# Traditional Muslim Classifications of the Sciences: Comparative Notes on Qutb al-Din al-Shirazi and Ibn Khaldun[1]

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## Introduction

Ibn Khaldun (1332-1406) was born two decades after the death of Qutb al-Din al-Shirazi (1236-1311). This means that we may treat them as contemporaries. Those who know the life history of these two notable and fascinating Muslim intellectuals[3] could find it quite interesting making comparisons and contrasts between them. Ibn Khaldun, an Arab by birth, was a philosopher-historian; Qutb al-Din, who hailed from Shiraz, a city of historic importance in the Persian-speaking world, was a philosopher-scientist. Both traveled extensively in the Muslim world, both as a scholar and as a diplomat, for the two had been patronized by the rulers of their day.

In the modern world, both have become famous, mainly because of their original scientific contributions to their respective fields of specialization. Let us first consider the fame of Qutb al-Din. He is well-known today, particularly for his contributions to astronomy and optics. His innovative treatment of planetary motion at the prestigious Maraghah School of Astronomy – the "NASA at Cape Kennedy of his day" – resulted in the world's first successful attempt at the construction of a model of planetary motion for Mercury. Some modern historians of science even claim that Qutb al-Din's astronomical

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[1]This paper is presented at the International Conference on Ibn Khaldun's Legacy and Its Contemporary Significance organized by International Institute of Islamic Thought and Civilization (ISTAC), International Islamic University, Malaysia on November 20-22, 2006 at Marriott Hotel, Putrajaya.

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[3]On the life, works and significance of Qutb al-Din, see Osman Bakar, *Classification of Knowledge in Islam* (Cambridge: Islamic Texts Society, 1997); On Ibn Khaldun's life, see, for example, Ibn Khaldun, *The Muqaddimah: an Introduction to History*, trans. Franz Rosenthal (London and Henley: Routledge & Kegan Paul, 1986), vol. I, pp. xxix – lxvii.

works influenced the later development of astronomy in the West, especially on Copernicus. In optics, Qutb al-Din is remembered for his achievement as the first scientist to have given a qualitatively correct explanation of the cause of the rainbow. He has many other contributions to Islamic thought and civilization, but the scope of this essay does not allow me to discuss them.[4]

Now, unlike Qutb al-Din, who earned a respectable place in world intellectual history through his study of the natural world, the world fame of Ibn Khaldun arose from his study of the human world. He excited the world's intelligentsia with his novel approaches to the study of human society and human history. He discovered and explained, in a scientific manner, God's laws governing the flow of human history and the growth and decay of human societies and civilizations. Creatively utilizing the ideas and insights of his Muslim predecessors into the nature and dynamics of human society, Ibn Khaldun founded a new science of society, a new philosophy of history, and a new science of civilization. If, on reading the Muqaddimah he wrote more than six centuries ago, we feel like we are reading a book on the destiny of human societies written only yesterday, it is precisely because the issues he discussed and the principles he offered to explain them are of central concern to all human societies, irrespective of time and place. These perennial issues of society and civilization and perennial principles governing societal phenomena, such as the idea of *'asabiyyah* ("group solidarity"), would guarantee well the "perennial significance" of Ibn Khaldun.

Qutb al-Din and Ibn Khaldun have one more thing in common, which is what this paper basically intends to discuss. This is their common concern with the issue of classification of the sciences (*taqsim al-'ulum*). Both thinkers have authored works that contain extensive treatment of classification of the sciences developed by Muslims up to their respective times. Now, I wish to turn to their respective discussions of this very

[4]For more details, see my *Classification of Knowledge in Islam.*

important subject, but before doing that, I would like to make clear why, from the Islamic point of view, classifications of the sciences are worthy of being elevated to a subject of *ummatic* importance and worthy of being progressively refined in accordance with progress in human knowledge, or to quote Ibn Khaldun, in accordance with the growth and expansion of urban civilizations.[5]

**Importance of classifications of the sciences**

As to the great importance of this subject among Muslims, and its popularity as a theme of academic discussion, I have made the following emphasis in my book on the subject: "From al-Kindi in the third/ninth century to Shah Waliallah of Delhi in the twelfth/eighteenth century, successive generations of Muslim scholars have devoted a considerable deal of their intellectual talents and genius to expositions of this theme."[6]

What motivated Muslim men of learning to spend their efforts in that sort of discussion? The primary motive common to all of them seems to be the "concern with the means of preserving the hierarchy of the sciences (*maratib al-'ulum*) and with the delineation of the scope and position of each science within the total scheme of knowledge."[7] As for the general usefulness of classifications of the sciences, let me paraphrase al-Farabi (258/870 – 339/950) whose work on the subject became a classic. A well-composed classification of the sciences would serve the following:

[1] It serves as a general guide to the different sciences so that students choose to only study subjects that are really beneficial to them;

[2] It enables a person to learn about the hierarchy of the sciences;

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[5] Says Ibn Khaldun, "The sciences are numerous only where civilization is large and sedentary culture highly developed." He adds, "The quality and the number of the crafts depend on the greater or lesser extent of civilization in the cities and on the sedentary culture and luxury they enjoy, because (highly developed crafts) are something additional to just making a living." See *The Muqaddimah*, vol. 2, p. 434

[6] O. Bakar, *Classification of the Sciences*, p. 1

[7] *Ibid*

[3] Its various divisions and subdivisions of the sciences provide a useful means of determining the extent to which specialization may be legitimately pursued;
[4] It tells students what to first study and master before they can claim having expertise in a particular science.

There are other benefits of classifications of the sciences that are both general and more specific in nature, not included in al-Farabi's list. In our own modern times, some Muslim scholars speak of the importance of the traditional classifications of the sciences to the search for and the realization of a veritable Islamic educational system, the formulation of Islamic philosophy of science, and the conduct of an authentic discourse on Islamization of knowledge.[8] But we need not detain ourselves here with further discussions of their benefits.

There is, however, a need to acknowledge diversity of perspectives in Muslim treatments of classification of the sciences and to fully understand the underlying reasons for these differences. Notwithstanding many similarities in motives, approaches, and characteristics of Muslim classifications of the sciences, we do find outstanding differences between them, such as in the categorization of knowledge into its fundamental divisions, as we shall see in the case of Qutb al-Din and Ibn Khaldun. But it is important to realize that despite these differences, there is, at a more fundamental level, an underlying unity of principles being observed by authors of traditional Muslim classifications. The two most fundamental principles in question are unity of the sciences and the earlier cited principle of hierarchy of the sciences.

**Qutb al-Din's and Ibn Khaldun's Classifications of the Sciences**

[8] See, for example, the views of Seyyed Hossein Nasr, who speak of the virtues of traditional Muslim classifications of the sciences in such terms, in his foreword to Osman Bakar, *Classification of the Sciences in Islam*, pp. xiii – xiv; and his *Science and Civilization in Islam* (Cambridge, USA: Harvard University Press, 1968).

Qutb al-Din's classification is contained in his book *Durr al-taj*[9] ("Pearls of the Crown"). This book is in Persian, and as far as I know, it has not yet been translated into any European language. I will try to present a brief summary of this classification, which I have treated in greater details in my book *Classification of the Sciences in Islam*.[10] Again, as confirmed by several reviewers of my book, my study of Qutb al-Din's classification, completed exactly twenty years ago this year (1986), was the first study ever undertaken in a European language. I realize the introductory nature of my study, which clearly needs to be further developed.

Unfortunately, there has been no follow-up to this study, particularly when considering its revelation that Qutb al-Din has actually introduced new arguments defending the traditional categorization of knowledge into the transmitted sciences (*al-'ulum al-naqliyyah*) and the intellectual sciences (*al-'ulum al-'aqliyyah*). His new arguments may be seen as a good way out of the difficulties which many modern Muslim scholars attribute to the classical classification of the sciences. Even if one does not agree with his arguments, one must at least acknowledge that he had brought new insights into Muslim discussions of the distinction between *al-'ulum al-naqliyyah* and *al-'ulum al-'aqliyyah*.

In *Durr al-taj*, Qutb al-Din divides knowledge (*'ilm*) into two kinds, the philosophical (*al-hikmiy*) and the non-philosophical (*ghayr al-hikmiy*). He then divides the philosophical sciences (*'ulum hikmiy*) into the theoretical (*nazariy*) and the practical (*'amaliy*), and the non-philosophical sciences (*'ulum ghayr hikmiy*) into the religious (*diniy*) and the non-religious (*ghayr al-diniy*). He was following the Muslim philosophical tradition established by al-Farabi and Ibn Sina (370/980 – 428/1037) when he divided the philosophical

[9] The full title is *Durr al-taj li-ghurrat al-dibaj fi'l-hikma* ("Pearls of the Crown, the Best Introduction to Wisdom"). The eight volumes of this work are edited and published in modern-day Iran in two volumes, the first edited by Sayyid Muhammad Mishkat (Tehran, 1938-1941), and the second by Sayyid Hasan Mishkat Tabasi (Tehran: Majlis, 1317-24).

[10] See Chapter 11 of my *Classification of Knowledge in Islam*.

sciences into the theoretical and the practical. His inclusion of metaphysics, mathematics, and natural philosophy in the category of theoretical philosophy and of ethics, economics, and politics in the category of practical philosophy was strictly in conformity with that established philosophical tradition.

So, what is novel about Qutb al-Din's classification? In order to recognize its novelty, we must first be informed that he had inherited such categorizations of knowledge as the philosophical science (*al-'ilm al-hikmiy*), the "religious" sciences (*al-'ulum al-shar'iyyah*), the intellectual sciences (*al-'ulum al-'aqliyyah*) and the transmitted sciences (*al-'ulum al-naqliyyah*). In terminological usage, therefore, he had not introduced anything new. Al-Ghazzali (450/1058 – 505/1111), for example, had used all these terms in his writings.[11] But in Qutb al-Din's work, I can detect his clear attempt to see these various major categories of knowledge in a new light and to reassign new epistemological positions and significance to these categories within his overall vision of knowledge.

New features of Qutb al-Din's classification include the following things. First, he went beyond the *naqliy-'aqliy* division to posit a more fundamental one, namely, a division between the "philosophical" (*hikmiy*) and the "non-philosophical" (*ghayr hikmiy*). His concept and theory of wisdom (*hikmah*) forces him to redefine the *naqliy* and the *'aqliy* categories. He did not equate the "philosophical" (*hikmiy*) sciences with the "intellectual" (*'aqliy*) sciences and the "religious", either as denoted by the term *diniy* or the term *shar'iyyah,* with the transmitted (*naqliy*). In light of his re-interpretation of the *naqliy* and the *'aqliy* categories, he presented both the *hikmiy* and the *diniy* categories as being more fundamental than the former pair.

Second, he had introduced a broader category of the religious sciences when he presented the *diniy* as inclusive of the *shar'iyyah*. Moreover, his idea of the "religious"

[11] See my *Classification of the Sciences in Islam*, Chapter 9

(*'diniy*) includes knowledge that is either *naqliy* or *'aqliy* in nature or both.[12] What is crucial to our proper understanding of Qutb al-Din's classification is his definitions of *naqliy* and *'aqliy*, which appear to be more coherent than the ones offered by Ibn Khaldun. According to Qutb al-Din, *naqliy* sciences are those sciences which could only be established through evidences that are heard or transmitted from relevant authorities. As for the *'aqliy* sciences, these are the sciences which can be established by the human intellect, regardless of whether there is *naqliy* evidence or not. In other words, Qutb al-Din acknowledged the possibility of the *hikmiy* sciences as being constituted of both *'aqliy* and *naqliy* components.

As examples of knowledge that can be both rationally demonstrated and affirmed by appealing to *naqliy* evidence, he mentioned knowledge of the existence of God and knowledge of the reality of prophecy. In his classification of the sciences, this kind of knowledge appears both in the category of the *hikmy* sciences, specifically in metaphysics, and in the category of the *diniy* sciences, specifically in the sciences of fundamental principles of religion. This means that there is an overlapping in the core content of the "philosophical" sciences and the "religious sciences", although this is not explicitly shown in his structuring of the sciences.

These are the major features of Qutb al-Din's classification. While it seems he was fully aware of the difficulties and tension emanating from the traditional distinction between the philosophical sciences and the religious sciences, and, in fact, presented a way out of the difficulties, it is questionable whether he had succeeded in coming up with the most acceptable basis of classification of the sciences. Still, I think his proposed basis of classification deserves a more careful study from us.

We now turn to Ibn Khaldun's classification. This classification is contained in the *Muqaddimah*. His account of the sciences given within the framework of this

[12] O. Bakar, *Classification of the Sciences in Islam*, p. 257

classification is quite extensive.[13]It is not the intention of this paper to discuss and verify his account of the different sciences and to determine whether or not his account can be accepted as the most comprehensive and the most accurate ever made regarding the state of the sciences in his contemporary Islamic civilization. There is an-going discussion on this issue among modern academics and scholars. My main concern is with the classification itself, although it is inevitable to make references to certain aspects of his survey of the sciences. The link between the classification scheme and the account of the sciences is hardly separable. As a matter of fact, critics see his classification as problematic, because they see the non-conformity of some of the sciences in his account with his understanding of the distinction between the intellectual and the transmitted sciences.[14]

The central idea underlying Ibn Khaldun's classification is the distinction between the intellectual sciences (*al-'ulum al-'aqliyyah*) and the transmitted sciences (*al-'ulum al-naqliyyah*). According to him, "the sciences with which people concern themselves in cities and which they acquire and pass on through instruction, are of two kinds: one that is natural to man to which he is guided by his own ability to think, and a traditional kind that he learns from those who invented it."[15] He terms the first kind of sciences the philosophical sciences (*al-'ulum al-'aqliyyah*). He describes these sciences as "ones with which man can become acquainted through the very nature of his ability to think and to whose objects, problems, arguments, and methods of instruction he is guided by his human perceptions, so that he is made aware of the distinction between what is correct

[13] In Franz Rosenthal's English translation of the *Muqaddimah*, Ibn Khaldun's classification and survey of the sciences account for the whole of volume 3 and the last twenty-seven pages of volume 2. See *The Muqaddimah*, vol. 2, pp. 436-463 and vol. 3

[14] See, for example, the critique by Abderrahmane Lakhsassi in his 'Ibn Khaldun and the Classification of the Science' in *Maghreb Review*, IV (January-February 1979), pp. 21-25.

[15] *The Muqaddimah*, vol. 2, p. 436

and what is wrong in them by his own speculation and research, in as much as he is a thinking human being."[16]

Ibn Khaldun calls sciences of the second kind the transmitted sciences (*al-'ulum al-naqliyyah*). He describes this category of sciences as depending "upon information based on the authority of the given religious law. There is no place for the intellect in them, save that the intellect may be used in connection with them to relate problems of detail with basic principles."[17] If we compare Ibn Khaldun's definitions of the *'aqliyyah* and the *naqliyyah* with the corresponding definitions by Qutb al-Din, then we can see significant differences between them. It is safe to say that Ibn Khaldun did not know of Qutb al-Din's classification. We could now observe the two contemporaries conveying different understandings of the *'aqliyyah-naqliyyah* division.

For Qutb al-Din, the two categories of the *'aqliyyah* sciences and the *naqliyyah* sciences as he has defined them, by themselves, could not have accounted for all the sciences found in his contemporary Islamic civilization. Thus he came up with what he viewed as the broadest pair of contrasting categories possible, namely, the philosophical (*hikmiy*) and the non-philosophical (*ghayr hikmy*). Moreover, he saw sciences that belong to both the *'aqliy* and the *naqliy* categories.

Ibn Khaldun's definition of the transmitted sciences implies that he equated them with the religious sciences. Qutb al-Din gave a more universal definition of the *naqliy* so that his idea of transmission could embrace the non-religious sciences, such as the science of language. His definition also raises problems for the role of intellect in the religious sciences. He was prepared to only grant a limited role to the intellect in matters relating problems of detail with basic principles of religion. Qutb al-Din presented a different view of the role of *'aql* in the religious sciences. He admitted the possibility of religious

[16] *Ibid*
[17] *Ibid*

sciences having an *'aqliy* component. For him, this possibility is not limited to detailed issues pertaining to religion. On the contrary, the human intellect is capable of demonstrating the truth of the existence and unity of God and the truth of prophecy, both of which are considered as basic principles of religion.

**Contemporary critiques of the Ibn Khaldun classification**

It is the traditional classification of the sciences as popularized by Ibn Khaldun that has invited strong criticism from many contemporary Muslim scholars. The criticism is directed at the categorization of all knowledge into the intellectual (*al-'aqliy*) and the religious (*al-naqli*) and at the thesis that the distinction between the two would serve as the best basis for classification of the sciences. According to Fazlur Rahman, the division of the sciences into the religious and the intellectual must be regarded as "the most fateful distinction that came to be made" in the intellectual history of Islam.[18] In his view, the seeds of the decline of science and philosophy in Islam can be partly traced to that distinction. Ismail R. al-Faruqi also criticized the *naqliy-'aqliy* distinction as unacceptable to Islam, since the distinction seems to negate the rationality of the religion of Islam. To put religion under the category of the transmitted sciences, as contrasted with the *'aqliy*, which he understands as meaning the rational, is tantamount to saying that Islam is not a rational religion.

Other critics point out to the discrepancy between Ibn Khaldun's two-fold division of knowledge and his enumeration of the sciences. Thus again raised is the issue of the problems inherent in the *'aqliy-naqliy* division. Abderrahman Lakhsassi, for example, thinks that Ibn Khaldun is not clear about the issue of the need to match his criteria of the division of the sciences with the list of the sciences he has given.[19]

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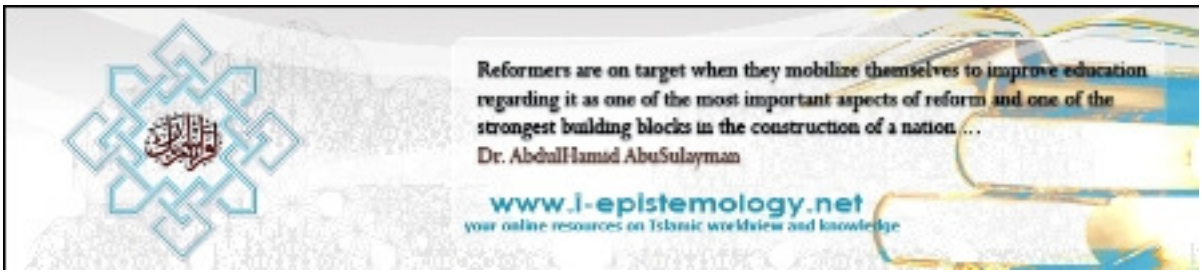
[18] Fazlur Rahman, *Islam and Modernity: Transformation of an Intellectual Tradition* (Chicago-London: University of Chicago Press, 1982), p. 33

[19] Abderrahman Lakhsassi, 'Ibn Khaldun and the Classification of the Sciences', p. 21

In my view, some of the points raised in these critiques have been answered by Qutb al-Din. It is unfortunate that his classification is little known among contemporary Muslims. The *'aqliy-naqliy* division is a legitimate one, but the limits of its validity need to be observed. Among other things, we need to refine our definitions of the two terms so that they do not put into question our epistemology or theory of knowledge that serves as the basis of this division. Since we are comparing Ibn Khaldun's classification with that of Qutb al-Din, perhaps in responding to the former, we need to look deeper into the latter's still little studied "Pearls of the Crown."

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