The Age of Light: An Overview of Arab Geography in the Middle Ages

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ABSTRACT

The Medieval Arab world was a time of curiosity and inquiry, and many contributions to the knowledge of the earth were made during this period. Scientific study was strongly encouraged by many of the caliphate leaders. For this reason, we can call this period the “Age of Light.” In contrast, many scientific studies during the “Dark Ages” of Medieval Europe were hindered by the Christian Church. Unfortunately, many Western scholarly accounts of the Middle Ages ignore the writings of Arab geographers. This study highlights the findings and theoretical underpinnings of selected Medieval Arab geographical works. It also discusses why these works have been overlooked by the West, despite evidence of their diffusion. Medieval Arab geography is exemplary in its scientific works, many of which should be credited in modern accounts of the history and philosophy of geography.

KEY WORDS: Arab geography, Muslim, Medieval, Islam, history.

INTRODUCTION

“No people ... contributed so much as (the Muslims) to broadening man’s conception of the universe and to giving him an exact idea of the planet on which he lives, which is the prerequisite of all real progress.”

E. Renan
French Historian 1878
(Ajram, 1992)

What is the measure of one’s contribution to knowledge of the world around us? Some may measure contribution by inventions, the discovery of new theories, or formulas. Others might suggest that rich study and discussion of ideas, or the gathering and testing of information serves to expand our knowledge. History has had the privilege of seeing all these contributions to mankind’s understanding of the world and has recognized many great leaders in these endeavors including the Greeks,
Chinese and others. However, one group of leaders has not been widely recognized; the Arab geographers of the Middle Ages. Certainly, the contemporary world is aware of many of the Arab works of this era (approximately 300-1500 A.D.), but few have been fully appreciated, especially by the Western world. In many of the Western historical accounts and evaluations of the period, there is an underlying attitude that Medieval Arab works were insignificant. Though these writings are vast and numerous, it is usually implied that they contributed minimum original thought and did little to directly influence geographical study in the West. There are many possibilities why this attitude exists, but none is reason enough to justify this limited view. The study of Arab geographical works during the Middle Ages reveals that their contributions to the advancement of worldly knowledge were of considerable importance. Furthermore, their zeal to learn served to sustain a spirit of intellectual stimulation that had waned under the repressive forces of the Christian church in Europe, which led to a state popularly known as the “Dark Ages.”

The term “Dark Ages” is unfit to describe the Medieval Arab world. As Sarton (1962, p. 443) indicates, “students who do not deem any civilization worth considering but the Western, reach the conclusion that this was a very dark age. But that conclusion is obviously wrong.” The Middle Ages were a time of “light” for the East. With the center of study at Baghdad, many centuries of scientific study passed before the Renaissance of the West. In fact, “[Baghdad] ruled an empire greater than Rome’s. Her court scientists were perfecting algebra (from an Arabic word for calculating-al-jabr) and the measurement of a degree of longitude while, as one historian put it, ‘Charlemagne and his lords were reportedly dabbling in the art of writing their names’” (Abercrombie, 1991, p. 21).

It is difficult to pin-point when the Middle Ages began, though many scholars have dated it to the 4th century during the reign of the Roman Emperor Constantine (Kimble, 1968, p. 3). This date is appropriate because it marks the beginning of Christianity as the official religion of the Roman empire. Under Christianity, pagan scholars were tolerated for some centuries, but with the application of theological limitations, all scientific studies had to be explained in accordance with the book of Genesis. Christian extremists thwarted scientific study altogether because they believed spiritual endeavors were far more important than anything earthly (Sharaf, 1967, p. 56). Although many pagan works of past centuries included important discoveries, those that could not be reconciled with Christian theology were discarded or lost.

Thankfully, the pagan works were not lost forever. In the 5th century, the dispersion of the Nestorian heretics began, and with them went many of the banished works of Christendom. As they moved east, these Christian scholars set up learning centers that extended deep within Asia by the 7th century. One of the key centers was near Basra, an early city of Muslim scholarship. Here, many classical Greek, Egyptian, and Persian works of the Nestorian collection were translated into Syriac, and eventually this knowledge was diffused to Baghdad where these writings were translated into Arabic after the establishment of the caliphate. These works, especially Ptolemy’s Almagest, greatly influenced the beginnings of Arab geography (El-Bushra, 1992, p. 158; Tolmacheva, 1991, p. 125).

Because of limitations of space, Arab geographers not discussed in detail here are presented in a separate table (Table 1). These scholars may be noteworthy, but often their works are no longer extant or available in the West.

**ISLAM AND THE IMPETUS TO GEOGRAPHICAL STUDY**

The momentous events of the 7th century, such as the birth of Islam, ushered in the Arab scientific age. By 650, the Islamic empire stretched from the Mediterranean to India. Because the Holy Qur’an was forbidden to be translated, all people of the Muslim faith were united religiously and linguistically. Therefore, many of the conquered people who converted to Islam learned Arabic, and be-
cause of the influence of the Islamic culture, those who did not convert still learned Arabic for purposes of commerce, trade, and daily living. This commonality of language and culture served to create a strong empire.

The terms “Arab” and “Muslim” are here used interchangeably. Although the term “Arab” connotes ethnicity, the culture of Islam had such a deep influence for so many centuries that even non-Muslims or non-Arabs were influenced daily by this politically dominant culture. Both terms are used to apply to people united by one language and culture.

With the establishment of the grand Abbāsid Caliphate in 750 at Baghdad (Ahmad, 1965, p. 8), fervent efforts began to increase the knowledge of newly conquered lands. The first caliph, al-Mansūr, founded the Translation Bureau. Every available ancient work was translated into Arabic. Hundreds of translators were hired and paid well for their efforts. Special attention was paid to the fields of astronomy, geography, mathematics, medicine and botany. The Arabs “were not slow to adopt” (Kimble, 1968, p. 45). Within one century of the first caliphate, they had knowledge of the major works of Plato, Aristotle, Ptolemy, Indian and Persian scholars, and other major philosophical, scientific and medical literature of previous eras. With this transmission of knowledge to the Arabs, an era of literary accomplishments and education began. Newton (1968, p. 89) states, “the geographical literature in the Arabic language is a very creditable outcome of the Greek sources from which it grew.”

The discovery and translation of foreign works was not the sole motivation for the Arabs to pursue knowledge. The very nature of the desert environment created a necessity to study the earth. The “intensive heating during the day in the Arabian deserts made the night the most favoured time for travel, and the clear night skies gave the Arabs an early interest in astronomy. The moon and the stars were used to fix orientation in these
vast barren deserts” (El-Bushra, 1992, p. 157). Additionally, the pastoral nomadic lifestyle of many people in this land led to a keen knowledge of plant life and climate in order to accommodate their flocks.

Aside from these incentives, there was a great religious motivation to increase their knowledge of the world. The Prophet Mohammad charged his followers to “seek knowledge, even in China” (Beazley, 1949, p. 408). The Holy Qur’an encourages searching the world for new things; "who [the God] made the earth a resting place for you, and placed roads for you therein that hapely ye may find your way” (Al-Zukhruf, qtd. in Al-Monaes, 1991, p. 394). It also encourages astronomical study; “He it is who made the sun a shining brightness and the moon a light, and ordained for it mansions that you might know the computation of years and the reckoning” (1982, 10:5). Daily prayers that faithful Muslims must recite had to be said while facing the holy city of Mecca. Holy mosques were also required to face Mecca. This led to an early need to fix locations on the earth (Kimble, 1968, p. 63). Another religious requirement is the hajj (pilgrimage) to Mecca that every Muslim makes in his or her lifetime. Millions of people from different points across the vast empire journeyed, creating a need for travel routes and maps. The meeting of such diverse cultures in one city fostered the exchange of valuable geographic information. Finally, the desire to spread the Islamic faith was strong. Expansion of the extent of Islam continued with eagerness, adding to the need for a clear understanding of people and land routes to accommodate the Muslim missionaries.

The incentives to gain an understanding of the newly acquired lands were culminated in administrative needs. Projects included the establishment of a postal system, the mapping of roads and commerce routes, and tax censuses. Ibn Khurdadhbih (c.825-c.912), who served as “director of posts” in Samarra, wrote a book entitled Kitāb al-masālīk wal mamālīk (Book of Routes and Kingdoms) (Al-Monaes, 1991, p. 397). He included a description of the earth as known at that time:

... the earth is round like a ball and placed in the centre of the heavens, just as the yolk is in the middle of an egg ... (it) is 9,000 parasangs [or about 27,000 miles] in circumference ... The northern quarter of the globe is inhabited, while the southern is desert, because of the great heat that prevails there. The other half of the earth, opposite to ours, is uninhabited. The northern and southern quarters are divided into seven climates. Ptolemy says in his book that in his time there were 4,200 towns in the world (qtd. in Kimble, 1968, p. 50).

Ibn Haukal published Book of Roads and Provinces about one century later (Kimble, 1968, p. 51). An excerpt from his work illustrates the details he gathered:

... to describe the various climates and regions of the face of the earth, comprised within the circle of Islam, or Mohammedanism, and their several divisions, in such a manner that every remarkable place belonging to each region shall be noticed, and all the boundaries and territories depending on them, their districts, cities, mountains, rivers, lakes, and deserts ... and to delineate [them] on maps (qtd. in Kimble, 1968, p. 51).

These treatises were not simply compilations of various travel notes, but extensive surveys of routes, villages, climate, flora, fauna, industry, and culture. Schoy (1924, p. 267) commends the Arabs for these works, claiming “the sympathetic and often extremely exact understanding which the Arabic geographers had for everything foreign deserves much praise.” From these almanacs (from the Arabic al-manakh), modern historians have acquired valuable, detailed information concerning the medieval Islamic realm (Ajram, 1992, p. 111).
Astronomical and Mathematical Study

Scientific study continued with the rule of Al-Ma'mün (813–833), the seventh Abbāsīd Caliph. In Baghdad, he founded a scientific academy called Bayt al-Hikma (House of Wisdom) (Sarton, 1962, p. 558). He had an observatory constructed there, enabling the scientists to study celestial phenomena. Credited to Ma'mūn’s academy are the construction of tables of planetary motions, the determination of a degree of the earth’s arc, the determination of the earth’s circumference at 20,400 miles, and the inclination of the ecliptic found to be 23° 33’ (Sarton, 1962, p. 558; Ahmad, 1965, p. 9). Also occurring during Ma’mūn’s reign was the correction of Ptolemy’s exaggerated figure for the length of the Mediterranean Sea by 17’, and the construction of a world map (Tolmacheva, 1991, p. 126).

One of the most notable scientists under Ma'mūn was the geographer and mathematician Al-Khwārizmī (d. 850). Most important were his mathematical contributions. As Sarton (1962, p. 563) claims, “he influenced mathematical thought to a greater extent than any other medieval writer ... [and] may be called one of the founders of analysis or algebra as distinct from geometry.” He contributed to the creation of astronomical tables and constructed his own trigonometric tables. His Hisāb al-jabr wa-muqābala included solutions to linear and quadratic equations. He is credited with introducing arithmetic, known as the Hindu system of numeration, which was eventually made known to the West through 12th century Latin translations (Fuson, 1969, p. 53). With these early foundations in astronomical observation and mathematics, it is no surprise that these fields represent a large part of the achievements of Arab scientists in the Middle Ages. To this day, many stars are recognized by their Arabic names (Fig. 1).

Of special note in the astronomical field are Al-Battānī and Al-Bīrūnī. Al-Battānī produced various works, but excelled in astronomy. In addition to proving the possibility of annular eclipses of the sun, he discovered an increase in the longitude of the sun’s apogee by 16° 47’ since Ptolemy’s time, implying the motion of the solar apsides (Sarton, 1962, p. 603). He also calculated a solar year as 365 days, 5 hours, and 40 minutes (Alavi, 1965, p. 25). Sarton (1962, p. 602) calls him “the greatest astronomer of his race and time.” He also exhibited a clear understanding of sines and developed a table of cotangents by degrees (Sarton, 1962, p. 603). Al-Bīrūnī, though most famous for his regional geography, was a master at calculating longitude and latitude by many different methods (Sharaf, 1967, p. 81). Most notable is his terrestrial calculation of longitude, found by determining the latitude of two points and then the shortest distance between them. Schoy (1924, p. 264) describes this method in great detail and calls it “remarkably accurate.” Many Western textbooks claim little improvement in astronomy until the 12th century, and the majority attribute the development of trigonometry to the Greeks. Clearly, through the works of the aforementioned scientists, astronomy was progressing enormously before the 12th century. Moreover, though the Greeks may have developed theories that contributed to trigonometry, the important functions of sine, cosine and tangent were developed by the Arabs, hence the Arabic (jaib) derivation of the words (Ajram, 1992, p. 168).

Regional and Physical Geography

Other areas of great accomplishment for the Arabs in the Middle Ages were regional and physical geography. Originating from the administrative and religious incentives previously discussed, many of the earlier works came from the writings of merchants, postal workers, and people making the hajj. Because of their long tradition as merchants, the Arab traders progressed in their knowledge of navigation, ruling the Indian Ocean routes for centuries. Many manuals were found that make reference to sea charts, however, none are extant. Muqaddasī (10th century) wrote of seeing such charts while traveling on ships, and
FIGURE 1. Stars with Arabic names in the constellation Ursa Major. (Source: Kauffman, 1991, p. 20)

Marco Polo is said to have viewed Arab sailing charts during his voyages in the Indian Ocean (Hanafi, 1992, p. 156). Evidence of Arabic influence is clear in European portolans as early as the 12th century (Kimble, 1968, p. 190). Upon reading the translated work of Ibn-Rusd (d. 1198), Columbus is said to have admitted their influence on his speculation of the existence of the Americas (Ajram, 1992, p. 113). And Vasco da Gama, the 15th century navigator hired an Arab sailor, Ibn Majid to guide him. They were aided by Majid’s *Kitab al-Fawa'id*, a nautical directory of the trading routes (Riverain, 1966, p. 21).

Previously mentioned for his astronomical works, Al-Biruni was truly one of the greatest minds in regional geography. Schoy (1924, p. 261) describes his famous *Kitabul Hind (Book of India)* as “a work which, by reason of Al-Biruni’s universal comprehension and profound knowledge of facts, may be regarded as the most significant Arabic production in the field of regional geography.” Al-Biruni lived in the late 10th and early 11th centuries, and traveled extensively, particularly in India. He had a vast knowledge of the country, and in his treatise he discussed many aspects of geography, indicating a clear understanding of its influence on man. He devised mathematical formulas to attempt to measure the mountains and made many notes on the possibilities of their origin. He performed intense studies of fossils and indicated their watery origins, claiming that the Indus Valley at one time must have been a sea (Ajram, 1992, p. 102). Through his notes, it is clear Al-Biruni had some understanding of the geologic time required for weathering processes, and had a grasp of the erosional effects of water:

But if you have seen the soil of India with your own eyes and meditated on its nature—if you consider the rounded stones found in the earth, however deeply you dig, stones that are large near the mountains and where the rivers have a violent current; stones that are of smaller size at greater distance from the mountains and where streams flow more slowly; stones that appear pulverised in the shape of sand where the streams begin to stagnate near their mouths and near the sea—if you consider all this you could scarcely help thinking that India had once been a sea which by degrees has been filled up by the alluvium of the streams (Al-Biruni, qtd. in Ahmad, 1965, p. 66).

Al-Biruni also noted the seasonal differences north and south of the equator, and discovered the Law of Hydrostatics (El-Bushra, 1992, p. 159). Ahmad (1965, p.
suggested that he also comprehended the effects of a rainshadow:

India has the tropical rains in summer, the period being called ‘Varshakala.’ These rains are more copious and last the longer the more northward the situation of a province of India and the less it is intersected by ranges of mountains. . . . However on the other side of the peak there is no rainfall for the clouds in the north are very heavy and do not rise much above the surface, when they reach the mountains, they strike against them and the clouds are passed like olives or grapes, in consequence of which the rain pours down and the clouds never pass beyond the mountains.

Al-Biruni had a clear understanding of the monsoons, because Arab sailors and merchants had used the winds for years, even in pre-Islamic times. The word “monsoon” comes from the Arabic “mawsim” meaning “season” (Sharaf, 1967, p. 71). But, even the discovery of this concept has been credited to the West, as Cameron (1965, p. 61) writes:

We used to be told that ‘one Hippalus, a Greek navigator of the first century, was the man who discovered the secret of the monsoons (which is proved by the fact that the south-westerly monsoon is called Hippalus in his honour).’ Common sense ought to tell us that Hippalus could not have discovered the secret of the monsoons—the Arabs in their dhows had been sailing the Indian Ocean before him for over two thousand years, in every one of which the monsoons had blown with clockwork regularity!

Western textbooks commonly refer to Leonardo da Vinci (15th century) as being the “Father of Geology,” mainly because of his ideas concerning the watery origin of fossils that were found on mountains. Press and Siever (1994, p. 191) claim, “one of the first modern thinkers to make the connection between fossils and once-living organisms was Leonardo da Vinci, in the fifteenth century.” However, we have clearly seen similar observations were made by Al-Biruni, some five centuries before da Vinci’s. Ahmad (1965, p. 173) speculates that da Vinci probably read a Latin translation of Biruni’s work in order to come to his conclusions. Because of the use of the word “modern,” writers such as Press and Siever are technically correct in their statements. However, the authors fail to credit Biruni for his contribution. Another oft-made Western claim is that the first mention of valley formation was in 1756 by Nicholas Desmarest, who suggested they are cut by their streams over long periods of time (Ajram, 1992, p. 82). Again, seven centuries earlier, these ideas were introduced by Biruni, and another man, whose works were well known through translations in the West, Ibn Sina.

Ibn Sina (980–1036), or Avicenna, as he was known in the West by his Latin name was most interested in medicine, his most significant work being the Qunan (Canon), in which he discussed the distribution of disease through water and soil (Sarton, 1962, p. 710). But, he was also concerned with geology. Ibn Sina’s interest and theories in the field of geology may have come from his knowledge of the Holy Qur'an, which he had memorized (Ajram, 1992, p. 103). Parts of the Holy Qur'an have been interpreted to refer to the downward extension of mountains into the earth’s crust, via what geologists today call “roots” (El-Naggar, 1991, p. 11). The Holy Qur'an (1982, 78:6–7) reads: “Have we not made the Earth as a wide expanse? And the mountains as projections (thereon).” Still another concept from the Holy Qur'an (1982, 28:88), that the mountains are not fixed, but moving with the earth’s crust: “And you see the mountains, you think them to be solid, and they shall pass away as the passing away of the cloud” (El-Naggar, 1991, p. 10). Ibn Sina discussed the origins of mountains as possibly from the “upheavals of earth crust” as in an earthquake, or from water cutting deep valleys (Ajram, 1992, p. 103). He also noted
the strata found in rock and the different effects water has on each layer, emphasizing the long periods of time needed for these effects to occur. These ideas, especially, were ignored in Europe for centuries because of the influence of Christian doctrine and the belief that the world was created in seven days.

Another great traveler of the Middle Ages was Al-Mas‘ūdī (d. 956–7), who journeyed through much of Africa, India, and East Asia. His greatest work was his Marūj Al-Dhab was Ma‘ādin Al-Jawāhir or Meadows of Gold and Mines of Precious Stones. In this comprehensive study of the places he traveled to, he corrected the idea that the sea of Azov was connected to the Caspian. Unfortunately, he also claimed that the Arctic Sea was connected with the Azov by a small channel (Al-Monaees, 1991, p. 396). Despite this misconception, his descriptive geography was notable for including a study of the water of the Dead Sea, various geologic observations, and a description of an earthquake in 955.

An Islamic Spaniard of great influence in the West, was Al-Idrisi (1099–1164), commonly known by his Latin name, Edrisi. His famous Kitāb Rojēr (Roger Book) was completed for Roger II, the King of Sicily, and was a description of the earth accompanied by 70 maps. He is noted for his use of the scientific method. He presented seven climata of the earth, found the source of the Nile, and studied its flooding habits (Ajram, 1992, p. 109). Through his work, it is clear that Ptolemy was no longer considered the sole authority on geographical issues. His climata were superior to the ancients because he believed in the habitability of the equatorial regions (the ancients’ “torrid zone”). Another Ptolemaic idea Al-Idrisi did not adhere to was the enclosure of the Indian Ocean by a land mass to the south. Martin and James (1993, p. 39) state that “this terra australis incognita was not cleared from the maps until the voyages of Captain James Cook in the eighteenth century proved that such a southern land area did not exist.” The authors are correct in stating that proof was not available until this voyage, but Al-Idrisi constructed a map, in the 12th century, clearly showing the open ocean to the south of Africa. In a later chapter, Martin and James (1993, p. 51) acknowledge Al-Idrisi’s correction of this, and many other Ptolemaic theories. Yet, upon the death of Ptolemy, they claim, “it was many centuries before the effort to describe and explain the face of the earth as the home of humankind again attracted the attention of scholars.”

Al-Muqaddasi (c. 945–c. 988) was another man noteworthy for using the scientific method. His detailed and very well organized Ahsan al-Taqāsīm fi ma‘arfat al-Aqālīm (The Best Division for the Study of Climate) was a general survey of primarily the Islamic realm of the world. Muqaddasi’s greatest contribution to science was in the way he conducted his surveys and the attitudes he held about scientific research. He believed that “the only real knowledge is that gained by research and inquiry, not by faith in tradition or by deductions from the intellect” (Kimble, 1968, p. 52). His works abound with descriptive geography because he believed that only scientific observation (those things he observed himself) could be presented as fact (Scholten, 1980, p. 2). His theories encompassed these beliefs, and were important to science for certain reasons, avoiding the inadvertent repetition of erroneous statements being the most obvious. But, they also led to the questioning of past works that had been blindly accepted by many for years, notably Ptolemy’s Almagest, and paved the way for progression in scientific inquiry because of this attitude. Regardless of a scholar’s fundamental understanding of geographic concepts, the precedent to challenging authority had been set.

Ibn Battūta was one of the greatest travelers of the Medieval Arab world, and has often been compared to Marco Polo. Unfortunately, he is “little celebrated in the West save in scholarly footnotes” though well known in Arab circles (Abercrombie, 1991, p. 8). Setting out to make the hajj in 1325, he journeyed for thirty years, covering approximately 73,000 miles. Upon returning, he was commissioned by Sultan Abu ‘inan of
Morocco, to dictate the story of his travels, and the ensuing manuscript was the Riha (or Travels) of Ibn Battuta (Dunn, 1986, p. 4). Throughout the three decades of his adventures, Ibn Battuta traversed much of Africa and South Asia (Ajram, 1992, p. 110). The account of his travels is a detailed, eloquent, and sometimes flowery story of the places he visited, the people he spoke with, and the lands he observed. In the following passage, he describes the primary crop produced in the country of Malabar:

Their country is that from which black pepper is brought; and this is the far greater part of their produce and culture. The pepper tree resembles that of the dark grape. They plant it near that of the cocoa-nut, and make framework for it, just as they do for the grape tree. It has, however, no tendrils, and the tree itself resembles a bunch of grapes. The leaves are like the ears of a horse; but some of them resemble the leaves of a bramble. When the autumn arrives, it is ripe; they then cut it, and spread it just as they do grapes, and thus it is dried by the sun. As to what some have said, that they boil it in order to dry it, it is without foundation (Batuta, 1829, p. 168).

URBAN GEOGRAPHY

Another prominent area of Arab study was urban geography. In his Muqaddimah, Ibn Khaldun (1332–1406) studied settlement patterns, the rise and fall of cities and cultures, and the environmental considerations when settlement was attempted (El-Bushra, 1992, p. 162). Khaldun (1967, p. 267) states that, "to protect towns against harmful atmospheric phenomena, one should see to it that the air is wholesome, in order to be safe from illness." He lists necessary aspects of cities, such as reliable water sources, defensible location, sufficient land areas for crops and grazing, and ample supplies of forest for firewood and building materials. He also compares nomadic and sedentary lifestyles, and analyzes, economic aspects of different cities, towns and villages and how they are affected by the reigning dynasties. In all, the Muqaddimah is a penetrating look into the culture and structure of the empire. To overlook Khaldun's work would be a mistake, as his contribution to the study of the urban landscape is clear, especially considering the century in which he lived.

Al-Qazwini (1208–1283), through extensive urban study, produced a model of the Persian city Oazwin (Fig. 2). His model consisted of four concentric rings transected by two wadies (water sources). It is of interest, particularly because of its similarity to the well-known Von Thünen Model of concentric rings, from the 19th century. Of course, the latter may have developed independently from the 13th century model, but their similarity is clear. El-Bushra (1992, p. 163) suggests, "one might ask whether traces of Al-Qazwini's model were transmitted to Europe through translation from Arabic into European languages when the Islamic civilization in Spain (Andalusia) [derived from the Arabic Belād-al-Andalus] reached its zenith during the Middle Ages" (Taylor, 1969, p. 47).

ARAB GEOGRAPHY IN THE WESTERN WORLD

Apart from the translation of Greek and other ancient works, there are those who claim that the Arabs gave the Western world little that was new. According to Ahmad (1965, p. 136), "this tendency leads to a distorted view of the history of the world culture and encourages an unscientific belief in the absolute isolation of cultures; bestowing an air of uniqueness to all renaissance thought in Europe." Considering the vast reach of Arab domain, the deep involvement in trading and traveling, and the length of time and depth of penetration into what is now the Western realm, it would seem almost impossible for no exchange of information to have occurred. The western Islamic center of Cordova, whose caliphs strongly encouraged education, had more than seventy libraries, one of which housed over 400,000 volumes. Nevertheless, Wright (1965, p. 77) goes so far as to write that, "formal Arabic geography certainly contributed next to
nothing to the knowledge of the earth possessed by the Occidentals of the Crusading age." He also claims that "except in so far as it brought a knowledge of Aristotle to Europe, [Arabic geography] added little to Western notions either of physical or of regional geography." As has been clearly shown, regional and physical geography represent two of the strongest fields of Arab study in the Middle Ages.

There are others, unfortunately, who share this distorted view. Timothy Ferris (1988, p. 43) claims that, after a short spurt of scientific inquiry at the beginnings of the Arab caliphate, "little attention was paid to the concept of a vast universe." Languas' *Dictionary of Discoveries* (1968, p. 158) states that Ptolemy's work "remained the sum of geographical knowledge until superseded in the 16th century, following the great discoveries." One of the reasons for the misconceptions of Arab efforts, may be that many Arabic works were ignored or left untranslated for many years. At the beginning of the Renaissance, there was deep religious and racial animosity for the Islamic realm, which was not ousted from its last redoubt on the Iberian peninsula until 1492. For this reason, much of the Arab progress made during the Middle Ages was overlooked. Wright (1965, p. 87) suggests that the Western world was not interested in Eastern works because they, "as a rule, felt little genuine interest in the world beyond [their] immediate ken."

**CONCLUSIONS**

No writings or cultures, regardless of accuracy or perceived importance, should be overlooked. For example, in the Western world, textbooks recognize Aristotle's contribution to the progressions of knowledge and scientific inquiry. So too must the great Arab thinkers be recognized. The contributions of men such
as Muqaddasi in scientific observation, Al-Biruni in regional geography, Al-Khwārizmi in mathematical study, and Ibn Khaldūn and Al-Qazwini in urban geography, can be hailed as exemplary scientific works, that added much to the knowledge of the world and are deserving of credit in geography and history books, equal to that enjoyed by Western scholars.

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