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Contribution of Muslim Scholars and its Impact on Development of Geography

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Highlights

- Due to dominance of Church and lack of exploration the word Geography almost completely disappeared from ordinary vocabulary.
- During Medieval period Arab Scholars made remarkable contribution in the subject of Geography.
- The commendable works of eminent Arab scholars ultimately lead to European enlightment, so called Renaissance which was the real product of Muslim efforts.

ABSTRACT

The Greek and Roman Contributions to Geography, which preceded the Arabs, came to an end with the demise of Roman Empire in fifth century A.D. This was the time when "Dark Age of Geography" set in. Due to dominance of Church and lack of exploration the word Geography almost completely disappeared from ordinary vocabulary. Against this background, the Muslims rekindled the scientific spirit and made distinct contributions in the fields of physical and Regional Geography, Mathematical Geography, Cartography and Astronomy as it was part of Geography at that time. The commendable works of eminent Arab scholars ultimately lead to European enlightment, so called Renaissance, which was the real product of Muslim efforts. Without Arabs there could hardly had been the contributions of Bernhard Verinus, Alexander von Humboldt , William Moris Davis and others, even no modern highly cultured subject of geography. The present paper is an attempt to present the description of contribution of Muslim scholars and its impact on the development of subject of geography.

Keywords. **Dark Ages ; Library of Alexandria, Caliph Al-Mamun ; Muslim Geography ; Renaissance ; Baitul- Hikma.**

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I.INTRODUCTION

Although the roots of geography , as a field of study reach back to classical Antiquity, its establishments as a modern science was essentially the work of the century 1750-1850 . Humboldt and Ritter of this period rightly regarded as Founders of Modern Geography but one is easily led to ignorance the importance of previous workers who laid the foundations for founders, the inheriters of the geography of classical Antiquity and that of the Renaissance (Hartshorne, 1939), who were Arab scholars of the Medieval Ages which extended from 5th to 15th century A.D, no doubt characterized by lack of scientific enquiry and scientific developments in Europe because European Scholars rejected anything that did not confirm with the dogmas of the church [1].This time period 5th to 15th century is known as Dark Ages in the history of Europe. The dark stagnation of European Geography started with the collapse of Western Roman Empire in 476 A.D.A few copies of the Greek and Roman Geographical texts survived. Indeed, many of them were already lost, particularly at Alexandria, were the fire of 47 B.C. had destroyed some 400,000 manuscripts in the Great Library, and again in 391 A.D. which resulted in destruction of 300,000 more works in the Temple of Serapis [2]. The result of all these events eventually lead to the situation which Preston James points out that, in the Christian Europe it was the time when word Geography, although disappeared from ordinary vocabulary Against this background were the Intellectual curiosity, integrity and catholicity of the Muslim geographers which lead to the great achievements in the discipline of geograph[3].

In spite of the fact that European world itself had forgotten the Greek heritage in geography, the Arabs had held the banner aloft and it was largely rough contact with the Arab world, and the translation of their books including retranslation of Greek works from the Arabic translations) that geography got revived as a living science in fifteen century Europe [2].

The birth of Islam had opened a new vista for the enterprise of the Arabs and their conquests which swept over the three known continents during the early decades of Islamic power, procured a fresh stimulus to their adventurous spirit[3]. Science were among the fields in which Arab scholars excelled and made great contributions participating in the development of human Knowledge [8.] It was under the Caliph Al Mansor (A.D 753-775) that geographical science begin to take shape among the Arabs. Muslim geographers made full use of the methods and results of previous scholars of Indian, Persian and Greek [4]. The latter was the result of the

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establishment of 'Baitul-Hikma' under the patronage of Harun-al-Rashid. It was in this academy that scholars from all over the world were invited to teach and assist the Arab academics and to help them in the translation of the Greek, Latin, Persian and Sanskrit works into Arabic [5]. The epoch of translation was followed by one of the creative activity; for the Arabs not only assimilated the ancient lore of Persia and the classical heritage of Greece but adopted both to their peculiar needs and ways of thinking[6].

Arabs not only create those mathematics' which were to be indispensible instrument of scientific analysis, they laid the foundation of those methods of experimental research which in conjunction with mathematical analysis gave birth to modern science[7].

To Arabs Geography not only meant the distribution of landforms but also the causes of such distribution for which they invoked the help of other sciences. Thus they included with in its field historical explanation of natural features and the formulation of scientific laws and also a study of social and economic attributes of man on the earth's surface. It is really their treatment of the subject from the point of humans which makes their contribution to geography valuable. The Arabs made an outstanding contribution to the fields of physical, mathematical and regional geography. Their achievements in climatology, oceanography, linear measurements, geomorphology, determination of cardinal points, limits of habitable world, sprawl of continents and oceans are highly commendable.

Al-Battani (858A.D-929A.D) , a great Muslim scholar was known in the West in the Medieval Ages as Albategnus or Albategni. The Islamic encyclopedia refers to Al-Battani as famous for the observation of planets and was one of the leading figures in the fields of geometry, planet positions, and star calcus. The French astronomer Lalande said that Al-Battani was among the twenty top level astronomers that existed in the entire world. It was from Al-Battani tables that Regiomontanus constructed the Ephemerides which made the voyage of Columbus possible [11].

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Al-Masudi (End of 9th century to 956A.D) was not only a great geographer but also a historian, a world traveler and a prolific writer. Al-Masudi made an in-depth study of Greek and Roman sources and gathered information through travels [7].Al-Masudi had a clear idea of spherical shape of the earth based on logic. In physical geography Al-Masudi advocated the modern ideas of geomorphology including both the comparative study of landforms and analytical study of processes involved in their formation [12]. Al-Masudi the role of cycle of erosion and the adjustment of streams to structure in the evolution of landforms[7].He described the evaporation of moisture from the water surfaces and the condensation of the moisture to form clouds.[3] Al-Masudi also gave a significant account of the monsoons of India[13]. In the field of Human geography Al-Masudi tried to correlate man with environment.

Al-Biruni (973-1039A.D.) was one of those prodigious minds at work in the medieval world whose creative, versatile, scientific and international outlook, coupled with universality of thought, amaze the modern world[2].He is the author of number of books. He wrote 27 books on geography, four each on cartography, geodesy, and climatology and the remaining seven books on comets, meteors and surveying. Al-Biruni travelled forty years to collect mineralogical specimen; and his tables of specific weights of eighteen substances proved wonderfully correct. He also discovered that light travels faster than sound. His most brilliant work is *Asrar al-Baqiya,* a chronology of ancient nations, containing the minute and accurate details of geographical and historical information. Al-Biruni in Kitab-al-Hind in 1030 recognized the significance of rounded stones in the south of Himalayas, he pointed out that stones became round as they were rolled along the torrential mountain streams. He also recognized that material dropped close to mountains is coarser in texture and becomes finer in texture farther away from the mountain.He is called father of geodesy. He compared the different fossils discovered in the plains of Arabia, Jurjan and Khwarizmi along the Caspian sea. He believed that sea has been at these places in by gone age. Al-Biruni maintained that Indo-Gangitic plain is formed by the silt brought down by rivers. He also discussed occurrence of floods and springs. He opined that mountain of moon was the source of Nile and that floods in Nile were because of heavy rains in upper reaches. The historian George Sarton acknowledges Al-Biruni's scientific prominence: "Al Biruni was an outstanding traveler, philosopher, mathematician astronomer and Geographer. He was one of the greatest encyclopedic Muslim scholars in all times".

Ibn-Sina (980-1037) was a eminent scholar of Muslim world. He made tremendous contribution to the subject of geography. His contribution in the field of Geomorphology is commendable. He believed that mountains are formed in two ways, first by "uplifting of the ground, as takes place in earthquakes," and those which result "from the effects of running water and wind in hollowing out valleys in soft rocks."Thus the concept of mountain formation by differential erosion was expressed. The idea of slow erosion over long periods of time was also held by him[15].In his book of healing gave law of superposition and concept of uniformaterianism[18].

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Al-Idrisi (1099-1180 A.D) an outstanding scholar of Muslim world. He made the most extensive correction of erroneous ideas handed from Ptolemy. He also corrected the idea of an enclosed Indian Ocean and consideration of Caspian Sea as a gulf of the world ocean. He corrected courses of many rivers including the Danube and Niger and the position of several mountain ranges [3]. He showed the Greek division of world into five climatic zones does not correspond to reality and devised his own climatic classification. His most important contribution was world map in which he correctly represents the Caspian and Areal seas, and is very rich in information[2].

Nasir Al-Din Tussi (1201-1274 A.D) , one of the few extraordinary scientists to have flourished in the 13th century A.D. and one of the distinguished Muslim scholars. He was as "Al-Allama" (The professor).He made important contributions and additions in astronomy. He clarified a number of astronomical theories, and criticized the "almagest" treatise and suggested an astronomical system simpler than the Ptolemaic one. Thus, he paved the way for the reforms brought up by Copernicus later. He also wrote treatises on the celestial sphere and the planetary system[8].

Abu Al Fida :- (1273-1331).He was one of the brilliant Muslim scholar of Medieval Ages. He wrote a book on Geography named as "The Concise History of Humanity". In this book a long introduction on Geographical factors is followed by twenty-eight sections dealing in tabular form with the chief towns of then known world. After each name are given the longitude, latitude, climate, spelling and then observations generally taken from earlier authors. Parts of his work were translated as early as 1650 in Europe [8]

Ibn-Batuta:- (1304-368 A.D). He was a great Muslim explorer who explored regions of North Africa and West Asia, sailed along the coast of Africa to kilwa point 10 degrees south of equator. This lead to the confirmation that Torrid Zone is habitable disproving Ptolemy. He also travelled to Mecca, Persia, Bukhara, Samarkand, Afghanistan, and to Delhi. He also visited several islands including Ceylon, Java, and Sumatra. He travelled a distance of about 75,000 miles that was a record in that time[8](dikshit).His book *Rihlah* throws light on the soils, agriculture, economy and political history of the then Muslim world.

Ibn-Khaldun:-(1342-1405A.D).A well known scholar of Muslim World. He contributed significantly to the development of modern Geography. In his introduction to his book *Muqaddimah* he identified two sets of forces influencing mans progress (i,e.,history) :one, the physical environment and second, the social environment derived from culture and belief rather than the natural environment. This was a great achievement of his time that is why Kimble (1938) was prompted to remark that Ibn-Khaldun had "discovered ….the true scope and nature of geographical enquiry [13].He was the first Arab scholar to throw light on the relationship between man

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and environment. He discusses various stages of social organization, identifying the desert nomad most primitive and purest, and he suggests that sedentary city dweller is dependent on luxuries and becomes morally soft[3].He established the foundation for historical geography in those of his writings which discusses rise and fall of empires.Ibn-Khaldun discusses cities and their proper location.

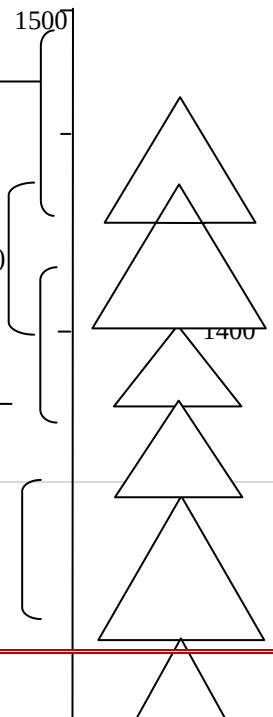
Uleg Beg (1393-1499A.D) was a well known scholar of his times. He designed many astronomical instruments that helped astronomers in their researches. He also worked on trigonometry and his cosine and sine tables helped great deal in the establishment of modern science .He built an astronomical observatory between 1424 and 1429 A.D, with the instruments he designed he made observation of stealer and planetary positions. From these results he designed kuragon tables. He accurately gave the inclination of earth's axis to be 23 degrees and 52 minutes which was more accurate than value arrived at by Copernicus later on in 18th century [8]. Model 1.1

II.CONCLUSION.

The significance of Arab contribution to the historiography of modern Geography lies in that the development of Geographical knowledge in the Arab world represented, in some ways, a further development over the original base provided by the geographers of ancient Greece, whose works had been translated into Arabic, and widely used by Arab scholars. Thus, while Europe itself had forgotten the Greek heritage in geography, the Arabs had held the banner aloft and it was largely rough contact with the Arab world, and the translation of their books (including retranslation of Greek works from the Arabic translations) that geography got revived as a living science in fifteen century Europe. It was under the influence of the Arabs and the Moorish revival of the culture and not in the fifteenth century, that a real renaissance took place.

Contribution of Muslims to geography over time (800-1400 A.D)

Concept	Chronology	Contributor	Relevance
First Astronomical observatory.	1500	Uleg-Beg (1393-1499 A.D)	Tyco-Brache (1546- 1601A.D) on same lines
Operated Urinoborg (Danish observatory)			
Man-Environment relationship.	1400	Ibn-Khaldun (1342-1405 A.D)	Concept of Determinism by Ritter(1792-1859).



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Age of Explorations - Ibn-Batuta (1304-1368 A.D) Lead to Latin-American expedition and Russian explorations by A. V. Humboldt(1790-1859).

Early regional geography – 1300 Abu Al-Fida (1273-1331A.D) Foundation of Regional Geography was laid by . – Vidal de la Blache (1845-1918).

Early Astronomy. Nasir Al-Din Tulsi (1201-1274A.D). Helped to improve Astronomical observations.

– 1200

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First climatic classification. Al-Idrisi (1099-1180 A.D) Climatic classification was given by Koppean (1884).

Early concept of: formation of mountains 1100 Number of theories by Kober, Joly, parker, Mackenzie.. .

Differential erosion, – Concept of differential erosion was given by Hack(1960).

Principle of superposition, Ibn-Sina (980-1037 A.D) The principle was given by N.Steno in 17th century.

Principle of uniformaterianism. – 1000 . The principle was given by J. Hutton(1726-1797) .

Basis of concept of: river erosion,map Projections Al-Biruni (973-1039 A.D) Subject matter of Geomorphology, cartography today.

Basis for study of landforms and Geomorphology.

Basis of Concept of cycle of erosion. – 900 Al-Masudi (end of 900-956 A.D) Concept of cycle of erosion was given by Davis1909.

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Astronomical tables (Kuragon tables). Al-Battani (859-929.A.D)

Made voyage of Columbus possible.

800

The size of the shows significance of the concept.

Source: Compiled by the authors.

Model 1.1

REFERENCE

1 Jenson ,H., Geography Its History and Concepts, Harper publishers, New York , 1981.pp.11

2. Husain, M. , Evolution of geographical thought, Rawat Publications ,Jaipur , 1984.

3. James , P.E., All Possible World-A History of Geographical Ideas, Odessy Press, New York,1972, pp.53-54

4 . Hartshorne, R. , Nature of Geography : A critical survey of current thought in the light of the past, Lancaster, Pennsylvania ,Association of American Geographer, 1939, pp.

5 . Hartshorne, R. , Perspectives on Nature of Geography,Chicago : Rand McNally, 1959, pp.

6. Harvey, D. , Explanations in Geography, Rawat Publications, New Delhi, 2003, pp.

7 Ahamad, K.J. , Hundred Great Muslims, Library of Islam, Des Planes, USA, 1987.

[8] Halima, G. , Architects of Scientific Thought In Islam, Published by Islamic Scientific and cultural organization, 2003.

9 Beazely ,C.R., The Dawn of Modern Geography ,Oxford, 1906.

[10] Ali.S.M, , Arab Geographical Thought ,Aligarh, 1976.

[11]. Briffault, R .,The Making of Humanity, George Allen and Unwin Ltd, London,1906.

ISSN (Print): 2278-0793
ISSN (Online): 2321-3779

[12] Shafi, M. ,Al-Masudi as a Geographer, Al-Masudi-Millenary commeration volume, Aligarh,

[13] Dikshit, R.D. , Geographical thought: A contextual History of Ideas, Printice Hall of India, New Delhi, 1999, pp. 25-27.

14. Dikshit, R.D. , Art and Science of Geography: Inttegrated Readings, , Printice-Hall of India New Delhi, 1994

15 Thornburry, W.D. ,Principles of Geomorphology, New Age Publishers, New Delhi, 1954.

16 Johnston, R.J. , Future og Geography

17 Minshull, , Changing Nature of Geography.

18 Wikipedia