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Muslim thought: its origin and
achievements, by M.M.
Sharif--edited, with notes,
bibliography and introduction

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Thesis

MUSLIM THOUGHT: ITS ORIGIN AND ACHIEVEMENTS,

BY M. M. SHARIF—

EDITED, WITH NOTES, BIBLIOGRAPHY AND INTRODUCTION

by

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ABSTRACT

Mian Mohammad Sharif's *Muslim Thought: Its Origin and Achievements* was first published in 1951 in Lahore, Pakistan. Discussing the most important facts about the origin and the evolution of Islamic science and philosophy, it points out historical connections between the Islamic and Western civilizations in fields of literature, philosophy, science and law. It makes the case that the Western civilization owes its progress in science and philosophy to the medieval Islamic world. The importance of the book arises from the fact that its author was one of the pioneers of philosophical study in Pakistan, and from the fact that it is a short, lucid and comprehensive introduction to the field. This thesis has produced a standardized text of *Muslim Thought*: it has edited the book for mistakes, typing errors and factual revisions; it has included a detailed bibliography of the sources that existed before 1951 or the post-1951 sources that provide credence to the historical references in the book; it includes a glossary of those names, places and words that may not be clear to all the readers and that are not self-explanatory within the context of the book. The thesis is accompanied by an Introduction that contributes new facts about Sharif's scholarly works and discusses the significance of this edition by placing it within the history of editorial work done in South Asia.

Table of Contents

List of Abbreviations	v
Select List of Names, Places, and Terms	vii
Introduction	1
Preface (M. M. Sharif)	30
<i>Muslim Thought</i>	
<i>Chapter 1—The Origin of Muslim Thought</i>	32
<i>Chapter 2—Dissemination of Knowledge</i>	48
<i>Chapter 3—Advancement of Learning: Scientific Thought</i>	53
<i>Chapter 4—Advancement of Learning: Philosophy</i>	79
<i>Chapter 5—Conclusion</i>	120
Endnotes	124
Bibliography	150
Transliterations	174

List of Abbreviations

(?)	=	Uncertain source or data
A.D.	=	Anno Domini
Ar.	=	Arabic
b. (in Arabic names)	=	bin (son of)
b. (in brackets)	=	date of birth
B.C.E.	=	Before Common Era
BBC	=	British Broadcasting Corporation
c.	=	circa
C.E.	=	Common Era
Co.	=	Company
d.	=	date of death
Ed./ed./Eds./eds.	=	Edited by, or Editors, or Edition
EI	=	<i>Encyclopedia Iranica</i> , Online
EI2	=	<i>Encyclopaedia of Islam, Second Edition</i> , Online
f.	=	and the one that follows
ff.	=	and the ones that follow
fl.	=	floruit (flourished)
Gr.	=	Greek
Inc.	=	Incorporated
Ltd.	=	Limited

<i>MW</i>	=	Merriam-Webster Dictionary Online < www.m-w.com >
n	=	note
No.	=	Number
<i>OED</i>	=	Oxford English Dictionary Online < www.oed.com >
Ph.D.	=	Doctor of Philosophy
r.	=	ruled
Rev.	=	Review, or Reverend, depending on the context
Skt.	=	Sanskrit
Tr./tr./trans.	=	Translated by/Translators
UNESCO	=	United Nations Educational, Scientific and Cultural Organization
url	=	Uniform Resource Locator (web site address)
U.S.	=	United States
Vol./vol./Vols./vols.	=	Volume or Volumes

Select Glossary of Names, Places, and Terms

Abu ‘Ali ‘Isa ibn Zurah (10th century C.E.)

Abu Bakr (Albubather) Abu Bakr al-Hasan b. al-Khasib (8th-9th century C.E.)

physician; astrologer

Abu Mansur Abu Mansur Maturidi (d. c. 944 C.E.)

Abu Ya‘qub Yusuf (d. 1184 C.E.)

Abu Zakariya Yahya Abu Zakariya Yahya b. al-‘Awwam (12th century C.E.)

Adelard of Bath (d. c. 1152 C.E.)

‘Adud Dawlah Abu Shuja Fanna Khusraw (d. 983 C.E.)

Ahmad Ahmad ibn Majid (late 15th century C.E.)

al-Ash‘ari Abu al-Hasan al-Ash‘ari (d. 936 C.E.)

Al-Baghdadi Ibn Tahir al-Baghdadi (d. 1037 C.E.) mathematician

al-Faraghani (Alfraganus) Abu al-Abbas Ahmad b. Muhammad b. Kathir al-Farghani

(9th century C.E.); a crater on the moon is named after him

Al-Ghafiqi Abu Ja‘far Amad b. Muhammad b. Ahmad ibn al-Sayyid (d. c. 1250 C.E.)

al-Hakim Caliph al-Hakim (disappeared in 1021 C.E.); built a library in present-day

Egypt c. 1004 C.E.

al-Jahiz (d. 869-9 C.E.)

al-Khwarizmi (d. c. 850 C.E.) founder of Algebra

Al-Kuhi Abu Sahl al-Kuhi (10th century C.E.)

al-Qabisi (Alqabitus) (d. 967 C.E.) astrologer

al-Razi (d. 1222 C.E.) probably, this is Fakhr al-Din al-Razi who died in 1209 C.E.

al-Shabushti Abu al-Hasan ‘Ali b. Muhammad al-Shabushti (d. c. 1000 C.E.)

al-Tahawi (d. 935 C.E.)

‘Ala’ al-Dawlah Abu Kalijar Garsasp I ‘Ala’ al-Dawlah (d. 1051-52 C.E.)

Albert the Great Albertus Magnus (d. 1280 C.E.)

Alexander of Aphrodisias (late 2nd-early 3rd century C.E.) Greek philosopher

Alfonso the Wise *see* Alfonso X

Alfonso VI (d. 1109 C.E.)

Alfonso X (d. 1284 C.E.)

‘Ali of Baghdad (d. c. 1010 C.E.)

‘Ammar of Mosul (late 10th-early 11th century C.E.)

Ammonius (d. c. 526 C.E.) Greek philosopher

Antioch ancient city; in present-day Turkey

apogee the point at which the distance between the earth and the moon, or between the earth and the sun, is greatest *OED*

Apollonius Apollonius of Perga (d. c. 190 B.C.E.) Greek geometer

Archimedes (d. c. 212 B.C.E.) Greek polymath

Aristotle (d. 322 B.C.E.)

Arthur J. Arberry (d. 1969 C.E.)

azurite blue-colored mineral of copper *OED*

Baba Lal (17th century C.E.)

baldachin “a rich embroidered fabric of silk and gold” *MW*

Bay of Biscay part of the Atlantic Ocean to the South-West of France

Bergson Henri-Louis Bergson (d. 1941 C.E.) philosopher

Berkeley George Berkeley (d. 1753 C.E.) philosopher

Birbhan (?)

Bodleian Library A legal deposit library; established in 1602; the central library of the
University of Oxford

Briffault Robert Briffault (d. 1948 C.E.) surgeon; anthropologist

Bruno Giordano Bruno (d. 1600 C.E.) philosopher

Bukhari (d. 870 C.E.) the compiler of what is considered to be the most authentic
compilation of Prophetic reports in the Islamic Sunni legal tradition

Caesarea town in present-day Israel

Caliph al-Mutawakkil (d. 861 C.E.)

Caliph al-Rashid (d. 809 C.E.)

Cardanus Gerolamo Cardano (d. 1576 C.E.) Renaissance mathematician

cauterisation “to make insensible” *MW*

Chaitanya (d. 1534 C.E.)

Charlemagne (d. 814 C.E.) Roman emperor

Clement (d. c. 215 C.E.) Christian theologian

Colosio Stefano Colosio (late 19th-early 20th century C.E.) historian of economics

Columbus Christopher Columbus (d. 1506 C.E.)

Copernicus Nicolaus Copernicus (d. 1543 C.E.) presented the idea of a heliocentric

universe (the sun being the centre of the universe and the planets revolving around it) in his book *De Revolutionibus Orbium Coelestium*

cordovan kind of leather *OED*

cornelian a red stone *OED*

Coulton G. G. Coulton (d. 1947 C.E.)

Crescas Hasdai Crescas (d. 1410-11 C.E.) philosopher

D. Morley of Norfolk Daniel of Morley (d. c. 1210 C.E.) philosopher

Dadu Dadu Dayal (d. 1603 C.E.)

Daniel Defoe (d. 1731 C.E.)

Dante Durante degli Alighieri (d. 1321 C.E.)

Danube river in Central Europe

Darwin Charles Darwin (d. 1882 C.E.)

De Boer Tjitze J. de Boer; orientalist

De Wulf Maurice De Wulf (d. 1947 C.E.) historian of philosophy

Descartes René Descartes (d. 1650 C.E.)

Deutsch Emanuel Oscar Menaham Deutsch (d. 1873 C.E.)

Diophantine equations developed by Diophantus (d. c. 290 C.E.)

Dr Khalifah Abdal-Hakim (d. 1959 C.E.) South Asian scholar and public intellectual

Draper John William Draper (d. 1882 C.E.) historian

Dubois Pierre Dubois (?) (d. c. 1320 C.E.)

ecliptic relating to “interception ... of the light of the sun, moon, or other luminous body” *OED*

Edessa ancient Greek city

Edmund Burke (d. 1797 C.E.) Irish politician; political philosopher

Edw. G. Browne Edward Granville Brown (d. 1926 C.E.) orientalist

Edward Pococke Junior (d. 1691 C.E.) Chair of Arabic at the University of Oxford

equinox “one of the two periods in the year when the days and nights are equal in length

all over the earth” *OED*

Euclid (d. 265 B.C.E.) known as the father of geometry

Euclid (fl. 300 B.C.E.) “father of geometry”

Euphrates river in Western Asia *OED*

Fadl Haqq Khairabadi (d. 1861 C.E.)

Ferdinand III (d. 1252 C.E.)

Frederick II (d. 1250 C.E.)

Frederick II (d. 1250 C.E.) Roman emperor

Galen (d. 200 C.E.) Physician; Philosopher

Galileo Galileo Galilei (d. 1642 C.E.) astronomer

George Ashwell (d. 1695 C.E.)

George Henry Lewes (d. 1878 C.E.) philosopher; critic

George Keith (d. 1716 C.E.) Scottish preacher; orientalist

Gerard of Cremona (d. c. 1187 C.E.)

Gershon ben Solomon (13th century C.E.)

Gersonides (d. 1344 C.E.)

Goethe Johann Wolfgang von Goethe (d. 1832 C.E.) poet

Goldziher Ignaz Goldziher (d. 1921 C.E.) orientalist

Harran ancient city; in present-day Turkey

Hasan Bihari (17th century C.E.)

Hegel Georg Wilhelm Friedrich Hegel (d. 1831 C.E.) philosopher

Hellas Greece

Hermann Herman of Carinthia (d. c. 1160 C.E.)

Hermanus Hermannus Alemannus (d. 1272 C.E.)

Herodotus (d. c. 425 B.C.E.) Greek historian

Hippocrates (d. c. 370 B.C.E.) Greek physician

Hitti Philip K. Hitti (d. 1978 C.E.)

Hume David Hume (d. 1776 C.E.) philosopher

Ibn al-Baitar (d. 1248 C.E.)

Ibn al-Khatib (d. 1375 C.E.) poet; historian; physician

Ibn Hazm (d. 1064 C.E.) polymath

Ibn Ibrahim al-Fazari (8th-early 9th century C.E.) mathematician; astronomer

Ibn Khallikan (d. 1282 C.E.) Arab biographer

Ibn Miskawaih (d. 1030 C.E.) polymath

Ibn Sina (d. 1037 C.E.) polymath

Ibrahim ibn Adham (d. c. 782 C.E.)

Iqbal Sir Muhammad Iqbal (d. 1938 C.E.) national poet of Pakistan

‘Iraqi Fakhr al-Din ‘Iraqi (d. 1289 C.E.)

‘Isa b. Yahya (9th century C.E.) (?)

Jabir Jabir b. Aflah (c. late 11th-early 12th century C.E.) astronomer

Jacob of Serugh (d. 521 C.E.)

Jacobi Friedrich Heinrich Jacobi (d. 1819 C.E.) philosopher

Jalal al-Din Dawwani (d. 1502 C.E.)

Jamal al-Din Afghani (d. 1897 C.E.)

James I King of Scotland (d. 1437 C.E.)

John of Seville (12th century C.E.) part of the Toledo school of translators

John Philoponus (d. c. 570 C.E.) Greek polymath

Juda ben Solomon Cohen (d. c. 1275 C.E.)

Jundi Shapur city in present-day Iran

Jurjani Zain al-Din Jurjani (d. 1136 C.E.)

Justinian Justinian I (d. 565 C.E.)

Kabir (d. 1518 C.E.)

Kant Immanuel Kant (d. 1804 C.E.)

kaoline white-colored clay; used in manufacturing porcelain *OED*

Katibi Najm al-Din al-Katibi (d. 1276 C.E.) logician

Kepler Johannes Kepler (d. 1630 C.E.) astronomer

Khalid b. ‘Abd al-Malik (9th century C.E.)

Kun-Pandya (13th-14th century C.E.)

Laldas (?)

lapis lazuli bright blue-colored mineral *OED*

Legate Robert of Courcon (d. 1219 C.E.)

Leibniz (d. 1716 C.E.) philosopher

Leonardo da Vinci (d. 1519 C.E.) polymath

Locke John Locke (d. 1704 C.E.) philosopher

M. Carra de Vaux Bernard Carra de Vaux (b. 1867 C.E.)

macadamised repaired *OED*

Macdonald Duncan Black Macdonald (d. 1943 C.E.) orientalist

Madhava Madhvacharya (d. 1317 C.E.)

Maimonides (d. 1204 C.E.) philosopher

Malchion (3rd century C.E.)

meridian midday *OED*

Michael Scottus (d. c. 1232 C.E.)

Miguel Asin y Palacios (d. 1944 C.E.) Spanish orientalist

Mill John Stuart Mill (d. 1873 C.E.) philosopher

Mir Zahid no reference found

morocco kind of leather *MW*

Mulla Sabzwari Mulla Hadi Sabzwari (d. 1873 C.E.)

Musa ibn Khalid (9th century C.E.) (?)

Musa ibn Shakir (8th-9th century C.E.); father of three astronomers called the Banu

Musa

muslin “a type of fabric” *OED*

Namdav (d. 1350 C.E.)

Nank Guru Nanak (?) (d. 1538 C.E.)

naphtha “a volatile ... liquid” *OED*

Nathad Vali (d. 1069 C.E.)

Nestorius (d. c. 451 C.E.) Archbishop of Constantinople

Nicholson Reynold Alleyne Nicholson (d. 1945 C.E.) Orientalist

Nimbaraka (12th century C.E.)

Nisibis ancient city; in present-day Turkey

O’Leary De Lacy O’Leary (d. 1957 C.E.) Orientalist

obliquity being slant *OED*

Ockham William of Ockham (d. c. 1348 C.E.)

Origen (d. 254 C.E.) Christian theologian

Pascal Blaise Pascal (d. 1662 C.E.) philosopher

Paul Bronnle (b. 1867 C.E.)

Plato (4th century B.C.E.)

Plato of Tivoli (12th century C.E.)

Pope Innocent III (d. 1216 C.E.)

Porphyry (d. c. 305 C.E.) Neo-Platonist

Professor Ballesteros Antonio Ballesteros Beretta (d. 1949 C.E.)

Professor Ribera Julián Ribera (d. 1934 C.E.)

Ptolemy (d. 168 C.E.) a Greek polymath

Pyrenees mountain range in the south of France

Qinnasrin ancient city; in present-day Syria

Ramanada (d. 1410 C.E.)

Ramanuja (d. 1137 C.E.)

Ramaswami Sastri K. S. Ramaswami Sastri (b. 1878 C.E.)

Raymond Lull (d. 1315 C.E.) philosopher

Raymond Martini Ramón Martí (13th century C.E.)

Raymond of Marseille (12th century C.E.) translator

Renan Joseph Ernest Renan (d. 1892 C.E.)

Ridwan (12th-early 13th century C.E.) clockmaker

Roger Bacon (d. 1294 C.E.) philosopher

Samuel Ibn Tibbon (d. 1232 C.E.)

Sana’i Majdud b. Adam al-Ghaznawi Sana’i (d. 1036 C.E.) Persian poet

Sayyid Ahmad Khan (d. 1898 C.E.)

Scaliger Julius Caesar Scaliger (d. 1558 C.E.) physician

Schleiermacher Friedrich Daniel Ernst Schleiermacher (d. 1834 C.E.) philosopher

Schmidt Nathaniel Schmidt (d. 1939 C.E.) orientalist

Seleucia ancient city; in present-day Iraq

Send b. ‘Ali Sind b. ‘Ali (d. c. 870 C.E.) astronomer

Sha‘rani ‘Abd al-Wahhab b. Ahmad al-Sha‘rani (d. 1565 C.E.)

Shabistari Mahmud Shabistari (d. 1340 C.E.) Persian poet

Shah Wali Allah (d. 1762 C.E.)

Shaikh Ahmad Sarhindi (d. 1624 C.E.)

Shaqiq Balkhi (d. 810 C.E.)

Shibli Allama Shibli Nomani (d. 1914 C.E.) South Asian scholar

Sialkoti Abdul Hakim Sialkoti (d. 1656 C.E.)

Simon Ockley (d. 1720 C.E.)

Sir Thomas Clifford Allbutt (d. 1925 C.E.) physician

Spinoza Baruch Spinoza (d. 1677 C.E.)

St John of the Cross (d. 1591 C.E.)

St Thomas St Thomas Aquinas (d. 1274 C.E.) priest; philosopher; theologian

Taftazani Sa'd al-Din Taftazani (d. 1390 C.E.)

Tara Chand (b. 1888 C.E.) archaeologist; educationist

Tashkoprazade no reference found

the Aral Sea a lake in Central Asia

Themistius (d. c. 390 C.E.) Greek philosopher

Theophrastus (d. c. 287 B.C.E.) Greek philosopher

Torricelli Evangelista Torricelli (d. 1647 C.E.) invented the Barometer

Ulrich of Strasburg (d. 1277 C.E.)

Vasco da Gama (d. 1524 C.E.) Explorer

Visnuswami (15th century C.E.)

Vittelo Erazmus Ciolek Witelo (d. c. 1300 C.E.) polymath

William Osler (d. 1919 C.E.) physician

Yahya b. Abi Mansur (d. 830 C.E.)

Yaqut Yaqut al-Hamawi (d. 1229 C.E.) Arab biographer

Zarqali Abu Ishaq Ibrahim al-Zarqali (Arzachel) (d. 1100 C.E.) astronomer; a crater on
the moon is named after him

Introduction

Mian Mohammad Sharif's *Muslim Thought: Its Origin and Achievements* is a text of discursive prose that cannot be categorized as either academic or otherwise. In substance, it is academic. In tone, it sometimes slips into polemics. It has signs of being an academic text as well as signs to appeal to a wider audience. This is a rare problem to begin with, since most editorial tasks in the humanities that focus on bringing out new editions of old works deal with literature and creative writing. There are particular literary features that lend importance to texts. They are either good poetry or good prose. If neither, they are texts of great historical significance. Even then, many a time they have peculiar literary qualities. *Muslim Thought* does not neatly fall into any of these categories. It is not a piece of literature. It is a 62 year old text (published first in 1951) with no great historical significance. Then why edit it? Because these characteristics make this text singular, make the problems unique, and make the task of the editor that much more challenging.

Many times scholars produce critical editions of works not because the works are of compelling importance in and of themselves, but because they represent some special feature. Almost every editor believes, and most of the time rightly so, that the work *is* of significance. However, some editors critically edit works because the works present unique challenges and difficulties. If an editor produces an edition of a philosophical work that has not received much attention before, it is an exercise not only in philosophy but also in editorial studies. Such critical editions may inform us about philosophy but they definitely inform us about the editorial process that goes into the work.

A. E. Housman (d. 1936) was a classical studies scholar and Professor of Latin at the University of Cambridge for many years. He believed that his five-volume edition of *Astronomica* of poet-astronomer Marcus Manilius (first century C.E.) was important not because it was a text of literary importance, but because it presented unique and singular challenges for him as an editor.¹

In a review of *The Letters of A. E. Housman* compiled and edited by Archie Burnett, Frank Kermode wrote that the “long editorial labour they required was a tribute rather to Housman’s eminence in other activities than to his letter-writing.”²

In addition to Housman’s letters, Archie Burnett also compiled and edited Housman’s poems³, and this edition was reviewed by Benjamin Fisher who stated:

Although Housman’s classical scholarship may be more important in its sphere than his verse is within the great world of poetry, the poems have been, and will undoubtedly continue to be, the substance of his lasting fame. Despite heterogeneous opinions concerning their appeal and value, Housman’s poems continue to be read.⁴

Examples like this can be found in other literary traditions as well. In Urdu, for instance, there are very few works that have been critically edited and standardized. Before we proceed to examples of authors whose works were not of extraordinary import, we must discuss probably the only truly comprehensive editorial work done in Urdu

¹ In a letter to Robert Bridges on Sep. 25, 1924, Housman wrote: “I adjure you not to waste your time on Manilius. He writes on astronomy and astrology without knowing either. My interest in him is purely technical”: *The Letters of A. E. Housman*, ed. Archie Burnett (New York: Oxford University Press, 2007), i, 572. I am grateful to Professor Burnett for pointing out this anecdotal evidence in class and giving me its reference upon request.

² Frank Kermode, “Nothing for Ever and Ever,” *London Review of Books* [Rev. of *The Letters of A. E. Housman*, ed. Archie Burnett] 29.13 (2007): 7-8. url: <www.lrb.co.uk>, accessed on March 4, 2013.

³ *The Poems of A. E. Housman*, ed. Archie Burnett (Oxford: Clarendon Press, 1997).

⁴ Benjamin F. Fisher, [Rev. of *The Poems of A. E. Housman*, ed. Archie Burnett], *Victorian Poetry* 37.3 (1999): 448.

Studies—Imtiaz ‘Ali ‘Arshi’s critical edition of Ghalib’s Urdu poetry.⁵ ‘Arshi was awarded India’s prestigious literary award—the Sahitya Akademi Award—in 1961 for this edition.⁶ It provides a chronological list of printed texts and manuscripts of Ghalib’s writings, a corrected text of Ghalib’s poetry, and detailed textual variations.⁷

In 2003 a noted Pakistani scholar Mushfiq Khwaja (d. 2005) produced an edition of the poetry of Yaganah Changezi (d. 1955).⁸ Intizar Husain, whose literary work *Basti* was recently featured in the *New York Review Books*⁹ and who is one of the shortlisted candidates for the Man Booker International Prize 2013¹⁰, praised this compilation:

Mushfiq Khwaja is happier when dealing with minor writers or those who may be pseudo-writers. They are the ones whose utterances provide enough food for his amusement. And they are the ones who most tempt him to make a caricature of them.¹¹

Although Husain discovers a poet of genius in Yaganah Changezi who deserved more than what he received from the literary community of his time,¹² it does not change the fact that his poetry went mostly ignored until Mushfiq Khwaja decided to work on it.

⁵ Mirza Asadullah Khan Ghalib, *Diwan-i Ghalib Urdu: Nuskhah-yi ‘Arshi* [Urdu], ed. Imtiaz ‘Ali ‘Arshi (New Delhi: Anjuman Taraqqi-e Urdu, 1982). Ghalib (d. 1869) is regarded as one of the most outstanding poets of Urdu and Persian.

⁶ See Carlo Coppola, “The Sahitya Akademi Awards: 1967,” *Mahfil* 5.1-2 (1968-9): 23.

⁷ See *Encyclopaedic Dictionary of Urdu Literature*, Vol. I, ed. Abida Samiuddin (New Delhi: Global Vision Publishing House, 2007), 193.

⁸ Vajid Husain Yaganah Changezi, *Kulliyat-i Yaganah* [Urdu], ed. Mushfiq Khwaja (Karachi: Academy Bazyaft, 2003).

⁹ “Basti,” *New York Review Books* <<http://www.nybooks.com/books/imprints/classics/basti/>>, accessed on March 4, 2013.

¹⁰ “Man Booker International Prize 2013 Finalists Announced” *The Man Booker Prizes* Jan. 24, 2013, url: <<http://www.themanbookerprize.com/news/man-booker-international-prize-2013-finalists-announced>>, accessed on March 4, 2013.

¹¹ Intizar Husain, “Scholar of a rare variety,” *Dawn* Aug. 22, 2004, url: <<http://archives.dawn.com/weekly/dmag/archive/040822/dmag14.htm>>, accessed on March 4, 2013.

¹² Intizar Husain, “Yagana rediscovered,” *Dawn* March 23, 2003, url: <<http://archives.dawn.com/weekly/dmag/archive/030323/dmag17.htm>>, accessed on March 4, 2013. The first sentence reads: “Mushfiq Khwaja has done a great job. He has managed to pull out a poetic genius

A most recent example of an editorial work in Urdu Studies is Syed Nomanul Haq's edition of Abdurrahman Bijnouri's *Mahasin-i Kalam-i Ghalib*.¹³ Bijnouri (d. 1918) wrote this work as a critical tribute to Ghalib's poetry. However, there has not been recognition of this work except for a few articles over decades that mention it. It was in 2009 that Tariq Hashmi produced an edition of this work with some annotations;¹⁴ but it contained so many mistakes¹⁵ that it merited a comprehensively revised edition, which was produced by Haq four years later. He writes in the Introduction:

Now the issue is that Mr. Bijnouri has more passion and less critical appreciation; more color and less substance ... Our author spends less time with Urdu poetics and with the tradition of *Subk-i Hindi* that resides in its background, and cruises more towards the West [Western literary tradition]. We must point out that with regard to its textual theme, i.e. the interpretation of Ghalib's poetry, analysis, and the extrapolation of Ghalib's ideas, this text no longer remains of much use—but the story does not end here. The historical significance of *Mahasin-i Kalam-i Ghalib* is by all means still in tact; and even more, if the mention of this work gets excluded from the broader discussion of Urdu literary criticism, the impression that the discussion has remained incomplete in its aspiration is inevitable.¹⁶

from the oblivion where he had been pushed by his hostile contemporaries", thereby acknowledging that when Mushfiq Khwaja decided to work on Yagana's poetry, Yagana was, in fact, in "oblivion".

¹³ Abdurrahman Bijnouri, *Mahasin-i Kalam-i Ghalib*, ed. Syed Nomanul Haq (Karachi: Oxford University Press, 2013). I must mention that I worked very closely with Professor Haq on this project and he includes high praise for that in his Introduction. All my statements about this particular work should be seen in light of this.

¹⁴ Abdurrahman Bijnouri, *Mahasin-i Kalam-i Ghalib* [Urdu], ed. Tariq Hashmi (Faisalabad: Misaal Publishers, 2009).

¹⁵ One will have to read through Haq's edition to find many such mistakes pointed out. For example, read through pages n, s, f, z (n. 6), (Urdu alphabets pronounced 'noon', 'seen', 'fay', and 'zuad') and 100-118.

¹⁶ Haq, k-l (Urdu alphabets pronounced 'kaaf'-'laam'). My translation from the Urdu text.

These examples show that for a scholar who understands the importance of the editorial process, the production of a critical edition of a work does not require the work to be important as an absolutely necessary pre-requisite. Although almost all editors do work on projects that have some historical or literary import, it is not a requirement for a critically edited work.

This thesis will argue that even though it must not be a requirement for a work-to-be-edited to have much significance, M. M. Sharif's *Muslim Thought: Its Origin and Achievements* has virtues that do satisfy the need for a critical edition even by the more stringent standards of editorial pre-requisites. The next section, entitled "The case for editing *Muslim Thought*," will explain my reasons for editing this work for this thesis.

The case for editing *Muslim Thought*

*A biographical sketch of M. M. Sharif*¹⁷

Mian Mohammad Sharif (1893-1965) was a highly celebrated scholar of South Asia, and after the Partition in 1947, of Pakistan. Having studied under famous philosophers Bertrand Russell and G. E. Moore, his training in philosophy was meticulous. With this background he came to the study of Islamic intellectual history. As a scholar he contributed to scholarship on Islamic philosophy, science, and literature. As a scholarly activist, he promoted rigorously the study of philosophy. He was the first Muslim President of the Indian Philosophical Congress¹⁸ and the Founder and General President of the Pakistan Philosophical Congress. However, what made his name popular in the world of academia is the fact that he edited the two-volume reference work on Islamic intellectual history entitled *History of Muslim Philosophy*¹⁹. This was the first of its kind venture in the field of Islamic intellectual history that brought together prominent researchers from many countries to contribute detailed articles on different topics. Initiated and solicited by the Government of Pakistan, it was arguably the first comprehensive reference tool in the field and was received with great enthusiasm. Scholars did point out some issues with certain entries etc., but overall it was seen as an indispensable work for researchers. It received a critically favorable review from one of

¹⁷ This section, unless otherwise stated, has been adapted from: B. A. Dar, "M. M. Sharif"; C. A. Qadir, "Preface"; B. A. Dar, "His Dialectical Monadism" in *The World of Philosophy: Studies Prepared in Honour of Professor M. M. Sharif*, ed. C. A. Qadir (Lahore: The Sharif Presentation Volume Committee, 1965).

¹⁸ M. M. Sharif, "The Origin and Achievements of Muslim Thought," *The Aryan Path* 17 (June 1946): 213.

¹⁹ *A History of Muslim Philosophy, with Short Accounts of Other Disciplines and the Modern Renaissance in Muslim Lands*, ed. M. M. Sharif, 2 Vols. (Wiesbaden: Otto Harrassowitz, 1963-6).

the most respected scholars of Islamic Studies, George F. Hourani. He reviewed the work in two articles.²⁰ At the end of the second article, he wrote:

A group project of this magnitude is inevitably of mixed quality. But this total work comprises many valuable aids to understanding the intellectual heritage of Islam, and for this we should be grateful for the prolonged efforts of the late editor, the contributors and the publisher.²¹

In a review of the first volume, Waardenburg wrote:

Mr. Sharif acknowledges that, given the number of collaborators, the result was bound to have its deficiencies, but he expresses the hope that it may pave the way for future improvements. Particularly difficult to achieve was “complete uniformity of language, style, and points of view, and evenness of quality and length” (viii). Given these precautions, it may be said that the result, as far as it can be judged from this first volume, is encouraging.²²

Since *Muslim Thought* itself has its virtues, the importance of the two-volume work makes the case for editing this particular book by Sharif even more compelling.²³

²⁰ George F. Hourani, “A History of Muslim Philosophy by M. M. Sharif,” *Journal of the American Oriental Society* 85.4 (1965): 570-574; George F. Hourani, “A History of Muslim Philosophy, with Short Accounts of Other Disciplines and the Modern Renaissance in Muslim Lands by M. M. Sharif,” *Journal of the American Oriental Society* 88.3 (1968): 601-602.

²¹ Hourani (1968), 602.

²² Jean Jacques Waardenburg, “A History of Muslim Philosophy, Vol. I (review),” *Journal of the History of Philosophy* 5.3 (1967): 289.

²³ There are examples where authors became famous for one work, and as a result their previous works began to receive more attention. In South Asian literary history, Sir Dr. Allama Muhammad Iqbal (Sir, Dr., and Allama being academic and honorary titles given to him) is such a case. Even though he was primarily a poet, his six lectures that were later compiled with an additional chapter under the title *The Reconstruction of Religious Thought in Islam* received a lot of attention. Many academics have emphasized the importance of this text in the frameworks of philosophy and intellectual history. However, it is due to the fame of *Reconstruction* that his earlier academic work *The Development of Metaphysics in Persia* became better known. In popular literature the case of Dan Brown’s intriguing novels falls under this category. It is only after the record-breaking success of his *The Da Vinci Code* that his three earlier novels sold well.

Following is a short and point-wise summary of his educational and professional career:

Education

- Completed secondary education in Lahore in 1910
- Began his post-secondary education at the M.A.O. (Muhammedan Anglo-Oriental) College in Aligarh. Studied Persian and Arabic. Main subject: Philosophy
- Received B.A. (Bachelor of Arts) from Allahabad University
- Joined the University of Cambridge in 1914. Studied Ethics under William R. Sorley, studied Psychology under G. E. Moore, studied Logic under W. E. Johnson²⁴. Also studied under Bertrand Russell

Teaching and Research

- Appointed Senior Professor in Philosophy at the M.A.O. College in 1917
- Appointed Professor and Chairman of the Department of Philosophy from 1921 to 1929, and then from 1944-1948
- Appointed Provost of M.A.O. College (elevated to a University in 1920) from 1921 to 1924
- Became the first Muslim to be General President of the Indian Philosophical Congress in 1945

²⁴ Dar has named Sharif's Logic professor D. E. Johnson (Dar, vii). I think that it is W. E. Johnson (William Ernest Johnson), who was a logician at the University of Cambridge during the same period that M. M. Sharif was there. See J. A. Venn, "Johnson, William Ernest," *ACAD (A Cambridge Alumni Database)*, University of Cambridge, url: <venn.lib.cam.ca.uk>, accessed on March 3, 2013.

Partition of the sub-continent in 1947

- Lectured to the Pakistan Civil Service Academy from 1949 to 1951
- Served as Secretary of the Punjab University Enquiry Commission in 1951
- Served as Principal of Islamia College, Lahore from 1952 to 1956
- Founded and Presided over the Pakistan Philosophical Congress in 1954; became General President in 1955; worked as Editor-in-Chief of *The Pakistan Philosophical Journal* from 1957 to 1965
- Served as Dean of the Faculty of Arts at the University of the Punjab in 1956
- Became Director of the government-funded Institute of Islamic Culture in 1959; remained Director till 1965

Conferences and Memberships (select list)

- The only Pakistani representative in the South and South-East Asia Conference (U.S.) in 1956 sponsored by UNESCO
- The only Pakistani “active member” of the International Philosophical Conference in Venice in 1958
- Member of the American Philosophical Association (Pacific Division)
- Director of the International Federation of Philosophical Societies in Paris²⁵

For some years, a scholarship was given by the Sharif family in the name of M. M. Sharif to one graduate student in the University of the Punjab’s Department of Philosophy.²⁶

²⁵ For details on all three sections of Sharif’s biography, see the original sources.

²⁶ Interview on Dec. 28, 2012, with Professor (R) Abdul Khaliq, former Professor of Philosophy and former Head of Department at the University of the Punjab’s Department of Philosophy. He was also one

The importance of M. M. Sharif as an academic and as an historical figure who spearheaded the study of philosophy in Pakistan after its independence in 1947, so much so that he was selected by the Government of Pakistan as the editor of a first-of-its-kind reference tool in Islamic philosophy, lends enough reasons for his other works to be edited seriously.

List of M. M. Sharif's works, their translations and editions²⁷

Books

- ***A Critique of Economics* (Simla: Fine Art Printers, 1937)**
- ***About Iqbal and his Thought* (Lahore: Institute of Islamic Culture, 1964)**

[Collected Papers—I]

- **My Contact with Iqbal**
- **Iqbal's Concept of God**²⁸
- **An Unfinished Letter**
- **William James and Iqbal**
- **Iqbal's Theory of Beauty**
- **Iqbal's Theory of Art**²⁹
- ***Studies in Aesthetics* (Lahore: Institute of Islamic Culture, 1964)**

of the contributors in *A History of Muslim Philosophy*, ed. M. M. Sharif. Exact years of when this scholarship was awarded are not known.

²⁷ Derived from: B. A. Dar, "M. M. Sharif". Detailed citations have been added for some references. All items in bold, whether they are whole works or partial references to a work, are additions that I have made to the list of works of M. M. Sharif. The only list available previously was from Dar (1965). I have made substantial additions not only to the actual list of Sharif's writings, but also to the different editions and translations of his works published in Pakistan and elsewhere. The order of works is left as it was in Dar.

²⁸ Published originally in *Islamic Culture*.

²⁹ Published originally in *Iqbal*.

[Collected Papers—III]

- **Aristotle’s Theory of Tragedy**³⁰
- **Croce’s Theory of Beauty and Expression**³¹
- **Beauty—Objective or Subjective?**³²
- *Studies in Aesthetics* (Urdu version)
- *Islamic and Educational Studies* (**Lahore: Institute of Islamic Culture, 1964**)

[Collected Papers—II]

- **Islamic Studies**
- **Islamic Values**
- **Islamic Goal of Education**
- **Education and Freedom**
- **Education and Character-building**
- **Political Theory in Early Islam**
- **Islamic View of Being and Sense**³³
- *Muslim Thought: Its Origin and Achievements*³⁴
- *Muslim Thought: Its Origin and Achievements* (Urdu version)³⁵
- *National Integration and Other Essays* (**Lahore: Institute of Islamic Culture,**

1965) [Collected Papers—IV]

³⁰ Published originally in *Urdu*.

³¹ Derived from his articles in *Muslim University Journal, Philosophical Quarterly* and *Philosophical Journal*.

³² Published originally in *Philosophical Quarterly*.

³³ Published originally in *Iqbal*.

³⁴ See next section entitled “Muslim Thought: *The Text and its History*”. It is devoted specifically to *Muslim Thought* and its history, translations and editions.

³⁵ See next section entitled “Muslim Thought: *The Text and its History*”. It is devoted specifically to *Muslim Thought* and its history, translations and editions.

- **Melancholia**
- **We and Our Psychology**
- **Good Life and Citizenship**
- **Conditions of Social Growth**
- **National Integration**
- ***In Search of Truth* (Lahore: Institute of Islamic Culture, 1966)**
[Collected Papers—V]
 - **Neo-Platonism**³⁶
 - **The Significance of Question**
 - **Free-Will**³⁷
 - **Nietzsche’s Ethical Doctrine**³⁸
 - **The Nature of Time**
 - **Dialectical Materialism**³⁹
 - **Philosophical Interpretation of History**⁴⁰
 - **Dialectical Monadism**
- ***A History of Muslim Philosophy* [edited], 2 Vols. (Wiesbaden: Otto Harrassowitz, 1963-6), with the following contributions from Sharif**
 - **“Introduction by the Editor”, Vol. 1, 1-14**
 - **“Greek Thought”, Vol. 1, 75-111**
 - **“Philosophical Teachings of the Qur’an”, Vol. 1, 136-155**

³⁶ Published originally in *History of Philosophy, East and West*.

³⁷ Published originally in *Muslim University Journal*.

³⁸ Published originally in *Muslim University Journal*.

³⁹ Published originally in *Philosophical Quarterly*.

⁴⁰ Published originally in *Studies in Philosophy of History and Social Dynamics*.

- “**Philosophical Influence from Descartes to Kant**”⁴¹, Vol. 2, 1381-1387
- “Conclusion”, Vol. 2, 1656-1662

Book Chapters

- “Dialectical Monadism⁴²,” *Contemporary Indian Philosophy*, 2nd edition, ed. S. Radhakrishnan & John H. Muirhead (London: G. Allen & Unwin, 1952). Originally published in 1936
- “Philosophical Interpretation of History,” in *Studies in Philosophy of History and Social Dynamics*, ed. B. A. Dar (Lahore: Pakistan Philosophical Congress, 1957)
- “Neo-Platonism,” *History of Philosophy, Eastern and Western*, ed. S. Radhakrishnan (London: Allen & Unwin, 1952-3)

Journal Articles

- “Iqbal’s Conception of God,” *Islamic Culture* 3 (1942)⁴³
- “Dialectical Materialism,” *Philosophical Quarterly*
- “Classicism and Romanticism,” *Philosophical Quarterly*
- “Individualism in Economics,” *Philosophical Quarterly*
- “Hedonism in Economics,” *Muslim University Journal*
- “Croce’s Theory of Fine Arts,” *Muslim University Journal*

⁴¹ Dar attributes the entire chapter, instead of just the relevant section, to Sharif. He cites the title of the chapter—“Influence of Muslim Thought on the West, from Descartes to Kant”—to be by Sharif (Dar, x).

⁴² Spelled as Mondaism (Dar, x).

⁴³ See Muhammad Riaz, “Allama Iqbal in 50 Volumes of the ‘Islamic Culture’,” *Iqbal Academy Pakistan*, url: <<http://www.allamaiqbal.com/publications/journals/review/apr89/8.htm>>, accessed on March 3, 2013.

- “Nietzsche’s Ethical Doctrine,” *Muslim University Journal*
- “The Origin and Achievements of Muslim Thought,” *The Aryan Path*
17 (June 1946): 213-218
- “The Cultural Background of Islamic Thought,” *The Aryan Path*
- “Is Beauty Objective or Subjective?” *Philosophical Quarterly*
- “Two Points of Croce’s Theory of Aesthetics,” *Philosophical Journal*
- “Free Will,” *Muslim University Journal*
- “The Economic Theory of Disvalue,” *Philosophical Journal*
- “Shi‘r mein ibham,” [Urdu] *Sahifa*
- “Adab aur takhayyul,” [Urdu] *Sahifa*
- “The Differentia of Tragedy according to Aristotle,” *Urdu*
- “Jamal ma‘ruzi hai ya mawzu‘i?” [Urdu] *Iqbal*, October 1952
- “The Genesis of Iqbal’s Aesthetics,” *Iqbal*, July 1952
- “Ta‘limat-i Islamiyyah,” [Urdu] *Iqbal*, April 1953
- “Iqbal’s Theory of Art,” *Iqbal*, January 1954
- “Islami falsafa-i ta‘lim,” [Urdu] *Iqbal*, October 1955
- **“Islam and Spiritual Values,” *Philosophy East and West* 9.1-2 (1959): 41-43**
- “Muslim Philosophy and Western Thought,” *Iqbal* **8.1 (Jul. 1959): 1-14**
- “Islamic View of Being and Sense,” *Iqbal*, July 1960
- **“Iqbal on the Nature of Time,” *Iqbal Review* 1.3 (1960): 35-40**
- “Mahiyyat-i zamanah,” [Urdu] *Iqbal*, April 1962

Conference Papers

- “The Logical Significance of Question,” read in the Pakistan Philosophical Congress
- “Comedy,” read in the Indian Philosophical Congress
- “Conditions of Social Growth,” Presidential Address delivered at the Pakistan Philosophical Congress session held at Karachi, 1955

Editions, Reprints, & Translations of Sharif's Works Not Mentioned in the 1965 Bibliography by Dar

- ***Islamic and Educational Studies* (Lahore: Institute of Islamic Culture, 2010)**
- ***About Iqbal and His Thought* (Lahore: Institute of Islamic Culture, 1976)**
- ***Three lectures on the nature of tragedy: being an examination of Aristotle's Theory of Tragedy* (Lahore: Asiatic Publishers, 1947)**
- **w/ A. H. Kamali, *Allama Muhammad Iqbal, a philosopher poet of Islam: three selected articles* (Lahore: Bazm-i Iqbal, 2002)**
- ***Beauty and Expression* (Lahore: M. Ashraf, 1949)**
- ***Beauty; Objective or Subjective* (Lahore: Asiatic Publishers, 1947)**
- ***Jamaliyat ke teen nazariye* [Urdu] (Lahore: Majlis-i Taraqqi-i Adab, 1963)**
- **“Islamic View of Being and Sense,” in *Sinn und Sein: ein philosophisches Symposium*, ed. Richard Wisser (Tübingen: Max Niemeyer Verlag, 1960)**
- **“Muslim Philosophy and Western Thought,” *Kant-Studien* 54 (1963): 188-197**

- *Ta'rikh-e falsafa dar Islam* [Persian translation of: *A History of Muslim Philosophy*, 2 Vols.], tr. Nasrullah Purjavadi (Tehran: Markaz-e Nashr-e Danishgahi, 1983). [Also printed: Karachi: Royal Book Co., 1983]
- *Historija islamske filozofije* [Croatian translation of: *A History of Muslim Philosophy*, 2 Vols.], tr. Hasan Susic (Zagreb: August Cesarec, 1990)
- *Sejarah Islam Dari Segi Falsafah* [Malay translation of: *A History of Muslim Philosophy*, 2 Vols.], tr. Khidmat Terjemahan Nusantra (translation service) (Kuala Lumpur: Ministry of Education, Malaysia, 1994)
- *Para filosof Muslim* (Bandung: Mizan, 1998)
- *Falsafah-yi Iqbal* [collection of articles published in *Iqbal*] (Lahore, Bazm-i Iqbal, 1961)
- “Islam and Spiritual Values,” *Philosophy and Culture—East and West; East-West philosophy in practical perspective*, ed. Charles A. Moore (Honolulu: University of Hawaii Press, 1962)

Forewords, and other writings

- “Foreword,” in Mahmud Brelvi, *Islam in Africa* (Lahore: Institute of Islamic Culture, 1964)
- “Foreword,” in M. Saeed Sheikh, *Studies in Muslim Philosophy* (Lahore: Pakistan Philosophical Congress, 1962). [Published again: Lahore: S. M. Ashraf, 1974]

- “Foreword,” in M. Saeed Sheikh, *Islamic Philosophy* (London: Octagon Press, 1982)
- “Address of Welcome,” *Pakistan Philosophical Session: Ninth Session* (Jan. 2-5, 1962): 1-2
- “Foreword,” in Muhammad Iqbal, *The Development of Metaphysics in Persia: A Contribution to the History of Muslim Philosophy* (Lahore: Bazm-i Iqbal, 1959)

Articles written about M. M. Sharif

- *The World of Philosophy*, ed. C. A. Qadir (Lahore: The Sharif Presentation Volume Committee, 1965)
- C. A. Qadir, “M. M. Sharif 1893-1965,” *Proceedings & Addresses of the American Philosophical Association* 40 (1966): 125-127.
- Richard V. de Smet, “The Philosophy of Professor M. M. Sharif,” in *Philosophical Activity in Pakistan 1947-1961* (New York: Fordham University, 1962). [Also published in *International Philosophical Quarterly* 2.1 (1962): 110-184; article pages 176-180]

Muslim Thought: *The Text and its History*⁴⁴

There are six editions of the original English text, itself derived from a short article. It has been translated into five different languages—Arabic, Persian, Urdu, Malay and

⁴⁴ This thesis is presenting for the first time a history of the publication of *Muslim Thought*.

Indonesian. I have been able to consult most of these editions and the translations, and in such cases only have I included descriptions in square brackets after the references. The author in all these cases is M. M. Sharif.

Original article

- “The Origin and Achievements of Muslim Thought,” *The Aryan Path* 17 (June 1946): 213-218. [26 paragraphs of text preceded by a biographical note on Sharif]

First edition in English

- *Muslim Thought: Its Origin and Achievements* (Lahore: Sh. Muhammad Ashraf, 1951).

Other editions of the English text

- *Muslim Thought: Its Origin and Achievements* (Lahore: Sh. Muhammad Ashraf, 1959). [Reprint of the 1951 edition]
- *Muslim Thought: Its Origin and Achievements* (Lahore: Institute of Islamic Culture, 1980). [A revised edition that made minor textual modifications in the previous edition. Base-text for this thesis]
- *Muslim Thought: Its Origin and Achievements* (Lahore: Kazi Publications, 1987). [The only reference I have found of this is on the internet, and it is suspect]

- *Muslim Thought: Its Origin and Achievements* (New Delhi: Adam Publishers, 2007). [I have not seen this edition in physical form]
- *Muslim Thought: Its Origin and Achievements* (Lahore: Institute of Islamic Culture, 2012). [Reprint of the 1980 edition]

Arabic Translations

- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: Maktabat al-Anjilu al-Misriyah, 1962). [The first Arabic translation, with some additional notes, and many mistakes such as “Renen” (14) instead of Renan and “Mocdonald” (14) instead of “Macdonald”]
- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: Maktabat al-Nahdah al-Misriyah, 1966). [Translation with some additional notes on some pages. Mistakes exist, such as “Adlard” (67) instead of Adelard and “De Revolution” (68) instead of De Revolutionibus]
- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: 1971).
- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: 1974).
- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: Maktabat al-Nahdah al-Misriyah, 1975). [Includes some additional translator's notes providing some insights into the text. Many spelling mistakes, including “Febanoce” (114) instead of Fibonacci and “de Beor” (124) instead of de Boer]

- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: Maktabat al-Nahdah al-Misriyah, 1978).
- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: 1984).
- *al-Fikr al-islami: manabi'uhu wa-atharuhu*, tr. and notes Ahmad Shalabi (Cairo: Maktabat al-Nahdah al-Misriyah, 1986). [Some textual notes. Mistakes exist, such as “Jacob of florance” (79) instead of Jacob of Florence and “Eucyclopaedia Britannice” (103) instead of Encyclopaedia Britannica]

Persian translation

- *Manabi'-e farhang-e islami*, tr. and notes S. Khalil Khaliliyan (Tehran: Daftar-e nashr-e farhang-e islami, 1980). [Few textual notes elaborating on the text. Comparatively better notes with more relevant information than the ones in Arabic editions]

Urdu translations

- *Musalmanon ke afkar* (Lahore: Majlis-e Taraqqi-e Adab, 1963). [Plain translation without any notes]
- *Musalmanon ke afkar* (Lahore: Majlis-e Taraqqi-e Adab, 2006). [Reprint of the 1963 edition]

Malay translation

- *sumbangan islam kepada dunia* (Kota Bharu, Malaysia: Sharikat Dian Sdn., 1970). [Translation without preserving the original paragraphing. Very few notes]

Indonesian translations

- *Alam fikiran Islam: peranan ummat Islam dalam pengembangan ilmu pengetahuan*, tr. Fuad M. Fachruddin (Bandung: Diponegoro, 1970)
- *Alam fikiran Islam: peranan ummat Islam dalam pengembangan ilmu pengetahuan*, tr. Fuad M. Fachruddin (Bandung: Diponegoro, 1979)

None of these translations try to provide complete citations for references that are already mentioned by Sharif. They do not state either the author, or the publisher, or the year of publication, or other pieces of information. None of the translations try to find out from where certain quotations were taken. And since many quotations are not traced, they are copied verbatim with the mistakes that were there in the original work.

The thesis will use these abbreviations for the editions of *Muslim Thought*:

Sa = *Muslim Thought: Its Origin and Achievements* (Lahore: Sh. Muhammad Ashraf, 1951)

Sb = *Muslim Thought: Its Origin and Achievements* (Lahore: Sh. Muhammad Ashraf, 1959)

Sc = *Muslim Thought: Its Origin and Achievements* (Lahore: Institute of Islamic Culture, 1980)

Sd = *Muslim Thought: Its Origin and Achievements* (Lahore: Kazi Publications, 1987)

Se = *Muslim Thought: Its Origin and Achievements* (New Delhi: Adam Publishers, 2007)

Sf = *Muslim Thought: Its Origin and Achievements* (Lahore: Institute of Islamic Culture, 2012)

Sg = *Muslim Thought: Its Origin and Achievements* (Edited, with Notes and Introduction, by Ateeb Gul, M.A. Thesis, Boston University, 2013. Unpublished)

The virtues of Muslim Thought

This text is highly concise and to-the-point. This is why the whole text is roughly a hundred pages. Despite its short size, it is filled with historical facts. On almost every page there either is a direct quotation, an historical piece of information, or a concise and well-informed analysis that is supported by similar facts, or all three. The cases where Sharif seems to give neither facts nor analyses but rather an opinion, are few, and even they are very important as they help us categorize the text as something other than solely academic.⁴⁵ The advantage of such a work is that it serves as a good introduction to the field. If a new reader wants to get an overall historical framework of the field, such introductions become indispensable. *Muslim Thought* serves this purpose.

Another purpose that it serves is that a wide readership can read it since it is of small size, with easy English, minimum jargon, and with a great amount of relevant

⁴⁵ Sharif made statements like: “But the West, being geographically nearer the Islamic countries than India and being in the Middle Ages on a very much lower spiritual plane, was simply flooded by Muslim philosophy and science”; “In the early part of the seventh century C.E., a new spring of thought burst forth in the deserts of Arabia and soon swelled into a sea seething with life. It was Islam. It infused into men a spirit the like of which history had never known before” (Sg, 33). These statements have clear dramatic overtones.

information. With continually increasing interest in Islamic Studies, a concise, easy, beginner's introduction to Islamic intellectual history can be very valuable.

Another feature of the text is that it touches only on the most important facets of the field—important figures, important numbers, and important dates. This is why even with such a great amount of information included in a few pages, the reader does not feel an information overload. Everything seems highly relevant.

The text makes it a point to emphasize those particular pieces of historical information that connect the Islamic civilization with the Western civilization, essentially breaking down this dichotomy. Hence, there is an activist aspect to this work. It makes a point to tell the readers that Islamic and Western intellectual histories are not separate; they are intertwined in myriad different ways.

This new edition of the book will give the readers—especially undergraduate students—an insight into how scholarship progresses. How is it that previously uncontested historical truths become obsolete and get replaced by new narratives grounded in new facts and interpretations?⁴⁶

Sharif himself summarizes his motives when he writes in his Preface:

In the text I have mentioned only the most illustrious writers, their most outstanding works on philosophy or science and the most lasting aspects of their systems. Thus within the limits I have imposed upon myself to keep this work small in size and handy, I have not been able to say even a word about hundreds of other famous writers and their works.⁴⁷

⁴⁶ For example, see Endnotes 35.6, 62.5, and 120.6.

⁴⁷ Sg, 30.

Sharif is therefore the editor simultaneously of a multi-volume reference work on Islamic philosophy and the author of a short and concise account of Islamic intellectual tradition. All the aforementioned facts—M. M. Sharif’s educational background, the list of Sharif’s works and their reception, the virtues and the reception of *Muslim Thought*, and the mistakes in the previous translations and editions of *Muslim Thought* which are discussed in the next section—add up to make a compelling case for editing *Muslim Thought*.

***Mistakes and shortcomings in previous editions and translations,
and improvements made in this thesis***

No previous edition has even attempted to find out the references for all the quotations and facts in the book. They have confined the references to the extent to which Sharif himself has confined them. They hardly add anything in terms of references.

For example, Sharif quotes from Hitti’s *History of the Arabs*, 315.⁴⁸ Instead of finding out which edition of Hitti’s *History* has this quotation on 315, the different editions and translations of *Muslim Thought* keep this reference as it is. Similar is the case with Deutsch’s quotation.⁴⁹ All editions and translations either copy or translate the quotation without giving either the full name of the author, or the reference of the source, or the corrected quotation. This thesis has identified the author as Emanuel Oscar Menaham Deutsch, the source of the quotation as an article entitled “Islam”, and the correct quotation, with which many liberties had been taken in *Muslim Thought*.

⁴⁸ Sg, 47.15.

⁴⁹ Sg, 37.12.

Similarly, no edition or translation identifies the quotation on Sg, 35.8-12. This thesis has found the quotation to be by John William Draper from his *A History of the Intellectual Development of Europe* (1864)—again, many liberties were taken with the quotation in *Muslim Thought*, which have been corrected and pointed out. In the same vein, no edition or translation has identified “Professor Ballasteros” and “Professor Ribera”.⁵⁰ This thesis has identified them as Antonio Ballesteros Beretta (1880-1949) and Julián Ribera (1858-1934) respectively—and this discovery led to the correction of the spellings of Ballesteros (spelled as Ballasteros in all previous editions).

Sharif mentions a quotation from *History of Philosophy* by George Henry Lewes.⁵¹ The Malay, Urdu and Persian translations do not spell out his name in the original, but the Arabic translations of 1962⁵², 1966⁵³, 1975⁵⁴ and 1986⁵⁵ do: Lewis. Had an attempt been made to check the quotation for its accuracy, the name of the author would have been corrected to Lewes. This thesis has made an attempt to find out the possible and probable references for all the quotations and factual information, and it has mostly succeeded. There are very few facts and even fewer quotations for which references have not been found. And even in most of these cases, we have partial references or leads to investigate further, even if we do not have the complete information. Quotations with inaccuracies have been corrected in the text, with changes noted in the Endnotes.

⁵⁰ Sg, 48.15-16.

⁵¹ Sg, 86.5-8.

⁵² 123.

⁵³ 98.

⁵⁴ 140.

⁵⁵ 121.

The Introduction to this thesis has (a) made additions to the list of works by Sharif (the only previous bibliography was published in 1965); (b) traced the editions, translations and reprints of Sharif's works for the first time; (c) provided a comprehensive list of the translations and editions of Sharif's *Muslim Thought* for the first time.

For the first time in the history of the publications of *Muslim Thought*, this thesis presents a glossary of select names, places and words in the book along with their dates and relevant information where necessary. The glossary includes only those names, places and words in the book the meaning and the context of which are not self-evident. Also, only relevant dates and facts are mentioned to support the entries that help in a better understanding of the text. The entries have been arranged alphabetically.

This thesis has also standardized the text. It has preserved the aesthetic autonomy of the text by not introducing footnote numbers in the body of the text but rather using page numbers and line numbers for citations in the Endnotes. As a result, the thesis has also standardized the text for future references.

It is the first time in the history of English publications in Pakistan by Pakistanis that such editorial work has been done. M. Saeed Sheikh⁵⁶ made a similar attempt when he edited Sir Allama Muhammad Iqbal's *The Reconstruction of Religious Thought in Islam*.⁵⁷ It was highly successful in giving most of the references and in pointing out most authors from whose works Iqbal benefited. However, it did not standardize the text,

⁵⁶ M. Saeed Sheikh served as Director of the Institute of Islamic Culture, Lahore, as well.

⁵⁷ Muhammad Iqbal, *The Reconstruction of Religious Thought in Islam*, ed. M. Saeed Sheikh (Lahore: Institute of Islamic Culture, 2006).

which is why there is no uniform way to refer to something in the book. Also, it did not discuss a comprehensive history of the publication of *Reconstruction*, and as a result it did not point out the fact that there are major substantial variations in the different editions of the text. This thesis has decided not to include textual variations, but the reason here is that they are small and substantially unimportant. That is not the case with *Reconstruction*.

Editorial decisions: Preserving the aesthetic autonomy of the text

All editorial decisions taken during the course of this thesis fall under one broad objective—to preserve the aesthetic autonomy of the text. I argue that just as there is a strong case made for preserving the textual autonomy of a work (the words or phrases the author has used, the punctuation, and so on), there is a strong case to be made for preserving the aesthetic autonomy of the text as well. The principle that guides this objective is that the reader should have minimum disturbance or distraction while reading. Superscript footnote numbers in each line, footnotes themselves on the bottom of the page, and even the superscript numbers in the text that point to notes at the end—all these are distractions; especially if the author himself has chosen not to overload each page with these items. Reasonable conjecture on the part of the editor regarding authorial intention makes the case for the preservation of aesthetic autonomy compelling.

In this regard, the first decision I took, and the most radical one in the thesis, is to *remove* the diacritics from the text. Sharif had used macrons and under-dots that help in the Romanization of Arabic names. There are two reasons why I took this decision. One,

a text with so simple language and point-by-point factual representations with a very clear argument that unfolds naturally seemed to get bogged down by the use of diacritics. It felt as if the diacritics were making it difficult for the reader by creating distractions. Second, I argue that those who read the text who know Arabic and have training in Islamic or Near Eastern Studies will already know the correct pronunciation, for example, of al-Razi. And those who do not have training in Arabic will find these diacritics in almost every line of the text meaningless. Getting rid of these diacritics is an attempt to make the reading experience as smooth as possible, since the very nature of this text dictates that it is a book designed to be read widely and easily, a text that wants to make a broader point without getting bogged down with details that do not necessarily affect that broader point. This is by far the most radical editorial decision taken in this thesis.⁵⁸ In any case, I have included all names and terms that were marked with diacritics by Sharif at the end of the thesis as an appendix. By removing the diacritics from the text and including the names and terms with diacritics at the end of the thesis, I think I have maximized the benefits and minimized the losses of my editorial decision.

Another editorial decision involved the references in the Bibliography. This is the first time that an edition of this work has made an attempt to locate all references to the quotations in the book, as well as credible citations to all important pieces of historical information. In the first stage, I made attempts to find a pre-1951 source for the quotations and historical facts. If no such reference turned up in my research, in the

⁵⁸ Carl Ernst, a prominent scholar of Sufism or Islamic Mysticism, does not use diacritics in *The Shambhala Guide to Sufism* because it is meant for a wide readership and, in my view, for easy reading. Carl Ernst, *The Shambhala Guide to Sufism* (Boston: Shambhala Publications, 1997).

second stage I tried to locate any reference, and not just one that was published before 1951. This was done to make sure that there is some level of academic credibility attached to all facts and analyses, even if it does not come from a pre-1951 source.

I have also included explanatory notes where I deemed that they would prove helpful. Some notes provide revisions to facts and to analyses in *Muslim Thought*.

With regard to the representation of the Bibliography, I decided to combine the Chicago Manual of Style (with minor modifications) with another method that I found in a monograph published by Brill.⁵⁹ In this book the bibliography mentions the name of the author as used in the text, followed by the title of the work, followed by the sign ‘=’, followed by the complete reference. I have simplified it even further by removing the title. In the Endnotes I refer to a book by the name of the author, or the title of the book, or in select cases by the abbreviation of the name of a website. In the Bibliography, I put one of these items and equate it with the full reference that it represents.

The editorial decision about how to represent the Endnotes was relatively easy. The easiest way to refer to an item in the text was to point out the relevant page number and the line number. For example, if a quotation ends on the 17th line of page 10, the Endnotes will put in bold **10.17**, and in front of it the citation and the notes.

⁵⁹ Sarah Stroumsa, *Freethinkers of Medieval Islam: Ibn al-Rawandi and Abu Bakr al-Razi and their Impact on Islamic Thought* (Leiden: Brill, 1999). One exception to this style in this thesis is the reference to EI2.

Preface

In my conversation with friends I have often been asked if there is such a thing as Muslim thought. To dispel such an appalling ignorance a good deal of literature should be poured into this country. This work represents my contribution towards that aim. Some parts of it come from the address I delivered as General President of the Twentieth Session of the Indian Philosophical Congress held at Trivandrum in December 1945. They were later published in a very much modified form in *The Aryan Path*. I owe my thanks to the Secretary of the Indian Philosophical Congress, and the Editor of *The Aryan Path* for permitting me to incorporate them in the present work.

In the text I have mentioned only the most illustrious writers, their most outstanding works on philosophy or science and the most lasting aspects of their systems. Thus within the limits I have imposed upon myself to keep this work small in size and handy, I have not been able to say even a word about hundreds of other famous writers and their works. Besides, for the same reason, I have given no account of the philosophy of any individual thinker among the rationalist scholastics, orthodox scholastics and mystics, except al-Ghazzali. Such expansions I have left for some other occasion.

My indebtedness to such Orientalists and writers on medieval history and philosophy as Jurji Zaidan, Y. Palacios, Goldziher, M. De Wulf, Renan, Macdonald, O'Leary, Hitti, especially the last three is overwhelming, and I claim no originality for what I have written, though I own responsibility for the many mistakes that I might have made. I only claim to have endeavoured to satisfy an urgent need, and hope that in

Chapter 4 I have succeeded in making clear some ideas that might have been left somewhat vague in other writings.

M. M. Sharif

Chapter 1

THE ORIGIN OF MUSLIM THOUGHT

(1) Introductory

About six hundred years before the Christian era, philosophical thought took its birth in four different centres of civilisation in the world: China, Persia, India and Greece. Of these four different springs of thought, two, Indian and Greek, developed into mighty rivers. The former of these, after a brief shrinkage, has again started flowing and seems to have a great destiny. But the latter, after fertilising Greece, Alexandria, Rome and Syria for more than fifteen centuries, became more or less merged into Muslim thought and then, in the tenth century C.E., the world was left with only two great currents of thought, Indian and Muslim.

It is but natural that geographical proximity should lead the flow of water from a higher to a lower place. This analogy also holds good in the case of thought. India was on the same intellectual plane as, and in certain respects on a higher plane than, Islamic countries in the eighth and ninth centuries and, therefore, streamlets naturally ran out or distributories were dug out to take modes of thought from India to the world of Islam, and later, when these countries rapidly rose to the highest cultural plane yet reached, back from the

world of Islam to India. But the West, being geographically nearer Islamic countries than India and being in the Middle Ages on a very much lower spiritual plane, was simply flooded by Muslim philosophy and science.

In the early part of the seventh century C.E., a new spring of thought burst forth in the deserts of Arabia and soon swelled into a sea seething with life. It was Islam. It infused into men a spirit the like of which history had never known before. Persia and Byzantium, then the two greatest empires, tried to stem its rising tides, but in the struggle were themselves swept away, and by the first centennial of its founder's death, it spread from the Bay of Biscay to the Indus and the confines of China and from the Aral Sea to the upper cataracts of the Nile, over more than half of the then known world, wielding an empire greater than the Roman Empire at its zenith. This was an empire which, in spite of vast changes in its boundaries and in spite of being now closely, now loosely, knit, saw its rise till the third quarter of the sixteenth century. It could boast of one language, Arabic, as its *lingua franca*. It had towns with a prosperous population of ten to forty lacs of inhabitants, with tens of thousands of garden villas, lavishly furnished with magnificent paintings, rich tapestries, curtains and chandeliers, with thousands and thousands of public baths, strongly macadamised roads and solidly paved lanes lighted with public lamps. It possessed the largest navy in the medieval world and had mastery over the Atlantic off the coast of Spain and West Africa, the Mediterranean Sea, the Red Sea, the Indian Ocean, the China Sea and the Pacific Ocean, and kept a

mercantile fleet that made monthly voyages from the Atlantic to the Pacific, touching at all the important ports, including those of Malabar on the way. It ran industries that manufactured highly finished goods, such as leather and metallic goods, carpets, glass, jewellery and cotton, silk and woollen fabrics admired both in the East and the West, with factories spreading from Persia to the banks of the Danube on the one side and the heights of the Pyrenees on the other. In leather, cotton and silk fabrics alone, several European names owe their origin to the Muslims. Such are, for example, morocco, cordovan, muslin (from Mosul), cotton (from Ar. *qutn*), baldachin (originally a stuff made in Baghdad), damask (from Damascus), fustian (from Fustat), taffeta (from the Persian *taftah*), tabis (from Attabic, the name of a silk-manufacturing family in Baghdad). It carried on trade by sea-routes from Korea, Japan and the Philippines to Spain and France, and, indirectly, through Jewish and European tradesmen, to England, Sweden and Norway and by land-routes from North Africa to the heart of Siberia. It was the first to manufacture gunpowder, an invention as important in the Medieval Ages as the atomic bomb today, and to blazon shields of heraldry and coats of arms and use them in warfare. Its men dived deep into the sea to bring out pearls, and penetrated low into the earth to dig out gold, silver, lead, iron, antimony, mercury, marble, turquoise, rubies, lapislazuli, azurite, kaoline, naphta, cornelian, sulphur, asbestos and tar. They spread a “veritable network” of canals in the lands, through which pass the Euphrates, the Tigris and the Nile, and gave to Europe the taste for spices,

scents, ginger, sugar and coffee. They set ideals of civic life, home life, hygiene, agriculture, architecture, irrigation, calligraphy, music, dress, food, and games for the whole of Europe. And all this centuries before Columbus went westward in his search after the Queen of the East and sighting the shores of America shouted with joy “Indiana! Indiana!”; centuries before Vasco da Gama could reach the land of Columbus’s dreams, by the calamitous help of Ahmad, an Arab sailor of repute, whom he entertained as his honoured guest and guide throughout the voyage; and centuries before the time “when there was not” yet “so much as one public lamp in London” and the streets of Paris were yet unpaved, when “the dwellings of the rulers of Germany, France, and England ... were” still “scarce better than stables—chimneyless, windowless, ... with a hole in the roof for the smoke to escape,” and when the priests of Europe deemed it a great virtue not to bathe and change for months. 5 10

However, we are not just now concerned with these aspects of the life of the Muslims in their days of glory. For our present purpose what we want to study, and that too very briefly, is their contribution to the development of thought. 15

(2) The Islamic Basis

The remarkable impetus that the spirit of Islam gave to knowledge came direct from the Qur’an and the sayings of the Prophet of Islam, and this is a fact that the Christian writers of history generally ignore. 20

Let us see what the Qur'an says in this connection. In the very first verses revealed, it commands Muhammad to read in the name of the Beneficent and the Most Bountiful Who taught man the use of pen and gave him the knowledge of things (96:1-5). It advises him to pray: "O my Lord! advance me in knowledge" (20:114). It says that those who have knowledge are not on an equality with those who have knowledge (39:9), that those who do not observe and understand are worse than cattle (7:179), that those who do not hear, understand and speak are the vilest of animals in God's sight (8:22), that the details of revelation are given to those "who have knowledge" (6:98)—"who have understanding" (6:99), that "whosoever has been given knowledge has indeed been given abundant good" (2:269), that crown is deserved by those who, in the eyes of God, have preference over others and have physical strength coupled with knowledge (2:247), and that of all things it is knowledge by virtue of which man is superior to angels and is the vicegerent of God on earth (2:30f.). It teaches men to reflect on the phenomena of Nature, the creation of the heavens and the earth, the changes of seasons, the cycle of day and night, the sea, the clouds, the winds, the sun, the moon, the stars and the laws they imply. It bids them to ponder over the mysteries of birth and death, growth and decay, of men and nations, and to contemplate sunsets, dawns, hills, streams, ravines, vineyards, gardens of palms, cattle going out to pasture and returning home, the canopy of the starry heavens, the ships sailing on the sea, and the beauties of the soul more than those of the sense (2:164; 3:199; 10:6; 13:2f.;

106:3f.; 16:78f.; 40:67; 35:5). It declared knowledge to be of three degrees in the ascending scale of certitude: (1) knowledge by inference, (2) knowledge by observation and (3) knowledge by personal experience (69:50; 102:5f.)—a distinction which may be exemplified by my certitude of: (1) fire always burns, (2) it has burnt John’s fingers, and (3) it has burnt my fingers. 5

Deutsch recognises this teaching of the Qur’an in these words: The Qur’an is “a book by the aid of which the Arabs ... came to Europe as kings ... to hold up ... the light to Humanity ... while darkness lay around; to raise up the wisdom and knowledge of Hellas from the dead, to teach philosophy, medicine, astronomy, and the golden art of song to the West as well as to the East, to stand at the cradle of modern science, and to cause us late epigoni for ever to weep over the day when Granada fell.” 10

Coming to the sayings of the Prophet, “The first thing created,” says he, “was reason,” and “God has not created anything better than reason”; “He who leaves his home in search of knowledge walks in the path of God”; therefore, 15
 “To seek knowledge is the duty of every Muslim man and every Muslim woman.” “Acquire knowledge,” he exhorts; “it enables the possessor to distinguish right from wrong; it lights up the path to Heaven. It is our friend in the desert, our security in solitude, our companion when friendless. It guides to happiness, it sustains in adversity. It is an ornament among friends and an 20
 armour against enemies.” “Seek knowledge from the cradle to the grave”; again, “Acquire knowledge, because he who acquires it in the way of the Lord

performs an act of piety; he who speaks of it praises the Lord; who seeks after it adores God; who dispenses instruction in it bestows alms; and who imparts it to others performs an act of devotion to God.” “The angels offer their wings to the seeker of knowledge,” and “He dies not who seeks knowledge.”

A few sayings in which the Prophet compares knowledge with devotion are: 5
 “To listen to the words of the learned and instill into others the lessons of science is better than religious exercises”; “The preference of the learned man above the devotee is as my preferment above the lowest of you”; “Whosoever reveres the learned reveres me”; “The ink of the scholar is more holy than the blood of the martyr”; “An hour’s contemplation and study of God’s creation is 10
 better than seventy years’ prayer”; “To listen to the instructions of science and learning for one hour is more meritorious than standing up in prayer for a thousand nights.”

With such teaching of the Qur’an and the Prophet of Islam, it is no wonder that there was a “meteoric rise” in the intellectual activities of Muslims and that 15
 they drank deep at all the fountains of knowledge, the brinks of which they reached in their forward march to progress.

The first of these fountains were those that arose from the very soil of Arabia herself, the Qur’an and the *Hadith*. These were, so to say, the mother’s sacred breasts on which Muslim thought was fed from its infancy. The Qur’an 20
 gave Muslims a new ethics and a new political theory and a new philosophy—a practical ethics, a democratic politics and a monotheistic philosophy. Though it

gave a clear-cut monotheistic explanation of the universe in its broad outline, it left the details of this conception open to interpretation. All universality ignores particularity and a religion that claims to be universal inevitably has to do so. There is one God, but is He transcendent or immanent, or both? He is called by different names, but are these the names of His essential attributes, or of the attributes metaphorically so called? He is eternal, everywhere and nowhere, but what kind of relation has He to time and space? From Him all actions flow, though men are themselves responsible for their doings, but how is that possible? Such are the questions which the Qur'an left for human intellect to solve. To be a Muslim it was enough to be monotheistic, whatever the details of one's conception of monotheism. Hence the differences in this conception even among the most orthodox of Muslim thinkers. The Qur'an did indeed chain and fetter it. Just as Nature gives organisms a start with some inborn impulses and then leaves them to develop in suitable environment, even so were the seeds of Muslim thought supplied by the Qur'an and the *Hadith* and its growth was simply the germination and fruition of these in the congenial soil of some pre-existing modes of thought.

(3) Other Sources

The rest of these fountains of knowledge at which Muslims drank were in Syria, Egypt and Persia. Before the advent of Islam, Hellenistic philosophy had

passed from Greece to Alexandria and from there it had spread to Syria. The Neo-Platonism of Plotinus (d. 296 C.E.), combined and fused with Aristotelian elements of Porphyry who taught at Rome towards the end of the third century, was taken up by Christians of Alexandria, prominent among them being Clement and Origen. Both of them tried to adapt contemporary philosophy with Christian theology. But local intrigue soon compelled Origen to leave Alexandria for Palestine, where he founded a school at Caesarea on the lines of the one at Alexandria. Shortly after that (in about 270 C.E.) Malchion founded a school at Antioch on the same model, and about fifty years later a similar school was established in the midst of a Syriac-speaking community at Nisibis, which was afterwards removed to Edessa and then in the middle of the fifth century brought back to Nisibis.

A little earlier a controversy had started between the Orthodox Church which held the Alexandrian theory of the eternal fusion of the Divine and human elements in Christ and those associated with the school of Antioch headed by Nestorius, Bishop of Constantinople, who stressed the complete humanity of Christ with a temporary union with God after birth. Before this controversy the general philosophical belief was that there was God the Father, the Source, the First Cause of all things, and the Son or Logos or the created spirit was an emanation from Him and therefore God, the Son. Also it was believed, under the influence of Alexander of Aphrodisias (about 200 C.E.), that in every soul and so in that of Christ, besides the power of thinking (material

intellect), there was an *active intellect*, which too was an emanation from the Deity. The second emanation was supposed to be an emanation of the first emanation. This controversy was really about the relation between the first emanation, the Logos, and the second emanation, the active intellect.

The Nestorians *denied the second emanation and believed that the first emanation entered the body of the human Christ temporarily after his birth.* 5
 This controversy ended in the condemnation by the General Council at Ephesus in 431 C.E. of Nestorius and his followers as heretics, their gradual banishment from Antioch and the surrounding Greek-speaking Syria, their repudiation of the Orthodox Church and establishment of their own Church known as the Nestorian Church, and the strengthening of their position at Nisibis under the 10
 protection of Persian kings to whom Nisibis then belonged.

The Nestorians of Nisibis defended their Christian doctrines by theories drawn from Greek philosophy and this missionary work became a propaganda, not only for their theology, but also for Hellenistic philosophy. Hence their 15
 importance as bearers of the Oriental version of Greek philosophy in the Alexandrian school. One party, holding that *both the emanations had the eternal nature of God*, undermined the humanity of Christ altogether, while the other set of thinkers called the Monophysites or Jacobites, as they were later called after Jacob of Serugh who organised this new Church, held that, *though Jesus* 20
was human, yet the union between the Logos and the rational soul was not temporary, as the Nestorians held, but eternal. This controversy resulted in the

Council of Chalcedon in 448 C.E. which expelled the Monophysites from the State church. They organised a church of their own and their convent at Qinnasrin (Chalcis) became a new centre of Greek studies.

Now the period between the two great controversies in the Christian church and the conquest of Syria by Muslims was rich with translations from Greek into Syriac, commentaries and expositions, but this activity was confined chiefly to the narrow limits of theology. The study of metaphysics and Aristotelian logic was emphasised but mainly to defend theology. The study of medicine, chemistry and astronomy was also undertaken, but no originality was shown.

The school of Alexandria engaged itself, not only in theology, but also in medicine for which lectures were delivered on sixteen selected works of Galen. Besides medicine, the Alexandrian school carried on research in chemistry and astronomy, and on the eve of the Muslim conquest of Syria it was known for its scientific studies.

In the middle of the sixth century C.E., Mar Ahba, a convert from Zoroastrianism, established a school at Seleucia like the one at Nisibis and a little later the Persian king, Anusharwan, who had offered a home to the ejected Greek philosophers when the Byzantine emperor, Justinian, closed the schools at Athens, founded a Zoroastrian school at Jundi Shapur. Here, not only Greek and Syriac works, but also Indian writings on philosophy and science were

translated into Pahlawi and both Indian and Greek systems of medicine were taught and developed.

Besides these, there was a school at Harran, established since the time of Alexander which long remained a centre of Greek Paganism and Neo-Platonism as formulated by Porphyry. It remained for long one of the oases of Greek learning. 5

Thus Alexandria, Nisibis, Qinnasrin, Seleucia, Jundi Shapur and Harran, as much as Nature itself became veritable nurseries for the newly-born Muslim thought. These several schools, during their period of existence, did not produce many philosophers or scientists of outstanding merit or books of lasting value, but they kept alive an intellectual tradition which offered a rich soil for the production of outstanding men. And when the seed was supplied by the spirit of Islam, such men were produced, not by the dozens but by the hundreds. As O'Leary says, these schools supplied the soil on which "Muslim theology, philosophy, and science put forth their first luxuriant shoots". 10 15

(4) Capture of Pre-Islamic Learning: Translations

The rise of Muslim thought began with a period which, though rich in original thought, was chiefly marked by extensive translations from Sanskrit Pahlawi, Syriac and Greek. In 762 C.E., the first Abbasid Caliph, al-Mansur, laid the foundations of his new capital, Baghdad, and he gathered round him 20

scholars from different lands and encouraged translations of scientific and literary works from other tongues. Many scholars receiving royal encouragement engaged themselves in translation work in their private capacity. They were mostly Jews, Christians and new converts to Islam. One of these workers was ‘Abdullah b. al-Muqaffa‘ (d. 757 C.E.), a convert from Zoroastrianism whose best known translation was of *Kalilah wa Dimnah*, a Pahlawi version of a Sanskrit work on ethics. The Sanskrit original and the Persian translation are lost, but parts of the material of this treatise are found in an expanded form in the *Panchatantra* and the *Mahabharata*, and from its Arabic version it has been transmitted to almost all the languages of Europe. Another worker was an Indian traveller who helped in the translation of the *Sidhanta*, an astronomical work, and of a work on mathematics. Among other translators were a Nestorian physician of al-Mansur’s court from Jundi Shapur, Jurjis (George) ibn Bakhtishu‘ (d. 771 C.E.), his sons, Bakhtishu‘ (d. 801 C.E.) and Jibril (d. 809 C.E.), his pupil, ‘Isa ibn Thakerbakht, John bar Masarjawaih (a Jewish Syriac physician), Qusta ibn Luqa (d. 923 C.E.), al-Hajjaj ibn Yusuf ibn Matar (fl. between 786 and 833 C.E.), the first translator of the *Elements* of Euclid and one of the first of Ptolemy’s *Almagest* (the very first being Yahya ibn Khalid, a vizier of the Caliph al-Rashid); Thawafil ibn Tuma (Theophilus, d. 785 C.E.), translator of some parts of Homer’s *Iliad*, and Abu Yahya (between 796 and 806 C.E.) who translated the major works of Galen (d. 200 C.E.) and Hippocrates (c. 436 B.C.E.), *Quadripartitum* and *Almagest* of Ptolemy, and the

Elements of Euclid. None of these early Arabic versions of Greek works was, however, very satisfactory.

In 832 C.E. the Caliph al-Ma'mun founded an academy with an observatory, a library and a translation bureau at Baghdad. As Hitti (*History of the Arabs*, pp. 310 ff.) says, this academy in certain ways proved to be the most important 5 institution after the Alexandrian Museum established in the first half of the third century B.C.E. Here, works were translated from Syriac and Pahlawi, the Syriac and Pahlawi works being themselves translations from Greek and Sanskrit. Yahya b. Masawaih (777-857 C.E.), a Nestorian physician and pupil of Bakhtishu', was appointed head of the academy. He is said to have translated 10 for the Caliph al-Rashid certain medical manuscripts. But the most important work of the academy was done by his pupil Hunain ibn Ishaq (Joannitius, 809-873 C.E.), also a Nestorian Christian, and his disciples. He was first a dispenser to Ibn Masawaih, then a manuscript collector in Greek-speaking lands in the service of the sons of Musa ibn Shakir, then in charge of the academy and its 15 translation bureau, and last of all private physician to the Caliph al-Mutawakkil. Hunain, probably with the assistance of a number of collaborators, translated into Arabic the books of Euclid (c. 300 B.C.E.); parts of Galen, Hippocrates, Archimedes and Apollonius; the *Republic*, *Laws*, and *Timaeus* of Plato; the *Categories*, *Physics*, *Magna Moralia* and the spurious *Mineralogy* on book 20 XXX of the *Metaphysics*, the Old Testament and medical pandects of Paul of Aegina (fl. c. 650 C.E.). His son rendered into Arabic the *Sophist* of Plato, the

Metaphysics, De anima, De generatione et de corruptione and the *Hermeneutica* of Aristotle and the commentaries of Porphyry, Alexander of Aphrodisias and Ammonius. Abu Bishr Matta b. Yunus (d. 939 C.E.), besides writing commentaries on Aristotle's *Categories* and the *Isagoge* of Porphyry, produced the Arabic version of Aristotle's *Analytica Posteriora* and *Poetica*, Alexander of Aphrodisias's commentary on *De generatione et de corruptione* and Themistius's commentary on Book XXX of the *Metaphysics*. Hunain's nephew Hubaish, 'Isa b. Yahya and Musa ibn Khalid were other prominent translators of this school. 5

Just as Hunain was the head of the Nestorian group of translators, so was Thabit ibn Qurrah (b. 836 C.E.), the leader of the Sabian group of workers from Harran, an old seat of learning which has become famous for its philosophical and medical studies. Thabit and his disciples translated the major part of the Greek mathematical and astronomical works and improved upon earlier translations. In later life he became a great favourite of the Caliph Mu'tadid. His work was continued by his sons, Ibrahim and Sinan, his two grandsons, Thabit and Ibrahim, and two great-grandsons, Ishaq and Abu al-Faraj. 10 15

In the second half of the tenth century rose the school of Jacobite translators, prominent among whom were Yahya ibn 'Adi (d. 974 C.E.) and Abu 'Ali 'Isa ibn Zurah (1008 C.E.). Yahya ibn 'Adi revised many of the early versions and produced fresh translations of the *Categories*, the *Sophist*, *Elench*, *Poetics* and *Metaphysics* of Aristotle; *Laws* and the *Timaeus* of Plato, and commentary on 20

the *Categories* by Alexander of Aphrodisias and on the *Moralia* by Theophrastus. Abu ‘Ali ‘Isa ibn Zurah translated the *Categories*, the *Natural History* and the *Partibus animalium* with the commentary of John Philoponus.

So extensive was the range of Arabic translation of philosophical and scientific classics that, within eighty years of the establishment of Baghdad, the Arabs were in possession of the greater part of the works of Aristotle including the spurious *Mineralogy*, *Mechanics* and *Theology*, which last was actually an abridged paraphrase of the last three books of Plotinus’s *Enneads*, some of the works of Plato and Neo-Platonists, the important works of Hippocrates, Galen, Euclid, Ptolemy and subsequent writers and commentators and several Persian and Indian writings. All this was taking place in the Muslim world when Greek thought was almost unknown in the West. While in the East, says Hitti, “al-Rashid and al-Ma’mun were delving into Greek and Persian philosophy, their contemporaries in the West, Charlemagne and his lords, were reportedly dabbling in the art of writing their names” (*History of the Arabs*, p. 315).

Chapter 2

DISSEMINATION OF KNOWLEDGE

(1) Schools, Colleges and Universities

In the last chapter we have seen that the sources of Muslim thought were both internal and external. From the internal sources the Muslims received the teaching of the Qur'an and the *Hadith* and their zest for knowledge. From the external sources they acquired much that was vital in the wisdom of India, Persia and Greece—especially Greece. 5

Having acquired knowledge from all these sources, the Muslims took up the task of disseminating this knowledge. 10

Education spread in the Muslim world with electric speed. There was no village without a mosque, and elementary and secondary schools sprang up as adjuncts to mosques, their curriculum being the teachings of the Qur'an, stories about the life of the Prophet, reading and writing, a little poetry and the elements of arithmetic and grammar. As Professor Ballesteros and Professor Ribera tell us, schools were provided for nearly all children. For higher education students went either to colleges, academies and universities or to individual teachers. Rulers, princes, ministers and wealthy nobles regarded it a fashion to become patrons of learning, hold academic discussions, open schools 15

and colleges, set up laboratories and establish hospitals and libraries. The first college was established by al-Ma'mun in Baghdad. The second college for higher studies called the Nizamiyyah was founded in Baghdad in 1065 by Nizam al-Mulk, a Persian vizier to the Saljuq king, Alp Arslan. It was a residential college in which theological studies had the same place as afterwards classical studies had in European universities. Reuben Levy (*A Baghdad Chronicle*, Cambridge, 1929) holds that some details of its organisation appear to have been copied by early European universities. Al-Ghazzali was the head of this institution for four years from 1091 to 1095 C.E. An interesting story is told about a pupil of the Nizamiyyah who, along with a group of students, once took a heavy dose of an infusion of anacardium, lost his wits and came naked to the class. When, amidst the laughter of the class, the professor asked him to explain his shameful conduct, he very seriously replied that he and his classmates had drunk the infusion of anacardium to sharpen their intellect and that made them all lose their senses with the exception of himself who had luckily remained sane! After a little over three centuries, the Nizamiyyah was merged into a new institution named al-Mustansiriyyah which was the first educational institution to have a hospital attached to it. Other well-known colleges were al-Rashidiyyah, Amaniyyah, Tarkaniyyah, Khatuniyyah and Sharifiyyah in Syria, and Rambiyah, Nasiriyyah and Salahiyah in Egypt. In course of time the Nizamiyyah type of colleges spread all over the empire, thirty being in Baghdad, twenty in Damascus, thirty in Alexandria, six in Mosul and one at

least in all other important cities such as Cairo, Nishapur, Samarqand, Isfahan, Merv, Balkh, Aleppo, Ghazni, Lahore, and so on. In Spain, “Cordova alone had several hundred colleges, and in some at least of these philosophy, literature, history and science (in a dozen special branches) were taught as well as theology.”

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It was in Spain that the foundations of what are now called universities were laid. The chief of these were the universities of Cordova, Seville, Malaga and Granada. The portals of the university of Granada bore this inscription: “The world is supported by four things only: the learning of the wise, the justice of the great, the prayers of the religious and the valour of the brave.” Scholars from all over Europe flocked to these universities for study.

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(2) Other Educational Institutions

Besides these institutions of higher studies, education was also imparted by individual teachers in their homes or in mosques or shrines which had special quarters reserved for travelers, students and teachers. Both teachers and students were supported by endowments given to these mosques or shrines by wealthy people. These teachers were highly respected. In mosques lectures were delivered, not only on theology, but also on other branches of learning, and not only to regular students but to all those adults who cared to attend them. Nasir

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Khusraw writes in the eleventh century that the mosque at Cairo was daily visited by five thousand men to hear lectures on various subjects of study.

Moreover, a large number of observatories which sprang up in different parts of the empire were also colleges for teaching astronomy, just as colleges for medical studies. Furthermore, there existed literary societies and study circles which held their meetings in the homes of the aristocracy. 5

(3) Libraries

During the Abbasid period, paper manufacture became an indigenous industry. Books began to be written and were sold by booksellers and book agencies in large numbers, and thousands of private and public libraries sprang up. Paper-making was indeed the greatest boon that Islam gave to Europe through Sicily and Spain. In the tenth century, Mosul had a private library where scholars were supplied with free paper. In the same century, the founder of the library at Basrah granted stipends to scholars working in it. Some libraries were very generous in lending books. Yaqut mentions to have borrowed two hundred books from the Damiriyyah library of Merv. There were twenty public libraries in Spain alone. In the tenth century the library of Cordova possessed about four hundred thousand (some say six hundred thousand) books “at a time when there were probably not 10,000 elsewhere in Europe, possibly not even 4,000”. If the figure given in *The Catholic* 15 20

Encyclopaedia is correct, four centuries later, after all the achievements of the thirteenth century, Canterbury headed the list of Christian libraries with 1800 volumes. The *Bait al-Hikmah* at Cairo is said to have had two million books and that of Tripolis in Syria, which was burnt by the first Crusaders, contained three million books of which fifty thousand were copies of the Qur'an and its commentaries. That means that this library alone had three-fourths of the volumes which the Bodleian Library has, or more than half the volumes that all the libraries of India and Pakistan have been estimated to possess today. In the library of al-Hakim, books were arranged in forty chambers, each containing about eighteen thousand books. The *Khazinat al-Kutub*, a library founded at Shiraz by 'Adud al-Dawlah, a Persian king (d. 984 C.E.), was surrounded by parks and had three hundred and sixty rooms and pavilions. The magnificence of these libraries becomes all the more astounding when we realise that all the books were manuscripts, for we are talking of a period when there were no printing presses. Besides these, there were several other famous libraries such as those of Baghdad, Ram Hur-Muz, Rayy, Merv, Balkh, Bukhara and Ghazni. Mosques also served as repositories of books all over the empire. Men of learning were appointed as librarians. Even such renowned scholars as Ibn Sina, Ibn Miskawaih and al-Shabushti held posts of librarians.

Chapter 3

ADVANCEMENT OF LEARNING:

SCIENTIFIC THOUGHT

We have already seen what Muslims received from their predecessors. Let us now see what they gave to their successors. They received from Alexandria, Syria and Persia an old tradition, but passed on to Europe an entirely new tradition, not only old but also new sciences, new studies and a vast store of knowledge. From the seventh to the twelfth century C.E. was the period of Islamic glory. During this period the Muslims became the leaders of philosophical thought. But it was in the field of science that they achieved their greatest triumph. In this chapter we make a rapid survey of their contribution to scientific knowledge.

(1) Jurisprudence

The Muslims perfected the science of jurisprudence and brought it to bear upon the minutest details of life. Its recognition of personal liberty and of the rights of women and children, its universality and comprehensiveness are features which distinguish it from Roman law. "The Mohammedan law," says

Edmund Burke, “is binding upon all, from the crowned head to the meanest subject. It is the law interwoven with a system of the wisest, the most learned and the most enlightened jurisprudence that ever existed in the world.” They created a new science which may be called the applied science of testimony (*Hadith*) which formulated principles for the verification of statements made in and about the past, and applied them to the sayings and doings of the Prophet to the minutest details covering the whole range of life. One great worker in this field (Bukhari) collected 600,000 sayings and statements about the life of the Prophet from one thousand religious leaders in the course of sixteen years’ travels through Islamic countries, and, after critical examination, selected only 7275 as true. One of the principles of this science was public opinion, which meant that when legal authority was silent, matters should be decided by public opinion. It is this democratic principle which helped Muslims to decide matters arising out of new situations in this progressive world by consensus of opinion, each individual having the right to exercise his or her own judgment.

(2) *History and Sociology*

This discipline of the science of testimony trained Muslims in their study of history. After Herodotus, Muslims were the first great historians of the world. Some of them undertook long journeys to collect material. The name of the Muslim globe-trotter Ibn Battutah (d. 1377 C.E.), is well known to the history of

this country. Though not an historian himself, the records of his travels are a gold mine of material for all workers on the history of Medieval India. One Muslim historian, al-Tabari (d. 923 C.E.), travelled from Persia to Egypt and on one occasion had to sell the sleeves of his shirt to buy bread. An abridged form of his universal history (up to 915 C.E.) has come down to us. It covers 2501 pages and is supposed to be one-tenth of the original work. He is said to have written on an average forty pages a day for forty years (Yaqut, *Mu'jam al-Buldan*, VI, 424). Another historian al-Mas'udi (d. 956 C.E.), known as the Herodotus of the Arabs journeyed into almost every country in Asia, including perhaps China and Madagascar. He has left a monumental work of thirty volumes on universal history up to 947 C.E. The works of these authors are taken to be remarkably elaborate and accurate both by Oriental and European writers. Yet another historian, Ibn Hayyan (d. 1076 C.E.), wrote fifty works one of which was a history of Spain, entitled *al-Matin*, covering sixty volumes. A history of Arab poetry set to music was written by Abu al-Faraj (d. 967 C.E.) in twenty-one volumes. Al-Biruni (d. 1048 C.E.) laid down for the first time the principles of historical criticism and formulated the method by which exaggerated and inaccurate accounts could be tested. A Spanish historian, Ibn al-Khatib (d. 1376 C.E.), left sixty odd works on different subjects. Of these his history of Granada is the most famous. Histories of science and philosophy were also written. The author of *Kashf al-Zunun* mentions 1300 historical works of value, including the five mentioned above. There were not a few works on

biography. Ibn 'Asakir (d. 1177 C.E.) wrote in eighty volumes the biographies of distinguished men of Damascus. Ibn Khallikan's biography of the most distinguished Muslims in history is regarded by Nicholson (*A Literary History of the Arabs*, p. 452) as "the best general biography ever written." But of all those who worked in the historical field, the man who holds the highest claim to enduring fame is Ibn Khaldun (d. 1406 C.E.). He was at once a writer on political theory, history of philosophy and sociology. Comparing him with Machiavelli as a writer on political science, Colosio observes: "If the great Florentine instructs us in the art of governing people, he makes this as a far-sighted politician, but the learned Tunisian was able to penetrate into the social phenomena, as a profound economist and philosopher, a fact which urges us to see in his work such farsightedness and critical art as was totally unknown to his age" ("Contribution a l'etude d'Ibn Khaldun"). As a philosopher of history, Ibn Khaldun, in his *Muqaddimah*, "presented for the first time a theory of historical development which takes due cognizance of the physical facts of climate and geography as well as of the moral and spiritual forces at work. As one who endeavoured to formulate laws of national progress and decay ibn-Khaldun may be considered the discoverer ... of the true scope and nature of history. ... By the consensus of critical opinion ibn-Khaldun was the greatest historical philosopher Islam produced and one of the greatest of all time" (Hitti, *History of the Arabs*, p. 568). Not only this, he was undoubtedly also "the real founder of the science of sociology" (ibid.; also Schmidt, *Ibn Khaldun, Historian*,

Sociologist and Philosopher). He can also be justly said to be the father of political economy. “Ibn Khaldun,” says Colosio, “was an original economist who understood the principle of political economy, and applied it with intelligence and skill long before it was known to Western research. If the theories of Ibn khaldun about the complex life of society place him foremost among the philosophers of history, his comprehension of the part played by labour, property, and wages, places him foremost among the masters of modern economy.”

(3) Geography

In the field of geography in the first half of the ninth century, at the instance of Caliph Ma'mun, al-Khwarizmi and his ninety-nine collaborators made a map of the heavens and the world. They also carried out the measurement of the length of a degree of the meridian on the plain of Sinjar and also near Palmyra. It came out to be $56 \frac{2}{3}$ miles, 959 yards more than real length—a remarkably accurate result. From this measurement the circumference of the earth was inferred to be 20,000 miles and its diameter 6500 miles. All this activity was going on at a time when the whole of Europe believed in the flatness of the earth. In the middle of the ninth century, al-Muqaddasi, after twenty years' travels in different parts of the world, wrote a geographical encyclopaedia giving an account of the places visited by him. In the third quarter of the same

century and the beginning of the tenth century, Ptolemy's *Geography* was translated into Arabic independently by two different scholars and a number of notable works came out. One, for example, was historico-topographical, another topographical and economic, another on political geography of the Caliphate, showing its divisions into provinces, the details of its postal system and taxation for each district, and yet another on general geography. There were also works on geography dealing with climates and mineralogy. In the middle of the tenth century, al-Istakhri produced a geography of the Islamic world with coloured maps for each country. In the beginning of the eleventh century, al-Biruni wrote the geography of Russia and Northern Europe. In the eleventh century, Zarqali estimated the approximately correct length of the Mediterranean Sea (42°). In the middle of the twelfth century, al-Idrisi, the most distinguished geographer and cartographer of the Middle Ages, made a celestial sphere and a dish-shaped map of the world, both in silver, for Roger II, king of Sicily. He also showed on map the sources of the Nile, which were discovered by the Europeans as late as the nineteenth century. In 1290, Qutb al-Din made a map of the Mediterranean Sea for the king of Iran. But the greatest of all Arab geographers was Yaqut (1179-1229 C.E.) who, in the beginning of the thirteenth century brought out a monumental encyclopaedia of geography in six volumes.

Out of their whole geographical literature which is till the delight of oriental researchers, Muslims passed on to Europe the geographical conceptions of the Greek, the Indian idea of the world cupola, Ujjaini (or Arin as they called it),

the doctrine of the roundness of the earth and the approximately correct theory of the causation of tides.

(4) Astronomy

Now let us come to those studies in which Muslims can justly be said to have laid the foundations of modern European thought. These are astronomy, 5
 mathematics, medicine, physical sciences and philosophy. I have already mentioned the measurement of the length of a terrestrial degree taken by al-Ma'mun's astronomers. In about 773 C.E., an Indian traveller introduced *Sidhanta*, the Indian tables, into the Islamic world. By the orders of the Caliph al-Mansur, this treatise was translated into Arabic by al-Fazari (between 796 10
 and 806 C.E.) who became the first astronomer of Islam. The leader of al-Ma'mun's group of astronomers, al-Khwarizmi (d. 850 C.E.), drew up his own astronomical tables, basing them on al-Fazari's work. He also syncretised the Indian and Greek systems of astronomy, adding his own valuable contributions. Besides al-Ma'mun's observatory where al-Khwarizmi worked and the three 15
 observatories at Baghdad, there were observatories in Egypt, at al-Rayy, Shiraz, Nishapur, Samarqand, Jundi Shapur, Delhi, Seville, Maragah, Wasit, Apamia and other places. At al-Rayy, Abu Ja'far al-Khazin ascertained the obliquity of the ecliptic and solved an Archimedean problem, leading to a cubic equation. About the observatory at Seville, Draper observes that "after the expulsion of 20

the Moors it was turned into a belfry, the Spaniards not knowing what else to do with it". Independent astronomical tables were compiled by al-Khwarizmi, Ahmad of Nihawand (d. 835 or 845 C.E.), Habash son of Hasib (d. 831 C.E.), Yahya son of Abi Mansur (between 870 and 970 C.E.), Nairizi (d. 922 C.E.), al-Majriti (1029-1087 C.E.), Kushyar (d. 1029 C.E.), Zarqali (Arzachel, 1029-1087 C.E.), and Nasir al-Din Tusi (d. 1274 C.E.). In his explanation of the solar eclipses, Zarqali gave the world the first determination of time by an altitude. He made a new type of astrolabe and was the first to prove the motion of the solar apogee with reference to the stars. According to him, it measured 12·04", while its real measurement is 11·8".

The sons of Musa ibn Shakir ascertained the obliquity of the ecliptic, marked for the first time the equinoxes and the movement of the solar apogee, all unknown to the Greeks. Al-Kuhi studied the summer solstice and autumnal equinoxes. Abu Ma'shar (786-886 C.E.) gave to Europe the laws of the tides based on the movement of the moon in relation to the earth. Al-Battani (d. 929 C.E.) "made several emendations to Ptolemy and rectified the calculations for the orbits of the moon and certain planets. He proved the possibility of annular eclipses of the sun, determined with greater accuracy the obliquity of the ecliptic and presented original theories on the determination of the visibility of the new moon" (Hitti, *History of the Arabs*, p. 376). *Zij al-Akbar al-Hakimi*, a famous work by 'Ali ibn Yunus (d. 1009 C.E.), was also a decided advance on the work of Ptolemy. It was reproduced among the Persians by 'Umar al-

Khayyam, a poet, philosopher and mathematician, famous for his *Ruba'iyat* (eleventh century), among the Greeks, in the Syntax of Chrysococca, among the Mongols, by Nasir al-Din Tusi and among the Chinese in the Astronomy of Co-Cheon-King in 1280 C.E. Send b. 'Ali, Yahya b. Abi Mansur, and Khalid b. 'Abd al-Malik made important observations about the equinoxes, the comets, photometry of the stars and other celestial phenomena. Al-Biruni (d. 1048 C.E.), who has been mentioned before, discussed the theory of the rotation of the earth on its axis and made accurate determination of the longitude and latitude. 'Umar al-Khayyam made a calendar which is more accurate than the Gregorian calendar, for it leads to an error of one day in 5000 years as against the latter which leads to an error of one day in 3300 years. Besides works on geometry and arithmetic, he wrote a comprehensive treatise on astronomy.

Four works of Abu Ma'shar (Albumasar) and al-Khwarizmi's tables were translated into Latin by John of Seville and Adelard of Bath. Plato of Tivoli and later Alfonso X translated al-Battani's tables into Latin, and Gerard of Cremona translated Jabir's *Kitab al-Ha'iah*, a treatise on astronomy which was published in 1534 C.E. This book was a great improvement on Ptolemy's *Almagest*. Many other works on astronomy by Muslim authors, including those of Abu Bakr (Albubather), al-Qabisi (Alqabitus), al-Battani (Albategnius), and al-Farghani (Alfraganus), were translated into Latin, and they exercised a great influence on the development of this science in Europe. Alphonsine tables completed by Alfonso X were nothing but a modified form of Muslim astronomy. The well-

known Toledan tables are also based on observations made by Muslims, chiefly by Zarqali. The works of Raymond of Marseille were also drawn from the astronomical tables of Zarqali. “Arab astronomical tables replaced all their Greek and Indian predecessors and came to be used even in China.” Copernicus was well acquainted with Arab astronomers, for he quotes two of them, al-Zarqali and al-Battani, in his book *De Revolutionibus Orbium Coelestium*. Besides such terms as “azimuth” (*al-sumut*), “nadir” (*nazir*), “zenith” (*al-samt*), are likewise of Arabic etymology and testify to the rich legacy of Islam to Christian Europe” (Hitti, p. 573). 5

(5) Mathematics 10

The same Indian scholar who took the astronomical work *Sidhanta* to the court of al-Mansur is said to have taken with himself to Baghdad also a treatise on mathematics which laid the foundations of Arab mathematics. This work was translated into Arabic by Ibn Ibrahim al-Fazari (between 796 and 806 C.E.) It acquainted Muslims with the use of zero and Hindu numerals. These numerals were justly names by Muslims as Hindi numerals, but the Europeans who got them from the Arabs, not knowing their true origin, called them the Arabic numerals or algorisms of al-Khwarizmi who was the first Muslim to use them. Al-Khwarizmi was the author of the oldest Arab treatise on arithmetic and algebra. His book on the Hindu method of calculation became the basis of the 15 20

science of arithmetic as we have it today. He was followed by Ahmad al-Nasawi (d. c. 1040 C.E.) who “explains the division of fractions and the extraction of the square and cubic roots in an almost modern manner” (Hitti, p. 379). The Spanish Muslims developed the figures called *ghubar* numerals. These were slightly different from Hindu figures. The figures used in modern European languages are more like the *ghubar* numerals than the Arabic numerals. Al-Khwarizmi was the founder of algebra. His work, *Hisab al-Jabr w-al-Muqabalah* (“The Mathematics of Integration and Equations”), which was translated into Latin by Gerard of Cremona, “was used until the sixteenth century as the principal mathematical text-book of European universities and served to introduce into Europe the science of algebra [*al-jabr*], and with it the name” (Hitti, p. 379). He substituted sines for Ptolemy’s chords in trigonometry and invented a common method for the solution of quadratic equations, and Ibn Ibrahim al-Fazari expanded it to the solution of cubic equations.

Al-Khayyam advanced the science of algebra still further. His work (published in America in 1932: Tr. Daoud S. Kasir, *The Algebra of Omar Khayyam*) developed the method of solving trigonometrical and algebraic equations of the second degree and gave an excellent classification of equations. Abu Bakr Muhammad (d. 1029 C.E.) solved Diophantine as well as quadratic equations. Thabit ibn Qurrah (d. 901 C.E.), a Sabian court-astronomer of the Caliph Mu‘tadid, investigated the properties of the amicable number and the problem of trisecting an angle. He applied algebra to geometry and laid the

foundations of analytic geometry, mechanics and astronomy. Archimedes's problem of dividing a sphere by a plain into two segments having a prescribed ratio was first expressed as a cubic equation by al-Mahani and the first solution was given by Abu Ja'far al-Khazin (d. 971 C.E.).

The science of trigonometry, like the science of algebra and that of analytical geometry, was largely founded by the Arabs. Al-Battani (d. 930 C.E.), a Sabian under Muslim patronage, discovered most of the basic notions of trigonometrical ratios as they are used today. He was the first to calculate θ from the equation $\sin \theta / \cos \theta = k$ and to give the formula $\cos a = \cos b \cos c + \sin b \sin c \cos a$ for a spherical triangle. Abu al-Wafa' (d. about 998 C.E.) was the first to find out the generality of the sine theorem in relation to spherical triangles. He was also the first to introduce the tangent, co-tangent, secant and co-secant in trigonometry and to show the relation between the six trigonometric levis. Al-Baghdadi wrote a book on spherical trigonometry and al-Khujandi (d. 1000 C.E.) discussed the five theorems in relation to spherical triangles. Ibn Yunus (d. 1008 C.E.) made further developments in spherical trigonometry and gave an improved formula for the calculation of sines. In Spain, Jabir (eleventh century), or Geber as he was called by European writers, wrote a treatise on astronomy in nine books which was a considerable improvement on Ptolemy's *Almagest*. He was the first to give the formula $\cos B = \cos b \sin A$, $\cos C = \cos A \cos B$ in a triangle of which C is a right angle. Some wrongly suppose the science is called algebra after his name and not after

the name of al-Khwarizmi's book *Hisab al-Jabr w-al-Muqabalah* written about two centuries before.

The British scholars Adelard of Bath (eleventh century) and D. Morley of Norfolk (twelfth century) went to Muslim Spain to learn mathematics and physics and on their return began to teach the principles they had learnt from their Muslim teachers. Adelard also translated al-Khwarizmi's work on the Hindu method of calculation. Although the Arabic numerals were introduced into the West by this work, as were the *ghubar* figures by the work of Gerbert who was also educated in Spain before he became Pope Silvester II (999-1003 C.E.), they were not put to any practical use till the middle of the thirteenth century. They were first employed for practical purposes in Christian Europe by Leonardo Fibonacci of Pisa (d. after 1240) who was taught by a Muslim teacher. His work which "marks the beginning of European mathematics" contained the six types of quadratic equations given by Muslim mathematicians and so did the works of Jacob of Florence. The mathematical work of Georg Purbach, professor of mathematics at Vienna in the fifteenth century, was based chiefly on al-Zarqali. Georg Purbach's pupil Johannes Muller was professor at Padua. His treatise on mathematics which was published and republished in the middle of the sixteenth century was the first complete European treatise on trigonometry, but "his methods were in some respects behind those of the Arabs".

(6) Music

Closely connected with mathematics was the Muslim theory of music. The basic principle of measured songs or mensural music—that notes have exact time ratios between themselves—was well known to Muslims centuries before the West became familiar with it through their influence. Sa‘id ibn Misjah (d. 638 C.E.) studied the Byzantine and Iranian music and blended them with Arab music. His pupil Ibn Muhriz (d. c. 715 C.E.) further developed this synthesis. Yunus Katib (about 742 C.E.), a court-musician of Walid II, wrote earliest works on music, one of which was entitled *Kitab al-Naghm* (“The Book of Melodies”). In the time of the caliphs Harun and Ma‘mun (786-833 C.E.) Greek works on music were translated into Arabic. 5 10

Ishaq, a court-musician of Harun, composed several works on music. Al-Kindi (d. 873 C.E.), a philosopher of whom more shall be said later, produced seven books in which he gave a full exposition of the principles of measured songs. One of his works which is now lost was “very much appreciated in the West”. Al-Khwarizmi’s mathematical treatise, the Latin translation of which was made by Adelard of Bath under the title *Liber y sagogorum Alchorismi*, had an important section on music. Ibn ‘Abd Rabbihi (d. 904 C.E.) composed a biography of great musicians and Abu al-Faraj (d. 967 C.E.) wrote his famous work called *Aghani*, a collection of songs set to music. About the same time, the writers of *Ikhwan al-Safa’* also made important contributions to the subject. But 15 20

the greatest writer on the theory of music in the Middle Ages was the renowned philosopher al-Farabi (950 C.E.) who wrote commentaries on the lost books of Euclid, advanced acute criticism against Greek writers and left three major works on music, besides his treatment of the subject in two of his compendiums of the sciences. One of these compendiums, *Ihsa' al-'Ulum (De Scientiis)*, was the earliest work translated into Latin and it exercised “powerful influence” in the West. The musical writings of Ibn Sina (d. 1037 C.E.) and Ibn Rushd (d. 1198 C.E) were also translated into Latin and long served as text-books in Europe. Similarly, other renowned philosophers, e.g. al-Ghazzali (d. 1111 C.E), Ibn Bajjah (d. 1138 C.E.), Nasir al-Din Tusi (D. 1310 c.e.) and Jalal al-Din Dawwani (d. 1501 C.E.), made valuable contributions to the subject. Among non-philosophical writers mention may be made of al-Majriti (d. 1007 C.E.), Kirmani (d. 1066 C.E.), Haddad (d. 1165 C.E.), Shams al-Din Muhammad (d. 1310 C.E.), ‘Abd al-Qadir Ghaibi (d. 1435 C.E.), Muhammad son of Murad (d. 1481 C.E.) and ‘Abd al-Hamid Ladiki (d. 1512 C.E.).

By the end of the twelfth century, many of the chief philosophical works had become known to the West through their Latin translations made at Toledo. The present-day Western notation is basically the same as was described by Franco of Cologne (c. 1190 C.E.), nearly three centuries after al-Kindi had given a similar exposition of it under the name *iqā'* (rhythm). Franco’s work was followed by a treatise said to have been written by John of Garland dealing

with *ochetus* (rhythmic mode which term, as Hitti observes [p. 601], is probably a Latinised form of *iqāʿat* (pl. of *iqāʿ*).

The West inherited from the Muslim world, not only the basis of mensural music, but also several musical terms, e.g. the lute (Ar. *al-ʿud*), the rebec (Ar. *rabab*), the anafil (Ar. *al-nafir*), the tambourine pandero (colloq. Ar. *bandair*), 5 sonajas (Ar. pl. *sunuj*), the guitar (Ar. *qitarah*), the naker (Ar. *naqqarah*) and the kanoon (Ar. *qanun*).

(7) Chemistry

The Muslims distinguished themselves in their study of the natural sciences. The encyclopaedia of the Brethren of Purity¹ contains seventeen out of fifty-two 10 parts on natural sciences. In chemistry, the first great Muslim worker was al-Razi (Rhazes, d. 925 C.E.). One of his chief works, *Kitab al-Asrar*, was rendered into Latin by Gerard of Cremona. It was the chief source of chemical knowledge till it was superseded by the works of Jabir (Geber, fl. 766 C.E.), 15 which, after the fourteenth century, were the most influential treatises in the East and the West. Jabir made important advance to the science of chemistry. He described scientifically the processes of calcination and reduction; improved the

¹ Ar. *Ikhwan al-Safaʿ*, according to Goldziher, drawn from *Kalilah wa Dimnah* (Fables of Bidpai) in which a group of animals acting as sincere friends (*Ikhwan al-Safaʿ*) to one another, escaped the snare of the hunter. This was a sacred society of scholars who, being opposed to the existing political order and afraid of oppression, wrote in collaboration under obscure names in the form of fifty-two epistles (*rasaʿil*) the first encyclopaedia of the world covering all branches of knowledge. They flourished in Basrah in about the middle of the tenth century C.E. 20

methods of evaporation, sublimation, melting and crystallisation; prepared acetic acid, sulphuric acid, nitric acid and the mixture of the last two, aqua regia, in which gold and silver could be dissolved; discovered several chemical compounds, and separated antimony and arsenic from the sulphides. His theory of the constituents of metals superseded that of Aristotle and was with slight modifications accepted in the West till the eighteenth century. Al-Jahiz (d. 868-69 C.E.) obtained ammonia from the offals of animals by dry distillation. Shihab al-Din al-Tifashi (d. 1253 C.E.) composed a treatise in which he discussed the origin and nature of twenty-four precious stones, and al-Biruni, in his work on physics, described with almost complete exactitude the specific gravity of eighteen precious stones and metals.

(8) *Physics*

Muslim researches in physics were not less marked. Abu Yusuf Ya'qub ibn Ishaq al-Kindi (ninth century), an Arab philosopher, wrote on optics. His chief work on geometrical and physiological optics was extensively used both in the East and the West. Its Latin version, *De aspectibus*, influenced even Roger Bacon. But al-Kindi's work was superseded by that of Ibn al-Haitham (Alhazen, d. c. 1039 C.E.) who, besides being one of the most important mathematicians and philosophers, was the chief Muslim physicist and student of optics. He was the author of about two hundred works on different subjects. In opposition to

Euclid and Ptolemy, he rightly held that vision did not result from the omission of rays from the eyes, but from the objects. He made experiments for testing the angles of incidence and reflection, especially of atmospheric refraction. He knew the principle of gravity, and discovered that a body would weigh differently in a rare and dense atmosphere. He understood the weight of atmosphere five centuries before Torricelli and had a clear idea of capillary attraction. In some of his experiments, he anticipated the theoretical discovery of the magnifying lenses which were actually made in Italy three centuries later. His treatise on optics was translated into Latin in 1572 and was very influential in the development of optics in the West. Almost all medieval writers in Europe based their works on this book. Even Leonardo da Vinci, Bacon and Kepler did not escape his influence. In the beginning of the thirteenth century, Jazari wrote a valuable work on mechanics and Ridwan described a water-clock made by his father. Muslim scientists improved the water-wheel and discovered the windmill and the glass mirror, and passed their use on to Europe. Ibn Sina's treatise on mineralogy became a source of geological knowledge in the West.

(9) Natural History

The Muslims made equally valuable researches in the field of natural history, more particularly in pure and applied botany. They laid out botanical gardens in Baghdad, Fez, Cairo and Cordova for botanical studies. They

observed and described sexual differences in plants. They also classified plants according as they grow wild, from seeds, or cuttings. On agriculture Abu Zakariya Yahya's work *al-Filahah* is an outstanding work of the Medieval Ages. Al-Ghafiqi of Cordova collected the plants of Spain and Africa, gave them names in Berber, Arabic and Latin and described them in a most accurate manner. The most famous botanist of Islam was Ibn al-Baitar. He travelled extensively in search of herbs and left two celebrated works. One of these in which he describes two hundred plants unknown to his predecessors is the foremost work of its kind. Some parts of its Latin translation were printed at Cremona as late as 1759. On the whole, the Arabs made an addition of about two thousand plants to botanical knowledge.

In zoology, al-Jahiz's *Kitab al-Hayawan* ("The Book of Animals") contains the germs of the theory of evolution by adaptation and animal psychology. But al-Damiri of Egypt (d. 1405 C.E.) was the greatest zoologist of Islam. His book, *Hayat al-Hayawan*, saw several editions. The work of Frederick II on falconry is supposed to be the first natural history, but it is really based entirely on the Latin translation of an Arabic and of a Persian treatise on falconry.

(10) Medicine

The Muslims developed the science of medicine as extensively as any other study and their medicine influenced Europe equally deeply. As learning began

to flourish, hospitals and colleges of medicine arose in all principal Islamic centres. The first of these was established by Harun al-Rashid at Baghdad in the beginning of the ninth century. In course of time hundreds of books appeared, some of which were later translated into European languages and printed. ‘Ali al-Tabari, the court-physician to the Caliph al-Mutawakkil, wrote a treatise in 850 C.E. based on Greek and Indian sources. Ahmad al-Tabari, another writer of the same century, was the first to describe the itch mite. Even non-Muslims scholars did remarkable work under the patronage of Muslim rulers. Yahya ibn Masawaih (d. 858 C.E.) was a renowned Nestorian physician of Baghdad under the rule of Harun al-Rashid. From his pen and also from that of his pupil and co-religionist Hunain ibn Ishaq al-‘Ibadi (Joannitius, d. 873 C.E.), private physician to al-Mutawakkil, we have the earliest existing text-books on ophthalmology. Hunain also translated and wrote commentaries on Hippocrates and Galen. Some of his works were translated into Latin. They were very popular in Europe in the Middle Ages and were published in the sixteenth century. These were followed by thirty other works by Arab writers on this subject. But the great period of Muslim medicine began with the philosopher and physician al-Razi (Rhazes, d. 925 C.E.) who practised at Baghdad. He was an encyclopaedic writer and is said to have surpassed even Galen in the voluminousness of his writings. He produced more than two hundred medical works. Edw. G. Browne considers him to be “the greatest and most original of all the Muslim physicians, and one of the most prolific as an author” (*Arabian Medicine*, London, 1921, p.

44). His *Kitab al-Mansuri (Liber Al-mansoris)* is a monumental work in ten volumes. It was translated in Milan towards the end of the fifteenth century and some parts of it have been recently rendered into French and German. His monograph *al-Judari w-al-Hasbah* was the first to give a clinical account of smallpox and measles accurately. It was first translated into Latin in 1565 and then in several European languages and it established his reputation as one of the greatest clinicians of the Middle Ages. Its English version was published as late as 1847. His encyclopaedic work, *al-Hawi*, which welded into one system the Greek, Persian and Hindi medicine in twenty volumes, was translated into Latin by a Jewish physician of Sicily in 1279 and printed repeatedly from 1486 onwards. Al-Razi's works exercised remarkable influence on the Latin West for centuries. 'Ali ibn al-'Abbas (Haly Abbas, d. 994 C.E.) wrote a standard work entitled *Kitab al-Maliki* (the Royal Book) which was more than once translated into Latin and printed. The best parts of this work consist of *materia medica* and dietetics. He contributed an early conception of the capillary system and proved that in parturition the child does not come out itself, but is pushed out by the muscular contraction of the womb. 'Ali of Baghdad and 'Ammar of Mosul composed valuable works on the diseases and treatment of the eye. These were translated into Latin and used as the best text-books in ophthalmology till the middle of the eighteenth century. Ibn al-Haitham (Alhazen, b. 965 C.E.) left a treatise on optics which still survives in Latin. It became the basis of Western optics. De Boer regards him as superior to Vittelo (thirteenth century C.E.) in

keenness of observation. Ibn al-Baitar of Damascus (d. 1248 C.E.) was the author of *al-Adwiyat al-Mufradah*, a collection of simple medicines which in Europe held the position of a standard *materia medica* for centuries. Its translation into Latin, *Simplicibus*, was printed in twenty-six editions during and after the fifteenth century and was used in the formation of the first London pharmacopoeia issued by the College of Physicians in the reign of James I. Some parts of its Latin version were printed as late as 1758 at Cremona. Abu al-Qasim al-Zahrawi (Abulcasis, tenth or eleventh century C.E.) of Cordova wrote *al-Tasrif*, a medical encyclopaedia, a part of which was translated into Latin in the sixteenth century by Gerard of Cremona, passed through various editions, the last being that of Oxford in 1778, and was for centuries a standard, if not the only standard, authority on surgery in Europe (Sir Thomas Clifford Allbutt, *Encyclopaedia Britannica*, 11th edition). It illustrated surgical instruments and helped in laying the foundation of Western surgery. It introduced new ideas such as cauterisation of wounds, the need for vivisection and dissection and crushing the stone in the bladder. Ibn Rushd, in his encyclopaedic work, *al-Kulliyat fi al-Tibb* (corrupted into *Colliget*) for the first time states the fact that no one is taken ill twice with smallpox and describes the true function of the retina.

But the Muslim writer of the highest fame was Ibn Sina (Avicenna, d. 1037 C.E.). “In Europe his works even eclipsed and superseded those of Hippocrates and Galen” (Sir Thomas Clifford Allbutt, *Encyclopaedia Britannica*, 11th

edition), and his works were used as text-books of medicine in the universities of Europe. His treatise *Qanun* is a singularly complete encyclopaedia of medicine and surgery. "From the twelfth to the seventeenth centuries this work served as the chief guide to medical science in the West" (Hitti, *History of the Arabs*, p. 368). In the last thirty years of the fifteenth century it passed through fifteen Latin editions and one Hebrew edition; and an English translation of some of its parts was published in London in 1930. It remained, says William Osler in *The Evolution of Modern Medicine* [(New Haven, 1922), p. 98], "a medical bible for a longer period than any other work". Ibn Zuhr (Avenzoar or Abumeron, twelfth century) developed a system of his own. His works were also translated into Latin. The chief of these, *al-Taisir fi al-Mudawah w-al-Tadbir*, was printed more than once. He was the first to discuss the question of feelings in bones. Ibn Rushd, the great Spanish philosopher, also wrote on medicine and was "widely read" in Europe. Ibn al-Khatib wrote a book in defence of the theory of infection through "contact with the afflicted" and their "garments, vessels and earrings". Of the Arab works on ophthalmology thirty-two survive in their original form. The work of Ya'qub ibn Akhi-Hizam (d. 902 C.E.) on horsemanship contains the rudiments of the veterinary art. Ibn Jazlah (Benesla, Byngezla, d. 1100 C.E.) made tables of diseases like the astronomical tables. This book was printed in Latin at Strassburg in 1532.

The Arabs knew a process by which blood could be infused into veins and used silver tubes for rectal feeding. They employed opium for the purposes of

dentifrice and tare for inducing sleep for operational purposes. They produced the first pharmacopoeia and established the first apothecary shops and mobile hospitals and were the first to introduce the system of daily medical visits to jails and medical examinations. Owing to their advanced knowledge of chemistry, they prepared new medicines and discovered new compounds. Some of their remedies hold the field even today. “Many of the names such as rob (Ar. rubb), julep (Ar. julab), syrup (Ar. sharab), soda (Ar. suda‘), alcohol (Ar. al-kuhl), alembic (Ar. al-inbiq), alkali (Ar. al-qali), antimony (Ar. ithmid from Gr.), aludel (Ar. al-uthal), realgar (Ar. rahj al-ghar), tutty (Ar. tutiya’ from Skt.). Many forms of medicine now used, in fact the general outline of modern pharmacy except so far as modified by modern chemistry, started with the Arabs” (Sir Thomas Clifford Allbutt in *The Encyclopaedia Britannica*, 11th edition). Although Arab medicine began to influence Europe from the middle of the eleventh century, yet it was after the thirteenth century that it reigned supreme in its medical circles. At this time, under the influence of muslim learning, many of the older European universities were started. Among these are those of Montpellier, Bologna and Padua which were the earliest to distinguish themselves in medicine. The portraits of al-Razi and Ibn Sina are today hung in the Hall of the School of Medicine in the University of Paris.

Referring to Muslim contribution to the scientific method in *The Making of Humanity*, Briffault observes: “Roger Bacon learned ... Arabic science. Neither Roger Bacon nor his later namesake has any title to be credited with having introduced the experimental method. Roger Bacon was no more than one of the apostles of Muslim science and method to Christian Europe; and he never wearied of declaring that a knowledge of ... Arabic Science was for his contemporaries the only way to true knowledge. Discussions as to who was the originator of the experimental method ... are part of the colossal misrepresentation of the origins of European civilization. The experimental method of Arabic science was by Bacon’s time widespread and eagerly cultivated throughout Europe. 5 10

“[A]lthough there is not a single aspect of European growth in which the decisive influence of Islamic culture is not traceable, nowhere is it so clear and momentous as in ... natural science and the scientific spirit.

“[S]cience owes ... its [very] existence [to Arabic culture]. The ancient world was ... pre-scientific ... The Greeks systematized, generalized and theorized, but the patient ways of investigation, the accumulation of positive knowledge, the minute methods of science, detailed and prolonged observation, experimental inquiry, were altogether alien to the Greek temperament ... What we call science arose in Europe as a result of a new spirit of inquiry, of new methods of investigation, of the method of experiment, observation, measurement, of the development of mathematics in a form unknown to the 15 20

Greeks. That spirit and those methods were introduced into the European world by the Arabs.”

Chapter 4

ADVANCEMENT OF LEARNING:

PHILOSOPHY

Although the Muslims did not originate philosophical thought as they originated scientific enquiry, some of their achievements in this field were most remarkable. They were acquainted with Hindu philosophy, were masters of Greek thought, and their speculation was deep and extensive. Their problems were the same as philosophy has had to solve in all ages. Their solutions of these problems were as little final as those of any other people in any other age. Nevertheless, they satisfied their own times, the Mediaeval Ages, and paved the way for further speculation and opened the door for the European Renaissance. This indeed is their chief claim to fame in philosophy. From the point of view of their attitude towards reason and revelation, Muslim philosophers can be classified into three main groups: (1) The Scholastics, (2) the Mystics, and (3) the Rationalists. The Scholastics again fall into two groups: (a) the Rationalist Scholastics and (b) the Orthodox Scholastics.

(1) The Rationalist Scholastics

Muslim philosophical thought began with rationalist scholastics or Mu‘tazilites as they were called. Broadly speaking, they held the following positions. Both revelation and reason are the sources and criteria of knowledge and, therefore, they must be in perfect harmony. It there is any inconsistency between them, revelation must be tested by reason. The universe is not eternal. 5
 It had a beginning in time. A thing is an essence that can be known or of which something can be said. Existence is only a quality which can or cannot be there. With it a thing is an entity, without it a nonentity, and yet possessing substance, accidents, genus and species. By God’s adding one quality—existence—things enter the sphere of existence and become material things for us. Existence is the 10
 only quality that makes things material. God is one. He is eternal. He is not anthropomorphic. Human qualities, like justice, mercy, wisdom, power, cannot be attributed to Him. His attributes are identical with His essence. The world is created by God and is not co-eternal with Him. God knows things by His essence and not, like us human beings, by any of His qualities or states. He 15
 cannot will evil and His power is confined only to the doing of good. Nor can He create the impossible.

God does not predestinate human action. Man has free will and is responsible for his doings. A sinner is eternally damned. The most comprehensive ethical law is justice. Even God is limited by its exigencies. It is 20
 a categorical imperative which binds God Himself. There is no intercession of Prophets and saints on behalf of their guilty followers. Divine justice requires

that sinners must be punished for their sins. The distinguished philosophers of this school of thought were Wasil b. ‘Ata’ (d. 748 C.E.), Nazzam (d. c. 845 C.E.), Jahiz (d. 868-69 C.E.) and the Brethren of Purity (middle of the tenth century C.E.). Of these Nazzam made doubt the first absolute requirement of knowledge.

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(2) The Orthodox Scholastics

The orthodox scholasticism began as a reaction against rationalist scholasticism. Its adherents belonged to several schools which arose simultaneously in different Islamic lands. These were the Ibn Hazm’s school in Spain, al-Tahawi’s school in Egypt, Abu Mansur’s Maturidiyyah school of Maturid near Samarqand, and Al-Ash‘ari’s school in Iraq. Of these the last one was the most renowned, both for its influence and originality of thought. Those who belonged to this school, the Ash‘arites, in spite of individual differences, generally held that revelation, intuition or inspiration is the only source of knowledge and reason has to submit to its pronouncements. They followed the dialectic method only to refute the philosophy of the Greeks with their own weapons. Knowledge is cognition of a thing as it is in itself and not as it appears. But what is a thing-in-itself? In raising this question, they anticipated Kant, but, as Macdonald observes, in answering it they were much more thorough than he. To perceive a thing is not to know it, for things are perceived

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in space and time. They seem to possess quality and quantity and are viewed as causes and effects, but the Aristotelian categories like space, time, quantity, action, passion and so forth are mere relations, and relations are all subjective. If objective, a relation must exist in something. It cannot, however, exist in either of the two things it brings together. It must, therefore, be in a third thing. But to bring this third thing and the first two together, other relations must be needed, and these other relations must require still other things in which to exist, and so on till infinity. This would lead to an infinite regress which is inadmissible. Relations, therefore, have no existence. They are mere appearances. Like all relations, the Aristotelian relation between matter and form is also a mere phantom. Nature which implies these relations is also a subjective appearance, and has no independent existence. Things as we see them are nonentities. There is nothing objective except qualities and substances. But substances without qualities cannot exist. Qualities, however, are mere accidents. They are fleeting; they come and go. Therefore, substances also come and go. Both qualities and substances have only a moment's existence, i.e. they are atomic. The world consists of atomic substances. The basis of all phenomena in the mental and physical world in space and time is a multitude of monads. These monads do not touch one another, for, in order to be separate, they must have absolute void between them. They are not extended but have only position. There are not only space monads but also time monads. Just as space is a series of atoms, so time is a series of untouching moments. These time and space monads leap across the

void between them with a jerk. All change is due to their coming into existence and dropping out again. In themselves they are changeless. We see clearly how far these orthodox scholastics were from the Greeks and how close they came to modern physicists and to Leibniz. There are two main differences between Leibniz's view and theirs. First, his monads are capable of development, but theirs are changeless. Secondly, to explain order in the monads he has to fall back upon the idea of pre-established harmony, while they fall back upon God. God, according to them, has absolute free will. He creates and destroys the monads and brings them into relations. We only seem to speak and listen to one another. Actually, God has brought about, by creation and annihilation and by pushing of atoms, their necessary combinations to produce these appearances. Fire does not burn and a knife does not cut. God creates in a substance a being burned when He makes the fire touch it and a being cut when He makes the knife approach it. All order is in the will of God and all order in the appearances is bestowed upon them by His acts. So all changes in the universe are Divine miracles. There are no causal laws, for all causality lies in Divine will. Existence is not a quality of things, but is the very essence of reality and God alone exists. The rest are all phenomena, in the last analysis based on atomic substances created and annihilated and brought into different combinations to give different appearances by the will of God. God and His essence are identical and His word is co-eternal with Him. His attributes are distinct from his essence. From Him both good and evil proceed and he can command even

impossibilities. No law can limit his action. An interesting discussion on this question is reported to have taken place between Abu al-Hasan ‘Ali al-Ash‘ari (d. 935-36 C.E.), the founder of the school of orthodox scholastics, and al-Jubba’i (d. 915-16 C.E.), a rationalist scholastic teacher of his. Al-Ash‘ari opened the discussion with this question: “Suppose the case of three brothers: one being God-fearing, the other godless and the third dies as a child. What of them in the world to come?” To this al-Jubba’i replies: “The first will be rewarded in Paradise; the second punished in Hell; and the third will be neither rewarded nor punished.” Al-Ash‘ari’s further question was: “But if the third said: ‘Lord! Thou mightest have granted me life, and then I would have been pious and entered Paradise like my brother.’ What then?” Al-Jubba’i replied: “God would say: ‘I knew that if thou wert granted life, thou wouldst be godless and unbelieving and enter Hell.’” On this al-Ash‘ari asked: “But what if the second said: ‘Lord, why didst Thou not make me die as a child? Then I would have escaped Hell.’” Al-Jubba’i was silenced and al-Ash‘ari went away in triumph. The Ash‘arites relate this dialogue to disprove the rationalist scholastics’ doctrine that God is constrained to do only that which is good and to prove their own position that God is free to do good or evil as He likes and further to show that reason cannot understand the ways of God.

Man, according to this school, is determined and all his actions flow from Divine will. God creates in his creature power and choice and then He creates in him the action corresponding to his power and choice. So all his actions are

created by God. He himself is only the locus or subject of his action. He is so made by Divine will that he can acquire grace by his own efforts. In the general position of this school, one can readily see how delicately, besides other elements, philosophies of Leibniz, Berkeley, Kant and conceptions of modern physics are poised. 5

The chief thinkers of the school were al-Ash‘ari (d. 935-36 C.E.), Abu Bakr Baqillani (d. 1025 C.E.), Imam al-Haramain (d. 1100 C.E.), Shahrastani (d. 1190 C.E.), al-Razi (d. 1222 C.E.) and al-Ghazzali (Algazel, d. 1111 C.E.).

The last-named philosopher, al-Ghazzali, though not the greatest, was certainly the most original of all Muslim thinkers. I should like to add a few words on his position, partly because he is a link between the orthodox scholastics and the mystics, and partly because of his importance in Muslim thought. He was so great that, like the sun that kills the stars when it rises, he gave a death-blow to Muslim speculation in the East. The rays of his thought also penetrated the West. But that part of the world saw the rise of another sun that brought speculative daylight to it. Of this latter thinker, Ibn Rushd, I shall speak later. Al-Ghazzali was the head of the Nizamiyyah College of Baghdad from 1092 to 1096 C.E. His search for truth made him quietly leave that office and wander from place to place till he retired to Tus, his native place, and, eleven years after his flight from Baghdad, was commanded by the Sultan to teach at Nishapur. He remained there for a while and returned home where he lived in retirement with his disciples in an academy for students and a 10 15 20

monastery for mystics.

Al-Ghazzali's greatness can be judged by the fact that his thought anticipated the main features of the entire philosophy of the West from Descartes to Bergson. About his work *The Revivification of the Science of Religion*, George Henry Lewes, in his *History of Philosophy*, observes: "This work ... bears so remarkable a resemblance to the *Discourse sur la Methode* of Descartes that had any translation of it existed in the days of Descartes, everyone would have cried out against the plagiarism." But Lewes forgets that Arab philosophy had penetrated deep into the West much before Descartes' time, and that most of his works had been partly translated into Latin before the middle of the twelfth century and were exercising a considerable influence on Jewish and Christian scholasticism. Much before Descartes, his scepticism had been taken up by Jehuda Ha-Levi (d. 1145 C.E.) in his work *Chosari* and it had showed its mark on Crescas (d. 1410 C.E.). The Dominican Raymond Martini had freely used the Hebrew translation of *Incoherence of the Philosophers*, another of al-Ghazzali's works. Pascal had been deeply affected by his thoughts. St Thomas, who had received his education from the Dominican order in the University of Naples, had known Ghazzali's philosophy well, and in his *Summa* had used his arguments in attacks on Aristotelians. It is difficult to believe that Descartes did not know al-Ghazzali's general position and was not influenced by it through Latin scholastics, whom beyond question he must have read. This conclusion forces itself upon the mind all the more strongly when we realise

that Descartes was not only a scholar of Latin, but had himself written two of his most important works—*Meditationes de prima Philosophia* and *Principia Philosphaie*—in Latin. Exactly like Descartes, he begins with describing how in vain he interrogated in his mind every sect for an answer to the problems that disturbed his mind and how he finally resolved to discard all authority. Exactly like Descartes, he comes to his conclusions by a study of his own self. Only Descartes’s starting formula is: “I think; therefore, I am,” while his formula is: “I will; therefore, I am.” Descartes falls into the pitfalls of innate ideas, but al-Ghazzali manages to escape them. To him no innate ideas or universal concepts can yield any knowledge of the external world or the world of inner experience. Both Descartes and Spinoza follow al-Ghazzali’s derivation of the negative and positive attributes of God from the concept of necessary existence. Again, the distinction made by Descartes, Spinoza and Galileo between the infinite (that the parts of which cannot be expressed by any number or measurement) and the indefinite (that which has no limit) is exactly the same as given by al-Ghazzali and Ibn Sina and, following them, by Crescas and Bruno. Spinoza’s idea of substance is the same as al-Ghazzali’s idea of God—simple, having no accidental qualities, no distinction of genus and species and no separation of essence and existence. Besides, his idea of freedom is identical with al-Ghazzali’s idea of necessity (non-dependence upon anything else), and of necessity is identical with the latter’s idea of possibility (dependence upon a cause). Again, Spinoza’s definitions of the forms of imagination more or less

conform to the distinction between retentive and composite memory made by Maimonides following al-Ghazzali. In all these cases there is merely a difference of terminology. Like the empiricists from Locke to Hume, he bases knowledge on experience rather than on intellectual concepts. He does not confine the meaning of the term to sensuous experience, but extends it so as to include within it the intuitive experience of the prophet, the mystic and the saint. He thus escapes scepticism to which the European empirical thought inevitably led. This latter experience is, according to him, far more important than sense-experience, since this alone yields the knowledge of the Ultimate Reality. Like Hume, al-Ghazzali proclaims that we can have no knowledge of cause and effect in the realm of phenomena. All we can know is that one event succeeds another. His *description* of empirical laws and induction is the same as Mill's. We perceive by the senses that the same thing repeatedly passed the same way (e.g. fire burns); we conclude that it will always pass the same way (fire will always burn); or we notice that certain things pass for the most part the same way (e.g, taking scammony is followed by diarrhoea or wine by intoxication). We judge that the one will probably follow the other in future cases as well. But his *explanation* of induction is not based on the fallacy of *petitio principii* as Mill's. According to him, it is reason which judges that this sequence of events must come to pass by necessity, for, if it came by mere chance, it could not have occurred always or in most cases in the past. It is, he says, by this argument alone that induction of empirical laws can be rationally justified. Like Kant, he

distinguishes between phenomena and noumena and regards the physical world of which alone the scientific knowledge is true as the world of phenomena to which alone the categories, which to him are equally subjective, are applicable, causality, substance and attribute being excepted. I may incidentally remark that in making these exceptions he escapes many of Kant's inconsistencies. Like him, he demonstrates that theoretical reason can analyse only what the senses yield, and it cannot solve the basic and more important questions of philosophy and religion such as the existence of God, the nature of His attributes, the immortality of the soul and the eternity of the universe. Kant finds the key to the solution of these questions in the practical reason of man, while he discovers it in the religious experience of the prophet and the mystic, which in its turn is to be tested by moral certitude and the moral influence which it exercises upon the soul. He anticipates Schopenhauer and other voluntarists in holding that not thought but will is the fundamental reality, but he steers clear of Schopenhauer's pessimism. God, according to him, is will and the world flows from Him like a river. Like Bergson, even more like Jacobi and Schleiermacher, he makes intuition or immediate consciousness the source of knowledge. Al-Ghazzali exerted great influence over the East and the West. It was the Protestant revolt that freed the West from the grip of this great man's intellect, and in the East, having conquered all rival thought, it has even to this day a hold too tight to allow any fresh movement.

(3) The Mystics

The third school of Muslim thought is that of the mystics. They fall under two groups: (i) the theistic mystics and (ii) the pantheistic mystics. Although Islamic mysticism had its original source in the Qur'an and the life of the Prophet, in the earliest Muslim mystics the influence of Neo-Platonism, Neo-Pythagoreanism and Christian Gnosticism is marked. Many pantheists were definitely under the influence of the Zoroastrian, Manist, Hindu and Buddhist thought. The Muslim mystics agreed with the Ash'arites that inspiration was the only source of knowledge, but they laid great stress on inner purity. Al-Ghazzali is said to be a link between the orthodox scholastics and the mystics, because he also held the same view. Like the mystics all over the world, they believed that inner purity can be achieved only by love for and contemplation of God and renunciation of everything else, and that without a pure heart even good deeds have no value. The most celebrated mystics were 'Ali (d. 661 C.E.), Rabi'ah of Basrah (717-801 C.E.), Ma'ruf al-Karkhi (d. 821 C.E.), Bayazid of Bistam (d. 874 C.E.), Ibrahim ibn Adham (d. 875 C.E.), Junaid (d. 910 C.E.), Husain b. Mansur al-Hallaj (executed 922 C.E.), Abu Bakr Shibli (d. 946 C.E.), Qushairi (d. 1072 C.E.), 'Abd al-Qadir Gilani (d. 1166 C.E.), Shihab al-Din Suhrawardi (executed 1191 C.E.), Farid al-Din 'Attar (d. 1229 C.E.), Ibn 'Arabi (d. 1240 C.E.), Rumi (d. 1273 C.E.), Shabistari (d. 1320 C.E.), Khwajah Baha' al-Din (d. 1388 C.E.), 'Abd al-Karim Jili (d. 1406 C.E.), Jami (d. 1492 C.E). Chief among

the Indian mystics were Abu al-Hasan ‘Ali Hujwiri Ganj Bakhsh (d. 1072 C.E.), Mu‘in al-Din Chishti (d. 1234 C.E.), Bakhtiyar Kaki (d. 1236 C.E.). Farid al-Din Ganj Shakar (d. 1265 C.E.), Nizam al-Din Auliya’ (d. 1324 C.E) and Ahmad Sarhindi (d. 1624 C.E.). All the early mystics were theists, but from the time of Bayazid of Bistam there was a definite tendency towards pantheism. 5

Bayazid himself, Hallaj, Qushairi, Shihab al-Din Suhrawardi, Ibn ‘Arabi and ‘Abd al-Karim Jili were full-fledged pantheists, and these were the real system-builders of Islamic mysticism. Rumi was the greatest poet-philosopher of Islam. Professor Nicholson has translated his great poem, *Mathnawi*, into English and Dr Khalifah Abdal-Hakim has written a monograph on it. Hegel called him “the 10 great Rumi,” and Iqbal regarded him as his spiritual leader. The chief works of the mystic school are these: *Kitab al-Luma‘ fi al-Tasawwuf* by Abu Nasr Sarraj (d. 988 C. E.), *Kashf al-Mahjub* by Abu al-Hasan ‘Ali Hujwiri, *Risalah-i Qushairiyyah* by Qushairi, *Ihya’ ‘Ulum al-Din* by al-Ghazzali, *‘Awarif al-Ma‘arif* by Shihab al-Din Suhrawardi, *Mantiq al-Tair* by Farid al-Din ‘Attar, 15

Futuh al-Makkiyyah and *Fusus al-Hikam* by Ibn ‘Arabi, *Hadiqah* by Sana’i, *Mathnawi* by Rumi, *Gulshan-i Raz* by Shabistari, *Insan-i Kamil* by ‘Abd al-Karim Jili, *Lama‘at* by ‘Iraqi, *Lawami‘ al-Bayyinah* by Fakhr al-Din Razi and *Lawa‘ih* by Jami.

The following is a broad outline of the mystic position. 20

The Ultimate Reality that remains the same amidst the changes of appearances, which are predicated of it as its attributes, is God. For all mystics

He is an indefinable, indivisible, incomprehensible Unity. For most of them, however, His essence is beauty, which is defined as perfection; for some it is will; for some light, and for some others knowledge. To the first school belong Shaqiq Balkhi, Ibrahim ibn Adham, Suhrawardi and of the last Ibn ‘Arabi.

God’s attributes are other than His essence. They are the modes of His Unity, or rather they are the reflections, emanations or self-manifestations of the Divine Unity and their sum total makes up the phenomenal world. 5

In so far as the world is a *reflection* of Reality and consists of the attributes of God as distinct from His essence, it is an illusion. On the other hand, all things being reflections, emanations or self-manifestation of His *Perfection* or *Beauty* in an ascending scale of clearness, they are themselves beautiful and lovable in different degrees according as they are near or distant from their source. 10

The human soul is also an emanation from God as a ray is an emanation from the sun. Before the ray became a ray, it was one with the sun. Even so the human soul, before it became a soul, was one with God. Its unnatural union with matter—like the union of the ray of light with the particles of dust—gave it a distinct appearance. Man is a microcosm in which all the Divine attributes are manifest in an imperfect form. Hence he has a unique position. But like everything else, he is restless for reunion with his source. This restlessness, this desire to be free from the want of perfection and to be one with Perfect Beauty, is love. Love is the essence of all religions; therefore, God is not to be found in 15 20

the temple, the church or the mosque, but in the heart.

The only true object of love—the real beloved—is Divine Beauty. But to reach that the mystic must love and contemplate first the beauties of the world—Divine manifestations in their ascending scale—and do such deeds as please the Beloved. In the course of his ascent, he must pass through several stages and several states till his love, from which would naturally and spontaneously begin to flow all good deeds, takes him to the Perfect Beauty of the Beloved till all attributes disappear and he becomes one with the Beloved. 5

Heaven is the ecstasy of union or closeness; Hell, the pain of separation. But for the mystic all misfortune is welcome, for it comes from the Beloved. 10

To be one with the Beloved, a man must imitate Him, and for that he needs a guide whom he must implicitly obey. The path of love is not the path of logic and, therefore, he is not to reason why. But a bad guide will lead one astray. Therefore one should take extreme care and use all one's intellect to find a true guide. 15

The more a man gains perfection, the nearer is he to God. When he absorbs by imitation all the attributes of God, he becomes His perfect manifestation. Then all the attributes get dissolved in God's absolute unity and with that he becomes one.

The theistic mystics do not speak of union with God, but of illumination from God or closeness to God. They hold that even when the mystic passes away from his individual will and enters into the Divine Will so that all his life 20

is devoted entirely to God, his ego still remains intact. Even when in ecstasy he loses his senses, he is aware of this loss of senses as a distinct ego. There are moments when the ego-consciousness also seems to disappear, but actually it is still there; it is only momentarily outshone by Divine vision, as the light of the stars is outshone by the light of the sun. These moments rapidly pass away and the ego-consciousness appears again. 5

That Islamic mysticism was influenced by Buddhism and Hinduism has already been mentioned. As Goldziher points out, certain conceptions, e.g. *fana'*, *tariqah*, *muraqabah* and *karamahs*, came from these sources. But as far as Hinduism is concerned, the debt was not one-sided. Very much more fundamental ideas passed consciously or unconsciously from Muslim mystics to Hindu philosophers and saints and through them to the Hindu masses. “The sweet, subtle and gentle influence of Sufism,” says Ramaswami Sastri, “was ... noteworthy because it went into the wrap and woof of the mind of the people. Further, the great doctrines of the unity and majesty and glory of God and the brotherhood of man—which are the most vital doctrines of Islam—indelibly impressed Hindu religious thought.” Dr Tara Chand’s observations in his *Influence of Islam on Indian Culture* are more detailed and comprehensive. Although there is no evidence of direct borrowing, “The establishment of this monotheistical tendency [in Southern India],” says he, “received a powerful impetus from the appearance of so uncompromisingly monotheistic a religion as Islam. Sankara was born at a time when Muslims were beginning their 10 15 20

activities in India, and, if tradition is correct, when they had gained a notable success in the extension of their faith by converting the king of the land. He was born and brought up at a place where many ships from Arabia and the Persian Gulf touched. If his extreme monism, his stripping of the *One* of all semblances of duality, his attempt to establish this monism on the authority of revealed scriptures, his desire to purge the cult of many abuses, had even a faint echo of the new noises that were abroad, it would not be a matter for great surprise or utter incredulity. ... 5

“His successors, Ramanuja, Visnuswami, Madhava and Nimbaraka, and the hymn-makers, in their speculations and religious tone, show closer parallelism. ... 10

“In Ramanuja’s time Muslims were to be found in the ports of the Coromandel Coast. Muslim saints like Nathad Vali were preaching Islam to the people and converting numbers of them, and Hindu kings like Kun-Pandya were giving grants of land for the erection of mosques. ... 15

“Ramanuja’s philosophy recognised a god with good attributes and inculcates His worship with faith and devotion. He exhibits a desire to open the doors of religion to the classes which had so far been shut out of it. Love finds a place not only in the relations of man and God but also of man and man, although in the latter case the advance is timid. Visnuswami, Nimbaraka and Madhava’s metaphysical discussions regarding the nature of God and man almost recall the debates of Nazzam, Ash‘ari and Ghizali [*sic.*]... 20

“Certain other characteristics of South Indian thought from the ninth century onwards, however, strongly point to Islamic influence. These are the increasing emphasis on monotheism, emotional worship, self-surrender (*prapatti*) and adoration of the teacher (*Guru bhakti*) and in addition to them laxity in the rigours of the caste system, and indifference towards mere ritual” (Tara Chand, *Influence of Islam on Indian Culture*, pp. 111-12). 5

The far-reaching influence of Islamic mysticism on Ramananda, Kabir, Nank, Dadu, Birbhan, Laldas, Baba Lal and others in North India, on Namdev in Maharashtra and of Chaitanya in Bengal is too well known to be mentioned.

European mysticism was also very much influenced by the mysticism of Islam. The Spanish orientalist Miguel Asin y Palacios writes, in his book *Islam and the Divine Comedy*, that Dante owed many details of his picture of the next world in *The Divine Comedy* to Ibn ‘Arabi. Arthur J. Arberry observes in *The History of Sufism* that “it is impossible, for example, to read the poems of the Spanish mystic St. John of the Cross without concluding that his entire process of thinking and imaginative apparatus showed much to those Muslim mystics who had also been natives of Spain”. In the beginning of the fourteenth century, Raymond Lull wrote on mysticism. He was an accomplished Arabic scholar and founder of a school of oriental languages at Rome. His mystical writings are “beyond question” influenced by Sufi speculation. These are only a few examples of what Arberry regards as “unquestionably a general process”. In later times the influence of Persian mystical poetry on so great a genius as 10
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Goethe is too well known to be mentioned.

(4) The Rationalists

So much about the mystics. Now let us come to the last school of Muslim thought—the School of Rationalists. It is these rationalists of whom it came be truly said that they “raised up the wisdom and knowledge of Hellas from the dead” and passed them on to the West as to the East. The most renowned among them were al-Kindi (Alchendius, d. 873 C.E.), Farabi (Alfarabius, d. 950 C.E.), Ibn Miskawaih (d. 1030 C.E.), Ibn Sina (Avicenna, d. 1037 C.E.), Ibn al-Haitham (Alhazen, d. 1039 C.E.), Ibn Bajjah (Avempace, d. 1138 C.E.), Ibn Tufail (Abubacer, d. 1185 C.E.), and Ibn Rushd (Averroes, d. 1198 C.E.). Most of them, like most of the leading scholastics, wrote books on several subjects besides philosophy. For example, al-Kindi wrote on astronomy, geometry, astrology, arithmetic, music, physics, psychology, meteorology and politics; al-Farabi on mathematics, astronomy, logic, politics, physics and music; Ibn Sina on theology, mathematics, astronomy, medicine, politics, zoology and botany; and Ibn Rushd on jurisprudence, physics, grammar, astronomy and medicine.

Roughly speaking, the school moved from synthesis of Neo-Platonism, Aristotelianism and Islam to Aristotelianism pure and simple. Al-Kindi, Farabi and Ibn Sina attempted to produce Muslim-Platonic-Aristotelian philosophy, only Farabi was more Aristotelian and Ibn Sina more Neo-Platonic. The later

thinkers of the school gave up the attempt at synthesis as hopeless and became avowed peripatetics and managed to keep theology and philosophy apart. According to this school, both reason and revelation are the sources of knowledge, but where they do not agree, they must be kept apart.

(i) *Al-Kindi*. Al-Kindi was an encyclopaedist. He wrote 263 works. It was he and not Descartes who first held that the mathematical method was essential for philosophical enquiry. He wrote a whole book to prove this, but unfortunately his own use of his method was vitiated by Pythagorean influences. His principal work on optics was widely read both in the West and in the East. Roger Bacon and Cardanus held him in high esteem, the latter for his assertion of the unity and universality of the world, on account of which the complete knowledge of a part contained the knowledge of the whole, the fundamental principle of the English absolutists of today. According to al-Kindi, knowledge is conveyed either by the senses or by reason or by imagination which last is a mediating faculty that lies between the two. The senses give knowledge of the particular, and reason of the universal and imagination of the universal-particular. Up to very recent times, Kant (d. 1804 C.E.) was supposed to be the first to have made imagination a mediator between the other two faculties—sense-perception and reason. But now some question Kant’s originality in this distinction and take it back to Lord Kames (d. 1782 C.E.), to the Italian Renaissance critic Muratori (d. 1750 C.E.) and in the end to Addison (d. 1719 C.E.). But, as we have seen, the credit of this distinction actually goes back to al-Kindi who had made it in a

clear-cut form more than nine centuries before Kant and eight centuries before Addison.

(ii) *Al-Farabi*. Al-Farabi is said to be the greatest Muslim philosopher, and his importance cannot be overestimated. He was universally regarded in the history of Muslim thought as the “second teacher,” the first being Aristotle. All later thinkers acknowledge their indebtedness to him. On Ibn Sina (Avicenna) and Ibn Rushd (Averroes) his influence is apparent. According to M. Carra de Vaux, his Logic produced a permanent effect on the logical thought of the Latin scholars. He wrote more than one hundred books, about half of which were criticisms and commentaries of past thinkers, chiefly Aristotle, and the rest were original works. Twenty-five of his works are still extant in fragmentary form. His chiefly subject was logic which, like modern idealists, he identified with epistemology. The logical process is for him not the methodology of knowledge, but the morphology of knowledge. It is not *the way* to finding the truth, but is itself finding of the truth. Al-Farabi and, following him, Ibn Sina added the third form of the famous cosmological proof of God based on the conception of possibility and necessity, the first two being based on the idea of motion and potentiality formulated by Aristotle. It was taken up from Ibn Sina by the Jewish philosopher Maimonides and from him by St Thomas Aquinas, and it was this proof that Kant criticized as the model cosmological proof. Al-Farabi was the first to hold against Aristotle that the body contained in itself the principle of movement, an idea which brought him very close to the position of

modern science and, if pursued, would have proved most fruitful. He emphasised the distinction between essence and existence which played such an important role in later Eastern and Western philosophy. Existence of a thing, according to him, is nothing but the thing itself. Being the thing itself, it cannot be truly predicated of a thing, for all predicates are universal, and existence is not a universal. It is distinct from essence. The subject and the predicate of a judgment, therefore, cannot change places. 5

(iii) *Ibn Miskawaih*. Ibn Miskawaih was a physician, philosopher and historian. He held that the soul of man is spiritual as distinguished from the corporeal, because a body cannot have opposite qualities, e.g. black and white, while the soul grasps systems of contradiction at once; similarly, it apprehends both the bodily and the spiritual, e.g. length and rationality; therefore the range of its knowledge and endeavour goes far beyond its own body. The greatest spiritual unity for him is that of self-consciousness—the knowing of one’s own knowing—for in that thinking, that which thinks and that which is thought are all united. He is noted for his system of ethics and for his formulation of the theory of evolution. 10 15

In his ethics Ibn Miskawaih defines good by reference to natural dispositions and their development as that by which a being possessed of will can attain to the perfection of its nature. Since an individual left to himself cannot realise all the good things that he might otherwise obtain, therefore he must live and work with others. But society is not possible without sympathy 20

and love; therefore the primary virtue which is the duty of everyone to develop is love for mankind. Love for others, or friendship, is not, as Aristotle held, an expansion of self-love, but a limitation of it and love for *another*. The primary function of religion is to make people moral, and that is not possible unless it gives training in the cultivation of love for humanity. The ascetic life of a recluse is not, therefore, moral. The chief function of pilgrimage to sacred places is the development of mutual love. From the metaphysical point of view, the particular goods of individuals are finally directed to the Absolute Good which is identical with the Highest Being. 5

In their theory of evolution, Ibn Miskawaih and his contemporary Ibn Sina further developed the views that had been held by the Brethren of Purity and in this theory were followed by the great philosopher of history, Ibn Khaldun, and the well-known philosopher-poet, Rumi. 10

Ibn Miskawaih's description of the process of evolution is in general outline the same as given by Darwin nine hundred years later. Shibli in his *'Ilm al-Kalam* summarizes it as follows: 15

“The combination of primary substances produced the mineral kingdom, the lowest form of life. A higher stage of evolution is reached in the vegetable kingdom. The first to appear is spontaneous grass; then plants and various kinds of trees, some of which touch the borderland of animal kingdom, in so far as they manifest certain animal characteristics. Intermediary between the vegetable kingdom and the animal kingdom, there is a certain form of life which is neither animal nor vegetable, but shares the characteristics of both (e.g. coral). The first step beyond this intermediary stage of life is the development of the 20

power of movement, and the sense of touch in tiny worms which crawl upon the earth. The sense of touch, owing to the process of differentiation, develops into other forms of sense, until we reach the plane of higher animals in which intelligence begins to manifest itself in an ascending scale. Humanity is touched in the ape which undergoes further development, and gradually develops erect stature and power of understanding similar to man. Here 5
animality ends and humanity begins.”

In his *Mathnawi* Rumi describes the evolutionary process in these lines:

“First man appeared in the class of inorganic things,
Next he passed there from into that of plants. 10
For years he lived as one of the plants,
Remembering naught of his inorganic state so different;
And when he passed from the vegetative to the animal state,
He had no remembrance of his state as a plant,
Except the inclination he felt to the world of plants,
Especially at the time of spring and sweet flowers; 15
Like the inclination of infants towards their mothers
Which know not the cause of their inclination to the breast.
Again the great Creator as you know,
Drew man out of the animal into the human state,
Thus man passed from one order of nature to another, 20
Till he became wise and knowing and strong as he is now.
Of his first soul he has now no remembrance,
And he will be again changed from his present soul.”

(iv) *Ibn Sina*. Ibn Sina attempted to give an *explanation* of the process of evolution in the cosmology. This explanation was universally accepted by 25

mystics including Rumi. It was based not, as in the case of Darwin, on the principle of struggle for existence leading to the survival of the fittest by adaptation to environment, but on the principle of struggle for self-development by reference to an ideal. Everything in the world is imperfect. Being imperfect, it strives for its completion, for its perfection. This willing or striving for perfection is the secret of growth and is named Love. The perfection it aims at is called Beauty. The entire universe is moving by the power of love towards the one Supreme Beauty—the most perfect and the best. Matter serves the purpose of love and, in its service of love, it takes different forms in an ascending scale, stones, plants, animals, man. At still higher stages of development, it will take even more perfect forms of which we know nothing. If we ignore his terminology, this theory of Ibn Sina is an anticipation of the recent theory of emergent evolution with a strong idealistic flavour.

Ibn Sina was one of Islam's greatest thinkers. He produced a synthesis of Aristotelian and Neo-Platonic philosophies. One of his works, *al-Shifa'*, an encyclopaedia of physics, metaphysics, and mathematics, was written in eighteen volumes. It was edited by Forget in Leiden in 1892.

According to Ibn Sina's metaphysics, only the thing that depends on a cause is possible, for if the cause were not there, it would not be. Its existence becomes *necessary* only when its cause is there. This basically possible character of all that has been caused and has thus become necessary leads us to the conception of the existence of a Necessary Principle or Necessary Cause

which introduces necessity into the possible. This Necessary Cause is God. As mentioned before, in formulating this proof Ibn Sina followed al-Farabi and was followed by Maimonides and Spinoza. In God there is identity of *essence* and *existence* and so of *knowing*, the *knower* and the *known*.

As a logician, Ibn Sina regards all universals—all ideas of things—as abstracted from experience by comparison of individuals and observations of resemblances, and, therefore, existing only in the mind. As pure universals or essences, they exist in the mind of God Whose knowledge consists only of these. Individuals make up the objective universe. They are universals combined with matter—universal particulars—that eternally flow out of the Necessary Existence—God—as water of a river consisting of drops gushes out of a spring. The existence of everything in the universe is momentary, but the constant flow of existence from its source makes it appear continuous.

The essences of pure universals eternally existing in the mind of God are the subject-matter of metaphysics; as eternally combined with matter in the material objects, they constitute the subject-matter of physics; and as universals abstracted from experience by comparison of individuals and observation of resemblances and existing only in the mind as ideas, they form the subject matter of logic.

But as the human intellect is defective, the abstracted universals are not as pure as the universals in the mind of God. The human effort should be directed to grasp true knowledge, to apprehend the true essences of things by the help of

logic. Logic is as useful for the acquisition of true knowledge as the rules of grammar are for correct speech. But, though very useful, logical rules are not indispensable. As Farabi also held, a Divinely-inspired man can do without them even as a Bedouin can do without an Arabic grammar.

For Ibn Sina, as for al-Ghazzali after him and for Kant in the modern age, the categories are subjective. Indeed, the Kantian position that the categories are subjective and the knowledge of objects is due to a synthesis of sense-perception and logical intelligence was a commonplace of Muslim philosophy in the twelfth century. It was expounded, not only by al-Ghazzali and Ibn Sina, but also by the latter's contemporaries, Ibn Haitham, famous for his optics, and al-Biruni (d. 1048 C.E.), well known for his studies in mathematics, astronomy, geography and ethnology.

As a psychologist, Ibn Sina forestalled the early twentieth-century hypothesis of brain localisation and, as an ethicist, in opposition to Aristotle, he gave a higher place to moral virtues than to intellectual virtues.

Ibn Sina's reputation both as a philosopher and writer of medicine lasted in the West for many centuries and most of his works were translated into Hebrew and Latin before the close of the twelfth century. With his treatise "Oriental Philosophy," now lost, Roger Bacon was well acquainted. Ibn Sina's classification of the philosophical sciences was widely accepted in Europe in the Middle Ages and was preferred by the scholastics of the thirteenth century to any other. The Jewish philosopher, Maimonides, was a follower of Ibn Sina.

Albert the Great, who was a contemporary of St Thomas, and his disciple Ulrich of Strassburg were also influenced by him. The former followed his method and regarded him as the greatest commentator of Aristotle. St Thomas himself followed Ibn Sina's position with regard to the nature of universals. In the Muslim East, perhaps no philosopher after al-Ghazzali has been read more widely than Ibn Sina. In the West, his influence on Christian scholastics was very great. Dante placed him between Hippocrates and Galen, and Scaliger held him to be Galen's equal in medicine and much his superior in philosophy. 5

Spinoza's view that in God intellect, intelligent and intelligible are identical, and so are essence and existence, while in created beings existence is an accident superadded to essence, has been traced by many to Ibn Sina through Maimonides. 10

(v) *Ibn Haitham*. Ibn Haitham, who has been mentioned before as a great ophthalmologist, was also a renowned philosopher of the Aristotelian school. He, like his contemporaries Ibn Sina and al-Biruni, anticipated Kant by nearly seven hundred years in his theory that sense materials receive their form from understanding and that an object is a logically elaborated perception. Besides, he saw clearly what was realised in the West only in the last century that apperception plays an important role in perception and that comparison and recognition are among the several forms of logical inference. He was the first to discover the psychological law that momentary impressions in succession give a continuous impression—a law the rediscovery of which in our own time has 15 20

brought the cinema into existence. If the chemical process of making or developing photographic plates were then known, the world would have seen cinematography nearly nine centuries earlier.

(vi) *Ibn Bajjah*. In al-Farabi and Ibn Sina a mystic strain was also prominent. But Ibn Bajjah, though a close follower of al-Farabi, gradually shed this strain. He made an open revolt against mysticism and declared that the sensuous imagery of mysticism conceals rather than reveals the truth and, therefore, in spite of the joy it affords, it must be renounced in favour of pure thought. He raised the problem how in a world, mostly composed of the philosophically ignorant and the religiously fanatical, the philosopher can rise to heights and know reality as it is and how he can present his views and adapt his life to a world so composed. He held that man could reach the highest peaks of knowledge by the natural advance from sense-experience to thought. He believed in a spirit of humanity—a pain-psyche—and regarded personal immortality possible in the case of some souls. Reality for him is divisible into (1) the cause of movement, (2) that which is moved, the natural order and (3) the self-moved, the individual soul. Body cannot live without form but form may live without body. The soul, being the form of the body, may live after the dissolution of the body, by progress in knowledge to higher and still higher forms. Those who see only the sensuous presentations will, like these presentations, pass away, but those whose action is directed by reason will reach the stage of knowledge and attain to eternal life. The soul is mortal, but the

spirit, the rational part of the soul, being universal, is eternal. Only those who develop the spirit achieve immortality. Those who reach knowledge by pure thought reach the Truth which is another name for God. They do not only reach God, they become one with God.

Ibn Bajjah's philosophy was well known to the Latin schoolmen, especially to Albertus Magnus and St Thomas Aquinas. 5

(vii) *Ibn Tufail*. Another Muslim thinker, Ibn Tufail, is famous for his masterpiece *Hayy Ibn Yaqzan*, a philosophical romance, in which he shows that, without the help of tradition and revelation, man can attain to the knowledge of nature and through that to the knowledge of God. This remarkable work was first translated into Latin by Edward Pocock Junior and published with the Arabic text at Oxford in 1671 and then its translations appeared in most of the European languages. In Paul Bronnle's words, "in a comparatively short time it caught the fancy of the public—in fact, it took the world by storm and for a long time it remained greatly in vogue". The world's interest in it has not yet ceased, for it was translated into Russian in 1920 and Spanish in 1934. It was first translated into English by George Keith in 1674, then by George Ashwell in 1686 and Simon Ockley in 1708. Eleven years after the publication of Ockley's version, Daniel Defoe produced his *Robinson Crusoe*. It has, therefore, been justly concluded that Daniel Defoe was indebted to the great Muslim philosopher for the conception of his work. 10 15 20

Ibn Tufail was *wazir* and chief royal physician to Caliph Muwahhid Abu

Ya‘qub Yusuf. He was succeeded to that office on his own recommendation by his young contemporary, Ibn Rushd, who was the last of the most illustrious philosophers of Islam and the one destined to become the supreme teacher of Europe for centuries to come.

(viii) *Ibn Rushd*. Ibn Rushd (Averroes, Aven Rois, Abenruth, Liveroys, Benroyst, Membucius, Mauvitiis, etc.) was the purest and greatest of all peripatetics. 5

According to Ibn Rushd, truth exists and is knowable, for the love and longing for it that we have in our hearts would be all in vain if it were not so. Like Aristotle, he holds that all becoming is transition from potentiality to actuality and back to potentiality. This eternal process of becoming presupposes movement and movement presupposes an Eternal Mover. God is the Eternal Mover. He is the origin and the goal of all things. Divine essence transcends both universals and particulars (both form and matter), but Divine thought which is identifiable with its objects produces everything. For Ibn Rushd, as for Kant centuries later, the proof of the existence of God from the notions of possibility and necessity given by al-Farabi, Ibn Sina and others makes no stand against the scientific criterion. 10 15

The main ideas for which he was vehemently opposed by scholastics of the East and the West and most enthusiastically welcomed by radicals in thought from the twelfth to the fourteenth century and which opened the door to the European Renaissance were: (1) allegorical interpretation of the scriptures, (2) 20

the theory of two truths, which, in the words of Macdonald, “ran like wild fire through the schools of Europe,” (3) pan-psychism which implied immortality of the universal soul of humanity and mortality of the individual soul, (4) eternity and potentiality of matter, and (5) emancipation of women. A word or two may be said about each of these ideas by way of explanation. 5

(1) Like his predecessors Ibn Bajjah and Ibn Tufail, Ibn Rushd holds that religion gives the truth, but only in an allegorical and pictorial representation. The scriptures use allegorical imagery so that the truth which is abstract should be apprehended by the common man. And that is inevitable, for religion is practical and has to keep in view the capacity of the masses to understand. They should be told only so much and in such form as they are capable of apprehending i.e. only the literal meaning of the scriptures. For the same reason, religion has to induce morality in the multitude by promise of punishment and reward, though true morality is above these considerations. True morality is an affair of reason, and that alone is right which is in conformity with reason. 10 15

(2) These ideas led Ibn Rushd to what is called his theory of two truths. He held that religion and philosophy differed, if not in their content, at least in the expression of the common truth. The images of scriptural descriptions suitable for the common man are not taken to be the full truth by philosophers and conceptions of philosophers of perhaps the same truth are not comprehensible to the common man. Therefore it is best to keep them apart as two truths, and accept the position that something may be true theologically but not 20

philosophically, and *vice versa*. Thus the realm of Grace was separated from the realm of Nature, the one for the theologian to pursue and the other for the scientist and the philosopher to know.

(3) In order to understand Ibn Rushd's pansychism, we have for a moment to go back to Aristotle. In discussing the nature of the soul, Aristotle, in a rather obscure passage, distinguishes between the passive intellect which begins with the body and disappears with it, and the active intellect which is a Divine principle coming into the human soul from outside. He also makes another distinction and that between the potential intellect and the actual intellect, one being the state of intellect when it is a mere capacity and the other intellect in the act of thinking when it is an actuality.

Later, Alexander of Aphrodisias identified the active intellect with God. Al-Farabi, after Al-Kindi, gave a fourfold distinction: (a) The passive, latent or potential intellect as the *capacity* man has of apprehending the essence of things by abstracting them from the various accidents with which it is associated in perception, more or less equivalent to the "common sense" of Aristotle. (b) The active intellect which is the same intellect aroused to *activity* and actually abstracting forms or universals from perceptions. (c) The agent intellect as *an external power* emanating from God and *arousing the intellect* from passivity to *activity*. (d) The acquired intellect as the intellect not only aroused to activity but also *developed* under the inspiration of the agent intellect.

Ibn Sina, owing to his Neo-Platonic bias, gives a hierarchy of intellects. The

first of these, the agent intellect, is an emanation from God—same as al-Farabi’s agent intellect—and the last, the human intellect, reason or the rational soul in man (as distinguished from the soul of other creatures), which ultimately comes from the agent intellect at the time the body is generated. It is independent of the body and is immortal. 5

Ibn Rushd makes important modifications in these ideas. The distinction in the intelligence of man between the passive intellect and the active intellect of man is of no consequence for Ibn Rushd, for the latter is the same as the former roused to a state of activity. In the earlier systems, the passive intellect is regarded as a seat of all latent and potential faculties, directly or indirectly 10 aroused to activity by the agent intellect. Not so for Ibn Rushd. For him, the passive intellect is a portion of the agent intellect itself temporarily occupying the individual body. But what is the agent intellect? It is the universal intellect of *humanity*. Intellect is not of persons but of the whole of the human race. It is the impersonal, objective, eternal and universal soul of humanity—a pan- 15 psyche—which, like a torch, illumines the individual souls and enables them to participate in the eternal truth. It is by a contact with this universal soul that individual souls get illuminated. This contact or union of the universal soul with an individual soul or participation by personal beings of the universal reason comes off according to the capacities of each man in several ways. It comes off 20 either (a) by way of abstract essence (i.e. *a-priori* knowledge of universals), or (b) in the form of mystical and prophetic illumination, or (c) by its action on the

sense-images in abstracting universals from them (in which last case it becomes the acquired intellect). Human intelligence is thus eternal in essence, but transitory (like the individual soul itself) in its function.

By death the individual soul or the personal intellect as such (whether passive or active), being a portion of the universal intellect *temporarily* 5 occupying the individual body, perishes even as the body perishes, but the universal soul remains even as matter remains. Therefore, while the soul of humanity is eternal, the individual soul is mortal. There is no personal immortality, but men live impersonally in the universal soul of humanity through the propagation of thought. Men die as persons, but they live eternally 10 in their progeny and their doctrines. According to Ibn Rushd, those who think that this view strikes at the root of morality are wrong. On the other hand, it protects one from servility to punishments and rewards. The truly moral man is impelled to action by the love of virtue alone.

(4) In discussing the origin of things, Ibn Rushd says that matter is not non-being as the Neo-Platonists think. It is not mere void, but universal and eternal 15 potency containing the germs of all forms. Creation is only a transition from potentiality to actuality. God's essence transcends both form and matter, but matter is co-eternal with His thought. His thought consists of forms (universals) which are the moving forces *inherent* in matter. No form is without matter and 20 no matter without form. Lower forms are called forth by higher forms and the graded series of forms or universal principles finds its termination in the Prime

Mover. The Prime Mover (*extractor*) does not arbitrarily introduce form into matter, as Ibn Sina held, but converts them from potentialities into actualities by drawing them (*ex-tractio*) out of primordial matter, and thus making active the forces of the latter.

In the process of the actualisation of form potential in matter, nothing new is added and, therefore, no increase of being takes place. The potential must *sometime* become actual. In fact, it is already actual for the philosopher who views eternity including all time—past, present and future—and for the eternal mover (*extractor*) who comprehends in a single glance (*subito*) whatever he regards. The extraction (*extractio*) of actual things from potentialities is in the nature of the case and, therefore, cannot be regarded, with Ibn Sina, as an arbitrary act of the Prime Mover.

Thus there is no free arbitrary creation by Providence, but a necessary causal nexus in all that happens in the world, God being the First Cause—the Prime Mover—and not the immediate cause of things.

(5) In the social ideas, particularly with regard to the status of women, Ibn Rushd was as radical as in his philosophy. Women, he said, were kept in his time like domestic animals and plants only for personal gratification and were far from being treated as human beings. In his opinion, “women differ from men not in quality, but in degree. ... Sometimes they surpass them ... the example of certain African States show their aptitude for war, and there would be nothing extraordinary in their attaining to the government of the State. Among sheep-

dogs, does not the female guard the flock just as well as the male?” Such ideas were first expressed in Europe by men like Dubois in France and Ockham in England two centuries after Ibn Rushd.

Ibn Rushd’s theory of two truths, combined with the doctrine that matter is eternal and potent to produce all forms from within itself, was a godsend for the scientifically-minded people in the West who were, as a rule, condemned and persecuted by the orthodox church and the State. They found in the above theses, which passed as Averroism, their best support. For this reason De Wulf calls Ibn Rushd the Doctor of Anti-Scholastics.

Just as the Jewish and Christian writers had translated pre-Islamic works for the Muslim world, even so did they translate the works of Muslim writers for the Western world. In this transmission of Muslim thought to the non-Muslim West, the Jews took the lead. During the long Muslim rule in Spain, the Jews, like all non-Muslims, enjoyed what historians call “unparalleled religious toleration”. The portals of colleges and universities were open to them and they held important university chairs. They spoke and wrote in Arabic, used the Arab dress and followed the same manners. During the short fanatical rule of the Berbers of Morocco, the Muwahhids, one of whom, Abu Yusuf Ya‘qub al-Mansur (r. 1184-99 C.E.), had banished even Ibn Rushd from Morocco for a time to appease the orthodox, they were persecuted and forced to migrate to the neighboring countries, viz. to Leon and Castile (the Christian part of Spain), to France across the Pyrenees and to Sicily. They were welcomed by Alfonso VI

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who had himself been educated among the Arabs and had done the work of
 initiating the Christians into Muslim thought. His successors Ferdinand III and
 Alfonso the Wise maintained the tradition and engaged Jewish scholars for
 translation work. Those Jewish scholars who settled down in the country
 adjacent to the Pyrenees were rich and held Averroist ideas. Their riches 5
 aroused the jealousy of their Christian neighbours and their Averroism, the
 hatred of Pope Innocent III, under whose orders hundreds of thousands of them
 were massacred in these parts. Many of them fled to other parts of Europe,
 carrying with them the learning of the Muslims. Wherever they settled down,
 they translated the works of Muslim thinkers, especially of Ibn Rushd, whom 10
 they universally admired, from Arabic into Hebrew and from Hebrew into
 Latin. The family of Tibbonids established at Lunel undertook the translation
 almost exclusively of Ibn Rushd's original works and his commentaries. Some
 of their own writings are nothing more than encyclopaedias of Ibn Rushd's
 teachings. Such were, for example, Samuel Ibn Tibbon's *The Opinions of the* 15
Philosophers, Juda ben Solomon Cohen's *The Search for Wisdom* and Gershon
 ben Solomon's *Gate of Heaven*. Among Jewish philosophers, while Ha-Levi
 followed al-Ghazali, and Maimonides, Ibn Sina, Gersonides was a disciple of
 Ibn Rushd. Besides Jewish scholars, Jewish statesmen and travellers were
 instrumental in spreading Averroism in France, Italy and Central Europe. 20

In Christendom, Raymond, Archbishop of Toledo (from 1130 to 1150 C.E.),
 founded a college at Toledo. At this college some of the most important works

of Muslim writers on philosophy and science, including Arabic versions of Aristotle and commentaries and abridgements by al-Farabi, Ibn Sina and Ibn Rushd, were translated into Latin. One of the well-known translator working in Toledo was a German Hermann by name, but his renderings of Aristotle's works were considered by Roger Bacon as barbarous and unintelligible. 5

It is noteworthy that Arabic was the written and court language of Toledo even two centuries after the Christian conquest by Alfonso VI in 1085. Even the coins of Alfonso VI and several of his successors bore Arabic inscriptions.

By the end of the twelfth century, Averroism, i.e. the philosophy of Ibn Rushd, became so popular, particularly among the whole school of philosophers represented first by the Faculty of Arts at Paris, and became such a menace to Orthodox Christianity that in 1210 the Council of Paris forbade all teaching of Aristotle's natural history and Ibn Rushd's commentaries on it, while this prohibition was confirmed by the Legate Robert of Courcon, Cardinal at Paris in 1215, and renewed by the Popes in 1231 and 1245. The *Physics* and *Metaphysics* of Aristotle were *forbidden* at the University of Toulouse by Urban IV in 1263. In 1269, the Bishop of Paris condemned thirteen of Averroes's basic doctrines, and in 1277 he condemned the prominent Averroist, Barban. Yet the strength of Averroism was irresistible. No force could suppress it. 10 15

In 1214, Frederick II became the Emperor of Rome. Having been educated at Palermo under Arab teachers and having come into close contact with the Muslims of Sicily and also in the Crusades with those of Syria, he had become a 20

great admirer of Muslim thought in general, and of Ibn Rushd in particular. In 1224, he established a university at Naples chiefly with object of introducing Muslim philosophy and science to the people of the West. St Thomas received his education at this university. Here both Christian and Jewish translators were engaged for rendering Arabic works into Latin and Hebrew. The works of Aristotle and Ibn Rushd in their Latin translations were not only used in the curriculum of this university, but were also sent to the universities of Paris and Bologna. 5

By the middle of the thirteenth century, almost all the works of Ibn Rushd had been translated from Arabic into Hebrew and Latin. Ibn Rushd's commentaries were translated into Latin by Michael Scottus, Hermanus and others, and had currency throughout Europe. In spreading his doctrines, the Friars took the lead and under their influence were translated Aristotle's works from the original Greek as well as Ibn Rushd's Commentaries. 10

Nowhere did Averroism strike deeper roots than in the universities of Bologna and Padua. Of these two centres of learning Padua became the "hot-bed of Averroism". 15

Averroism became rapidly the ruling mode of thought in the West. As Hitti writes: "Though using in most instances a Latin translation of a Hebrew rendition of an Arabic commentary upon an Arabic translation of a Syriac translation of a Greek original, the minds of the Christian schoolmen and scholars of medieval Europe were agitated by ibn-Rushd's Aristotle as by no 20

other author. From the end of the twelfth to the end of the sixteenth century Averroism remained the dominant school of thought, and that in spite of the orthodox reaction it created first among the Moslems in Spain, then among the Talmudists and finally among the Christian clergy. ... After being purged of objectionable matter by ecclesiastic authorities, his writings became prescribed studies in the University of Paris and other institutions of higher learning” 5
(*History of the Arabs*, pp. 583-84).

By the sixteenth century Ibn Rushd’s philosophy became, in the words of Renan, “almost the official philosophy of Italy in general”. Thus for over four centuries this remarkable man held sway over the intellect of Europe and laid 10
the foundations of the Italian Renaissance. Coulton compares his influence with that of Darwin in our time, but for the comparison to be true Darwinism has yet to live for three more centuries.

Chapter 5

CONCLUSION

As we have seen in this brief survey, the period from the eighth to the thirteenth century was a period of phenomenal rise and remarkable achievements in Muslim thought. From the thirteenth century onwards, however, there was a rapid decline. The conditions that led to this decline were many, but one of them was the extreme philosophies of al-Ghazzali and Ibn Rushd—extreme intuitionism of the one and extreme rationalism of the other. Under the influence of the former, Muslim thought was lost in the clouds of mysticism; under the influence of the latter, Western thought ran into the abyss of materialism. The West ignored what the East monopolised, and the East ignored what the West monopolised, and for that both have come to grief. For true knowledge both intuition and reason are needed. Intuition cannot ignore the laws of logic. Even the enjoyment of Divine Vision cannot be known to be so unless it passes into a rational judgment. And reason has to depend for its knowledge of the basic and the ultimate on intuition. It was a mistake of Muslim philosophy to depend wholly on the one or the other or to keep them apart. Reason and intuition must supplement each other. The upward movement of Muslim thought will depend mostly on the recognition of this truth.

The second condition that contributed to the downfall of Muslim thought was that the later rulers gave no encouragement to learning. If anything, they definitely checked its progress. Learning is a luxury for the individual, but it is a necessity for the State. This truth, well known to the early Arab rulers as much as to the great nations of today, was hardly known to them. Before the fall of Baghdad most of the great thinkers of Islam held high offices in the State or received its patronage in other ways. To mention only a few, al-Razi resided at several princely courts, including that of Samanid Mansur ibn Ishaq; Ibn Sina was under the patronage of ‘Ala’ al-Dawlah of Isfahan; and Ibn Miskawaih was treasurer and friend of Sultan ‘Adud al-Dawlah. Similarly, Ibn Tufail was one of the wazirs of Abu Ya‘qub Yusuf, Ibn Bajjah, a minister of ‘Ali, Governor of Saragossa, Ibn Rushd, a physician to Abu Ya‘qub Yusuf and Ibn Khaldun a secretary and ambassador at several courts. After the fall of that city, no such encouragement to learning came from any of the Muslim States.

Thirdly, great political upheavels led to the destruction of towns, wholesale massacres of populations, burning of libraries, closing of colleges and universities and gradual enslavement of nations. As a result, great social evils crept into Muslim society. There was a complete loss of independent thought and action. The pious and the wise went into mystic seclusion and their descendants degenerated into dancing dervishes and keepers and worshippers of shrines. A great empire got split up into parts and these parts into petty States and petty States into classes and clans. In course of time, the spirit chilled into

cold ritual and life froze into ruts, and the torch of learning passed from the Muslim East to the Christian West. The pseudo-mystic trend made the East bankrupt of science, and with science went trade and industry and with these all prosperity. No doubt, the philosophical tradition was kept alive for centuries to come by such thinkers as Katibi, Shahrazuri, Hilli, Isfahani, Sadr al-Din Shirazi, 5
 ‘Abd al-Karim Jili, Jurjani, Taftazani, Sha‘rani, Jalal al-Din Dawwani, Mulla Sabzwari, and a host of others in Iran and Central Asia; Tashkoprazade in Turkey; and Shaikh Ahmad Sarhindi, Sialkoti, Mir Zahid, Hasan Bihari, Shah Wali Allah and Fadl Haqq Khairabadi in India. But none of these thinkers except ‘Abd al-Karim Jili rose to any great height, for none except him could 10
 compare with the great masters of Muslim thought between eighth and thirteenth century. Although the downward tendency had begun in the thirteenth century, the seventeenth, eighteenth and nineteenth centuries have justly been described as the dark ages of Asia. Decline in thought and culture went parallel with the decline in political power. 15

Towards the end of the nineteenth century, however, a vigorous intellectual movement was started by Jamal al-Din Afghani in the Near East and Sayyid Ahmad Khan in India, and that movement opened the door to an Islamic renaissance. Since their time, there has been a definite revival of learning. In the realm of philosophy, this upward trend has been more manifest in the Indo-Pak 20
 subcontinent than elsewhere. A lead has been given by Iqbal who, though himself a poet-philosopher, never wearied of stressing the importance of

scientific study. Philosophy and science both aim at impartial and systematic knowledge, but while philosophy has as its goal a comprehensive knowledge of the ultimate nature of things and of the significance of values, science advances knowledge of the physical world and gives its votaries unlimited power over the forces of Nature for good or ill. It is the combination of religion, philosophy and science which can harness these forces for the true service of man. No nation without these three can rise of any great height. 5

Let us hope that the awakening now noticeable in the world of Islam will enable the Muslims, not only to overtake those who have gone far ahead, but also to regain their old leadership in all spheres of life and thought. To do so it is already very late, but it is hardly ever too late. 10

The End

Endnotes

x.y = page x . line y

a] b = corrected or revised text in thesis] text in Sc

32.2 The question of whether the accurate term to represent the intellectual history of the Islamic civilization is “Muslim,” “Islamic,” “Arab,” or “Arabic” has been dealt with only marginally. Contemporary scholarship is weary of all these terms—“Muslim” means that philosophical and scientific activities were being undertaken by Muslims alone; “Islamic” denotes that the intellectual activity resulted from religious commandments; “Arab” means that only those living in and around the Arabian Peninsula were working on philosophy and science; and “Arabic” denotes that the literary output was in Arabic alone. All these terms misrepresent what we now know about Islamic intellectual history. We know from Sharif himself that Muslims, Christians, Jews and Zoroastrians worked together in this enterprise; that there were as many non-religious historical modalities that pushed this enterprise as there were religious; that Persians, North Africans, and later the Andalusians were as much a part of this movement as the Arabs; and that by the 11th century C.E. Arabic was not the only language of philosophy and science. In 1974 the University of Chicago historian Marshall G. S. Hodgson, in a posthumous multi-volume publication that in scholarly circles has informally received the status of a sort of standardized history of the Islamic civilization, devised the term “Islamicate”. He wrote, “One can speak of ‘Islamic literature’, of ‘Islamic art’, of ‘Islamic philosophy’, even of ‘Islamic despotism’,

but in such a sequence one is speaking less and less of something that expresses Islam as a faith” (Hodgson, 57). However, the use of the term “Islamicate” never caught on as a trend in the academy. Many contemporary scholars now use the term “Arabo-Islamic”. By the hyphenated “Arabo” one denotes not Arab, but rather Arabic, which was the primary language of this intellectual tradition at least till the 11th century C.E. and maintained its place as the lingua franca after that as well. The hyphenated “Islamic” in this term denotes the socio-cultural milieu that resulted from the Arab experience with the Islamic faith system. This thesis will use this term. Sharif’s text has not been changed in light of this, as the use of a term here denotes not just a technicality but also an entire school of thinking with which our author associated.

32.11 The dichotomy between Indian and Muslim thoughts operates on the assumption that these were two different streams of thought in the tenth century. Post-1951 scholarship provides evidence that Indian thought—just like Greek, ancient Persian, and Chinese intellectual traditions—was also appropriated in the Arabo-Islamic tradition (see Haq).

33.16 ten to forty lacs = one million to four million

34.9 baldachin] baldachine

34.21 No citation found.

35.5 No citation found.

35.6 Ahmad ibn Majid. This once famous connection between Vasco da Gama and Ahmad ibn Majid is now in dispute. G. R. Tibbetts argued in 1971 that this is

most probably a legend constructed decades after the death of Ahmad ibn Majid, and that it is more likely that an Indian—a “Gujerati Moor”—was the one who guided Vasco da Gama’s quest in the Indian ocean (Tibbetts, 10-2).

35.9 Draper, 347.

35.12 Draper, 348.

France, and England ... were” still “scarce better than stables—chimneyless, windowless, ... with a hole in the roof] France and England were” still “scarcely better than stables, chimneyless, windowless, with a hole in the roof

35.19 This assertion, that the Arabo-Islamic intellectual enterprise was inspired by the Qur’an and the practices of the Prophet, is hardly accompanied by any external historical evidence. When Qur’anic verses and Hadiths are cited in favor of seeking knowledge and then the development of this intellectual tradition is discussed, it looks like an example of *post hoc ergo propter hoc* (after this, therefore because of this). Nonetheless, there is some historical evidence to support this connection, primarily from the field of astronomy. Owing to the Islamic injunctions of praying five times a day according to differences in the position of the sun, Muslim time-keepers (*muwaqqits*) in mosques had to develop detailed timetables for the prayers, an incentive that in large part led directly to the development of astronomical observations and models of planetary movements. Nicholas Copernicus used the theoretical model of Ibn al-Shatir—a time-keeper in a mosque—to develop his heliocentric theory in 1543 with the first

publication of his *De Revolutionibus Orbium Coelestium*. He also used a model developed by al-Tusi (see King and Saliba).

- 36.4** 96:1-5] xcvi. 1f.
- 36.5** 20:114] xx. 114
- 36.6** 39:9] xxxix. 9
- 36.7** 7:179] vii. 179
- 36.8** 8:22] vii. 29. 7:29 is not the correct reference for the relevant verse.
- 36.9** 6:98] vi. 98
- 36.10** 6:99] vi. 99
- 36.11** 2:269] ii. 269
- 36.13** 2:247] ii. 247
- 36.15** 2:30f.] ii. 30 f.
- 37.1** 2:164; 3:199; 10:6; 13:2f.; 106:3f.; 16:78f.; 40:67; 35:5] ii. 164; iii. 199; x. 6' xiii. 2f.; cvi. 3f.; xvi.78 f.; xl. 67; xvl. 5
- 37.3** 69:50; 102:5f.] lxix. 50; cii. 5f.
- 37.7** Qur'an is "a book] "Qur'an is a book
- 37.8** kings ... to hold up ... the light to Humanity] kings to hold up the light to humanity
- 37.8** around;] around,
- 37.10** astronomy, and] astronomy and
- 37.10** the West as well as to the East] the West as to the East
- 37.11** science, and] science and

37.11 to cause us late epigoni] to make us late-comers

37.12 Deutsch, 123.

37.14 According to “Shia Chat”, a Hadith in *Al-Kafi* states that ‘*aql* (intellect/reason) was the first thing to be created.

37.14 Reportedly, this Hadith is an agreed upon one. See “Extracts”.

37.15 The closest Hadith, in its wording and its meaning, that I have found is this:

The Holy Prophet has said, “If one sets out on a journey to seek knowledge, Allah will lead him to the path that takes him to paradise. The angels will stretch their wings for the pleasure of the seeker of knowledge, and all that is in heaven and earth, even the whales in the oceans, will ask (Allah) to forgive him. The excellence of the scholar over other people is like the brilliance of the moon over other stars during a full-moon night. Scholars are the heirs of the prophets. The prophets did not leave any Dirham or Dinar (wealth) as their legacy but left knowledge as their legacy. Whoever acquires a share from such legacy has gained an enormous share.” (*Al-Kafi*, Chapter 4, Hadith 1)

This hadith was also quoted by Syed Ameer Ali in his famous work *The Spirit of Islam*, but without a citation. See Ameer Ali, 532.

37.17 *Sunan Ibn Majah*, Hadith 224.

37.21 Ibn Abd al-Bar, *Fadl al-‘Ilm* (Marwaha, 165-6).

37.21 According to Fethullah Gulen, this was not a “real Tradition”. See “Authenticity”.

38.3 *Bihar al-Anwar*, Vol. 1, Chapter on Knowledge (Ameer Ali, 531-2).

- 38.4** According to Pandolfa, a Hadith that comes close to this is: “And the angels will place their wings as to aid the seeker of knowledge”.
- 38.4** No citation found.
- 38.7** This Hadith is not part of the Sihah Sittah (the six compilations of Hadiths considered authentic in the Sunni legal tradition). I am grateful to the members of an invitation-only Islamic Studies listserv who helped with Notes 38.7, 38.8, 38.9 (the first note) and 38.10.
- 38.8** *Jami‘ al-Tirmizi*.
- 38.9** This Hadith is not part of the Sihah Sittah.
- 38.9** reveres] revers
- 38.9** reveres] revers
- 38.10** This Hadith is not part of the Sihah Sittah. However, it does find a mention in other collections of Prophetic sayings, for example in *Jami‘ Bayan al-‘Ilm* of Ibn Abd al-Barr.
- 38.11** It is a Hadith Qudsi (a Prophetic saying which is considered to be a revelation in meaning but not in words—the meaning is considered to be revealed by God but the words are considered to be that of the Prophet). See Khurasani.
- 38.13** This Hadith is not part of the Sihah Sittah.
- 43.2** See O’Leary, 41-2; Pick, 111.
- 43.13** This idea of “the spirit of Islam” has been rejected in recent scholarship. These

are essentialist arguments that imply that history was supposed to unfold in a certain way. Operating in this framework excludes any analysis of historical reasons. Gutas writes,

I find little benefit in spending time on them [essentialist theoretical constructs] and with them if only because one has to come up with but one exception to such “laws” or “major ideas” that allegedly define a culture in order to invalidate them, and I seem to be coming across an awful lot of such exceptions. Furthermore, and perhaps more insidiously, it is frequently a small step from such a theoretical standpoint of defining “ideas” and “laws” to the adoption of assumptions about a culture which are essentialist and reificatory in nature and therefore quite ahistorical—assumptions such as the “Greek spirit” or the “Arab mind”. (6)

43.15 these schools supplied the soil on which “Muslim theology, philosophy, and science put forth their first luxuriant shoots] these schools “supplied the soil on which Muslim theology, philosophy, and science put forth their luxuriant root” Sharif took this quote from O’Leary, 54, who in turn had copied it from Nicholson, 9. This is actually Nicholson’s quote. In the process of mentioning it in Sharif, either the author, or the publisher, or the printer, could have introduced mistakes.

45.4 Bayt al-Hikma (House of Wisdom)

45.7 See Hitti, 310ff.

45.18 Hippocrates] Hyppocrates

- 47.13** philosophy their] philosophy, their
- 47.15** Hitti, 315.
- 48.15** Ballesteros] Ballasteros
- 48.16** Antonio Ballesteros Beretta (1880-1949); Julián Ribera (1858-1934).
- 48.16** See McCabe, 176.
- 49.7** 1929] 1922
- 49.8** See Levy, 193.
- 49.16** See Arab World.
- 50.5** See McCabe, 598.
- 50.10** See Ameer Ali (b), 570.
- 51.12** See Bukhsh.
- 52.3** See McCabe, 176.
- 53.7** The following quotations attest to the notion that the Arabo-Islamic intellectual tradition made permanent corrections and changes to the Greek scientific tradition. For astronomical sciences: “The most important transformation that took place during this time was the shift from Ptolemy’s instrumental approach to astronomy (which satisfied itself with the pragmatic success of the predictive features of the mathematical models) to a more theoretical approach which required that predictive results be consistent not only with the observations but also with the cosmological presuppositions of the observations themselves. In other words, in Islamic astronomy, it was no longer sufficient to say that a

specific predictive mathematical model, such as that of Ptolemy, gave good results about the positions of the planets for a specific time.” (Saliba, 167)

Philosophy: “In most fields, the crucial main texts had long before been translated, studied, and commented upon, and as a result, each discipline had advanced beyond the stage represented by the translated works. ... [I]n the tenth and eleventh centuries the composition of original scientific and philosophical treatises in Arabic that advanced beyond the level of the translated Greek works became so dominant and widespread that it generated its own “purist” reaction.” (Gutas, 152-3)

53.9 Many of the most remarkable achievements in Arabo-Islamic science occurred after the 12th century. Post-1951 scholarship has contributed massive data in this respect. Saliba notes, “it was in mechanics, with the works of Jazari (1205); or in logic, mathematics, and astronomy, with the works of Athir al-Din al-Abhari (c. 1240), Mu’ayyad al-Din al-‘Urdu (d. 1266), Nasir al-Din al-Tusi (d. 1274), Qutb al-Din al-Shirazi (d. 1311), Ibn al-Shatir (d. 1375), al-Qushji (d. 1474), and Shams al-Din al-Khafri (d. 1550); or in optics, with the works of Kamal al-Din al-Farisi (d. 1320); or in Pharmacology, with the works of Ibn al-Baitar (d. 1248); or in medicine, with the works of Ibn al-Nafis (d. 1288), every one of those fields witnessed a genuine original and revolutionary production ...” (Saliba, 21)

54.3 Burke, 71.

This tradition of the praise of Islamic judicial system in Western thought is

neither new nor over. One of the three quotations on the entrance of the Harvard Law Library is Qur'an 4:135. See Harvard.

54.11 See UGA; Heath, 137; Klein, 27.

55.4 See Nicholson, 350.

55.7 According to Herbert Berg, both al-Khatib al-Baghdadi and Ibn 'Asakir mention this

about al-Tabari. See Berg, 158 (n. 24).

55.10 See Ahmed, 44.

55.14 See Imamuddin, 150.

55.14 See Khatib, Vol. 1, 147.

55.16 See *Academy*, 202.

55.19 See Hammer, 4.

55.22 Kâtip Çelebi. See Çelebi.

56.2 See Hammer, 4.

56.4 R. A. Nicholson attributed this comment to Sir William Jones. See Nicholson (b), 452.

56.13 Colosio, 334. The correct statement is this:

“the great Florentine instructs us in the art of governing people, he does make it as a foresighted politician. Ibn Khaldun was able to analyze the social phenomenon as a deep economist and philosopher, a fact that invites us to see in his work such a critical methodology totally unknown in his epoch.”

This statement and the reference are taken from FPO.

- 56.13** “Contribution a l’etude d’Ibn Khaldun”] *Introduction a l’etude d’Ibn Khaldun*
- 56.16** as of the] as the
- 56.17** national] natural
- 56.17** decay ibn-Khaldun] decay, ibn-Khaldun
- 56.18** considered] considerd
- 56.19** of critical] of all critical
- 56.21** Hitti, 568.
- 57.1** Schmidt, 27.
- 57.8** No citation found.
- 57.16** See Overbay; and *Islamic Culture*, 317.
- 57.20** See *Medieval Science*, 190.
- 58.3** See EI2 (Geography).
- 58.9** See Hitti, 385.
- 58.10** See Gafurov.
- 58.11** See Pochta, 200; Thrower, 47.
- 58.14** See Strange, 14; UNESCO, 257.
- 58.17** See Shushtery, 173.
- 58.19** *Mu‘jam al-Buldan*. See Wells, 424; Browne (b), 481.
- 59.9** See Goodman, 143 (n. 139); Fine, 107; Viator, 151.
- 59.11** See Fine, 107.
- 59.13** See Goonatilake, 32; Joseph, 514.
- 59.19** See Hitti, 376.

- 60.2** Draper, 356.
- 60.9** See EI2 (al-Zarkali).
- 60.10** See Jurji, 130.
- 60.13** See Latiff, 173.
- 60.14** See EI (Abu Sahl Kuhi).
- 60.15** See Hitti, 378.
- 60.17** of annular] of the annular
- 60.20** Hitti, 376.
- 61.4** See Rahman, 303.
- 61.4** Taken from Ameer Ali, 347.
- 61.6** Taken from Ameer Ali, 374.
- 61.8** See Biruni, 360; Scheppler, 41.
- 61.11** See UofUtah, 3. The correct estimate of the mistake of one day in the Gregorian Calendar is now considered to be 3333 years, not 3300 years. See EI2 ('Umar Khayyam).
- 61.12** This treatise is either "Zij Malik-Shahi" (*Astronomical Tables for Malik Shah*) or "Nawruz-nama" (*Book of the New Year*). See EI2 ('Umar Khayyam).
- 61.14** See Nussbaumer, 135.
- 61.15** See Nussbaumer, 139.
- 61.16** Jabir b. Aflah
- 61.16** See North, 199.
- 61.17** See Adnan, 509; Cajori 119; Zambelli, 212.

61.19 See EI2 (Ibn al-Khasib).

61.19 See Jacquart, 908.

61.19 See EI2 (al-Battani).

61.19 Farghani] Faraghani

61.20 See EI (Fargani, Ahmad).

61.22 Alfonso] Alphonso

62.2 Toledan Tables comprised of astronomical coordinates of Toledo adapted with astronomical data available in the 11th century. See EI2 (Zidj). For the Zarqali reference, see Holder, 324.

62.3 See Pedersen, 311.

62.4 Hitti, 375.

62.5 Post-1951 research has shown that Copernicus mentioned five—not two—Arabo-Islamic scientists. Ragep names five astronomers: Thabit ibn Qurra, al-Battani, al-Zarqali, Ibn Rushd, and al-Bitruji (see Ragep, 125 (n. 1)). These are the places where Copernicus has named them:

Thabit ibn Qurra (d. 901): Mentioned as Thebith Benchorae in, for instance, Book III Chapter XIII (Harvard-ADS database); and as Thebith ben Chora in Book Three Chapter 14 (*On the Revolutions*).

al-Battani (d. 929): Mentioned as Albitegnius in, for instance, Book III Chapter II (Harvard-ADS database); and as al-Battani in Book Three Chapter 2 (*On the Revolutions*).

al-Zarqali (d. 1100): Mentioned as Arzachel in, for instance, Book III Chapter VI (Harvard-ADS database); and as Arzachel in Book Three Chapter 6 (*On the Revolutions*).

Ibn Rushd (d. 1198): Mentioned as Auerroes in, for instance, Book I Chapter X (Harvard-ADS database); and as Averroes in Book One Chapter 10 (*On the Revolutions*).

al-Bitruji (d. c. 1200): Mentioned as Alpetragius in, for instance, Book I Chapter X (Harvard-ADS database); and as Alpetragius in Book One Chapter 10 (*On the Revolutions*).

62.6 *Coelestium] caelestium*

62.9 “azimuth” (*al-sumut*), “nadir” (*nazir*), “zenith” (*al-samt*), are likewise of Arabic etymology and testify to the rich legacy of Islam to Christian Europe] azimuth (Ar. *al-sumut*), “nadir” (Ar. *nazir*), zenith (Ar. *al-samt*), the names of stars in European languages are mostly of Arabic origin and these “testify to the rich legacy of Islam to Christian Europe”

62.14 796 and 806 C.E. are the probable dates of al-Fazari’s death. These are not the dates of the translation of the work under question. See Muslim World, 80; Smith, 168.

62.20 See EI2 (al-Khwarazmi).

63.3 of the square] of square

63.3 Hitti, 379.

63.4 See Burnett, 42.

- 63.8** *Muqabalah*] *Muqabilah*
- 63.11** [*al-jabr*], and] [*al-jabr*] and
- 63.12** Hitti, 379.
- 63.13** See Lindberg, 177; Struik, 69.
- 63.14** No citation found.
- 63.18** See Kasir.
- 63.20** See Bashmakova, 93.
- 63.22** See Knorr, 289.
- 64.4** See Selin, 236.
- 64.8** See Sardar, 70.
- 64.10** See Murray, 46; Hill, 253.
- 64.14** See Rogers.
- 64.14** No citation found.
- 64.16** For al-Khujandi's contributions to spherical trigonometry, see EI2 (al-Khujandi).
- 64.17** For Ibn Yunus's contributions to spherical trigonometry, see EI2 (Ibn Yunus).
- 64.20** See Cajori, 109.
- 64.21** No citation found.
- 65.1** *Muqabalah*] *Muqabilah*
- 65.6** See Paetow, 374; Conder, 370.
- 65.7** See Sarkar, 14.
- 65.10** See Smith (b), 580.
- 65.13** No citation found.

65.17 See EB, 272.

65.20 in some respects] definitely

65.21 EB, 272.

66.9 *Kitab al-Naghm*] *Kitab al-Qiyan*

Sb and Sc name it *Kitab al-Qiyan*. However, *Kitab al-Qiyan* translates as “The Book of Singing Girls”; *Kitab al-Naghm* translates as “The Book of Melodies”. There is no way to know for certain which book Sharif wanted to mention. I have retained the translated title “The Book of Melodies” and changed *Kitab al-Qiyan* to *Kitab al-Naghm* because it suits the context better, since it seems that the work being discussed is a general work on music. See also Farmer (b), 99.

66.10 See Vernoit, 257.

66.15 (1) Great epistle on harmony; (2) His epistle on the ordering of melody, indicating the natures of the heavenly bodies, which resemble harmony; (3) On rhythm; (4) Introduction to the art of music; (5) Account of the art of harmony; (6) On the art of poetry; (7) Accounts of the art of music. See Kindi, lii.

66.17 See “Biografias”.

66.18 No citation found.

66.19 See EI2 (Ibn ‘Abd Rabbih).

66.20 See Kilpatrick, 248.

67.6 See Farmer, 562.

67.9 For two works by Farabi, two works by Ibn Sina, and one work by Ibn Rushd, see Farmer, 561. For Ibn Sina’s contribution to musicology, see Tawil.

- 68.2** Hitti, 601.
- 68.12** 925] 923
- 68.13** See Kitab al-Asrar.
- 68.15** after the fourteenth century] after fourteenth century
- 69.7** See Rogers (b).
- 69.9** See Hitti, 383.
- 69.11** See Rapp, 10.
- 69.14** See Lindberg (b).
- 69.16** See Lindberg (b), 474; 488.
- 69.20** See Zitzewitz, 9.
- 70.2** See EI2 (Ibn al-Haytham).
- 70.9** The treatise is *Kitab fi 'l-manazir (The Book of Optics)*. It was translated into Latin by F. Risner, entitled *Thesaurus Opticus*. See EI2 (Ibn al-Haytham).
- 70.13** See MacDougall, 143 (n. 23).
- 70.14** For Ridwan, see EI2 (Hiyal).
- 70.16** See McCann, 4.
- 71.4** *Kitab al-filahah*, published in 12th century C.E. See Hamarneh, 270.
- 71.6** For al-Ghafiqi's contribution to botany, see Abley, 129.
- 71.9** *al-Jami' li mufradat al-adawiya wa 'l aghdiya (Treatise on Simple Pharmacological Substances)*. See Ruymbeke, 22.
- 71.11** See Arabs in Spain, 232.
- 71.12** The Book] Book

- 71.15** For English translation, see Damiri.
- 71.15** *De Arte Venandi cum Avibus*, the first treatise on falconry.
- 71.17** See Epstein, 759.
- 71.18** Most of this section was copied, sometimes in facts and sometimes verbatim, from Hitti.
- 72.3** See Hospitals.
- 72.5** ‘Ali Ibn Sahl Rabban at-Tabari, *Firdaws al-hikmah (Paradise of Wisdom)*—a medical encyclopedia. See Hamarneh, 353; Porter, 95-6; Hitti, 365.
- 72.12** See Hitti, 311-12; Campbell, 63.
- 72.13** Hippocrates] Hyppocrates
- 72.18** 925] 923
- 72.20** See Medical Book.
- 73.1** Browne, 44; this statement begins with “probably”.
- 73.11** See Hitti, 367.
- 74.12** Allbutt] Albutt
- 74.12** See Allbutt, 46.
- 74.22** Allbutt] Albutt
- 75.4** Hitti, 368.
- 75.9** Osler, 98.
- 75.16** Hitti, 576; quoted from Müller. See Müller.
- 75.20** printed] prnted
- 76.12** Allbutt] Albutt

76.13 Allbutt, 46. The correct statement is:

“Many of the names and many forms of medicines now used, and in fact the general outline of modern pharmacy, except so far as modified by modern chemistry, started with the Arabs.”

77.2 learned ...] learned

77.6 that a knowledge] that knowledge

77.6 of ... Arabic Science] of Arabic Science

77.8 method ... are] method are

77.10 by] in

77.11 Briffault, 200-201.

77.12 [A]lthough] Although

77.14 Briffault, 190.

77.16 “[S]cience owes ... its [very] existence [to Arabic culture]. The ancient world was ... pre-scientific ... The Greeks] Science owes its very existence to Arabic culture. The ancient world was pre-scientific. The Greeks

77.19 observation, experimental inquiry, were] observation and experimental inquiry were

77.20 of a new] of new

78.2 Briffault, 191.

79.5 This is disputed. Treatises on scientific topics existed in ancient Greece. See Lloyd.

79.6 See Haq.

- 79.11** See Gutas; Saliba.
- 80.17** See EI2 (Mu‘tazila); Lapidus, 105-108; Khadduri, 43.
- 81.5** See Hitti, 430. The phrase “the first absolute requirement of knowledge” comes from Hitti, 430.
- 81.15** See Sachedina, 124.
- 81.20** See Macdonald, 201.
- 84.15** See Osborn, 275-276.
- 85.12** See Winter.
- 86.5** Lewes] Lewis
- 86.8** Lewes, 363.
- 86.8** Lewes] Lewis
- 86.12** A lot has been written about Cartesian Doubt and its remarkable similarity to Ghazali’s doubt. See Zamir; Albertini; Moad; Najm; Akdogan; Moulder.
- 86.14** See Jewish Encyclopedia, 351; Kreisel, 427.
- 86.16** See Hosseni, 41.
- 86.16** See Nofal.
- 86.18** See Rafiabadi, 184.
- 87.12** See Nicolle, 394; Spinoza, 95.
- 87.16** See Waxman, 59-79.
- 91.9** See Rumi.
- 91.10** See Hakim.
- 91.11** See Schimmel, 391. For Rumi’s influence on Hegel, see Grinell. Also, see Haq

(b).

91.15 *Mantiq]* *Mantaq*

94.9 See Mohamed, 90.

94.17 In all probability, this quotation is from Sastri's *The Evolution of Indian Mysticism*. Exact page numbers not found.

95.10 speculations] speculation

96.5 system, and] system and

96.6 See Chand, 111-112.

96.13 See Palacios.

96.17 See Arberry. No exact page found.

96.19 No citation found.

97.6 Deutsch, 123.

98.10 See Erdmann, 361.

98.19 See Murdoch.

98.21 See Carritt.

99.9 See de Vaux, 53-55.

99.16 See Herrick, 144.

102.6 See Iqbal, 33-34 (n. 1). Sharif wrote the Foreword to Iqbal's *Reconstruction*.

102.23 See Athenaeum, 306.

103.17 See Gohlman, 47; Wisnovsky, 281. J. Forget edited *Kitab al-isharat wa 'l-tanbihat* of Ibn Sina (d. 1037) which was published by Leiden in 1892.

104.4 See Melamed, 91.

105.4 See de Boer, 135.

105.19 See Erdmann, 363.

106.2 See Collinson, 35; Ashley, 301.

106.8 This is an exact quotation from de Boer, 148.

106.10 existence] existenee

106.12 Moses Maimonides quoted Ibn Sina. See Maimonides.

106.17 See de Boer, 150.

106.22 See Lindberg (c), 338.

107.17 See Montada.

108.6 See O’Leary, 245.

108.8 See Goodman (b).

108.12 See Conrad, 277.

108.13 For a list of all translations of Hayy Ibn Yaqzan, see Conrad, 275-285.

108.15 Bronnle, 11.

108.16 See Conrad, 283.

108.16 See Conrad, 284.

108.17 See Conrad, 277.

108.18 See Conrad, 277.

108.18 See Conrad, 277.

108.21 Sharif uses the word “concluded” to state that Daniel Defoe borrowed from Ibn

Tufail. However, recent scholarship disputes this. It presents it as an historical probability, not a fact. See: “Ibn Tufayl’s story was popular in late seventeenth-

century England, and Defoe *may* have taken it as a model for his own story” (Mahdi, 19); “While there does not seem to be any direct evidence that Defoe read the text, he did read many of Ockley’s other works” (Fallon, 47); “Daniel Defoe, the father of the English novel ... *seems* to have plagiarized a significant portion from this Arabic book in Robinson Crusoe” (Attar, 127); “It *probably* provided one of many sources for Defoe’s allegorical novel” (Ballaster, 82).
Italics mine.

109.8 exists] exits

110.2 Macdonald, 251.

112.17 contact] contract

115.1 Exact reference not found. However, a very similar analysis has been offered in Sadeghi, 152. For a comprehensive analysis of Ibn Rushd’s views on women, that also confirms the contents of this quotations, see Belo.

115.9 No exact citation found. However, a similar analysis is offered in de Wulf, 109-10.

115.15 See Erdmann, 368.

116.15 See Gersonides, 32.

117.5 See Averrois.

117.15 See Arnold, 659.

117.17 See Coulton, 132.

117.18 See Porter & Morris, 460.

118.3 See Iskenderoglu, 125; Burnett (b), 598.

118.4 See Rolbiecki, 27.

118.12 See Lorca.

118.14 See Ghazanfar, 8.

118.17 See de Wulf, 444. The University of Padua has also been called “the chief seat of Avveroism”. Windelband, 354.

119.7 Hitti, 583-4.

119.9 See BBC.

119.12 No citation found.

120.6 Scholarship since 1951 has refuted the claim that the scientific and philosophical activities in the Islamic world declined in the thirteenth century C.E. The same scholarship has also refuted the claim that Ghazzali and his supposed critique of mathematics and other sciences were responsible for it. Sharif states: “Al-Ghazzali exerted great influence over the East and the West. It was the Protestant revolt that freed the West from the grip of this great man’s intellect, and in the East, having conquered all rival thought, it has even to this day a hold too tight to allow any fresh movement” (Sg, 89.17-21). Others have made this claim relatively recently. See Hoodbhoy, 95-108; Hoodbhoy (b); Menocal, 212. These scholars have strongly refuted this claim. See Saliba, 21; Haq (c), 40; Haq (d), 157; Ragep (b); Anwar. There is now overwhelming evidence that scientific activity flourished in the Islamic world even after the 12th century C.E., throughout the 13th and 14th centuries C.E., and even after the 15th century C.E.

One finds mentions of Ibn al-Baitar (d. 1248) whose work is considered the “[m]ost influential of all the Arabic treatises on basic medicinal substances” (Pormann, 53); Ibn al-Quff (d. 1286) who “composed what appears to be the earliest medieval Arabic treatise intended solely for surgeons” (Pormann, 61); Khalifah ibn Abi al-Mahasin al-Halabi who wrote a treatise between 1265 and 1275 on ophthalmology (Pormann, 65); the fact that “the two treatises devoted only to surgery – that by Ibn al-Quff (d. 1286) written in Syria and another by Muhammad al-Shafrah (d. 1360) composed in Muslim Spain” (Pormann, 64) were produced much after Ghazali.

Savage-Smith argues that “for medicine in general and anatomy in particular ... al-Ghazali’s writings were in fact a source of encouragement” (Savage-Smith, 94). Also notice Ibn Ilyas’s *Tashrih-i-Mansuri* published in 1396 (Haq (e), 665); Ibn Nur Baksh al-Razi’s *Khulasat al-tajrib* completed in 1501 (Haq (e), 666), Ibn Mas‘ud’s *Risala-i-mujarrabat* completed sometime in the 16th century (Haq (e), 666); Bhuvva Khavasskhan’s *Ma‘dan al-shifa’* completed in 1512 (Haq (e), 666); Qasim Hindushah’s *Dastur al-atibba’* completed sometime in or around 17th century (Haq (e), 666); in the Ottoman empire Salih ibn Nasrallah’s *Ghayat al-itqan fi tadbir badan al-insan* completed in 17th century (Haq (e), 667); and contributions of Shifa’i (d. 1742) in the then comparatively new field within the study of medicine *tibb-i-jadid* (Haq (e), 667).

Sharif moves from his comments on the thirteenth century to the seventeenth, eighteenth and nineteenth centuries, thereby not touching upon the

then disputed centuries of scientific growth in Islamic history. He writes:
“Although the downward tendency had begun in the thirteenth century, the
seventeenth, eighteenth and nineteenth centuries have justly been described as the
dark ages of Asia” (Sg, 122.12-14).

122.7 Sabzwari] Sabziwari

122.21 See Iqbal; Iqbal (b).

Bibliography

I have explained in my Introduction why I chose the following style of citation (29). The exceptions to these styles are references to EI (*Encyclopaedia Iranica* online) and EI2 (*Encyclopaedia of Islam*, 2nd Edition, online) because these online versions themselves recommend a citation.

Abley = Mark Abley, “A Book of Remedies,” *Al-Mutanabbi Street Starts Here*, eds.

Beau Beausoleil and Deema Shehabi (Oakland: PM Press, 2012).

Academy = *The Academy: A Weekly Review of Literature, Science, and Art*, Vol. XLIX

(Jan. – June, 1896).

Adnan = A. Adnan, “Athar-i-Baqiya, a History of Arabic Mathematics by Salih Zeki,”

Isis 19.3 (1933): 506-515.

Ahmed = Akbar S. Ahmed, *Discovering Islam: Making Sense of Muslim History and*

Society (New York: Routledge, 2002).

Akdogan = Cemil Akdogan, “Ghazali, Descartes, and Hume: The Genealogy of Some

Philosophical Ideas,” *Islamic Studies* 42.3 (2003): 487-502.

Al-Kafi = *Al-Kafi*, Vol. 1 (New York: The Islamic Seminary INC).

Albertini = Tamara Albertini, “Crisis and Certainty of Knowledge in Al-Ghazali (1058-

1111) and Descartes (1596-1650),” *Philosophy East and West* 55.1 (2005): 1-14.

Allbutt = Sir Thomas Clifford Allbutt, “Medicine,” *The Encyclopaedia Britannica*, 11th

Ed., Vol. XVIII (New York: Encyclopaedia Britannica, Inc., 1911).

Ameer Ali = Syed Ameer Ali, *Life and Teachings of Mohammad OR The Spirit of Islam*

(London: W. H. Allen & Co. Ltd., 1891).

Ameer Ali (b) = Syed Ameer Ali, *A Short History of the Saracens: Being a Concise*

Account of the Rise and Decline of the Saracenic Power and of the Economic Social and Intellectual Development of the Arab Nation (London: MacMillan and Co., Limited, 1900).

Anwar = M. Sabieh Anwar, "Is Al-Ghazali (really) the Halagu of science in Islam?" *Viewpoint* 87 (Oct. 2008): 10-11.

Arabs in Spain = *The Arabs in Spain; An Historical Narrative*, Vol. II (London: E. Churton, 1840).

Arab World = *The Arab World*, Vol. 11 (Arab Information Center, 1965).

Arberry = A. J. Arberry, *An Introduction to the History of Sufism* (London: Longmans, Green and Co., 1942).

Arnold = William E. Addis & Thomas Arnold, *A Catholic Dictionary* (London: Kegan Paul, Trench, & Co., 1884).

Ashley = Benedict M. Ashley, "Anthropology: Albert the Great on the Cogitative Power" in *A Companion to Albert the Great: Theology, Philosophy, and the Sciences*, ed. Irven M. Resnick (Leiden: Brill, 2013).

Athenaeum = *The Athenaeum: Journal of Literature, Science, the Fine Arts, Music, and the Drama* (1887).

Attar = Samar Attar, "Suppressed or Falsified History? The Untold Story of Arab-Islamic Rationalist Philosophy" in *The Role of the Arab-Islamic World in the Rise of the West: Implications for Contemporary Trans-Cultural Relations* (New York: Palgrave Macmillan, 2012).

"Authenticity" = Fethullah Gulen, "Ensuring Authenticity," *Fethullah Gulen* (Dec. 24,

2002) <en.fgulen.com/content/view/1148/3/>, accessed on Dec. 14, 2012.

Averrois = “Averrois” Columbia University

<www.columbia.edu/dlc/garland/deweever/A/averrois.htm>, accessed on Feb. 25, 2013.

Ballaster = Ros Ballaster, “Narrative Transmigrations: The Oriental Tale and the Novel in Eighteenth-Century Britain” in *A Companion to the Eighteenth-Century English Novel and Culture*, eds. Paula R. Backscheider & Catherine Ingrassia (Oxford: John Wiley & Sons Ltd., 2009).

Bashmakova = *Nine Papers from the International Congress of Mathematicians 1986*, eds. I. G. Bashmakova and Ben Silver (American Mathematical Society, 1986).

BBC = “The Roots of the Modern World?” *BBC* Dec. 4, 2008 <www.bbc.co.uk>, accessed on Feb. 25, 2013.

Belo = Catarina Belo, “Some Considerations on Averroes’ Views Regarding Women and Their Role in Society,” *Journal of Islamic Studies* 20.1 (2009): 1-20.

Berg = Herbert Berg, *The Development of Exegesis in Early Islam: The Authenticity of Muslim Literature from the Formative Period* (Surrey: Curzon Press, 2000).

Biografias = “Adelard of Bath,” *Biografias* <<http://www.mcnbiografias.com/app-bio/do/show?key=adelardo-de-bath>>, accessed on Feb. 5, 2013.

Biruni = Al-Biruni, *The Chronology of Ancient Nations*, tr. C. Edward Sachau (London: The Oriental Translation Fund of Great Britain & Ireland, 1879).

Briffault = Robert Briffault, *The Making of Humanity* (London: George Allen & Unwin Ltd., 1919).

- Bronnle = Ibn Tufail, *The Awakening of the Soul*, tr. Paul Bronnle (London: John Murray, 1907).
- Browne = Edward G. Browne, *Arabian Medicine* (London: Cambridge University Press, 1921).
- Browne (b) = Edward G. Browne, *A Literary History of Persia: From Firdawsi to Sa'di* (New York: Charles Scribner's Sons, 1906).
- Bukhsh = S. Khuda Bukhsh, *Studies: Indian and Islamic* (London: Kegan Paul, Trench, Trubner & Co. Ltd., 1927).
- Burke = Edmund Burke, *The Works of Edmund Burke*, Vol. VIII (Boston: Charles C. Little and James Brown, 1839).
- Burnett = Charles Burnett, "The Introduction of Arabic Learning into British Schools," *The Introduction of Arabic Philosophy into Europe*, eds. Charles E. Butterworth & Blake Andrée Kessel (Leiden: E. J. Brill, 1994).
- Burnett (b) = Charles Burnett, "The Translation of Arabic Works on Logic into Latin in the Middle Ages and the Renaissance" in *Handbook of the History of Logic, Vol. I, Greek, Indian and Arabic Logic*, eds. Dov M. Gabbay & John Woods (London: Elsevier Ltd., 2004).
- Cajori = Florian Cajori, *A History of Mathematics* (New York: The Macmillan Company, 1919).
- Campbell = Donald Campbell, *Arabian Medicine and its Influence on the Middle Ages*, Vol. 1 (London: K. Paul, Trench, & Trubner, 1926).
- Carritt = E. F. Carritt, "The Sources and Effects in England of Kant's Philosophy of

Beauty,” *The Monist* 35.2 (1925): 315-328.

Çelebi = Kâtip Çelebi, *Kashf al-zunun ‘an asami al-kutub wa-al-funun* (Cairo: Dar al-Tiba‘ah al-Misriyah, 1858).

Chand = Tara Chand, *Influence of Islam on Indian Culture* (Allahabad: The Indian Press, Ltd., 1954). [First published in 1936]

Collinson = Diane Collinson, Kathryn Plant & Robert Wilkinson, *Fifty Eastern Thinkers* (New York: Routledge, 2000).

Colosio = Stefano Colosio, “Contribution a l’étude d’Ibn Khaldoun,” *Revue du Monde Musulman* 26 (1914): 318-338.

Conder = Claude Reignier Conder, *Syrian Stone-Lore* (New York: Scribner and Welford, 1887).

Conrad = *The World of Ibn Tufayl: Interdisciplinary Perspectives on Hayy Ibn Yaczan*, ed. Lawrence I. Conrad (Leiden: E. J. Brill, 1996).

Coulton = G. G. Coulton, *Studies in Medieval Thought* (New York: Russell & Russell, 1966).

Damiri = al-Damiri, *al-Damiri’s Hayat al-Hayawan, a zoological lexicon*, tr. A. S. G. Jayakar (London: Luzac, 1906-08).

Deutsch = Emanuel Oscar Menaham Deutsch, “Islam,” *Literary Remains of the Late Emanuel Deutsch with a Brief Memoir*, ed. Lady Emily Strangford (New York: Henry Holt and Company, 1874).

Draper = John William Draper, *A History of the Intellectual Development of Europe*, 2nd ed. (New York: Harper & Brothers, Publishers, Franklin Square, 1864).

EB = *The Encyclopaedia Britannica: A Dictionary of Arts, Sciences, literature and General Information*, 11th Ed., Vol. 27 (New York: The Encyclopaedia Britannica Company, 1911).

EI (Abu Sahl Kuhi) = David Pingree, "Abu Sahl Kuhi," *Encyclopaedia Iranica*, online edition, 2013, available at <http://www.iranicaonline.org/articles/abu-sahl-vijan-b> (accessed on 19 March 2013).

EI2 (al-Battani) = Nallino, C.A. "al-Battānī." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 03 February 2013 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/al-battani-SIM_1289>.

EI2 (al-Khujandi) = Samsó, J. "al-Khudjandī." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 04 February 2013 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/al-khudjandi-SIM_4323>.

EI2 (al-Khwarazmi) = Vernet, J. "al-Khwārazmī." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 04 February 2013 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/al-khwarazmi-SIM_4209>.

EI2 (Geography) = "Djughrāfiyā." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 28 January 2013 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/djughrafiya-COM_0194>.

EI2 (Hiyal) = Hill, D. R. "Ḥiyāl." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 07 February 2013
 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/hiyal-SIM_8624>.

EI2 (Ibn 'Abd Rabbih) = Brockelmann, C. "Ibn 'Abd Rabbih." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 05 February 2013 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/ibn-abd-rabbih-SIM_3031>.

EI2 (Ibn al-Haytham) = Vernet, J. "Ibn al-Haytham." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 07 February 2013 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/ibn-al-haytham-SIM_3195>.

EI2 (Ibn al-Khasib) = Vadet, J.-C. "Ibn al-Kḥaṣīb." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 03 February 2013 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/ibn-al-khasib-SIM_3251>.

EI2 (Ibn Yunus) = Goldstein, B.R. "Ibn Yūnus." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013. Reference. BOSTON UNIVERSITY. 04 February 2013
 <http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/ibn-yunus-SIM_3413>.

EI2 (Mu'tazila) = "Mu'tazila," *Encyclopaedia of Islam, Second Edition*. Brill Online,

2013. Reference. BOSTON UNIVERSITY. 26 February 2013

http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/mutazila-COM_0822.

EI2 ('Umar Khayyam) = "'Umar Khayyam." *Encyclopaedia of Islam, Second Edition*.

Brill Online, 2013. Reference. BOSTON UNIVERSITY. 03 February 2013

<http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/umar-khayyam-COM_1284>.

EI2 (Zidj) = "Zīdj." *Encyclopaedia of Islam, Second Edition*. Brill Online, 2013.

Reference. BOSTON UNIVERSITY. 03 February 2013

<http://referenceworks.brillonline.com/entries/encyclopaedia-of-islam-2/zidj-COM_1388>.

Erdmann = Johann Eduard Erdmann & Williston Samuel Hough, *A History of*

Philosophy, Vol. I (New York: Macmillan & Co., 1893).

"Extracts" = "A Few Extracts from Al-Hadith,"

<<http://www.chisty.freehosting.net/extracts.html>>, accessed on Dec. 14, 2012.

Fallon = Ann Marie Fallon, *Global Crusoe: Comparative Literature, Postcolonial Theory*

and Transnational Aesthetics (Surrey: Ashgate Publishing Ltd., 2011).

Farmer = Henry George Farmer, "The Influence of Al-Farabi's 'Ihsa' al-'ulum' ('De

scientiis") on the Writers on Music in Western Europe," *The Journal of the Royal*

Asiatic Society of Great Britain and Ireland No. 3 (1932): 561-592.

Farmer (b) = Henry George Farmer, "The Old Arabian Melodic Modes," *Journal of the*

Royal Asiatic Society of Great Britain & Ireland No. 3/4 (1965): 99-102.

Fine = Henry Burchard Fine, *The Number-System of Algebra: Treated Theoretically and Historically* (Boston: D. C. Heath & Co., Publishers, 1907).

FPO = “A medieval approach to social sciences,” *Free Patents Online* <url: <http://www.freepatentsonline.com/article/Journal-Markets-Morality/255839872.html>>, accessed on Jan. 27, 2013.

Gafurov = Bobojan Gafurov, “Al-Biruni,” *The UNESCO Courier* (June 1974): 4-6.

Gersonides = Gersonides, *The Wars of the Lord, Book One*, tr. Seymour Feldman (The Jewish Publication Society of America, 1984).

Ghazanfar = S. M. Ghazanfar, “The Dialogue of Civilisations: Medieval Social Thought, Latin-European Renaissance, and Islamic Influences,” *Foundation for Science Technology and Civilisation* (2004): 2-12. Accessed from Muslim Heritage, url: <www.muslimheritage.com>, accessed on Feb. 25, 2013.

Gohlman = William E. Gohlman, *The Life of Ibn Sina: A Critical Edition & Annotated Translation* (New York: SUNY Press, 1974).

Goodman = *The Case of the Animals versus Man: Before the King of the Jinn: A translation from the Epistles of the Brethren of Purity*, tr. Lenn E. Goodman & Richard McGregor (New York: Oxford University Press, 2012).

Goodman (b) = Ibn Tufayl, *Hayy Ibn Yaqzan: A Philosophical Tale*, tr. Lenn Evan Goodman (Chicago: The University of Chicago Press, 2003).

Goonatilake = Susantha Goonatilake, *Toward a Global Science: Mining Civilizational Knowledge* (Bloomington: Indiana University Press, 1998).

Grinnel = Klas Grinnell, “Hegel reading Rumi: The limitations of a system”

<www.grinell.se/Hegel%20reading%20Rumi.pdf>, accessed on Feb. 25, 2013.

Gutas = Dimitri Gutas, *Greek Thought, Arabic Culture* (London: Routledge, 1998).

Hakim = Khalifa Abdul Hakim, *The Metaphysics of Rumi; a critical and historical sketch* (Lahore: Ripon Printing Press, 1933).

Hamarneh = Sami Khalef Hamarneh, *Health Sciences in Early Islam*, ed. Munawar A. Anees (Blanco, TX: Noor Health Foundation and Zahra Publications, 1984).

Hammer = Joseph von Hammer & Oswald Charles Wood, *The History of the Assassins* (London: Smith & Elder, Cornhill, 1835).

Haq = Syed Nomanul Haq, "The Indian and Persian Background," in *History of Islamic Philosophy*, eds. S. H. Nasr & O. Leaman (New York: Routledge, 1996), 52-70.

Haq (b) = S. Nomanul Haq, "Dancing with Rumi," *DAWN Books & Authors*, March 4, 2007.

Haq (c) = S. Nomanul Haq, "Myth 4: That Medieval Islamic Civilization was Inhospitable to Science," in *Galileo Goes to Jail and Other Myths about Science and Religion*, ed. Ronald L. Numbers (Cambridge: Cambridge University Press, 2009), 35-42.

Haq (d) = S. Nomanul Haq, "Science in Islam," *Islam & Science* 7.2 (Winter 2009): 151-158.

Haq (e) = S. Nomanul Haq, "Occult sciences and medicine" in *The New Cambridge History of Islam*, Vol. 4, ed. Robert Irwin (New York: Cambridge University Press, 2010).

Harvard = "Entrance Wall" *Harvard Law Library* <url:

<http://library.law.harvard.edu/justicequotes/explore-the-room/west/>>, accessed on Jan. 28, 2013.

Harvard-ADS database = Nicolaus Copernicus, *De Revoltionibvs Orbium Cœlestium* [Original Latin text] (Norimbergae: 1543) [Made available by the NASA Astrophysics Data System (ADS) on <<http://ads.harvard.edu/books/1543droc.book/>>].

Heath = Jennifer Heath, *The Scimitar and the Veil: Extraordinary Women of Islam* (New Jersey: HiddenSpring, 2004).

Herrick = Paul Herrick, "The Cosmological Argument for the Existence of God: *An Apologia*" in *Reasonable Perspectives on Religion*, ed. Richard Curtis (Lanham: Lexington Books, 2010).

Hill = Donald R. Hill, "Mathematics and applied science," in *Religion, Learning and Science in the 'Abbasid Period*, eds. M. J. L. Young, J. D. Latham & R. B. Serjeant (Cambridge: Cambridge University Press, 1990).

Hitti = Philip K. Hitti, *History of the Arabs* (New York: St. Martin's Press, 1970).

Hodgson = Marshall G. S. Hodgson, *The Venture of Islam*, Vol. 1 (Chicago: The University of Chicago Press, 1974).

Holder = Edward S. Holder, "The Predecessors of Copernicus," *The Popular Science Monthly* LXIV (Nov. 1903-Apr. 1904): 316-342.

Hoodbhoy = Pervez Hoodbhoy, *Islam and Science: Religious Orthodoxy and the Battle for Rationality* (London: Zed Books Ltd., 1991).

Hoodbhoy (b) = Pervez Hoodbhoy, "How Islam lost its way" *The Washington Post* Dec.

30, 2001, <<http://ontology.buffalo.edu/smith/courses01/rrtw/Hoodbhoy.htm>>, accessed on Feb. 28, 2013.

Hospitals = "Hospitals," *U.S. National Library of Medicine*

<http://www.nlm.nih.gov/exhibition/islamic_medical/islamic_12.html>, accessed on Feb. 8, 2013.

Hosseini = Hamid S. Hosseini, "Contributions of Medieval Muslim Scholars to the History of Economics and their Impact: A Refutation of the Schumpeterian Great Gap," in *A Companion to the History of Economic Thought*, eds. Warren J. Samuels, Jeff E. Biddle, & John B. Davis (Berlin: Blackwell Publishing Ltd., 2003).

Imamuddin = S. M. Imamuddin, *Muslim Spain 711-1492 A.D.: A Sociological Study* (Leiden: E. J. Brill, 1981).

Iqbal = Allama M. Iqbal, *The Development of Metaphysics in Persia: A Contribution to the History of Muslim Philosophy* (London: Luzac & Co., 1908).

Iqbal (b) = Muhammad Iqbal, *The Reconstruction of Religious Thought in Islam*, ed. M. Saeed Sheikh (Lahore: Institute of Islamic Culture, 2006).

Iskenderoglu = Muammer Iskenderoglu, *Fakhr al-Din al-Razi and Thomas Aquinas on the Question of the Eternity of the World* (Leiden: Brill, 2002).

Islamic Culture = *Islamic Culture: The Hyderabad Quarterly Review*, Vols. 30-31 (1956).

Jacquart = Danielle Jacquart, [Rev. *Al-Qabisi: The Introduction to Astrology*, eds.

Charles Burnett, Keiji Yamamoto, and Michio Yano (London: Warburg Institute, 2004] *Speculum* 81.3 (2006): 908-909.

Jewish Encyclopedia = *The Jewish Encyclopedia: A descriptive record of the history, religion, literature, and customs of the Jewish people from the earliest times to the present day*, Vol. VII, ed. Isidore Singer (New York: Funk and Wagnalls Company, 1912).

Joseph = George G. Joseph, *The Crest of the Peacock: Non-European Roots of Mathematics*, 3rd Ed. (Princeton: Princeton University Press, 2011).

Jurji = Edward J. Jurji, *The Middle East: Its Religion and Culture* (Philadelphia: Westminster Press, 1956).

Kasir = Daoud S. Kasir, *The Algebra of Omar Khayyam* (New York: Teachers College, Columbia University, 1932).

Khadduri = Majid Khadduri, *The Islamic Conception of Justice* (Maryland: The Johns Hopkins University Press, 1984).

Khatib = Ibn al-Khatib, *The History of the Mohammedan Dynasties in Spain, extracted from Ibn al-Khattib's Nafhu-t-tib by Ahmed Ibn Mohammed al-Makkari*, 2 Vols. (London: The Oriental Translation Fund of Great Britain and Ireland, 1840).

Khurasani = Shaykh M. 'Ali Mu'adhhdhin Sabzawari Khurasani, *Tuhfah-yi 'Abbasi: The Golden Chain of Sufism in Shi'ite Islam*, tr. M. H. Faghfoory (Maryland: University Press of America, Inc., 2008).

Kilpatrick = Hilary Kilpatrick, "Modernity in a Classical *Adab* Work, the *Kitab al-*

Aghani,” in *Tradition and Modernity in Arabic Language and Literature* (Surrey: Curzon Press, 1996).

Kindi = Peter Adamson & Peter E. Pormann, *The Philosophical Works of al-Kindi* (Karachi: Oxford University Press, 2012).

King = David A. King, “Astronomy and Islamic Society: Qibla, Gnomonics and Timekeeping,” in *Encyclopedia of the History of Arabic Science*, Vol. 1 (London: Routledge, 1996), 128-84.

Kitab al-Asrar = “Kitab al-Asrar,” *Islamic Encyclopedia*
 <<http://islamicencyclopedia.org/public/index/topicDetail/id/564>>, accessed on Feb. 5, 2013.

Klein = F. A. Klein, *The Religion of Islám* (London: Kegan Paul, Trench, Trübner & Co., Ltd., 1906).

Knorr = Wilbur Knorr, *Textual Studies in Ancient and Medieval Geometry* (Boston: Birkhäuser, 1989).

Kreisel = Howard Kreisel, *Prophecy: The History of an Idea in Medieval Jewish Philosophy* (Dordrecht: Kluwer Academic Publishers, 2001).

Lapidus = Ira M. Lapidus, *A History of Islamic Societies* (Cambridge: Cambridge University Press, 1988).

Latiff = Abdul Latiff, “Arabic Philosophy,” *Journal of the Moslem Institute* 3.1 (1907): 169-186.

Levy = Reuben Levy, *A Baghdad Chronicle* (Cambridge: Cambridge University Press, 1929).

Lewes = George Henry Lewes, *The Biographical History of Philosophy From its Origin in Greece Down to the Present Day* (New York: D. Appleton and Company, 1857).

Lindberg = David C. Lindberg, *The Beginnings of Western Science: The European Scientific Tradition in Philosophical, Religious, and Institutional Context, Prehistory to A.D. 1450* (Chicago: The University of Chicago Press, 2007).

Lindberg (b) = David C. Lindberg, "Alkindi's Critique of Euclid's Theory of Vision," *Isis* 62.4 (1971): 469-489.

Lindberg (c) = David C. Lindberg, "Alhazen's Theory of Vision and Its Reception in the West," *Isis* 58.3 (1967): 321-341.

Lloyd = G. E. R. Lloyd, *Early Greek Science* (New York: Random House, 2012).

Lorca = Andrés Martínez Lorca, "Ibn Rushd's Influence on Scholastic and Renaissance Philosophy," url: <www.andresmlorca.com>, accessed on Feb. 25, 2013.

Macdonald = Duncan Black Macdonald, *Development of Muslim Theology, Jurisprudence and Constitutional Theory* (New York: Charles Scribner, 1903).

MacDougall = Elisabeth B. MacDougall, *Medieval Gardens* (Washington: Dumbarton Oaks, 1986).

Mahdi = *Medieval Political Philosophy*, eds. Ralph Lerner & Muhsin Mahdi (New York: Cornell University Press, 1972).

Maimonides = Moses Maimonides, *The Guide of the Perplexed*, tr. M. Friedländer, Vol. I (London: Trübner & Co., 1881).

Marwaha = Sonali B. Marwaha, *Colors of Truth: Religion, Self and Emotions* (New

Delhi: Concept Publishing Company, 2006).

McCabe = Joseph McCabe, *A Rationalist Encyclopaedia: A Book of Reference on Religion, Philosophy, Ethics, and Science*, 2nd ed. (London: Watts, 1950).

McCann = *The Geology of Central Europe*, ed. Tom McCann, Vol. 1 (Bath: The Geological Society, 2008).

Medical Book = *The Medical Book News* 2.7 (1904): 178.

Medieval Science = Medieval Science, Technology, and Medicine: An Encyclopedia, eds.

Thomas Glick, Steven J. Livesey & Faith Wallis (New York: Routledge, 2005).

Melamed = Yitzhak Y. Melamed, "Spinoza's Deification of Existence," *Oxford Studies in Early Modern Philosophy*, Vol. VI, eds. Daniel Garber & Donald Rutherford (Oxford: Oxford University Press, 2012).

Menocal = Maria Rosa Menocal, *The Ornament of the World* (New York: Little, Brown and Company, 2002).

Moad = Omar Edward Moad, "Comparing Phases of Skepticism in Al-Ghazali and Descartes: Some First Meditations on Deliverance from Error," *Philosophy East and West* 59.1 (2009): 88-101.

Mohamed = Malik Mohamed, *The Foundations of the Composite Culture in India* (Delhi: Aakar Books, 2005).

Montada = Josep Puig Montada, "Ibn Bâjja", *The Stanford Encyclopedia of Philosophy* (Spring 2012 Edition), ed. Edward N. Zalta, url:

<<http://plato.stanford.edu/archives/spr2012/entries/ibn-bajja/>>.

Moulder = D. C. Moulder, "The First Crisis in the Life of Alghazali," *Islamic Studies*

11.2 (1972): 113-123.

Müller = “Muqni‘at al-Sa’il ‘an al-Marad al-Ha’il,” *Sitzungsberichte der königl.bayer.Akademie der Wissenschaften zu München*, Vol. ii, ed. and tr. M. J. Müller (Munich, 1863).

Murdoch = Iris Murdoch, “Imagination” in *Metaphysics as a Guide to Morals* (New York: Penguin Books, 1992).

Murray = Daniel Alexander Murray, *Plane and Spherical Trigonometry* (London: Longmans, Green, and Co., 1908).

Muslim World = *Illustrated Dictionary of the Muslim World* (New York: Marshall Cavendish Corporation, 2011).

Najm = Sami M. Najm, “The Place and Function of Doubt in the Philosophies of Descartes and Al-Ghazali,” *Philosophy East and West* 16.3/4 (1966): 133-141.

Nicholson = R. A. Nicholson, *Mystics of Islam* (London: Routledge, Kegan Paul, 1914).

Nicholson (b) = R. A. Nicholson, *A Literary History of the Arabs* (New York: Charles Scribner’s Sons, 1907).

Nicolle = Jean-Marie Nicolle, “Mathematical Analogy in the Proof of God’s Existence by Descartes,” *Mathematics and the Divine: A Historical Study*, eds. T. Koetsier & L. Bergmans (San Diego: Elsevier Inc., 2005).

Nofal = Nabil Nofal, “Al-Ghazali,” *Prospects: The Quarterly Review of Comparative Education* 23.3/4 (1993): 519-542.

North = John North, *Cosmos: An Illustrated History of Astronomy and Cosmology* (Chicago: The University of Chicago Press, 2008).

Nussbaumer = H. Nussbaumer, "The Islamic Influence on Western Astronomy,"

International Symposium on Solar Physics and Solar Eclipses (SPSE) (2006):
129-142.

O'Leary = De Lacy O'Leary, *Arabic Thought and its Place in History* (London: Kegan Paul, Trench, Trubner & Co., Ltd., 1922).

On the Revolutions = Nicolaus Copernicus, *On the Revolutions of Heavenly Spheres*
[based on the translation of Charles G. Wallis], ed. Stephen Hawking (London:
Running Press, 2002).

Osborn = Robert Durie Osborn, *Islam under the khalifs of Baghdad* (London: Seeley, Jackson, & Halliday, 1878).

Osler = Sir William Osler, *The Evolution of Modern Medicine* (New Haven: Yale University Press, 1923).

Overbay = Shawn Overbay, Jimmy Schorer, & Heather Conger, "Al-Khwarizmi,"
University of Kentucky <url: <http://www.ms.uky.edu/~carl/ma330/project2/al-khwa21.html>>, accessed on Jan. 28, 2013.

Paetow = Louis John Paetow, *A Guide to the Study of Medieval History for Students, Teachers, and Libraries* (Berkeley: University of California Press, 1917).

Palacios = Miguel Asín Palacios, *Islam and the Divine Comedy*, tr. Harold Sunderland (London: J. Murray, 1926).

Pandolfa = Stefania Pandolfa, *Impasse of the Angels* (Chicago: The University of Chicago Press, 1997).

Pedersen = Olaf Pedersen, "Astronomy," in *Science in the Middle Ages*, ed. David C.

Lindberg (Chicago: The University of Chicago Press, 1978).

Pick = B. Pick, "Syriac Literature," *Cyclopaedia of Biblical, Theological, and Ecclesiastical Literature*, ed. John McClintock & James Strong, Vol. X (New York: Harper & Brothers, Publishers, 1886).

Pochta = *Values in Islamic Culture and the Experience of History*, eds. Nur Kirabaev and Yuriy Pochta (Washington:, D.C.: The Council for Research in Values and Philosophy, 2002).

Pormann = Peter E. Pormann and Emilie Savage-Smith, *Medieval Islamic Medicine* (Edinburgh: Edinburgh University Press, 2007).

Porter = Roy Porter, *The Greatest Benefit to Mankind: A Medical History of Humanity* (New York: W. W. Norton & Company, Inc., 1998).

Porter & Morris = Friedrich Ueberweg, Geo. S. Morris, & Noah Porter, *History of Philosophy: From Thales to the Present Time* (New York: Charles Scribner's Sons, 1885).

Rafiabadi = Hamid Naseem Rafiabadi, *Emerging from Darkness: Ghazzali's Impact on the Western Philosophers* (New Delhi: Sarup & Sons, 2002).

Ragep = F. Jamil Ragep, "Copernicus and his Islamic Predecessors: Some Historical Remarks," *Filozofski vestnik* 25.2 (2004): 125 (n. 1).

Ragep (b) = F. Jamil Ragep, "When did Islamic science die (and who cares)?" *Viewpoint* 85 (Feb. 2008): 1-3.

Rahman = Afzal-ur-Rahman, *Muhammad*, Vol. 3: *Evolution of Knowledge* (London: Muslim Schools Trust, 1984).

- Rapp = George Rapp, *Archaeomineralogy* (New York: Springer, 2002).
- Rogers = Leo Rogers, "History of Trigonometry – Part 3," *NRICH*
 <<http://nrich.maths.org/6908>>, accessed on Feb. 4, 2013.
- Rogers (b) = J. A. Rogers, "Al-Jahiz, Lord of the Golden Age of Arab Literature," in
World's Greatest Men of Color, Vol. 1 (New York: Macmillan Publishing
 Company, 1974).
- Rolbiecki = Rev. Dr. J. J. Rolbiecki, "St. Thomas Aquinas the Student," *The Catholic
 University Bulletin* 30.4 (1924): 27-29.
- Rumi = Maulana Jalal al-Din Rumi, *The Mathnawi, edited from the oldest manuscripts
 available, with critical notes, translation & commentary*, tr. Reynold A.
 Nicholson (London: The Trustees of the "E. J. W. Gibb Memorial", 1925-40).
- Ruymbeke = Christine van Ruymbeke, *Science and Poetry in Medieval Persia: The
 Botany of Nizami's Khamsa* (Cambridge: Cambridge University Press, 2007).
- Sachedina = Abdulaziz Sachedina, *The Just Ruler in Shi'ite Islam: The Comprehensive
 Authority of the Jurist in Imamite Jurisprudence* (New York: Oxford University
 Press, 1988).
- Sadeghi = Behnam Sadeghi, *The Logic of Law Making in Islam: Women and Prayer in
 the Legal Tradition* (Cambridge: Cambridge University Press, 2013).
- Saliba = George Saliba, *Islamic Science and the Making of the European Renaissance*
 (Cambridge: The MIT Press, 2007).
- Sardar = Ziauddin Sardar, *Science, values and environment in Islam and the West*
 (Manchester: Manchester University Press, 1984).

- Sarkar = Jagadish Narayan Sarkar, *Thoughts on trends of cultural contacts in medieval India* (Calcutta: OPS Publishers, 1984).
- Sastri = Ramaswami Sastri, *The Evolution of Indian Mysticism* (Bombay: International Book House, n.d.).
- Savage-Smith = Emilie Savage-Smith, "Attitudes Toward Dissection in Medieval Islam," *Journal of the History of Medicine and Applied Sciences* 50 (1995): 67-110.
- Scheppler = Bill Scheppler, *Al-Biruni: Master Astronomer and Muslim Scholar of the Eleventh Century* (New York: The Rosen Publishing Group, Inc., 2006).
- Schimmel = Annemarie Schimmel, *The Triumphal Sun: A Study of the Works of Jalaloddin Rumi* (Albany: SUNY Press, 1993).
- Schmidt = Nathaniel Schmidt, *Ibn Khaldun, Historian, Sociologist, and Philosopher* (New York: Columbia University Press, 1930).
- Selin = *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*, ed. Helaine Selin (Norwell: Kluwer Academic Publishers, 1997).
- "Shia Chat" = "What is the first creation of Allah," *Shia Chat* (July 14, 2010)
 <<http://www.shiachat.com/forum/index.php?/topic/234978036-what-is-the-first-creation-of-allah/>>, accessed on Dec. 14, 2012.
- Shushtery = Mahomed Abbas Shushtery, *Outlines of Islamic Culture: Historical and Cultural Aspects* (Bangalore: Bangalore Press, 1938).
- Smith = David Eugene Smith, *History of Mathematics: General Survey of the History of*

Elementary Mathematics, Vol. 1 (New York: Dover Publications, Inc., 1953

[published originally in 1923].

Smith (b) = Philip Smith, *The history of the Christian church ...* (London: John Murray, Albermarle Street, 1881).

Strange = Guy Le Strange, *The Land of the Eastern Caliphate: Mesopotamia, Persia, and Central Asia, from the Moslem Conquest to the Time of Timur* (Cambridge: Cambridge University Press, 1930).

Struik = Dirk Jan Struik, *A Concise History of Mathematics* (New York: Dover Publications, Inc., 1987).

Tawil = Mahfouz Ali El-Tawil, *Ibn Sina and Medieval Music (370 - 428 A.H. / 980 – 1038 A.D.): A New Edition of the Musical Section of Kitab al-Shifa', and Kitab al-Najat plus A Comprehensive Study of his Life and Works on Music with Introduction, Surveys, Parallels, Translation, Commentary, and Annotated Glossary of the Arabic Musical Terminology, 2 Vols. Ph.D. dissertation, University of Exeter, 1992.*

Thrower = Norman J. W. Thrower, *Maps & Civilization: Cartography in Culture and Society*, 3rd ed. (Chicago: The University of Chicago Press, 2008).

Tibbetts = G. R. Tibbetts, *Arab Navigation in the Indian Ocean Before the Coming of the Portuguese, being a translation of Kitab al-Fawa'id fi usul al-bahr wa'l-qawa'id of Ahmad b. Majid al-Najid* (London: The Royal Asiatic Society of Great Britain and Ireland, 1971).

UGA = "Hadith and the Prophet Muhammad," *The University of Georgia* <url:

<http://islam.uga.edu/hadith.html>>, accessed on Jan. 27, 2013.

UNESCO = *Arab Muslim Civilization in the Mirror of the Universal* (UNESCO, 2010).

UofUtah = *University of Utah Middle East Center Outreach Notes* 10.2 (2001).

de Vaux = Carra de Vaux, "al-Farabi," *The Encyclopaedia of Islam*, Vol. 2.

Vernoit = Stephen Vernoit, "Artistic Expressions of Muslim Societies," in *Cambridge Illustrated History: Islamic World*, ed. Francis Robinson (Cambridge: Cambridge University Press, 1996).

Viator = *Viator Medieval & Renaissance Studies* (Berkeley: University of California Press, 1986).

Waxman = Meyer Waxman, *The Philosophy of Don Hasdai Crescas* (New York: Columbia University Press, 1920).

Wells = Charles L. Wells, *The American Historical Review* Vol. 20 (1915): 424-426.

Windelband = Wilhelm Windelband, *A History of Philosophy*, Vol. II (New York: Harper & Brothers, Publishers, 1901).

Winter = Tim Winter, "Reason as Balance: The Evolution of 'Aql,'" *Cambridge Muslim College Papers* No. 3: 1-12.

Wisnovsky = Robert Wisnovsky, *Avicenna's Metaphysics in Context* (New York: Cornell University Press, 2003).

de Wulf = Maurice de Wulf, *History of Medieval Philosophy* (New York: Longmans, Green, and Co., 1909).

Zambelli = P. Zambelli, *The Speculum Astronomiae and its Enigma: Astrology, Theology*

and Science in Albertus Magnus and his Contemporaries (Boston: Kluwer Academic, 1992).

Zamir = S. Rizwan Zamir, "Descartes and Al-Ghazali: Doubt, Certitude and Light,"

Islamic Studies 49.2 (2010): 219-251.

Zitzewitz = Paul Zitzewitz, *The Handy Physics Answer Book* (Canton: Visible Ink Press, 2011).

Transliterations

The following words were translated in all previous English editions of *Muslim Thought*.

- In case of a word or a name starting with ‘ (‘ayn), it will appear in the order of the next alphabet. For instance, ‘Īsā b. Yaḥyā will appear under ‘I’.
- In case of a word or a name starting with the prefix **-al**, it will appear in the order of the next alphabet. For instance, al-Manṣūr will appear under ‘M’.
- If in the text the name appears with the prefix **Caliph**, it will appear under ‘C’, followed by the name. For instance, Caliph al-Manṣūr will appear under ‘C’.

Latin alphabets with diacritics

‘

’

ā Ā

ḍ Ḍ

ḥ Ḥ

ī Ī

ṣ Ṣ

ṭ Ṭ

ū Ū

w W

z Z

Arabic alphabets and pronunciations

‘ain

ḥamzah

elongated ‘a’ (as in Mark)

ḍuād

ḥa

elongated ‘i’ (as in jeep)

ṣuād

ṭā

elongated ‘u’ (as in loop)

wa (as in vital)

zā

Alphabetical order

‘Abd al-Ḥamīd Ladikī

‘Abd al-Karīm Jīlī

‘Abd al-Qādir Ghaibī

‘Abd al-Qādir Gīlānī

Abū ‘Alī ‘Īsā ibn Zurah

Abū al-Faraj

Abū al-Ḥaṣan ‘Alī al-Ash‘arī

Abū al-Ḥasan ‘Alī Hujwīrī

Abū al-Ḥasan ‘Alī Hujwīrī Ganj Bakhsh

Abū al-Qāsim al-Zahrāwī

Abū al-Wafā’

Abū Bakr

Abū Bakr Bāqillānī

Abū Bakr Muḥammad

Abū Bakr Shiblī

Abū Bishr Matta b. Yūnus

Abū Ja‘far al-Khāzin

Abū Ma‘shar

Abū Maṣū‘

Abū Naṣr Sarrāj

Abū Yaḥyā

Abū Yūsuf Ya‘qūb al-Manṣūr

Abū Yūsuf Ya‘qūb ibn Ishāq al-Kindī

Abū Zakariyā Yaḥyā

‘Aḍud al-Dawlah

Aghānī

Aḥmad

Aḥmad al-Nasawī

Aḥmad al-Ṭabarī

Aḥmad of Nihāwand

Aḥmad Sarhindī

‘Alā’ al-Dawlah of Iṣfahān

‘Alī

‘Alī al-Ṭabarī

‘Alī ibn al-‘Abbās

‘Alī ibn Yūnus

‘Alī of Baghdad

Alp Arslān

Amānīyyah

‘Ammār of Mosul

Anūsharwān

Arīn

‘Awārif al-Ma‘ārif

al-Baghdādī

Bait al-Ḥikmah

Bakhtīshū‘

Bakhtiyār Kākī

Başrah

al-Battānī

Bāyazīd of Bisṭām

Bāyazīd of Bisṭām

al-Bīrūnī

Bukhārā

Caliph al-Ma‘mūn

Caliph al-Manşūr

Caliph al-Rashīd

Caliph Hārūn

Caliph Mu‘taḍid

Caliph Muwaḥḥid Abū Ya‘qūb Yūsuf

al-Damīrī

Damīrīyyah

Dr Khalīfah ‘Abd al-Ḥakīm

Faḍl Ḥaqq Khairābādī

Fakhr al-Dīn Rāzī

fanā’

al-Fārābī

al-Farghānī

Farīd al-Dīn ‘Aṭṭār

Farīd al-Dīn Ganj Shakar

al-Fazārī

al-Filāḥah

Fuṣṭaṭ

Fuṣūṣ al-Ḥikam

Futūḥāt al-Makkīyyah

al-Ghazzālī

Ghaznī

ghubār numerals

Gulshan-i Rāz

Ḥabash son of Ḥāsib

Ḥaddād

Ḥadīqah

Ḥadīth

al-Ḥajjāj ibn Yūsuf ibn Matar

al-Ḥākīm

Ḥarrān

Ḥasan Bihārī

al-Ḥāwī

Ḥayāt al-Ḥayawān

Ḥayy Ibn Yaqzān

Ḥillī

Ḥisāb al-Jabr w-al-Muqābalaḥ

Ḥubaish

Ḥunain ibn Ishāq

Ḥunain ibn Ishāq al-‘Ibādī

Ḥusain b. Manṣūr al-Ḥallāj

Ibn ‘Abd Rabbihī

Ibn ‘Arabī

Ibn ‘Asākir

Ibn al-Baiṭār

Ibn al-Khaṭīb

Ibn Bājjah

Ibn Baṭṭūṭah

Ibn Ḥayyān

Ibn Ḥazm

Ibn Ibrāhīm al-Fazārī

Ibn Khaldūn

Ibn Khallikān

Ibn Muḥriz

Ibn Sīnā

Ibn ʿUfayr

Ibn Yūnus

Ibrāhīm

Ibrāhīm ibn Adham

al-Idrīsī

Iḥṣā' al-'Ulūm

Ihyā' 'Ulūm al-Dīn

Ikhwān al-Ṣafā'

'Ilm al-Kalām

Imām al-Ḥaramain

al-inbīq

Insān-i Kāmil

īqā'

īqā'āt

'Īsā b. Yaḥyā

'Īsā ibn Thakerbakht

Iṣfahān

Iṣfahānī

Iṣḥāq

al-Iṣṭakhrī

Jābir

Jāḥiẓ

Jalāl al-Dīn Dawwānī

Jamāl al-Dīn Afghānī

Jāmī

Jazārī

Jibrīl

John bar Māsarjawaih

al-Jubbā'ī

al-Judarī w-al-Ḥaṣbah

julāb

Jundi Shāpūr

Jurjānī

Jūrjīs ibn Bakhtīshū‘

Kabīr

Kalīlah wa Dimnah

karāmahs

Kashf al-Mahjūb

Kashf al-Zunūn

Kātibī

Khālid b. ‘Abd al-Malik

Khatunīyyah

Khazīnat al-Kutub

al-Khujandī

Khwājah Bahā' al-Dīn

al-Khwārizmī

al-Kindī

Kirmānī

Kitāb al-Asrār

Kitāb al-Hai'ah

Kitāb al-Hayawān

Kitāb al-Luma' fī al-Taṣawwuf

Kitāb al-Malikī

Kitāb al-Mansūrī

Kitāb al-Nagħm

al-Kūhī

al-kuhl

al-Kulliyāt fī al-Ṭibb

Kun-Pāndya

Lama'āt

Lawā'ih

Lawāmi' al-Bayyināt

Ma'rūf al-Karkhī

Mādhava

al-Mahānī

al-Majrūtī

al-Manşūr

Mantiq al-Ṭair

Marāghah

al-Mas'ūdi

Mathnawī

al-Matīn

Māturīd

Māturīdiyyah

Mīr Zāhid

Mu'īn al-Dīn Chishtī

Mu'jam al-Buldān

Muḥammad

Muḥammad son of Murād

Mullā Sabzwārī

al-Muqaddasī

murāqabah

Mūsā ibn Khālid

Mūsā ibn Shākir

al-Mustanşirīyyah

al-nafīr

Nairīzī

naqqārah

Naşīr al-Dīn Ṭūsī

Naşīr Khusraw

Naşīrīyyah

nazīr

Nazzām

Nimbāraka

Nīshāpūr

Nizām al-Dīn Auliya'

Nizām al-Mulk

Nizāmīyyah

al-Qabīsī

al-qalī

qānūn

Qānūn

Qinnasrīn

qītārāh

Qur'ān

Qushairī

Qustā ibn Lūqa

Quṭb al-Dīn

quṭn

rabāb

Rābi‘ah Baṣrī

Rābi‘ah of Baṣrah

rahj al-ghār

Rāmānuja

Rambīyyah

rasā’il

al-Rashīdiyyah

al-Rāzī

Riḍwān

Risālah-i Qushairīyyah

Rubā’iyāt

Rūmī

Sa‘īd ibn Misjah

Ṣābian group

Sadr al-Dīn Shīrāzī

Ṣalahīyyah

Saljūq

Sāmānid Manṣūr ibn Ishāq

Sanā’ī

Sayyid Aḥmad Khān

Send b. ‘Alī

Sha‘rānī

Shabistarī

al-Shabushtī

Shah Walī Allāh

Shahrastānī

Shahrazūrī

Shams al-Dīn Muḥammad

Shaqīq Balkhī

sharāb

Sharīfīyyah

al-Shifā'

Shihāb al-Dīn al-Tifāshī

Shihāb al-Dīn Suhrawardī

Shīrāz

Siālkotī

Sinān

şudā'

Sulṭān

al-sumūt

şunūj

al-Ṭabarī

tāftah

Taftazānī

al-Ṭahāwī

al-Taisīr fī al-Mudāwah w-al-Tadbīr

ṭarīqah

Tarkhānīyya

al-Taṣrīf

Thābit

Thābit ibn Qurrah

Thāwafīl ibn Tūma

Ṭūs

tūtiyā'

al- 'ūd

Ujjainī

'Umar al-Khayyām

al-uthāl

Viṣnuswāmī

Wāṣil b. 'Aṭā'

Wāsiṭ

wazīr

Ya'qūb ibn Akhī-Ḥizām

Yaḥyā b. Abī Manṣūr

Yaḥyā b. Masāwaih

Yaḥyā ibn 'Adī

Yaḥyā ibn Khālīd

Yaḥyā ibn Masāwaih

Yaḥyā son of Abī Manṣūr

Yāqūt

Yūnus Kātib

Zarqālī

Zīj al-Akbar al-Ḥākimī