Timbuktu's Scientific Manuscript Heritage: The Re-Opening of an Ancient Vista?

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Abstract

Timbuktu's intellectual heritage has attracted new-found interest after the preservation of the city's manuscripts was declared as the first cultural project of the *New Partnership for Africa's Development (NEPAD)*. The initiative created a space for researchers interested in studying the content of the manuscripts. This article maps a brief history of Timbuktu and provides some insight into its manuscript collections, before discussing the Timbuktu scientific heritage in light of contemporary debates on the history of science in Islamic societies. It is argued that the pre-modern Islamic legacy currently being unearthed in Timbuktu emphasises the need for a clearer articulation of the relationship between science and religion in Muslim societies.

Introduction

In the past few years Timbuktu, one of Africa's oldest centres of learning, has become the focus of long overdue attention. Renewed interest in its intellectual heritage is slowly melting away the veil of obscurity that has long confined the city to the realm of myth, signifying a "no-place". Recent concern has developed predominantly due to the re-emergence of the vast corpus of extant manuscripts held in the city and its desert environs.

In 1997 a delegation from Harvard University led by Henry Louis Gates Jr arrived in Timbuktu to film a documentary. Gates was overwhelmed by the private manuscript collections he encountered and played a pivotal role in securing funding for the establishment of one of Timbuktu's first private manuscript libraries.[2] In November 2001, the South African President Thabo Mbeki visited Mali and was

taken on a trip to Timbuktu. He was similarly moved by the abject state of the manuscripts held in the Ahmed Baba Institute, a government funded research centre, and pledged to revive and preserve this legacy. Mbeki initiated the South *Africa–Mali Project* for the preservation of the Timbuktu manuscripts, which is the first cultural project of *NEPAD*—the New Partnership for Africa's Development (The South Africa—Mali Project 2005). An offshoot of the Presidential initiative has been the *Timbuktu-UCT Manuscripts Project*, led by Professor Shamil Jeppie. Based at the University of Cape Town (UCT), where African history and Islamic studies have been taught for many years, Jeppie conceived of the idea of bringing together expertise in these fields to work on the content of the manuscripts themselves, thereby extending the sphere of engagement beyond conservation to encompass academic study as well.[3]

This article is an outcome of the ongoing research at the University of Cape Town and will specifically address the significance of the scientific manuscript heritage of Timbuktu. In order to contextualise the city's intellectual legacy we begin with a brief historical account of Timbuktu up until the present. Furthermore, two major manuscript collections will be discussed by outlining their content and exploring some of the research emanating from their study. Finally, the Timbuktu scientific manuscript heritage will be introduced and briefly discussed in light of contemporary debates on the history of science in Islamic societies.

A Brief History of Timbuktu[4]

Even though Timbuktu was founded in the eleventh century and very quickly became an important commercial centre, it only gained widespread prominence as an intellectual capital in the fifteenth century (Hunwick 2000). Chroniclers mention that the city has its roots in a nomadic summer camp set up a few miles from the river Niger as a base from which they could pasture and water their camels during the period of intense heat (Hunwick 2002: 2). This position proved strategic for commerce and soon attracted many settlers. The settlement was important not only because of its location at the junction of the dry Sahara and the lush central valley of the river Niger, but because the river itself constituted an easy pathway for transporting goods to and from the more tropical regions of West Africa. Thus merchants settled there early on and were subsequently followed by Muslim scholars, after the establishment of a permanent community.

The population of Timbuktu was always mixed. Although founded by Sanhaja Berbers, it was settled by Arabs from various Saharan oases, by Soninke and Dyula merchants and scholars, Songhay initially as conquerors, and by Fulbe and Tuareg as temporary occupiers. Today Songhay is still the dominant language, but Arabic and Tamasheq are also widely used (Hunwick 2002: 2).

The city is not mentioned in Arabic sources until Ibn Battuta's visit in the

early fourteenth century. In about 1325 the Malian ruler Mansa Musa visited the city on his way back from pilgrimage and erected a residence there as well as the Great Mosque (*Jingere-Ber*). With the decline of the Malian empire by the end of the fourteenth century the city came under the control of a group of Tuareg, but they were finally driven out in 1468 when the city was incorporated into the rising Songhay Empire under Sunni 'Ali (Hunwick 2000).

Books were always an important part of the local culture and manuscripts were sold and copied from early on. Under the patronage of the Songhay Empire (1468-1591) local intellectual activity flourished and Timbuktu's scholars began writing their own books on both religious and secular subjects, in addition to commentaries on classical works. Timbuktu was also a centre for trade in books in the sixteenth century. Leo Africanus (al-Ḥasan ibn Muhammad al-Wazzān al-Zayyātī) gives a glowing account of the book trade during his visit to the city in the early years of that century (Hunwick 2002: 6). Manuscripts were imported to Timbuktu from North Africa and Egypt and scholars going on pilgrimage to Mecca often copied texts there and in Cairo on their way back, to add to their own libraries. The eminent historian of Timbuktu John Hunwick also notes that there was also an active copying industry in Timbuktu itself (Hunwick 2002: 6).

It is reported that Askia Daoud, who reigned from 1548 to 1583, established public libraries in the kingdom. Furthermore, a characteristic feature of the scholarly elite was the establishment of personal libraries, a passion that has persisted up until today. Ahmed Baba (1556-1627), one of Timbuktu's most celebrated scholars of the sixteenth century, is reported to have said that his personal library of over 1600 volumes was one of the smaller collections amongst the city's scholars.

Timbuktu's golden era was abruptly halted by the Moroccan invasion in 1591, initiated by the Sa'dian ruler of Morocco Mawlay Ahmed al-Mansur. In time the city's military rulers shook off ties with the Sa'dians who were themselves beset with problems due to the death of Ahmed al-Mansur. A weak state was maintained thereafter around the Niger River from Jenne to Bamba, with the headquarters at Timbuktu. As a result, the city dealt with severe hardships in the centuries that followed and intellectual activity waned considerably. The city very briefly came under Fulbe control in the early nineteenth century but was finally occupied by the French in 1893-1894. French rule lasted until Malian independence in 1960.

Veneration of the written word had however found a secure place in the hearts of Timbuktu's inhabitants from very early on and scholarly elites and lay people alike held fast to whatever manuscripts they came to possess. Today, it is estimated that there are about 300 000 extant manuscripts in circulation in Timbuktu and the surrounding areas. Locked within these pages is one of Africa's greatest intellectual legacies. Fortunately, the keepers of this treasure are extremely committed to their culture of learning and sharing. Through the efforts of these desert librarians, this legacy is once again being rediscovered.

The Manuscript Collections

While most of the manuscripts in the region are still in private hands, recent initiatives have been made to gather this valuable material and store and preserve it in accessible collections. These efforts go back to 1973, with the establishment of the Ahmed Baba Centre for Documentation and Historical Research (*CEDRAB–Centre de Documentation et de Recherches Ahmed Baba*) by the Malian government, for the collection and preservation of Timbuktu's manuscripts. More recently private manuscript libraries have also been established with the assistance of outside funding.

These centres are an obvious starting place for any researcher interested in undertaking any study pertaining to the region and its intellectual tradition. At this point, a brief overview of these centres is useful to shed some light upon the manuscript collections they hold.

The Ahmed Baba Centre for Documentation and Historical Research – CEDRAB

The government of Mali had instituted CEDRAB, as it is generally referred to by its abbreviated French title, in Timbuktu in 1973. The centre was built with funding derived predominantly from Kuwait and initially prioritized the gathering of manuscripts from disparate locations. CEDRAB currently holds about 20 000 manuscripts.

The Al-Furqan Islamic Heritage Foundation has already published a catalogue, incomplete as yet, listing about 9000 manuscripts from the CEDRAB collection (Ould Ely 1995-1998). The starting point for any researcher interested in this collection would be a careful perusal of the catalogue. Thus its structure and content will be described briefly.

The CEDRAB catalogue comprises five volumes subdivided into six parts, with parts five and six incorporated into a single volume. Each volume contains 1500 entries totalling 9000 in all. Out of the 9000 entries only 50 are not in the Arabic language. These unique manuscripts are all written in the Arabic script but are in African languages such as Songhay, Fulani, Tamasheq and Hassaniyyah. There are also a few manuscripts written in Turkish but also utilising the Arabic script.

Volume one is the only part of the catalogue arranged according to subject headings. All entries are grouped under the subjects Qur'an, Law, Theology, Literature, Astronomy, Politics, Documents and Medicine. The manuscripts under each of these topics are arranged alphabetically. Volumes two to six simply contain a random arrangement of the material but do make mention of the subjects under which an entry is to be regarded.

Most of the manuscripts are on law (*fiqh*) or are collections of juristic opinions (*fatāwa)*. Though legal in nature, they highlight important aspects of the social history of the region.[5] Apart from law, the most commonly dealt with subject is literature (*adab*). Many of the manuscripts are anthologies of poetry. There is an equally rich

body of prose in the form of stories from the early centuries of Islam.

Officially recorded documentation (*wathā'iq*) also constitutes a large portion of the collection. Such documents contain information on the sale and purchase of slaves, livestock, salt, tea, homes, agricultural lands, execution and distribution of estates, bequests, determining of dowries; records of peoples' charities, disputes over wells between two tribes or families, records on the manumission of slaves containing their personal details etc. These official documents are an important source for understanding conflict of a socio-economic nature as well as conflict resolution. Unlike classical *fiqh* works that are rather abstract, these manuscripts present concrete cases whether social, legal or otherwise.[6]

The remainder of the manuscripts deal with astrology, medicine, Qur'anic and *ḥadīth* sciences, theology, mysticism, heresiography, Arabic grammar and history.

The Mamma Haidara Memorial Library

Abdul Kader Haidara conceived the idea of establishing a memorial library to hold his family's collection while working for CEDRAB. After leaving the centre he devoted all of his time and energy to this project and was successful in setting up the Mamma Haidara Memorial Library, which was the first of its kind in Mali.

Abdul Kader began cataloguing his inherited collection and was assisted by the al-Furqan Heritage Foundation in London, who agreed to publish his catalogue. Currently four of the projected five-volume catalogue has been published (Mamma Haidara 2000).

The Mamma Haidara collection comprises of 5000 manuscripts and each volume of the catalogue contains roughly 1000 entries. Material in the catalogue is arranged randomly, unlike the 1st volume of the CEDRAB catalogue, which uses subject divisions. As far as the subject matter is concerned, the catalogue comprises of about 3000 entries on Law and its various branches, Hadith studies, Qur'an studies, Doctrine, Arabic grammar, astronomy and literature. Approximately 1000 entries relate to documents of historical significance, dealing with the nature of the tribes in the region, business transactions, correspondence between scholars and the relationship of Timbuktu with its neighboring settlements.

A Brief Survey of Some of the Manuscripts

The University of Cape Town research team chose initially to concentrate on the Mamma Haidara manuscript collection in orderto extend the focus of attention beyond the official state institute and to create an awareness of the many other collections in private hands. A selection of legal texts (initially 100 manuscripts of varying size) was digitised at the Mamma Haidara Library in January 2004. Another 60 manuscripts from the Ahmad Bābā collection were subsequently procured.

These legal texts (*fiqh*, *uṣūl al-fiqh*, and *fatāwa*) offer unique paths into the social history of Timbuktu and the region. We are also beginning to know a bit more about juristic reasoning and the way in which scholars debated their cases in Timbuktu. Over the past few years we have worked with scholars concerned with the history of that part of West Africa from within the region itself and from elsewhere, trying to develop an appreciation for that social milieu and generally exploring interesting aspects of the manuscript heritage. In the course of 2004 we embarked upon the actual study of the digitised manuscripts by producing workbooks comprising selected texts. These reading sessions not only aimed at developing proficiency in reading the various fonts utilized in the writing of the manuscripts and familiarizing ourselves with their general import, but also to select specific texts for extended study. Some of the manuscripts that were read will now be briefly revisited in order to offer some insight into the nature of the material we were exposed to.

Manuscript **4743** (Mamma Haidara 2000, vol. 4: 117) is a *fatwa* that was issued in response to a wife who refused to grant her husband conjugal access by telling him that he is now forbidden to her in the same way as her father is. In classical *fiqh* such a phenomenon is known as *ẓihār,* but it is usually the husband who repudiates the wife by comparing her to the back of his mother. This incident reflects a unique reversal of roles and is possibly very revealing of the higher status accorded to women in this region. It is equally possible that this may have been an isolated incident, but the interested researcher is faced with the task of seeking corroborating evidence by searching for similar cases in the vast collections of juristic rulings available in manuscript form.

Manuscript **516** (Mamma Haidara 2000, vol. 1: 287) provides interesting insight into the socio-political culture of the region. It is a tract written by the Nigerian Reformist Abd-Allah b. Uthman b. Fudi (d. 1829), entitled *Ḍiyā al-Siyāsāt wa Fatāwa al-Nawāzil* (The Illumination of Legislative Politics and Verdicts on Events). Divided into several sections, it discusses apostasy, highway robbery, hostile combatants and heretics. The manuscript also deals with the issue of politics and classifies politics as either oppressive or just. An outstanding aspect of this work is a deeply philosophical discussion on the five universal elements necessary for existence, i.e., life, dignity, wealth, intellect, religion and deterrents from committing sin. Many other interesting examples are also to be found.

Manuscript **207**, from the Mamma Haidara collection, deals with juristic verdicts issued by *Qadi* Muhammad b. al-Wafi al-Arawani concerning problems related to the sale of slaves and inheritance. With regards to the sale of slaves the author mentions a dispute between two people and the import of the manuscript suggests that in Timbuktu buying and selling was in most cases *not* done on a cash basis. The author points out that insistence upon dealing in cash could lead to loss and destruction of the commodity!

Manuscript **1093** from the same collection is by Shaykh Sayyid al-Mukhtar b.

Ahmad b. Abi Bakr al-Kunti al-Wafi (d. 1811) and is entitled: "Important Answers to the One who Attaches any Importance to His Religion." It begins by encouraging the assistance of others and forwarding advice with sincerity. Reference is made to the words of sages regarding the intellect. Talk on the intellect and its importance is concretized in his description of the people of Timbuktu, who as inhabitants of the desert, the author suggests, pay importance to agriculture and thereby neglect knowledge and are consequently ignorant of many of the tenets of their religion, especially *fiqh* (law). He therefore sets himself the task, in the form of questions and answers, to educate the people of Timbuktu. Amongst the many questions that he addresses is the question of *zakāh* (the giving and receiving of obligatory alms). The manuscript suggests that the people of Timbuktu considered the alms to be the prerogative of an exclusive group of people. The author regards this phenomenon as an innovation that should be rejected. He raises the issue of accepting alms from thieves and oppressors, ruling that it is not permissible to do so as this would be tantamount to assisting them in evil. He concludes by encouraging people to distribute their alms in a manner sanctioned by Islamic teachings.

In comparison to many of the works in the collection, manuscript **52** (Mamma Haidara 2000, vol. 1: 28) is a relatively lengthy work of 36 folios. The author and date of the work are unknown, but the colophon clearly states the name of the copyist as Muhammad al-Amin b. Muhammad b. Muhammad Bābā b. al-Faqih al-Imaam Guurdu. The manuscript was copied in 1159 (AH), i.e. in the 18th century CE. The work is simply entitled *Mawlid al-Nabi* (The Birth of the Prophet) but presents a fascinating example of creation myth and salvation history, which centres on the finality of the Prophet Muhammad's messengership and the finality of Islam as the last of the revealed religions. More interestingly, the manuscript opens a window into the world of inter-religious polemics by way of its descriptions of Christians, Jews and sinful Muslims. It also presents a conception of original sin that implicates mother Eve in a manner that is more easily reconcilable with Christian eschatology than with a purely Quranic account. This in itself raises the question of the impact of Judeo-Christian thought upon Islamic thought as expressed in some of these manuscripts.

The Timbuktu Scientific Manuscript Heritage

A distinguishing characteristic of the religious, linguistic and literary traditions encountered in the manuscript corpus is a connection that traverses the past, ensuring continuity between the traditional legacy and contemporary developments in these fields. The continuity of these traditions has ensured the continued currency of their idiom and terminology and consequently the number of people working on them. Matters are drastically different in the case of the basic sciences such as mathematics, astronomy and medicine, where neglect began

setting in from the time when Muslims stopped contributing original ideas to these fields. As a result, this very important part of the Islamic cultural heritage has suffered a devastating interruption (Ibish 1999: viii).

However, even a cursory glance at the catalogues of the Timbuktu collection reveals a significant presence of manuscripts on the basic sciences. Volume one of the Ahmed Baba collection (Ould Ely 1995-1999), which is thematically arranged, groups together a significant number of manuscripts on medicine, for example. Apart from this, the dedicated researcher is faced with the challenge of scanning the entire catalogue to locate other manuscripts on science.

The same applies to the catalogue of the Mamma Haidara collection. Even so, Volume Three of the catalogue offers a rich concentration of science manuscripts and is worth special mention and some elaboration.[7]

A Brief Survey of the Science Manuscripts

The predominant subjects dealt with in the science manuscripts indexed in volume three are: astronomy[8], astrology[9], arithmetic[10] and medicine[11]. Some of the subject matter conforms rather loosely to what is regarded as science today and it is therefore useful to draw upon the distinction made by David King between the *scientific tradition* and the *folk scientific tradition*. As King (1993) notes, the *scientific tradition* was the purvey of specialists, while the *folk scientific tradition*—devoid of any mathematics beyond simple arithmetic and of any astronomy other than what can be observed by the naked eye—was favoured by the legal scholars of Islam. It quickly becomes apparent to the researcher perusing the Timbuktu corpus that most of the extant science manuscripts in the region fall under the category of the folk scientific tradition.

For example, Manuscript no. **2262** (Mamma Haidara 2000, vol. 3: 1211) is categorised as a work of astronomy. It is a short treatise by Ahmed Baba, one of Timbuktu's most celebrated scholars, entitled *Answers to the Four Problems*. The treatise is concerned with the intersection between the solar and lunar calendars, more specifically, with calculating the beginning of the month of January in the Islamic Lunar year 1023, i.e., on which month and day of the lunar calendar does January 1 fall? It also addresses whether that specific year in the solar calendar is a leap year or not.

In some of the manuscripts the link between the nature of the inquiry and the fulfilment of ritual obligation is clearly stated. Manuscript no. **2237** (Mamma Haidara 2000, vol. 3: 1198) is a work on astronomy entitled *A Treatise on the Stars and Astronomy* and is divided into 21 short chapters. The anonymous author is concerned with presenting a short summary on how to determine the beginnings of the four seasons, the divisions of the night, the times of the five obligatory prayers and the direction of the Ka'bah, all without the assistance of any mechanical devices.

Manuscript **2240** (Mamma Haidara 2000, vol. 3: 1200) is a typical example

of a work on astrology. The text describes how to cast lots in order to determine whether one should proceed with an intended action, like going out on a journey, getting married, divorced, etc. It suggests predictions on the basis of the results of 9 casts and a certain arithmetical calculation. This particular manuscript is another apt embodiment of what King (1993) refers to as the folk scientific tradition.

A particularly interesting manuscript dealing with arithmetic is also to be found in the Haidara collection. Manuscript **2267** (Mamma Haidara 2000, vol. 3: 1214) grabs one's attention not only due to its subject matter, but also since it is a representative sample of an extremely established genre in Arabic literature, that of the pedagogical poem. This two-page treatise sets out to explain simple arithmetic calculations by means of rhymed verses. This form of writing was extremely popular because it enabled the student to learn basic concepts in almost all disciplines by memorising rhymed and metered verses.

Manuscripts dealing with medicine are by far the most numerous amongst the science manuscripts. These manuscripts include both short prose tracts and pedagogical poems. The subject matter also varies in range, from Prophetic Medicine (*al-Ṭibb al-Nabawi*), to studies on the pharmacological properties of the local flora, to somewhat jocose examples of "medicine" based on folklore. Two examples should suffice. Manuscript **2297** (Mamma Haidara 2000, vol. 3:1229) is by Mukhtar al-Kunti from the famous scholarly al-Kunti clan, renowned in the region. His short treatise deals with physical ailments as well as ailments of the heart — psychological ailments – and is based on teachings of the Prophet (PBUH) pertaining to such matters.

In sheer contrast, manuscript **2309** (Mamma Haidara 2000, vol. 3: 1235), *A Treatise on Medicines and some Uses and Benefits derived from Animals*, ominously begins by advising one who has been stung by a scorpion to abstain from speaking to anyone and immediately to whisper into a donkey's ear that he/she has been stung, and by Allah's permission, no harm will come to them!

While not found in abundance, one does encounter manuscripts from the *scientific tradition* proper. The CEDRAB and Haidara libraries both have exquisitely diagrammed manuscripts on optics and geometry on display. The dedicated researcher will no doubt uncover similar works, but must be willing to spend time working in these libraries.

The Timbuktu Manuscripts and the Contemporary Discourse on Islam and Science

The natural question to pose with regard to the Timbuktu science manuscript corpus is of course one of relevance; more specifically, why is this heritage so important today? A significant part of the answer is to be found in the nature of the discourse on Islam and science today.

The contemporary debate on science and religion in Islamic thought is manifested along three very distinct trajectories. The first regards science as value-free and as such reconcilable with the personal beliefs of the scientist, the second calls for the Islamization of the sciences, while the third calls for the development of an altogether unique Islamic science. What is clearly evident in all three approaches is a preoccupation with what "Islamic" science should be, with very little consideration—if any—being given to the study of the development of science in Muslim societies. As will be argued below, this is mostly attributable to the hegemony of the contemporary western scientific paradigm.

John Walbridge (1998: 403) astutely points out that as soon as Europeans began asserting hegemony over the Islamic world, Muslims realised that science was a critical ingredient of western power. Consequently, the only common factor amongst the various ideological camps within contemporary Islamic thought—whether Modernist, Traditional, or somewhere in between—was complete deference to science. However, themanner in which science fitted into the conceptual schemes of these various strands was hotly debated. Christopher Furlow (1996) suggests a broad categorisation that very neatly accounts for the various approaches within contemporary Islamic thought. He chooses the terms "modernization", "indigenization" and "nativization" to indicate the various postures towards science when viewed through Islamic lenses.

Modernization

Advocates of the modernist approach regard science as value-free, neutral and objective, and therefore any religious values held by practitioners of science are personal and do not affect the content of science. While most Muslim Scientists hold this view, those engaged in the Islamization debate support their pursuit by arguing that Muslims are exhorted to seek knowledge and therefore pursuing science can be a religious imperative. They also insist that modern science is historically part of the Islamic legacy (Furlow 1996: 263). Leading advocates of this position include Nobel laureate for physics Muhammad Abdus Salam and Pakistani scientist Pervez Hoodbhoy.[12] This particular strand is scathing in its account of the appalling state of science in the Muslim world and from this perspective cannot be ignored. However, Hoodbhoy in particular, offers a rather simplistic account of science in the medieval period that serves his own polemics more than being a true reflection of the classical heritage.

Another important concern regarding this strand is its failure to engage critically with the cultural conduit of modern science. Failure to do so can obviously bear catastrophic results, such as simplistically equating the Islamic and Western cultural contexts. More positively, this strand supports the right of Muslim scientists to pursue their vocation unimpeded by doctrinaire concerns.

Indigenization

The indigenous strand also upholds the value-free and objective nature of science but strives to unite objectivity with ethical concerns and values, which they argue is lacking in the western model (Furlow 1996: 264). This is the most diverse strand in the Islam and science debate, but most of its various offshoots generally fall under the single rubric of the *Islamization of Knowledge*, a project pioneered by the late Isma'il Raji al-Faruqi in a short treatise outlining its goals and objectives (al-Faruqi 1982). At the core of Islamization is the goal of educational reform. Its proponents argue that the crisis in Islamic civilisation is as a result of the secular division of knowledge into the religious and the rational. Thus their solution is the re-unification of knowledge by means of a rigorous programme of Islamizing various disciplines, which will hopefully produce individuals who are better able to imbue the pursuit of knowledge with the ethical concerns of the Islamic faith. Al-Faruqi only advocated the Islamization of the social sciences, but others, building on his ideas, saw fit to apply them to the natural sciences as well (Furlow 1996: 263). The project has been successful in generating tremendous debate and has attracted many responses and rebuttals, but little has been achieved in terms of what was initially projected.[13] This has led Louay Safi (1993) to conclude that the project is still in its pre-methodological stage.

The fact that the project has given rise to a plethora of views, clearly unmasks its poor articulation. Responses to the dominant Western scientific model in the name of Islamization have ranged from the sublime to the ridiculous. For some, the purpose of the Islamization of Knowledge project is to overcome the opposition between fact and value universalised through western influence and to recognize the supremacy of an approach to knowledge that regards the entire universe as a unity (*tawhīd*) whose harmony derives from its origin as the creation of an omniscient God (Euben 2003). Others have tried to prove the chemical composition of milk in relation to certain verses of the Qur'an, along with a host of other crackpot ideas, all in the name of the Islamization of science (Hoodbhoy 1992: 140-154). Yet others strive to demonstrate how Islamization is used as a catchphrase to oppose secularism (Abaza 2002). Be that as it may, the Islamization of Knowledge project cannot be given a blanket dismissal; its main redeeming factor is its capacity to generate debate and to create a platform for constructive engagement with the dominant western paradigm and for important self-introspection.

Nativization

As Furlow (1996: 267) points out, the nativization approach is a third strategy used by Muslim intellectuals engaged in the Islamization of Science debate. Its advocates generally contend that the modernist model of science is embedded in the western worldview and is consequently a product of western civilisation. It therefore cannot solve the problems of Islamic civilisation because it has a different worldview. The

nativization approach invokes an authentic Islamic science as a solution to the problems of Islamic civilisation and therefore rejects any adaptation of the modernist model of science. There are, however, two competing strands within this approach, both claiming to present an alternative that is authentically Islamic. The first model emerges from the work of Seyyed Hossein Nasr and is supported by a group of like-minded scholars, while the second model is that of the Ijmali's,[14] represented most forcefully in the science and religion debate by Ziauddin Sardar.

As Furlow (1996: 268) notes, Nasr was for a long time the sole voice for an authentic Islamic science, having written books on the subject in the late sixties and early seventies, before the Islamization of Science debate had begun in earnest. For Nasr, the goal of Islamic science is to demonstrate the interrelatedness of all things (Furlow 1996: 267). He also equates authentic Islam with the Islam of the 'Golden Age' of Islamic Civilisation and not necessarily with the primary sources: the Qur'an and the Sunnah (Furlow 1996: 268). Nasr's work has therefore been intensely scrutinised and Sardar has presented a scathing critique of his frame of reference. Sardar goes into a detailed account of how Nasr draws heavily on the works of perennialist philosophers and how his work is influenced by his Isma'ili *(Shī'ah)* background, concluding that he is more representative of the Gnostic tradition that has a Neo-Platonic frame of reference rather than an Islamic one (Sardar 1989b: 114-129).

The Ijmali's on the other hand, provide a strong critique of western science at the epistemological level and attempt to identify fundamental Islamic concepts upon which to reconstruct science (Furlow 1996: 267). Sardar provides a somewhat lengthy working definition of Islamic Science that incorporates Ijmali synthesis and it is therefore important to quote him in full in order to effectively apprehend his core argument. Sardar (1989b: 163-164) claims that:

> Islamic science is a subjectively objective enterprise: it is based on a circumspect rationality which connects human rationality to the conceptual matrix of Islam and hence synthesizes pure knowledge with moral knowledge. The subjectivity of Islamic science is itself objective, since it is based on such Islamic conceptual categories as *khilāfah* [trusteeship], *'adl* [justice], *ḥalāl* [permissibility], *ḥarām* [prohibition], *istiṣlah* [public interest], *taqwa* [God consciousness], and numerous other concepts of the Quran and Shariah – in which it has its epistemological being – and on a social consensus, the *ijmā'*, of the Muslim community and civilization, the *ummah*. It uses methods in conformity with the questions it raises, the problems it seeks to solve, the needs it wishes to fulfil. It is universal not just because Islam itself is universal, but because it is grounded in

> a rationality and a methodology, empirical and experimental work that is objective and can be duplicated and repeated by people of all cultures. Its nature and contents reflects its metaphysical and epistemological foundations, as well as the needs, requirements and concerns of Muslim people. It seeks not to discover absolute truths but to delineate their exposition and highlight the complex and interconnected nature of reality — thus, it is ultimately a form of worship, *'ibādah*, a way towards the glorification of God and elevation of man, as well as a systematic and organized way of solving the physical problems and fulfilling the needs of individuals and society.

Sardar is quick to admit that the notion of science just described cannot be found in operation anywhere in the world and its reconstruction involves systematic and simultaneous work on at least eight levels ranging from epistemology to science consciousness (1989b: 165-172). His model is therefore more of a pipe dream than a viable account of Islamic science. He consequently tries to argue the legitimacy of his position by undermining the Western scientific model but fails to effectively contrast it with a viable Islamic alternative, choosing rather to point out the inconsistencies within the Western model.

In doing so, he relies heavily on the western critical tradition itself and little if any of his counterpoints arise out of the Islamic paradigm. He essentially tries to prove that science is not neutral but value laden by drawing on the countervailing narratives of thinkers like Thomas Kuhn, Karl Popper and Paul Feyerabend. While these thinkers certainly bring insightful critiques to the discussion concerning the nature and workings of science, they are not able to dismiss or even disprove the fact that modern science, as Toby Huff (1996: 311) argues, is a good example of a universalizing mode of discourse that constantly criticizes its assumptions and results, and thereby improves upon itself, at the same time extending the boundaries of scientific discourse across countries, continents, civilizations, and the world. If anything, the countervailing narrative within the western paradigm affirms this very position, despite Sardar's attempts to use it to subvert modern science.

The fundamental error committed by Sardar is that he locates the problem of value-free science within its methodological functioning and not within its cultural conduit, i.e., the philosophical tradition of western modernity. In this way he imputes agency to science itself and not to the practitioners of science. As strange as this may seem, it is still consistent with another audacious claim he supports, which is that scientific facts are not discovered but are rather socially constructed (Sardar 1989b: 140). Even this position of his is drawn from the dominant western model, the so-called "science-wars" debate currently raging in western scholarship.

The social construction thesis was dealt a heavy blow by Alan Sokal, a physicist with impeccable leftist credentials who wrote an article on the social construction of quantum gravity. He did so in order to prove that those who supported the thesis did not have sound intellectual standards and proved his point after his hoax article was accepted for publication without question (Walbridge 1998: 403).

Sardar's account of Islamic science is arguably the most erudite, yet it fails to convince because it offers a vague articulation of Islamic science, a questionable account of the history of science in the Islamic legacy and a rather naïve and shallow appraisal of the dominant Western model that relies upon the countervailing narrative within rather than some authentic alternative. Be that as it may, one cannot be too harsh upon such attempts or upon their heavy reliance on the Western paradigm if one acknowledges the burden of this hegemonic worldview.

Van Nieuwenhuijze (1997: 126) points out that positing the question of religion versus science already reflects an occidental mode of problem identification. He therefore cautions against the reckless lifting of this polarised construct out of its occidental context and notes that to speak about religion versus science in Islam requires circumspection (Nieuwenhuijze 1997: 131). Explaining further, Muhsin Mahdi (1994: 254) notes that in the Neothomist Christian worldview there is a definite hierarchy that governs the relation between theology, philosophy and science and consequently the relation between the supernatural and the natural order, which makes the notion of "religious philosophy" or "religious science" intelligible and meaningful. He therefore questions whether this notion makes sense in other religions, especially where the status of theology remains quite subordinate and the distinction between the natural and supernatural orders is not formulated in this fashion or is even absent in the strict sense in which it was understood by Aquinas. Given this, he suggests that one cannot assume a similar relationship between religion, philosophy and science in other religions as was found in Christianity.

Conclusion

Mahdi's insights bring to the fore some of the problems relating to the contemporary historiography of science in the Islamic legacy and it is in this regard specifically that the Timbuktu corpus may be of significant value; these manuscripts could well serve as an important point of departure for the revival of a far more nuanced historiography of science in Muslim societies.

Scholars such as Sardar and Seyyed Hossein Nasr explain the genesis of science in the Islamic legacy by either resorting to narrative accounts of its history or by emphasising a certain logic of discovery that arises out of the Islamic paradigm. Mohammad Salim Fakir (1992: 188) refers to this approach as an internalist method wherein the methodology of science follows a rational course. He is

emphatic in rejecting this method as inadequate for identifying the key factors that have influenced the scientific tradition in Islam. Both narrative history and the logic of discovery are unable to adequately explain the development of a distinct scientific epistemology (Fakir 1992: 201). He therefore raises the concern that if Islamic science was a combination of previous traditions it cannot be something unique, but if it was unique we must be able to explain where it branches off from the "ancien regime". Fakir concludes that only an externalist approach to history, which accounts for irrational influences and sociological context, is able to answer these concerns (Fakir 1992: 201). From this perspective, one is able to understand why scholars who favour the idea of an Islamic science are averse to an externalist history of science in the Islamic legacy.

However, this was not always the case. 'Abd al-Raḥmān Ibn Khaldūn (d. 1408), the great Arab philosopher of history, offers a very convincing externalist account for the rise and decline of the sciences in the Islamic world across the passage of history. He argues that the sciences always flourished with the expansion and urbanisation of a particular polity, and similarly declined with the destruction of that polity. As proof of his theory, he cites the example of the flourishing of the sciences in the western hemisphere of Islamdom after its decline in the East as a result of the Mongol invasion (Ibn Khaldūn 1993: 344). What this clearly indicates is that the sciences always flourished wherever Islamic civilisation flourished.

Ibn Khaldūn not only confines his analysis to Islamic history but tracks the passage and growth of knowledge from the Persian, Greek and Roman eras and even observes the hiatus in the Roman epoch (which he attributes to Christianity). Startlingly enough, he even chronicles the revival of the sciences in the Europe of his time (the fourteenth century), and comments that God alone knows to what heights this revival will carry the Europeans (Ibn Khaldūn 1993: 393-395). Learning and creativity were therefore cornerstones of Islamic civilisation, and it remained at the forefront of scientific discovery with no competitor seemingly in sight, despite Ibn Khaldūn's prophetic observation concerning Europe.

In this regard, Marshall Hodgson (1970: 104) points out that the crucial blocking of creativity in the overall Islamic tradition came only after 1650 or 1700 as a result of competition with a newly transformed West. A drastically accelerated pace of social change was brought about at this time by engagement in multiple, interdependent, large scale technical specialization that was firstly predominant in crucial sectors of science and technology, but soon gave its tone to occidental society as a whole (Hodgson 1970: 121).

The genius of western civilisation came to be imbued in its institutions, both scientific and social. Consequently, the rapid advances and discoveries in the West enabled it to transcend the geographic confines of Europe and reverberations were soon felt throughout the world. Most non-western societies were unable to keep up and insulated themselves as a result of being overwhelmed. Famous centres

of learning in the Islamic world were surpassed by their Western counterparts. As Hodgson so poignantly states: "In the sixteenth century, the Muslim peoples, taken collectively, were at the peak of their power; by the end of the eighteenth century they were prostrate" (1970: 122). With the onset of modernity, history witnessed the emergence of the West as the new dominant world power. Walbridge (1998: 401-402) concurs, arguing that the explanation of the Scientific Revolution is to be sought in special factors in Europe and not in some supposed defect of Islamic civilisation.

Be that as it may, European hegemony over the Islamic world was all-pervasive, infiltrating the domain of culture as well. Although Muslim scholars began speaking about an Islamic Awakening as early as the nineteenth century, they were compelled to do so in conversation with the dominant western paradigm. The early Islamic modernists favoured the incorporation of elements of western thought, while later critics called for a return to the pristine traditions of Islam. As has been pointed out above, the latest trend tries to engage critically with both these developments while simultaneously asserting a strong Islamic identity.

Not only do Islamic scholars of the pre-modern period (like Ibn Khaldūn) offer a far more sober account of the history of science in their milieu, they also show no inclination to appropriate science as either Islamic or un-Islamic. Muzaffar Iqbal (2002) rightfully argues that the new Islam and science discourse that emerged from the ruins of the old tradition is a "colonized discourse" that has accumulated a heavy overlay of extraneous issues which had never been part of the traditional discourse, and that this heavy overlay expresses itself in various attempts to "Islamize" modern science as well as in an extensive literature that attempts to prove the existence of various modern theories in the Qur'an.[15] The only reasonable explanation for such desperate attempts that inadvertently render a skewed account of Islamic history is to view them as a pathetic effort to articulate a sense of superiority over the prevalent western paradigm.

However, such attempts merely emphasise the need for a clearer articulation of the relationship between science and religion in Muslim societies. In order to achieve this, what better starting point than the pre-modern Islamic legacy currently being unearthed in Timbuktu?

Notes

1 Aslam Farouk-Alli worked as a researcher for the *Timbuktu-UCT Manuscript Project*.

2 For more details on this library and its founder see (Farouk-Alli 2005: 51).

3 For a discussion on Timbuktu and African History see (Farouk-Alli & Jeppie 2005). Professor Jeppie has produced a comprehensive volume that presents research papers by scholars on various aspects of Timbuktu and its intellectual heritage; see (Diagne & Jeppie 2008). Jeppie is also working with a team that is translating many of the manuscripts and is also supervising two Doctoral theses on the Timbuktu intellectual

heritage. References to recently published works emanating from the UCT project are cited in this article but the impressive catalogue (*Timbuktu Script & Scholarship* 2008) prepared by the UCT research team deserves special mention.

[4] For the sake of brevity this section draws on Hunwick (2000; 2002). There are however a few key references on the history of Timbuktu that cannot be ignored. The two major sources for the political history of the city and the region are *Tārīkh Sūdan* (History of the Land of the Blacks) by 'Abd al-Rahman al-Sa'di (see Hunwick 1999) and *Tārīkh al-Fattāsh* (History of the Researcher) by Mahmud Ka'ti (see Levtzion 1971); both scholars were from Timbuktu. Mahmoud Zouber's (1977) study on Ahmad Baba provides insight into the life and times of Timbuktu's most illustrious scholar, while Elias Saad's (1983) book on the social history of Timbuktu provides further elaboration on Muslim scholars and Notables in Timbuktu from 1400 to 1900.

[5] For a discussion on the use of the *fatāwa* material as a source of social history see (Farouk-Alli & Mathee 2008) and Sayed (2005-6).

[6] For a more detailed description of the content of these manuscripts see (Farouk-Alli & Mathee 2004).

[7] See especially pp. 11961247: Mamma Haidara (2000).

[8] Mamma Haidara (2000), pp. 1196-1247, cf. manuscripts 2237, 2238, 2242 and 2262 for a representative sample.

[9] Mamma Haidara (2000), pp. 1196-1247, for example, manuscripts 2241, 2321.

[10] Mamma Haidara (2000), pp. 1196-1247, for example, manuscripts 2249, 2267, 2328.

[11] Mamma Haidara (2000), pp. 1196-1247, for example, manuscripts 2290, 2295, 2297, 2309, 2314.

[12] For a detailed account of this position see Abdus Salam (1989) and Hoodbhoy (1992).

[13] See for instance Huff (1996), Rahman (1988), Nasr (1991) and Sardar (1989a) for a few detailed responses. I will not go into the responses in any detail as they do not concern the main line of argument of this paper.

[14] For more details see Sardar (1989b: 112-113). The term Ijmali, as explained by Sardar, is derived from the Arabic root *jml*, which conveys the ideas of beauty on the one hand and wholeness on the other, capturing the substance of synthesis with the style of aesthetics. Sardar points out that the Ijmalis are a heterogeneous group whose intellectual position is united by a methodology of conceptual analysis aiming at synthesis and future-orientated expressions of the values of Islam in all aspects of contemporary thought and life.

[15] See Iqbal (2002: 241-242). It must be noted that while Iqbal makes a valid point here, he does not reject the notion of an Islamic science. He in fact aligns himself with the thought of Seyyed Hossein Nasr and endorses his nativization approach, even if with some qualification (Iqbal 2002: 293-314).

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