

Suppression of medieval Islamic sciences by Muslim theologians

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Table of contents

1. Introduction	3
1.1. Muslim Theologians.....	5
1.2. Medieval Islamic Science	5
2. Rationalism versus Orthodoxy.....	6
2.1. Mu'tazilites	6
2.2. Mihna	7
2.3. Ash'arites	8
2.4. Al Mutawakkil	9
2.5. Al-Ash'ari	9
2.6. Al-Ghazali	10
2.7. Fakhr Al-Din Razi.....	11
2.8. Ahmad Ibn Hanbal	12
3. 'Heretical' Scientists	13
3.1. Al-Kindi	15
3.2. Al-Razi	16
3.3. Ibn Sina	17
3.4. Ibn Rushd	20
3.5. Ibn Khaldun.....	21
4. Relation to Theologians	24
4.1. Muslim Obligation towards the Theologians.....	24
4.2. Role of the Theologians	24
5. Compatibility of Islam and Science	26
6. Conclusion.....	30

1. Introduction

The study of sciences began a very long time even before the time of the prophet Mohammed. Sciences were practiced by the Greek, Egyptians, Indians to mention a few. The advent of Islam and its struggle for survival within Arabian Peninsula and with other contemporary civilizations and powers then lead to the development and advancement in technology by Muslims. The teachings of Qur'an and Sunnah inspired many Muslims to their accomplishments. This was spiced by the fact that the first revelation to the prophet was to read.

“Read in the Name of your Lord who has created”¹

This was also supported by the sayings and actions of the prophet (Sunnah) such as:

“The acquisition of knowledge is a duty incumbent on every Muslim, male and female.”

“Philosophy is the stray camel of the Faithful, take hold of it wherever ye come across it.”

“Seek knowledge even in China, for the pursuit of knowledge is the duty of every individual Muslim”, narrated by Anas ibn malik.

The Islamic Empire for more than 1,000 years remained the most advanced civilization in the world with various accomplishments in science and medicine. This was also complimented by the fact that Islam stressed the importance and respect of learning, forbade destruction, cultivated a respect for authority, discipline, and tolerance for other religions.

After the death of the prophet, there was struggle for power amongst some of the families and some of the companions which lead to the assassination of rightly guided caliphs from Uthman Ibn Affan up to Ali Bin Abi Talib. This lead to the rise of Muawiyah as the caliph, starting the reign of Ummayyad caliphate. It was ruled by the Umayyad dynasty, whose name derives from Umayya Ibn Abd Shams, the great-grandfather of the first Umayyad caliph. Although the Umayyad family originally came from the city of Mecca, Damascus was

¹ The holy quran, chapter 97, verse 1

the capital of their Caliphate. At its greatest extent, it covered more than five million square miles, making it one of the largest empires the world had yet seen².

The rise of the Abbasid caliphate pushed the ummayad caliphate out of power in 750 AD. This caliphate had the longest rule in history of islam before it fell after about 700 years. The Abbasid caliphs descended from Abbas ibn Abd al-Muttalib (566 – 662), one of the youngest uncles of Muhammad, because of which they considered themselves the true successor of Muhammad as opposed to the Umayyads. The Abbassids were influenced by the Qur'anic injunctions and hadith such as "the ink of a scholar is more holy than the blood of a martyr" stressing the value of knowledge³.

The fall out of the crises lead to the division into sects and school of taught. The major sects then were the Sunni and Shiites, while the school where rationalist, orthodox, heterodox etc. Rationalism is any view appealing to reason as a source of knowledge or justification". In more technical terms it is a method or a theory in which the criterion of the truth is not sensory but intellectual and deductive". Different degrees of emphasis on this method or theory lead to a range of rationalist standpoints, from the moderate position "that reason has precedence over other ways of acquiring knowledge" to the more extreme position that reason is "the unique path to knowledge". Given a pre-modern understanding of reason, "rationalism" is identical to philosophy, the Socratic life of inquiry, or the zetetic interpretation of authority (proceeding by inquiry or investigating). Orthodox is described as pertaining to, or conforming to the approved form of any doctrine, philosophy, ideology, etc, or conforming to beliefs, attitudes, or modes of conduct that are generally approved. Heterodoxy is generally defined as any opinions or doctrines at variance with an official or orthodox position. It is commonly used to describe a subject as characterized by departure from accepted beliefs or standards and is synonymous with unorthodoxy.

² Blankinship, Khalid Yahya (1994), *The End of the Jihad State, the Reign of Hisham Ibn 'Abd-al Malik and the collapse of the Umayyads*, State University of New York Press, p. 37, ISBN 0791418278.

³ Vartan Gregorian, "Islam: A Mosaic, Not a Monolith", Brookings Institution Press, 2003, pg 26–38 ISBN 0-8157-3283-X

1.1. Muslim Theologians

Theology is the study of God or, more generally, the study of religious faith, practice, experience or of spirituality. The pious scholars of Islam, men and women collectively known as the ulama. The ulama formed various schools of thought some of which are: Maliki, Hanafi, Shafi'i and Hanbali. Although the Amman message, a three-point ruling issued by 200 Islamic scholars from over 50 countries, recognizes eight legal schools of thought (madhāhib) including Sunni Hanafi, Sunni Hanbali, Sunni Maliki, Sunni Shafi'i, Shia Ja'fari, Shia Zaydi, Ibadi, Zahiri.⁴

1.2. Medieval Islamic Science

Medieval period in history as agreed to by historians was between the 5th and 15th century. Science in medieval Islam, also known as Islamic or Arabic science,⁵ is a term used in the history of science to refer to the science developed in the Islamic world prior to the modern era. It was also during this period that the prophet was born and Islam came into existence. It was also during this period that the Islamic civilization rose and fell. This period saw the rise of science in the Muslim world. The study and furtherance of the work of some of the Greek philosopher were studied and improved, while a lot of other aspects that were never in existence were ventured into. There were various innovative structures such as building of the first hospital, first university, educational structure i.e. degree, master and PhD during this period in the muslim world.

A major innovation of this period was paper. Originally, the secret tightly guarded by the Chinese. The art of papermaking was obtained from prisoners taken at the Battle of Talas, spreading to the Islamic cities of Samarkand and Baghdad. The Arabs improved upon the Chinese techniques of using mulberry bark by using starch to account for the Muslim preference for pen in place of brush by the Chinese. By 900 AD there were hundreds of shops

⁴ The International Islamic Conference: True Islam and Its Role in Modern Society, (Amman, 27-29 Jumada II 426 ah / 4-6 July 2005 ce)

⁵ Sabra A. (2000), "Poverty and Charity in Medieval Islam, Mamluk Egypt 1250-1517", Cambridge University Press Edinburgh, United Kingdom, p. 216

employing scribes and binders for books in Baghdad and public libraries began to become established. From here paper-making spread west to Fez and then to al-Andalus and from there to Europe in the 13th century.⁶

2. Rationalism versus Orthodoxy

2.1. *Mu'tazilites*

Mu'tazilah literally 'those who withdraw themselves', a movement that was founded by Wasil Bin Ata. It is an Islamic school of speculative theology that flourished in the cities of Basra and Baghdad, both in present-day Iraq. Its members were united in their conviction that it was necessary to give a rationally coherent account of Islamic beliefs. They relied on a synthesis between reason and revelation. That is, their rationalism operated in the service of scripture and Islamic theological framework. They, as the majority of Muslim jurist-theologians, validated allegorical readings of scripture whenever necessary. In addition to having an atomistic view of the universe, they generally held to five theological principles, of which the two most important were the unity of God and divine justice. The former led them to deny that the attributes of God were distinct entities or that the Qur'an was eternal, while the latter led them to assert the existence of free will.

The adherents of the Mu'tazili school are at odds with other Sunni Muslim scholars due to the former's belief that human reason can be applied alongside Qur'anic revelations. It is still adopted by some Muslim scholars and intellectuals⁷. It became, for a period of some thirty years, the official doctrine of the caliphate in Baghdad. By this time, Mu'tazilites were well established in many other centers of Islamic learning, especially in Persia, and had split into two rival factions, the Basran School and the Baghdad School. Although their links with these two cities became increasingly tenuous, both schools flourished until the middle of the eleventh century, and the Basran School only finally disappeared with the Mongol invasions. After the demise of the Mu'tazila as a distinct movement, Mu'tazilite doctrine - by now

⁶ Arnold Pacey, "Technology in World Civilization: A Thousand-Year History", MIT Press, 1990, ISBN 0-262-66072-5 pp. 41-42

⁷ Abd al-Jabbar (1965), "Abd al-Karim 'Uthman", ed (in Arabic). *Sharh al-Usul al-Khamsa*. Cairo: Maktabat Wahba.

regarded as heretical by Sunnis - continued to be influential amongst the Shi'ites in Persia and the Zaydis in the Yemen.⁸

2.2. Mihna

The Mihna means 'ordeal' or 'inquisition' is an episode that took place in classical Islamic history and lasting for about fifteen years. This was an attempt by al-Ma'mun to impose his theological views on his subjects. It involved testing particular individuals concerning their view of whether the Qur'an is created or not. All parties agreed that the Qur'an is the unadulterated speech of God. The issue was whether the Qur'an is the created (al-Ma'mun's position) or the uncreated speech of God. The response of the interrogees was not without consequences. Measures were taken against those who rejected the doctrine of the createdness of the Qur'an, including dismissal from public office, imprisonment, and even flogging. Mihna continued after al-Ma'mun's death under his successors al-Mu'tasim and al-Wathiq. Nearly all the scholars of Baghdad from the jurists and the traditionists were tested, and all of them acknowledged the doctrine of the created Quran, with the exception of the two; Ahmad b. Hanbal and Muhammad b. Nuh. This greatly pained and angered Imam Ahmad, such that he boycotted some of the great traditionists for their acknowledgement.⁹

Ahmad Ibn Hanbal, an Islamic scholar of the time, challenged the Fitnah (trial) of Islam and the Muslims. He was put under intense pressure, imprisoned, and tortured for preaching that the Qur'an was not created and that it was the literal words of Allah. He lived in prison until the new Caliph, Al-Mutawakkil, came into power. Al-Mutawakkil rejected the idea of the Qur'an being created and Hanbal was finally released.¹⁰ Towards the end of al-Wathiq's reign, a close student of al-Shafi'i, Ahmad b. Nasr al-Khaza'i was caught by the officials and charged for organising an uprising in Baghdad. When Ahmad al-Khaza'i was brought to al-Wathiq in chains, the latter, instead of asking him about his role in the uprising, questioned him about his belief in the creation of the Quran, to which Ahmad al-Khaza'i gave the standard Sunni reply. The enraged Caliph, upon hearing his response, personally

⁸ Gimaret, D. (1992) *'Mu'tazila'*, in *Encyclopaedia of Islam*, New Edition, Vol. VII, fasc. 127-8: 783-93.

⁹ Ya'qubi, vol.III, p.86; Muruj al-dhahab, vol.III, p.268-270.

¹⁰ <http://www.islamicawakening.com/viewarticle.php?articleID=1193>, retrieved 24th January, 2011.

decapitated him. His head remained in Baghdad, while his body remained on a crucifix in Samurra for six years, as a grisly warning to potential rebels.¹¹

As the number of Muslims increased throughout the Muslim empire, and in reaction to the excesses of so-called rationalism, theologians began to lose ground. The problem was exacerbated by Mihna. Mu'tazilites have been accused of being the instigators though it was the Caliph's own scheme. The persecution campaign, regardless, cost them and theology in general the sympathy of the Muslim masses. This patronage ceased when al-Mutawakkil reversed the edict of al-Ma'mun, which had required officials to publicly profess that the Qur'an was the created word of God.¹²

2.3. Ash'arites

The Ash'ari theology is a school of early Muslim speculative theology founded by the foremost theologian and thinker Abu al-Hasan al-Ash'ari. The disciples of the school are known as Ash'arites, and the school is also referred to as Ash'arite school. It had its origin in the reaction against the excessive rationalism of the Mu'tazila. Its members insisted that reason must be subordinate to revelation. They accepted the cosmology of the Mu'tazilites but put forward a nuanced rejection of their theological principles.

Contrary to popular opinion, the Ash'arites were not completely traditionalist and anti-rationalist, nor were their historical foes with the Mu'tazilites who were completely rationalist and anti-traditionalist, as the Mu'tazilites did depend on rationality and the Ash'arites did depend on tradition. Their goals were the same, to affirm the transcendence and unity of God, but their doctrines were different, with the Asharites supporting an Islamic occasionalist doctrine and the Mutazilites supporting an Islamic metaphysics influenced by Aristotelianism and Neoplatonism.

¹¹ Nawas, J. A. (1994). "A Reexamination of Three Current Explanations for al-Ma'mun's Introduction of the Mihna". *International Journal of Middle East Studies* 26 (4): 615–629. doi:10.1017/S0020743800061134.

¹² Nawas, J. A. (1996). "The Mihna of 218 A.H./833 A. D. Revisited: An Empirical Study". *Journal of the American Oriental Society* (Journal of the American Oriental Society, Vol. 116, No. 4) 116 (4): 698–708. doi:10.2307/605440. <http://jstor.org/stable/605440>.

2.4. Al Mutawakkil

Al-Mutawakkil was unlike his brother and father in that he was not known for having a thirst for knowledge, but he had an eye for magnificence and a hunger to build. He gave orders that any of their houses of worship built after the advent of Islam were to be destroyed and that one-tenth of their homes be confiscated. If the place was spacious enough, it was to be converted into a mosque.¹³

When he succeeded al-Wāthiq as caliph, al-Mutawakkil reverted to a position of Islamic orthodoxy and began a persecution of all non-orthodox or non-Muslim groups. Synagogues and churches in Baghdad were torn down, while the shrine in Karbalā was razed, and further pilgrimages to the town were forbidden. Old regulations prescribing special dress for Christians and Jews were reinstated with new vigour.¹⁴

2.5. Al-Ash'ari

Abu al-Hasan al-Ash'ari was noted for his teachings on atomism, among the earliest Islamic philosophies, and for al-Ash'ari this was the basis for propagating a deterministic view that Allah created every moment in time and every particle of matter. Thus cause and effect was an illusion. He nonetheless believed in free will, elaborating the thoughts of Dirar IBN Amr' and Abu Hanifa into a "dual agent" or "acquisition" (iktisab) account of free will.¹⁵

While al-Ash'ari was opposed to the views of the Mu'tazili school for its over-emphasis on reason, he was also opposed to the views of certain schools such as the Zahiri (literalist), Mujassimite (anthropomorphist) and Muhaddithin (traditionalist) schools for their over-emphasis on taqlid (imitation) in his *Istihsan al-Khaud*:

"A section of the people (i.e., the Zahirites, Thahirites and other orthodox people) made capital out of their own ignorance; discussions and rational thinking about matters of faith became a heavy burden

¹³ Bat Ye'or, *The Dhimmi*. Rutherford: Fairleigh Dickinson University Press, 1985. (pp. 167-68).

¹⁴ Al-Mutawakkil. (23 Jan, 2011). In *Encyclopædia Britannica*. Retrieved from <http://www.britannica.com/EBchecked/topic/399748/al-Mutawakkil>

¹⁵ Watt, Montgomery. *Free-Will and Predestination in Early Islam*. Luzac & Co.: London 1948.

for them, and, therefore, they became inclined to blind faith and blind following (taqlid). They condemned those who tried to rationalize the principles of religion as 'innovators.' They considered discussion about motion, rest, body, accident, colour, space, atom, the leaping of atoms, and attributes of God, to be an innovation and a sin. They said that had such discussions been the right thing, the Prophet and his Companions would have definitely done so; they further pointed out that the Prophet, before his death, discussed and fully explained all those matters which were necessary from the religious point of view, leaving none of them to be discussed by his followers; and since he did not discuss the problems mentioned above, it was evident that to discuss them must be regarded as an innovation."¹⁶

2.6. Al-Ghazali

Despite being named after Ash'ari, the most influential work of this school's thought was *The Incoherence of the Philosophers*, by the Persian polymath al-Ghazali. He was a pioneer of the methods of doubt and skepticism,¹⁷ and he changed the course of early Islamic philosophy, shifting it away from an Islamic metaphysics influenced by ancient Greek and Hellenistic philosophy, and towards an Islamic philosophy based on cause-and-effect that were determined by God or intermediate angels, a theory now known as occasionalism.

He is famous for defending the theory of occasionalism using logic. Al-Ghazali famously claimed that when fire and cotton are placed in contact, the cotton is burned directly by God rather than by the fire, a claim which he defended using logic. He argued that because God is usually seen as rational, rather than arbitrary, his behaviour in normally causing events in the same sequence (i.e., what appears to us to be efficient causation) can be understood as a natural outworking of that principle of reason, which he then describes as the laws of nature.¹⁸

Al-Ghazali nevertheless expresses support for a scientific methodology based on demonstration and mathematics, while discussing astronomy. After describing the scientific

¹⁶ M. Abdul Hye, Ph.D, Ash'arism, *Philosophia Islamica*.

¹⁷ Najm, Sami M. (July–October 1966), "The Place and Function of Doubt in the Philosophies of Descartes and Al-Ghazali", *Philosophy East and West* **16** (3-4): 133–41, doi:10.2307/1397536.

¹⁸ Nasr, Seyyed Hossein (2006), *Islamic Philosophy from Its Origin to the Present: Philosophy in the Land of prophecy*, SUNY Press, pp. 87–8, ISBN 0791467996.

facts of the solar eclipse resulting from the Moon coming between the Sun and Earth and the lunar eclipse from the Earth coming between the Sun and Moon, he writes:

“Whosoever thinks that to engage in a disputation for refuting such a theory is a religious duty harms religion and weakens it. For these matters rest on demonstrations, geometrical and arithmetical, that leaves no room for doubt”.¹⁹

Ghazali saw the practical usefulness of mathematics and condemns those who deny the mathematical sciences:

“A grievous crime indeed against religion has been committed by the man who imagines that Islam is defended by the denial of the mathematical sciences, seeing that there is nothing in revealed truth opposed to these sciences by way of either negation or affirmation, and nothing in these sciences opposed to the truth of religion”.²⁰

He also wrote *The Revival of the Religious Sciences in Islam*, a cornerstone of the Ashari school's thinking. It combined theology, skepticism, mysticism, Islam and other conceptions.

2.7. Fakhr Al-Din Razi

Fakhr al-Din Razi was a Persian mathematician, physicist, physician, philosopher, and a master of kalam. He wrote an encyclopedia of science, which was influential, and a later referent for such modern efforts as the Islamization of knowledge, which have similar intention. He was also a critic of Aristotelian logic and a pioneer of inductive logic. He was from the Shafi'i school of Islamic law and Asharite school of Islamic theology. As a result of his discussions in various cities, he found many opponents such as the Mutazilites, Hanbalites

¹⁹ Anwar, Sabieh (October 2008), "Is Ghazālī really the Halagu of Science in Islam?", *Monthly Renaissance* **18** (10), <http://www.monthly-renaissance.com/issue/content.aspx?id=1016>, retrieved 2008-10-14.

²⁰ Anwar, Sabieh (October 2008), "Is Ghazālī really the Halagu of Science in Islam?", *Monthly Renaissance* **18** (10), <http://www.monthly-renaissance.com/issue/content.aspx?id=1016>, retrieved 2008-10-14.

(who opposed philosophy and Kalam), Batinites and Qarmatians, all of whose teachings Razi criticized. In his *Wasaya (Testament)*, which he wrote before his death, he writes:

“I have explored the ways of kalam and the methods of philosophy, and I did not see in them a benefit that compares with the benefit I found in the Qur'an. For the latter hurries us to acknowledge that Greatness and Majesty belong only to Allah, precluding us from involvement into the explication of objections and contentions. This is for no other reason than because human minds find themselves deadened in those deep, vexing exercises and obscure ways of Kalam and Philosophy”.²¹

He also wrote the following about the relation of physics to mathematics and metaphysics:

“If the quiddity of a thing (*al-mahiyyah*) is in need of matter (*al-maddah*) for [realising] its external (*al-khariji*) and mental (*fi al-dhihn*) existence, then it is [included in] the science of physics (*al-ilm al-tabi'i*), which is the lowest science (*al-'ilm al-asfal*). If the quiddity [of a thing] is in need of matter for [realising] its external existence, but is independent of matter for its mental existence in the sense that the mind can grasp it without considering its materiality (*maddatiha*), then it is [included] in the science of mathematics (*al-ilm al-riyadi*), which is the intermediate science (*al-ilm al-awsat*). If the quiddity is independent of matter for [both] its external and mental existence, then it is [included in] the highest science (*al-ilm al-a la*) and the first philosophy (*al-falsafat al-ula*)”.²²

2.8. Ahmad Ibn Hanbal

Ahmad Ibn Muhammad Ibn Hanbal Abu `Abd Allah al-Shaybani was an important Muslim scholar and theologian. He is considered the founder of the Hanbali school of fiqh (Islamic jurisprudence). Imam Ahmad is one of the most celebrated Sunni theologians, often referred to as the "Sheikh ul-Islam"²³ or the "Imam of Ahl al-Sunnah," the leading authority on the Orthodox doctrine. Imam Ahmad personified the theological views of the early orthodox scholars, and in particular, the founders of the three juristic schools before him, Hanafi, Maliki and al-Shafi'i.

²¹ Hallaq, Wael B. (1985–1986), "The Logic of Legal Reasoning in Religious and Non-Religious Cultures: The Case of Islamic Law and the Common Law", *Cleveland State Law Review* 34: 79–96 [91–3]

²² Adi Setia (2004), "Fakhr Al-Din Al-Razi on Physics and the Nature of the Physical World: A Preliminary Survey", *Islam & Science* 2, http://findarticles.com/p/articles/mi_m0QYQ/is_2_2/ai_n9532826/, retrieved 2010-03-02.

²³ Ahmad IBN Hanbal, "Foundations of the Sunnah", pg 51-173.

Ibn Hanbal was famously called before the Inquisition of the Abassid Caliph al-Ma'mun - known as the mihna. Al-Ma'mun wanted to assert the religious authority of the Caliph by forcing the top scholars of the time to admit that the Qur'an was created rather than uncreated. Ahmad Ibn Hanbal was one of the few scholars to refuse to back down to the Caliph, setting the train in motion for the increasing power of the ulama in deciding questions of law and theology.

It is said that, when told that it was religiously permissible to say what pleases his persecutors without believing in it at the time of mihna, Ahmad said "If I remained silent and you remained silent, then who will teach the ignorant?" With regard to innovation within religion, Ahmad said "The graves of sinners from People of Sunnah is a garden, while the graves of the pious ascetics from the People of Innovation is a barren pit. The sinners among Ahlus Sunnah are the Friends of Allah, while the pious among Ahlul-Bidah are the Enemies of Allah."²⁴

On Friday, the 12 of Rabi' al-Awwal 241 AH, the legendary Imam breathed his last. The news of his death quickly spread far and wide in the city and the people flooded the streets to attend Ahmad's funeral.²⁵ When he died, he was accompanied to his resting place by a funeral procession of eight hundred thousand men (800,000) to One million and three hundred thousands men (1,300,000) or around two million people (2,000,000) as was estimated by few scholars attending the funeral and sixty thousand women (60,000), marking the departure of the last of the four great mujtahid Imams of Islam.²⁶

3. 'Heretical' Scientists

Important as military conquest was to the spreading of early Islam, it was the spectacular achievements of Muslim scholars which established the supremacy of Islamic civilization over its contemporaries. We need only recall that the Mongol invasions - which were superficially similar to the Arab conquests - produced an ephemeral empire but no civilization. Nothing but ruin and destruction remained when the Mongol hordes finally

²⁴ <http://www.islamicboard.com/islamic-history-biographies/34070-imaam-ahmad-IBN-hanbal.html> retrieved 22nd January, 2011.

²⁵ <http://www.islamicboard.com/islamic-history-biographies/34070-imaam-ahmad-IBN-hanbal.html> retrieved 22nd January, 2011.

²⁶ <http://www.islamlife.com/religion2/component/content/article/69-later-scholars/567-biography-of-IBN-qayyim-al-jawaziyah> retrieved 22nd January, 2011.

receded to their natural habitat in the Gobi desert. In contrast to this, the Islamic conquests led to a new world culture which flourished long after the military monopoly had declined.

For five centuries the flame of learning had burnt bright in Islamic civilization. To the scintillating galaxy of scholars belonged luminaries like Al-Kindi, Ibn Sina, Omar Khayyam, Ibn al-Haytham, Ibn Rushd, Ibn Khaldun, and many others. Without them the colourful tapestry of Muslim culture would have been much poorer, the claims to being a great world culture weak and unconvincing. Today, these names have become venerated symbols of past achievement. School children in Muslim countries must learn about them, history and science textbooks extol their achievements, and societies and institutes bear their names.

But for all the panegyrics and adulation, there lurks the proverbial skeleton on the closet: the great scholars of Islam were often endangered not by Mongol hordes or infidel Christians but, instead, by homegrown religious orthodoxy.

The tension between zealotry and secular learning was, as we have seen in the previous chapter, present almost from the instant at which the Hellenistic sciences were introduced into Muslim civilization. Sometimes subdued, but sometimes overt and violent, the opposition of the orthodox ulema often posed a mortal threat to those who studied science, philosophy and logic. 'The piety of theologians,' exclaimed al-Jahiz in frustration, 'consists of hastening to denounce dissidents as unbelievers.'²⁷ Scholars, therefore, relied on the critical support of enlightened caliphs and rulers for protection from powerful religious figures who considered their work to be heretical. But royal patronage stimulated jealousy and raised tensions because the theologians observed that a man of inferior status, the scholar, often had relatively easier access to the halls of power as well as to the Caliph. This environment placed certain important Constraints on the amount and nature of intellectual and scientific activity. It made the task of taking science to the people difficult, and thus confined it to the upper crust of society. This is probably why Ibn Rushd came out with the following astonishing dictum: books written by scholars should be declared forbidden to the ordinary person by the rulers.²⁸

²⁷ Hayawan. 1st ed. (Cairo. 1325). Vol. 1. p. 80. quoted by B. Lewis in *Islam in History*. (New York, The Library Press. 1973).

²⁸ *Encyclopedia of Islam*, ed. E. J. Brill, (Leiden, 1971), Vol. 3. p. 912.

3.1. Al-Kindi

The founder of the Islamic Peripatetic school of philosophy and the author of 270 treaties ranging from logic and mathematics to physics and music, Abu Yusuf Yaqub Ibn Ishaq al-Kindi (801-873) is known as the 'Philosopher of the Arabs' in recognition of his tireless efforts to make philosophy acceptable to theologians. He is also the only great Arab Muslim philosopher of antiquity. A thorough Mu'tazilite, he wrote that truth is universal and supreme, and that philosophy is but another form of the message which the prophets have carried. The word 'truth' for Al-Kindi had a very definite meaning. It stood for what Plato, Aristotle and other Greek sages had elucidated. The job of scholars was, in his words, 'to complete what the ancients have not fully expressed, according to the usage of our language and the custom of our times, so far as we are able.'²⁹

As a rationalist, Al-Kindi proposed that certain passages from the Holy Book whose literal interpretation would be in conflict with reality should, instead, be understood as allegories to guide men of reason. Most ancient philosophers, including Al-Kindi, believed that there exist two truths: one for the stupid and uneducated masses, and the other for the cultured and the educated. Al-Kindi was of the opinion that the former were only able to appreciate simple things and so had to be enticed by the vision of houris and other physical allurements. On the other hand, the latter were given the gifts of logic and reason so that they might arrive at a deeper meaning of the Book.

Al-Kindi rationalized his efforts at allegorical interpretation in this manner. To give an example of the allegorical reasoning that Al-Kindi believed in, consider verse LV5 of the Qur'an. In this passage, the believer is told that the sun, moon, stars, mountains, trees and beasts 'bow themselves' before God. For the unsophisticated, this invokes an image wherein all creation literally bends in prayer. But Al-Kindi gave an elaborate linguistic argument that the Arabic word for 'bow' should be understood as meaning 'obey'. Thus, the naive picture of universal worship should instead be understood as the universal obedience to God's will. Carried another step forward, this becomes for him an argument for the existence of a universal law which must be obeyed by all forms of matter, animate as well as inanimate.

²⁹ Abu Rida. *Rasail Al-Kindi Al-Falsajiya*, p. 97, translated by A. J. Arberry in *Revelation and Reason in Islam*. (London. George Allen & Unwin. 1957), p. 35.

Hence, according to Al-Kindi, something which is in apparent conflict with daily experience is transformed into something reasonable and appealing when suitably interpreted.

In the court of Al-Mamun, Al-Kindi was a star who shone bright in the foremost cultural centre of the world. His academic pursuits maintained their vigour in the subsequent reign of the rationalist Caliph al-Mutassim, and then of al-Wathiq. But then came the ascendancy of the orthodox Sunni Caliph Al-Mutawwakil, and with it the end of a long period of liberalism. It was not hard for the ulema to convince the ruler that the philosopher had very dangerous beliefs. Murawwakil soon ordered the confiscation of the scholar's personal library, known to all Baghdad as al-Kindiyah. But that was not enough. The sixty-year-old Muslim philosopher also received fifty lashes before a large crowd which had assembled. Observers who recorded the event say the crowd roared approval with each stroke.³⁰ Long before his death in 873 at the age of seventy-two, Al-Kindi had succumbed to prolonged depression and silence. Although a friend managed to retrieve his library by means of some subtle extortion, he never really recovered from the ordeal of his public flogging. Al-Kindi was the first major figure of Islamic scholarship to fall victim to the orthodox reaction against rationalism.

3.2. Al-Razi

Famed as the greatest clinical physician of Islam, Muhammad Ibn Zakariya Al-Razi (865-925) earned the title of 'Arabic Galen' and 'most brilliant genius of the Middle Ages' for his phenomenal achievements in the field of medicine. Of Persian origin, he received his medical training in Baghdad but later returned as director of a hospital somewhere near modern Teheran. He is said to have been an extraordinarily considerate physician who cared for all his patients, both rich and poor.

Although Al-Razi is best known for his writings on the life sciences, he was also a free thinker and an important philosophical figure who was even more radical than Al-Kindi in his attachment to Greek rationalism. His metaphysical system was said to be anti-prophetic in that he soft-pedalled the importance of revelation. Instead, he asserted, God created man and imparted a part of His reason to him, thereby enabling man to comprehend the material universe. Al-Razi's theory of cosmic creation required that, at the beginning, there existed only God, the soul, matter, space and time. Thereafter the physical world came into being

³⁰ The Genius of Arab Civilization. ed. J. R. Hayes. (Mass .. MIT Press. 1983). p. 69.

through the intervention of God in a certain predicament of the soul, and after all souls return to their natural abode in heaven the world shall cease to exist. To be sure, this concept of cosmic destiny and transmigration of the soul was not something which fitted too well with the generally held doctrine of creation.

Al-Razi's unconventional views on religion certainly did not endear him with all Muslims. Later writers, though wondering at his erudition, condemned him for blasphemy because he openly spoke of the superiority of reason to revelation. Heterodox Ismailis, such as Nasr-i-Khusrau, also charged him with heresy. For his radical views, Al-Razi had to pay a high price: the relegation of most of his scholarly works to oblivion.

Even Al-Biruni, with the possible motive of trying to please his orthodox patron, openly denounced Al-Razi and attributed his blindness to divine retribution. It is said that the blindness resulted from the punishment meted out to him by an emir who was a member of the conservative Mansur family of Bukhara.³¹ This enraged emir ordered Al-Razi be hit on the head with his book until either the book or his head broke. Thereupon Al-Razi lost both his eyesight, as well as his zest for life. When an oculist suggested remedial eye surgery, Al-Razi replied: 'I have seen enough of this world, and I do not cherish the idea of an operation for the hope of seeing more of it.' Shortly thereafter he died.

3.3. Ibn Sina

Abu Ali al-Husain Ibn Sina (980-1037) was a precocious genius whose work spanned vast areas of knowledge. By the age of ten he had memorized the Qur'an to perfection, and by seventeen he was an established physician. In another year or so he had mastered the metaphysics of Aristotle. His magnum opus, *The Canon of Medicine* (*Al-Qanun*) remained the standard text in the field until the birth of modern medicine. But hakims in those days were not merely practitioners of medicine, and Ibn Sina is the example par excellence of a classic man of wisdom. A prodigious worker, his labours span the domains of philosophy and logic, as well as medicine. Ibn Sina's dedication to Islam was steady but unconventional. The somewhat unusual nature of his commitment is borne out by the following example. During the course of his scholarly labours, he would often be beset with difficulties, in which case:

³¹ Edwin P. Hoyt. *Arab Science*, (Nashville. Thomas Nelson. 1975). pp. 60-4.

"If a problem was too great for me, I repaired to the mosque and prayed, invoking Creator of all things until the gate that had been closed to me was opened and what had been complex became simple. Always, as night fell, I returned to my house, set the lamp before me and buried myself with reading and writing. If sleep overcame me or I felt the flesh growing weak, I had recourse to a beaker of wine, so that my energies were restored."³²

The unconventional aspect here, needless to say, is the means of revitalization to which Ibn Sina takes recourse. It is characteristic of his distinctive personality and style.

Like his predecessor Al-Kindi, Ibn Sina was a fiercely independent-minded philosopher who insisted on the primacy of reason, although he had disputed the Mu'tazilites on various technical matters. For a time he was vizier to the emir of Hamadan. Here he got into a religious argument with the army, and they soon called for his execution. Soldiers came to his house but not finding him, plundered it and then called on the emir to behead him. Ibn Sina was warned in time and hid at the house of his friend Abu Said Dafdaq, where he worked on his masterpiece Al-Qanun.

Ibn Sina fled persecution and the wrath of rulers several times. With his books banned, and powerful enemies plotting against him, his friends counselled moderation. To this he replied: 'I prefer a short life with width to a narrow one with length,' and continued his work undaunted. Ibn Sina's attempted synthesis of religious beliefs with science and logic repeatedly earned for him the wrath of the ulema. Sensitive to allegations of heresy, he defended himself in a famous poem

"It is not so easy and trifling to call me a heretic
No belief in religion is firmer than mine own
I am the unique person in the whole world if I am a heretic
Then there is not a single Musulman anywhere in the world."

But protestations notwithstanding, Ibn Sina acquired a reputation for heresy among the orthodox both in his own time as well as in later centuries. The most influential of the

³² Edwin P. Hoyt. Arab Science, (Nashville. Thomas Nelson. 1975). p. 66.

conservative theologians, Imam Al-Ghazzali, declared him to be an unbeliever, and specifically in 'transmitting the philosophy of Aristotle'.³³

Like the fundamentalists of bygone ages, fundamentalists of the present day are harsh in their judgement of the great Muslim scholars and scientists. A Saudi-financed magazine based in London published an intemperate outburst:

“The story of famous Muslim scientists of the Middle Ages such as Al-Kindi, Al-Farabi, Ibn-al-Haytham and Ibn Sina shows that, aside from being Muslims. there seems to have been nothing Islamic about them or their achievements. On the contrary, their lives were distinctly un-Islamic. Their achievements in medicine, chemistry, physics, mathematics, and philosophy were a natural and logical extension of Greek thought.”³⁴

An Indian Muslim, Mohammed Kalimur Rehman, writing in a journal of Islamic science, has similar things to say:

“Many of the philosophers were either Mu'tazilites or agnostics. Many of them practised music, astrology and magic, which are either prohibited or not encouraged by Islam Al-Razi did not believe in revelations, Al-Farabi depended on pure reason (not shariyah) for discriminating between good and bad. Al-Kindi denied divine attributes. Ibn-Sina did not believe in Maad Jismani (resurrection of the body) There was a gradual loss of Islamic values from the society.”³⁵

The continuity of thought between modern and ancient orthodoxy is certainly evident; one observes that the passage of centuries has not brought forgiveness for the philosophers of Islam. Note also how their achievements are rejected as 'a natural and logical extension of Greek thought'. This extremist position is remarkably similar - although the reasons for it are different - to that of many Westerners who pour scorn on Muslim achievements in the sciences. Should a non-Muslim have alleged that Muslim science is but a regurgitation of Greek science, one can safely suppose that he would be angrily challenged. But coming from

³³ W. Montgomery Watt. *The Faith and Practice of Al-Ghazzali*. (London. George Allen & Unwin, 1953). pp. 32-3.

³⁴ Javed Ansari. 'This is a Formula for Islamic Scientific Impotence'. *Arabia: The Islamic World Review*, 20. (April 1983). pp. 54-5.

³⁵ M. Kaleemur Rehman. *MAAS Journal of Islamic Science*, Vol. 3. No.1. pp. 45-56.

supposed defenders of the faith, these insults to Muslim science and its heroes have drawn little reaction.

3.4. Ibn Rushd

For his role in having forged the vital link between Aristotelian and Renaissance philosophies. Abul Walid Muhammad Ibn Rushd (1126-1198) is by far the best known Islamic philosopher in the West. He stood in the foremost ranks of international scholars of repute. During the great philosophical and theological upheavals of medieval times. his works were frequently consigned to the fire and decried as heretical both by the Church and the orthodox Muslim ulema. Because they formed the most detailed and precise commentary on Aristotle. Ibn Rushd's writings were translated into Latin and Hebrew by European scholars. There soon appeared super-commentaries on his commentaries. Many of the writings exist only in these two languages, the original Arabic writings being long lost. This itself is a commentary on the extent to which Ibn Rushd. as a rationalist philosopher, was able to influence the mood of his times.

Like other rationalists before him. Ibn Rushd drew the ire of his opponents for suggesting that revelation must be guided by reason. In his opinion. the noblest form of worship was to study God through His works, using the faculty of the mind. He devised an elaborate scheme for the exegesis of the Qur'an, drawing upon the complex linguistic structure of the Arabic language. But it is for his rebuttal of Al-Ghazzali's arguments that Ibn Rushd is most well known.

Ibn Rushd's dispute with Al-Ghazzali, who preceded him by some 70 years, provides a fascinating view of the issues which engaged the minds of thinkers eight centuries ago. We have encountered in the previous chapter the views of Al-Ghazzali, particularly as they relate to the issue of cause and effect. In Al-Ghazzali's view everything - meaning all actions, events, physical phenomena, or whatever - is the result of continuous divine intervention. In his logic, fire burns a piece of cotton not because it is in the nature of fire to burn a substance but, instead, because of supernatural causes such as the intervention of angels.

But, for Ibn Rushd, it is patent nonsense that a multitude of angels, or other divine agents, should descend every time a piece of cotton catches fire. Physical cause begets physical effect. One knows from daily experience that cotton put into contact with fire will

burn, and it has never been seen to occur otherwise. In his famous rebuttal to Al-Ghazzali's *Tahafut al Falasifa* (Incoherence of the Philosophers), entitled *Tahafut-al- Tahafut* (The Incoherence of the Incoherence), Ibn Rushd states:

"To deny the existence of efficient causes which are observed in sensible things is sophistry Denial of cause implies the denial of knowledge. and denial of knowledge implies that nothing in the world can really be known." ³⁶

Ibn Rushd, as Qazi of Seville and later Cordova, became the victim of political intrigues and a target for the orthodoxy. When the Caliph Abu Yaqub died in 1184. and was succeeded by his son Abu Yusuf. Ibn Rushd soon fell out of favour. A prohibition was issued against the study of logic and science by order of the Caliph. Ibn Rushd was eventually banned from Cordova and was unceremoniously carted off to a small provincial town together with other students of philosophy. All his books. except for some strictly scientific ones were ordered burnt. It was only towards the end of the 12th century that he was restored to favour, and returned to Marrakesh to die. Most of his writings exist today only in Hebrew and Latin, the original Arabic writings being long lost. This is an indication of the fact that, in spite of his impassioned and articulate rebuttal of Al-Ghazzali's attack on rationalism, Ibn Rushd was unable significantly to influence the trend of his times.

3.5. Ibn Khaldun

The last of the intellectual giants of Muslim civilization, Abd-al-Rahman Ibn Khaldun (1332-1406) remained a totally obscure figure until the 19th century, when he was 'discovered' by Western scholars who recognized him as a master of the science of human behaviour and a forerunner of modern anthropology. This rather astonishing neglect was, in the words of Philip Hitti, because:

"This philosopher was born at the wrong time and in the wrong place. He came too late to rouse any response among his people deep in medieval slumber, or to find a would-be translator among Europeans. He had no immediate predecessors and no successors. No school of thought could

³⁶ Averroes. *Tahafut al-Tahufat*. (The Incoherence Of the Incoherence). translated by S. Van Den Bergh. (London, E. J. W. Gibb Memorial Series. Vol. I). p.317.

be styled Khaldunic. His meteoric career flashed across the North African firmament leaving hardly a glare behind."³⁷

Remarking on his contributions as a historian and sociologist, Arnold Toynbee wrote of Ibn Khaldun that he had 'conceived and formulated a philosophy of history which is undoubtedly the greatest work of its kind that has been created in any time or place.'

In contrast to the majority of major medieval Islamic scholars Ibn Khaldun was not a Mu'tazilite; or the contrary, he rejected the basic presuppositions of the Muslim neo-platonists such as al-Farabi and Ibn Sina. Their ontology, doctrine of emanation, and epistemology were anti-religious in his opinion. He remained Violently opposed to the practice of alchemy as well.

Nevertheless, Ibn Khaldun's greatest contribution to Islamic thought was as a positivist. o hlm we owe the formulation of laws of social behaviour and an embryonic science of civilization. He systematically elaborated how topography, demography and economic factors act as sociological determinants. One sentence of his is particularly famous: 'The differences which are seen between the generations are only the expression of the differences which separate them in their economic life'. This sentence ought to be compared with one of Marx who said: 'The method of production in the material matters of life determines in general the social, political and intellectual processes of life.'³⁸ In some important ways, Ibn Khaldun had anticipated the work of European thinkers of the post-Renaissance era.

For certain orthodox ulema, in spite of his scathing criticism of the Hellenistic inspired philosophers, Ibn Khaldun remained too much of a rationalist. In particular, it was considered outrageous that he should have applied the concept of asabiyya (group loyalty) to prophesy, and have stated that even a religion based on divine revelation required tribal cohesiveness for fulfilment of its mission. Arab scholars were additionally incensed by his often derogatory references to the crude behaviour of Arabs, and to the fact that he attributed most of the glories of the Golden Age to non-Arabs. For example, he wrote:

"It is a remarkable fact, that with few exceptions, most Muslim scholars both in the religious and intellectual sciences have been non-Arabs. When a scholar is of Arab origin, he is non-Arab in language and

³⁷ Philip K. Hitti. Makers of Arab History, (New York. St. Martin's Press, 1968). p.254.

³⁸ Encyclopedia of Islam, ed. E. J. Brill, (Leiden, 1971), Vol. 3., p. 830.

upbringing and has non-Arab teachers. This is so in spite of the fact that Islam is an Arab religion. and its founder was an Arab." ³⁹

Ibn Khaldun's family was from Yemen and settled in Spain. Sometimes his detractors would refer to him slightly as 'an ignorant Berber'. In turn, he writes of the Arabs as a 'savage nation' with a propensity to plunder and destroy.

It is a sad commentary on the state of Muslim scholarship that Ibn Khaldun remained a virtual nonentity until he was discovered by Orientalists. Now that he has their stamp of recognition, many scholars - excepting Arab racialists and the extreme orthodox - have entered into a competition to see whose encomiums are the loudest.

³⁹ Ibn Khaldun. *Muqadimma*. translated by F. Rosenthal. (New Jersey. Princeton University Press. 1967), Vol. 3. p. 311.

4. Relation to Theologians

4.1. *Muslim Obligation towards the Theologians*

The Muslim theologians are referred to as ulama. They are the educated class of Muslim legal scholars engaged in the several fields of Islamic studies. They are described as the body of Muslim clergy who have completed several years of training and study of Islamic sciences, such as a mufti, qadi, faqih, or muhaddith. There were some of the Muslim scientists that also theologians such as Ibn Rushd, Ibn Sina and Ibn Khaldun.

4.2. *Role of the Theologians*

The ulama learned at Islamic religious schools, Madrasahs, where they teach students about Islam and other areas of study. It is believed in Islam that a well-rounded education is something every Muslim must acquire in order to understand God's religion in its entirety. By the end of their education, they acquire an Ijazah, an academic degree in Islamic law and jurisprudence, a practice that dates back to the first several centuries of Islam.

In medieval times, the Ulama acted in political capacity on appointment by the caliph or the leader in the local areas. The Ulama in the Ottoman Empire had a large influence over politics because it was believed that secular institutions were all subordinate to religion; the Ulama were emblems of religious piety, therefore rendering them powerful over state affairs.⁴⁰ In contemporary times, the Ulama are most powerful in the Shi'a tradition of Islam. Following the 1979 revolution in Iran, factions of the Iranian Shi'a clergy, under the leadership of Khomeini, took control of the country.

Islamic clergy also fulfill the role of a counsel for the caliphs, governors and later kings, presidents, prime ministers. There are also jobs for them in various governmental institutions.

Thee ulama served in the caliphs' court and today where there are sharia courts, Islamic clergy become judges. Therefore, one of the jobs of Ulama is the interpretation and maintenance of Islamic law.

⁴⁰ Inalcik, Halil. 1973. "Learning, the Medrese, and the Ulemas." In *the Ottoman Empire: The Classical Age 1300–1600*. New York: Praeger, pp. 171.

There are various jobs available for the Islamic clergy at mosques, such as leading public prayers, preaching, and delivering sermons, especially at Friday prayers and some have made missionary activities a lifelong activity.

The Ulama in most nations consider themselves to represent the *ijma* "consensus" of the Ummah "community of Muslims" (or to represent at least the scholarly or learned consensus).

The Ulama have played the above mentioned role since medieval times and are still playing such role till today. They are the people that come in contact with the community and they make the community reason along with them. Severally they put personal interest into the message they pass along to the Muslim community (ummah).

5. Compatibility of Islam and Science

The Earth sometime between the 9th and 13th centuries reveals that Islam civilization for instant in Baghdad, the center of Islamic learning and international trade to which scholars travel from distant lands seeking for education seems to be the brightest spot, contradicts to the Dark Ages of European before the Renaissance in 14th–17th centuries. Baghdad was founded in the 8th century following an Arab victory over a larger Persian army, was the seat of the Abbasid caliphate (al-khalifah al- abbasiyyah) from the 9th to the 13th centuries. Ibn Sina from Afghanistan who is well known for his contribution in medicine, pharmacology, philosophy, mathematics, geometry, physics, politics etc. and Ibn Al-Haitham from Egypt, known to his work in optics, vision mechanism, anatomy of the eye, mathematics, philosophy of science from the renowned so –called book “Fruits of wisdom” etc. are two among the recognizable as precursors of the modern scientist during the era of al-khalifah al- abbasiyyah.

The part of humanity which one seemed to offer the greatest promise now appears inescapably trapped in a state of frozen medievalism, rejecting the new and clinging desperately to the old. On the other hand, the former retrogrades have climbed the evolutionary ladder and now aiming for stars. Was this stunning reversal of roles, the mere misfortune of one and the good fortune for the other? Was it due to invasions and military defeats? Or was it the result of a fundamental shift in outlook and attitudes? In the study of the rise and fall of Islamic civilizations is found to be most interesting case.⁴¹

The European retrogrades have the revolution term called “Renaissance”, literally means "rebirth" in French language. The period immediately after the Middle Ages in European civilization generally have been described particularly as a European interest in the ideas and culture of ancient Greece and Rome and used these influences in their own art, literature, value etc. The Renaissance is particularly about the exploration and finding of new continents, the growth of trading between countries and the refusal to the feudal system existed during the Middle Ages which people were given land and protection by a nobleman and had to work and fight for him in return, the revolution in astronomy which changed human thinking of the idea that the Earth was the center of the Universe to the Copernicus

⁴¹ Pervez Hoodbhoy, ‘Islam and Science: Religious Orthodoxy and the Battle for Rationality’, 1991, p. 1

principle that explained the Earth spins and circling the sun, which believed to be an early copied version of Muslim's intellect Ibn Al-Shater, and witnessed the invention of paper printing, lenses such as telescope, eyeglasses, clock, compass, gunpowder etc. During the War of the Crusade, which is the war fought in Palestine by European Christian countries against the Muslims in the Middle Ages exposed the Muslim's intelligence to the European and revealed that books are translated into the Latin and studied for their benefits.

About 700 years ago, Islamic civilization almost completely lost the will and ability to do science. Since that time, apart from the attempts during the Ottoman period and in Mohammed Ali's Egypt, there have been no significant efforts at recovery. Many Muslims acknowledge, and express profound regret at this fact. Indeed this is the major pre-occupation of the modernist faction in Islam. But most traditionalists feel no regret—in fact many welcome this loss because, in their view, keeping a distance from science helps preserve Islam from corrupting, secular influences.⁴²

King Louis IX of France made a conclusion that the Muslim can't be defeated by mere power of materialism and should be kept distance. Islam civilization is strong in spiritual and ethical value. Ottoman period at the height of its power, in the 16th and 17th centuries, the empire spanned three continents controlling much of South-eastern, Western Asia and North Africa. The falling of Ottoman Empire can be concluded to the unsuccessful economic structure making difficulties to integrate with its various continents. Mohammed Ali is regarded as the founder of modern Egypt because of the dramatic reforms in the military, economic and cultural spheres that he instituted.

The rise of European civilization through revolution term called "Renaissance" witnesses the change of paradigm from Christianity spiritual to the source of humanism and materialism. It is the beginning of religious boundary to human development. France revolution witnesses the downfall of king and church ruler by the middle class people. The European or Western civilization tough seems to be developed and robust apparently yet witnesses the moral collapse and continuous humanity damage in the community. The civilization growth based on mere materialism likewise has spread over the Muslim community and slowly erodes the faith in Islam which has been driving the development

⁴² Pervez Hoodbhoy, 'Islam and Science: Religious Orthodoxy and the Battle for Rationality', 1991 p.1

of Islamic civilization. Muslim loss indeed and rather supports to preserve Islam from corrupting and secular influences.

Experimentation, quantification, prediction, and control became the paradigm of a new culture. Modern science sought, by means of a clearly defined methodology, a rational comprehension of the physical universe. The methodology derived from the coherent set of rules and criteria independent of the hierarchies of power and wealth. To establish the validity of a truth merely required following the same procedures and did not depend upon the priestly class or temporal authority of an individual. To its possessors, the scientific method gave undreamed of power. In part of this power was used to understand the law of nature, and subsequently to create new technologies. But, in part, science becomes the weapon with which less technologically developed peoples around the world were to be systematically subjugated and colonized.⁴³

Modernist and traditionalist Muslims have disputed each other regarding the compatibility of Islam and science endlessly without answers to satisfy the oppose party respectively. Science is described as secular which is no relation to spiritual or religious matter in some point of view. The characteristic of science is not inevitably a complete ignorance of God. Science is based on logic and rational explanation through experiment, experience and observation. Ibn Sina, Al-Ghazali, Ibn Al-Haitham, Ibn Al-Jazari, Al-Rahman, Ibn Al-Shater etc. are among Muslim's who have contributed to science and technology and considered as scientist and they are no limit for them to be religious. Science is fully utilized to improve human living such as invention of water pump by Ibn Al-Jazari, hydraulic system by Banu Musa bin shaker, science astronomy for travelling purposes etc. Ignorance of science has caused Muslim society stood defenceless against colonization of the Muslim's world during 18th century of imperialism. Invention of modern weapons, gunpowder, steamship etc. which is unusual to Muslim region such as in East Asia had made it harder for them to have a fair fight. The weakling traditionalist became a prey to a modernist predator.

Whether Islamic culture has promoted or hindered scientific advancement is a controversial topic. Islamists such as Sayyid Qutb argue that since "Islam appointed" Muslims

⁴³ Pervez Hoodbhoy, 'Islam and Science: Religious Orthodoxy and the Battle for Rationality', 1991, p.3

"as representatives of God and made them responsible for learning all the sciences,"⁴⁴ science cannot but prosper in a society of true Muslims. Many "classical and modern [sources] agree that the Qur'an condones, even encourages the acquisition of science and scientific knowledge, and urges humans to reflect on the natural phenomena as signs of God's creation." Some scientific instruments produced in classical times in the Islamic world were inscribed with Qur'anic citations. Many Muslims agree that doing science is an act of religious merit, even a collective duty of the Muslim community.⁴⁵

Others claim traditional interpretations of Islam are not compatible with the development of science. It was argued that Islam's lag behind the West in scientific advancement after (roughly) 1500 AD was due to opposition by traditional ulema to efforts to formulate systematic explanation of natural phenomenon with "natural laws." He claims that they believed such laws were blasphemous because they limit "Allah's freedom to act" as He wishes, a principle enshired in chapter 14 verse 4: "Allah sendeth whom He will astray, and guideth whom He will," which (they believed) applied to all of creation not just humanity.⁴⁶

⁴⁴ Qutb, Sayyid, *Milestones*, p.112.

⁴⁵ Qur'an and Science, Encyclopedia of the Qur'an

⁴⁶ Stark, Rodney, *The Victory of Reason*, Random House, 2005, p.20-1

6. Conclusion

The writings of the major philosophers show simultaneous contempt for and fear of, the ignorant masses. They cheerfully advocated the expediency of one truth for the masses and another for the elect. This was essential for their self preservation and a calculated application of *taqiyyah* (dissimulation) because it was not hard for the fanatical mullahs to incite the masses against the philosophers. But they were also convinced that Islam mandated the study of science and philosophy.⁴⁷

The decline and decadence of Arab-Muslim civilisation from approximately the 14th century was caused by countless factors, of which the main one was the exhaustion of scientific initiative. This was accompanied by discouraging innovation (*ijtihad*) in all fields and the emergence amongst jurists of a more rigid “orthodoxy” and the progressive exclusion of natural sciences from the curricula of the theological schools (*madrasa*) with the exception of astronomy and mathematics.⁴⁸

⁴⁷ Pervez Hoodboy, “Islam and Science: Religious Orthodoxy and Battle for Rationality” Zed Books Ltd, London, United Kingdom, 1991, p. 94.

⁴⁸ Dariusch Atighetchi, “Islamic Bioethics: Problems and Perspectives”, Springer Books, 2007, p. 330.