inquisition the vital choice between belief and disbelief ultimately crucial to the history of western civilization took on mortal implications on a very grand scale. Tertullian's paradox was brought up to date with the implied emendation that could not be acknowledged: "The church sanctions death by torture because its doctrine might otherwise be judged absurd." Stern priestly authority was of course sufficient in curtailing the doubts of most potential disbelievers, but the Inquisition was always available just in case.

It was Islam, in fact, that sustained the concept of civilization during the Dark Ages. Modern historians are often tempted to include the four centuries of remarkable Arab achievement from 800 to 1200 in the orthodox Muslim region of the Near East despite having been obliged to engage in military conflict against Europe's Christian nations throughout the eight Crusades between 1095 and 1291. Ironically, the peak of Islam's intellectual attainment--a period lasting between 900 and 1200--was primarily inspired by ancient Greek civilization. Especially influential were the findings from Aristotle to the Alexandrian astronomers and mathematicians, but it is not entirely clear what aspects of classical science Arabs were able to take into account and to what extent. In any case, it seems obvious that medieval Arab civilization both rose and lapsed into decline over a period of three or four centuries at least partly because of a surge in fundamentalist Muslim radicalism in response to the threat of Mongol invaders from the East as compounded by renewed hostility against European nations willing to take advantage of this conflict.

The Islamic revolution of Mohammed in the mid-seventh century had been inspired by the Koran presumably revealed by God to Mohammed. Essential to this religion was the anti-Trinitarian insistence—"There is but one God"—that was possibly inspired by the earlier Nestorian heresy in the Christian tradition. Mohammed's successors, the Caliphs Omar and Othman followed by the Omayyad and Abassid dynasties (respectively from 661 to 750, and from 750-1258), enlarged Islam into an imperial power that extended from India to the Atlantic Ocean, depriving Christianity of its traditional strongholds in Carthage, Antioch, Alexandria, Jerusalem, and Constantinople among many other eastern cities. Especially noteworthy in this history of Islamic conquest and expansion was the brief reign of the fourth Caliph Ali (656-661), when Arab conquerors also restored the patronage of learning led by Mu'tazilites, who were generally identified as philosophic reformers and the moderate free-thinkers of Islam. The Islamic faith reached Cordoba, Spain, by the mid-eighth century, and under the Omayyads the Spanish domain became a

thriving bastion of Islamic civilization in the west until the early twelfth century.

Islam's initial military leaders turned out to be just as hostile to knowledge and classical learning as the Christians. The caliph Omar, for example, is still famous for having ordered the destruction of what was left of the Alexandrian library in 640 with the argument that what confirmed the Koran could therefore be ignored, and what did not confirm the Koran was wrong and should therefore be destroyed. Within two generations, however, Muslim leadership shifted to a far more enlightened attitude toward ancient knowledge, after which Arab societies in Egypt, Syria, and Persia as well as Spain and Sicily enjoyed an advanced civilization that thrived during the darkest period in the history of western civilization. Meanwhile, enormous wealth accrued resulting from the normalization of trade throughout conquered lands, and Arab cities enjoyed the affluence produced by this wealth, many of them with populations from a quarter million to a million inhabitants. The streets of Cordoba were solidly paved, and after sunset it was possible to walk ten miles through these streets by the light of public lamps. The palaces of caliphs had elegant furniture, chandeliers, polished marble balconies, ingenious ventilation systems, interior gardens with fountains, menageries and aviaries—all of which suggested a level of sumptuousness not to be found at this time in the Christian regions of Europe. On the other hand, Arab technological innovations included wheels, pumps and flood-gates for irrigation as well as small factories engaged in the manufacture of silk, cotton, wool, paper, earthenware, and iron and steel (the latter used in the manufacture of the famous Toledo sword blades). Unfortunately, Arab civilization also introduced gunpowder and artillery to Europe. [Draper, 111-17]

Enriched Arab caliphs subsidized public schools, medical schools, astronomical observatories, the pursuit of scholarship, the creation of large libraries, and the pursuit of scientific inquiry that had been neglected since the Hellenistic Age of ancient Greece. Colleges were established in Mongolia, Tartary, Persia, Mesopotamia, Syria, Egypt, North Africa,

Morocco, Fez, and Spain. Arab scholars from Cordoba to Damascus were able to consult a sixty-volume dictionary and a comprehensive Historical Dictionary of the Sciences additional to geographical, statistical, medical, and historical dictionaries, and lexicons of Greek, Latin, and Hebrew. The caliph library at Cairo was said to include 200,000 manuscripts, the great library of the Spanish caliphs was said to include as many as six hundred thousand manuscripts, and there were sixty additional public libraries in Andalusia alone. History and poetry thrived--the latter including satires, odes, elegies, romances, and novels, some of which very likely inspired French troubadours from the eleventh through the thirteenth century. In the realm of mathematics, the use of zero and positional numbers in India was adopted for the purpose of arithmetic, and major advances occurred in algebra, geometry, and trigonometry as well as optics, hydrostatics, botany, and chemistry. Whenever needed, apparatus was put to use for distillation, sublimation, fusion, and filtration, and experimentation was conducted in light of Alexandrian science influenced by Strato's example. Moreover, the visible stars across the sky were entirely charted and identified, proof of which is their Arab names used even today.

Geniuses with a versatility that might be compared to that of Aristotle and Leonardo da Vinci included al-Biruni (973-1048), the agnostic poet and mathematician Omar Khayyam (11th century), and Alhazen (965-c. 1040), who discovered atmospheric refraction as well as having proposed a modern theory of optics and speculated in depth about both gravity and evolution among many other questions. It was universally assumed by Arab astronomers that the world was a globe as had been earlier proposed by ancient Alexandrian astronomers beginning with Anaximander, and, like their precursors, Arab astronomers calculated the earth's size with remarkable accuracy, in their case simply by measuring the length of a single degree, then multiplying by 360. Meanwhile, a variety of religions were tolerated as in Rome before the Christian takeover. Nestorians were permitted the free exercise of their beliefs, and they were entrusted with the education of the children of Arab leaders. They were encouraged to translate Greek texts into Arabic, many of which would not otherwise have

survived. And finally, as in Alexandria many centuries earlier, Jews were also permitted to play a substantial role, especially in medicine. Later it was the migration across Europe of Jewish doctors educated in Arab universities that helped to expose the Christian world to a more advanced civilization just a few hundred miles away.

Arab philosophy's primary contribution to the secular history of philosophy was its retrospective synthesis of Platonic and Aristotelian speculation provided by Avicenna (980-1037) at Damascus and, a hundred-fifty years later, by Averroes (1126-1198) at Cordoba, several of whose works were translated into Latin early in the thirteenth century. As the dominant Arab philosopher who culminated Muslim secular speculation, Averroes accepted both the definition of God as an unmoved mover that was attributed to Aristotle as well as his concept of a limitless universe with neither beginning nor end as earlier proposed by both Parmenides and Melissus, thus undercutting creationist theory as well as the promised salvation in heaven for having led a virtuous life obedient to a particular god (or son of God). Averroes also introduced the pragmatic notion of a "double truth" (sometimes described as a "twofold" truth or *equivoque*)--the religious truth of the Koran (or, with equal relevance, the Bible) as opposed to the more rigorous philosophical truths established by Aristotle on a strictly physical basis. The choice was accordingly between belief and reason, and the Averroist double truth consisted of the assurance that neither should be rejected because it conflicts with the other. Often the two might seem to contradict each other, so it was expedient to concede the possibility of their separate validities whenever obliged to take a stand. In Europe Averroes' approach was influential with European free-thinkers identified as Averroists, most notably at the University of Paris during the thirteenth century and at the University of Padua during the fourteenth century. Later, during the so-called high Renaissance, Averroes's double truth became a universal strategy among philosophical skeptics who continued to identify themselves as Christians.

Some Arab philosophers were sufficiently skeptical to let themselves be identified as outright atheists comparable to Strato and Carneades during Hellenistic times. These included al-Warraaq, al-Rawandi, and the poet Abu'l Ala-al-Ma'Arri (973-1057), who denied divine revelation and declared that "the world holds two classes of men--intelligent men minus religion, and religious men minus intelligence." On the other hand, the philosopher Al Ghazali (d. 1111) resurrected ancient Pyrrhonian skepticism as Arab civilization drew to a close. In his influential text *Collapse of Philosophy*, he proposed that there is no need for philosophical speculation independent of revelation, since all truth is to be found in the Koran. As with the fall of the Roman Empire anticipated by Cicero, Al Ghazali's effort to downplay the validity of philosophy might well have anticipated Arab civilization's precarious existence on the brink of decline.

Like Rome during the fourth and fifth centuries, Arab civilization collapsed by the twelfth century, in its case as already indicated primarily resulting from a surge of Moslem fundamentalism concomitant with the invasions in the east by Turkish Seljuks and Mongol hordes and in the west by the Christian Crusades that took full advantage of the threat from the east to launch their own supposedly holy attack from the other direction. Moslem fundamentalists invaded Spain from Morocco, and within forty years the third Spanish emir of its new dynasty, Abu Yusuf Yaqub (1184-99), ordered all philosophical works to be burned. A generation later his son Muhammed al-Nasir (1199-1214) was defeated in 1212 by the united armies of Christian Spain, whereupon Arab civilization came to an end, having sustained huge losses in both wealth and population. In effect the fall that occurred was even more precarious than the decline of classical civilization a full millennium earlier. In the year 1000 Arab Spain (the half of the Spanish peninsula the Arabs dominated) is estimated to have had a relatively civilized population of roughly thirty million. Seven hundred years later all of Spain had a total population of six and a half million Christians, most of whom lived in poverty and abysmal ignorance.

Averroes's death in 1198 marks the termination of Arab philosophy, but within a decade Aristotle's *Metaphysics* and *De Anima* were translated into Latin that was intelligible to European scholars, and it was with this major breakthrough that takeoff may be said to have occurred in scholastic philosophy among the European nations. Significantly, the very first traces of recovery in European philosophy took effect less than ten years after the death of Arab philosophy's last major philosopher. Western leaders such as Pope Sylvester II (999-1003) and the Holy Roman emperor Frederick II (1194-1250) were fully acquainted with Arab civilization, and many of the improvements of the "high" middle ages at their time can be traced to Arab influence, if without producing comparable levels of sophistication for at least another four hundred years.

Altogether, Arab civilization lasted perhaps four hundred years, almost half as long as the combined ancient civilization of Greece and Rome, and its scientific and intellectual accomplishments were numerous, especially in the fields of astronomy and chemistry. That this remarkable chapter in the history of western civilization came to be overlooked can be attributed to the convergence of the two major orthodoxies at the time--medieval Christianity and the Muslim faith once divested of its debt to its classical heritage. In effect Christians refused to grant Arab civilization its extraordinary advancement except for its translations, and Muslim fundamentalists were equally unwilling to lay claim to this advancement, since it was linked with what could only have seemed obvious heresy.

In any case, the truncated four-century period of achievement linked with Arab civilization during Europe's Dark Ages effectively came to an end, thereafter followed by at least four centuries of strictly European civilization beginning with Copernicus and Galileo. If Arab civilization can be described as the first genuine renaissance to have occurred after the decline of classical civilization, there was also a second and almost entirely European Renaissance, one that took root with the theories of "nominalist" philosophers beginning with Roscelin and Abelard during the twelfth century, and later culminating in the early fourteenth century with Duns

Scotus, William of Ockham and Jean Buridan. However, their sway was mostly theoretical, far less integral to medieval European society than Arab scientists and philosophers had been with the Arab Renaissance. In any case, they proposed as nominalists theories that implied a coexistence of idea (or mind) and a physical universe external to idea.

Just as the Averroist interpretation of Aristotle had granted the existence of a tangible universe independent of the mind, thus justifying materialist speculation, so too did Nominalists in their treatment of universals as mental abstractions (i.e., nominals) ultimately derivative of experience but necessarily different from the “stuff” of experience. In contrast, the so-called Realists insisted on the singular truth of these categories imbedded in the universe itself as insisted by Plato and St. Augustine. As in ancient Greece, Realists could thus insist that Platonic ideas were real, whereas the Nominalists insisted they were merely names as opposed to the physical universe itself as the true reality. In effect, Realists bridged the gap between Platonists and Christian assumptions, whereas Nominalists played the same role by linking Aristotle’s inductive analysis with its later fulfillment in the modern scientific revolution. At the beginning of the twelfth century, Roscelin (c. 1050-1120) took a nominalist stance to challenge the unity of the Trinity as an objective truth, arguing the radical proposition that, “as only individuals are real existences, the actuality of the persons of the Trinity can be challenged because it involves their disunity.” According to this logic, the universe exists independent of its metaphysical analysis, thus ideal forms occur as conceptual abstractions inclusive of paradox as understood in human discourse. As a protégé of Roscelin, Abelard (1079-1142) further argued that “a doctrine is believed not because God has said it, but because we are convinced by reason that it is so.” As articulated, this stance seemed to offer potential justification of Aristotle and was rejected in favor of the Platonist emphasis upon ideal forms featured by St. Augustine, St. Anselm, and others identified as Realists because of their confidence that perceived universals were truly “real.”

In 1210 Aristotle's teachings were banned by a provincial council held in Paris, but the Aristotelian viewpoint gained in popularity in light of the supposedly atheist viewpoint of Averroes and other nominalist theologians. It thus became expedient for St. Thomas Aquinas (1225-74) to obtain a productive compromise by integrating Christian dogma with Aristotle's philosophical system without the heathen interpretation of Averroes. This synthesis he achieved with his monumental text *Summa Theologica* (1267-73), in which he refined and simplified the essentially Aristotelian dualism between body and soul:

And so we must conclude that there is no other substantial form in man besides the intellectual soul, as it virtually contains the sensitive and nutritive souls, so does it virtually contain all inferior forms, and itself alone does whatever the imperfect forms do in other things.
[*Summa Theologica*, First Part Q. 76, Art. 4. p. 393]

Until Aquinas' grand synthesis, Plato as interpreted by Augustine played the primary ancient Greek source for Christian metaphysics. Afterwards, Christian theology effectively compounded its debt to ancient Greece by at last taking into account both Plato and Aristotle if not the rest of their contemporaries. Science inspired by Aristotle finally became acceptable on a tentative basis during the thirteenth century as practiced by Grosseteste and advocated by Roger Bacon.

However, it was William of Ockham, of the early fourteenth century, who brought to scholastic metaphysics both the materialist and skeptical assumptions essential for something akin to a renaissance inclusive of a major role for science. As an Aristotelian nominalist, Ockham proposed a doctrine of empiricism that emphasized direct perception described as intuition (*notitia intuitiva*), thereby providing the basis for propositions that stand for individual things (*scientia realis*). With a radical perspective dangerously suggestive of Strato's earlier "presumption," Ockham was able to reject the universals emphasized by realists because they were

limited to mental constructions independent of the physical universe. The essential task of the philosopher lay, he argued, not in cultivating an endless skein of abstractions, but in ascertaining this relationship between things in the material universe and human perception responsive to the universe itself.

Also suggestive of Strato's contribution, Ockham's skepticism lay in his persistent dependence on the principle of parsimony, now described as Ockham's razor, in order to prevent an unnecessary surplus of arguments and assumptions from obstructing a clear understanding of the issues at stake. Simply enough, he proposed, "What can be done with fewer assumptions is done in vain with more." Using this minimalist criterion of evidence, Ockham was able to reject most proofs of God's existence, finally describing the task as nothing more than a high probability primarily confirmed by Scriptures. The potential threat to orthodoxy posed by Ockham's Razor is perhaps best illustrated by the French astronomer Laplace's response to Napoleon centuries later, "Sire, I have no need of that hypothesis," when asked to explain why he made no reference to God in his astronomical text, *Celestial Mechanics*. As to be expected, Ockham was excommunicated early in his career, but the seeming honesty of his professed commitment to the veracity of Scriptures, similar to that of his countryman, Wyclif, seems to have confirmed his status as a Christian fully committed to Protestantism's emphasis upon Biblical text, rather than ecclesiastical authority. It should be no surprise that Luther took pleasure in Ockham's accomplishment despite the obvious secularist possibilities it suggested.

Ockham's contemporary Nicolas of Autrecourt challenged the irrefutability of both Scriptures and Aristotle's teachings. Sentenced to be burned at the stake, he escaped the Inquisition by recanting his skeptical argument, thereby postponing until a later century the justification of his implied assumption of an uncompromising suspension of belief (*epoche*) essential to secular speculation. The adherents to Ockham's theory during his lifetime were a small circle of scientists led by Jean Buridan and Nicole

Oresme, who proposed theories of motion, impetus, and gravitational acceleration (already proposed by Strato) that seem to have ultimately led to the development of mechanics in the eighteenth century. Unfortunately, the medieval pursuit of science encouraged by Ockham was relatively brief, stretching from the inception of the Avignon papacy shortly after the turn of the fourteenth century to the Black Death almost fifty years later, whose four million victims included Ockham himself.

The Italian Renaissance effectively renewed secularism in the early fifteenth century partly resulting from the restoration of the Vatican from Avignon to Rome, and partly resulting from the capture of Constantinople in 1453, when ancient texts obtained from Greece were transported to Italian cities to prevent their destruction by pagan invaders. Under these circumstances what came to be described as a Christian Renaissance can instead be described as a Muslim achievement that led to the resurrection of ancient Greek secularism--and its concept of science in particular--as a credible explanation of the physical universe without any transcendent authority of the gods. More specifically, this remarkable breakthrough was primarily linked with the Italian scholar Petrarch's investigation of Cicero's two dialogues *Academica* and *De Natura Deorum*. Other ancient secularists whose writings became available on this basis at the time—literally as a theoretical rebirth--included Melissus, Democritus, Aristotle, Lucretius, Sextus Empiricus, and even Diogenes Laertius' invaluable collection of biographies, *Lives of Ancient Philosophers*, a single copy of which was found by accident in the ninth century. Additional secular findings were also evident at the time, including the scholarship of Valla, who advocated both science and Epicureanism based on the pantheistic notion that God consists of nature itself. Finally and perhaps most important, the pursuit of science beginning with Copernicus was inspired by the recent recovery of ancient precursors as far back as Anaximander's original concept of the earth as a globe as later described in Cicero's *Academica*. Amazingly, this unique pre-Socratic concept was resurrected by Arab civilization during the Dark Ages, then again by Italian civilization during the early Renaissance, and

finally by modern scientists whose astronomical findings continue to enlarge the concept of this realm of apparent infinite.