

MEMORY OF THE WORLD REGISTER
Al-Tafhim li Awa'il Sana'at al-Tanjim
(*The Book of Instruction in the Elements of the Art of Astrology*)
(Iran)

Ref N° 2010-09

PART A – ESSENTIAL INFORMATION

1 SUMMARY

Al-Tafhim li Awa'il Sana'at al-Tanjim is a book in the Persian language by the renowned Iranian scientist, abu-Rayhan al-Biruni (440-362 HD/ 973-1048 AD). As explained by the author, abu-Rayhan, the book contains questions and answers in a format easily understandable by new learners in sciences. This book was written by the request of Rayhanah, the daughter of Hussein or Hassan Khwarizmi, in 420 HD/ 1029 AD. To enhance readers' comprehension of this self-study book, abu-Rayhan begins with Geometry and Arithmetic; he then proceeds to Astronomy and Chronology and after introducing the use of the astrolabe for astronomical and astrological purposes, he explains the principles of Astrology, which is the main purpose of the Book and the 530 questions and answers it contains.

In addition to the Persian language, his mother tongue, abu-Rayhan also mastered Arabic and Sanskrit, in which he wrote many volumes or translated to and from. His works are abundant in the Arabic language, but his only remaining work in the Persian is the *al-Tafhim li Awa'il Sana'at al-Tanjim*. This book is the oldest Persian text in Mathematics and Astrology. Its authenticity and validity of contents as well as its literary significance has brought it great fame as a rare book in the Persian language after Islam.

Even though the Book was composed simultaneously in Persian and Arabic by abu-Rayhan himself so that neither is the translation of the other and each version stands independent of the other (the oldest Arabic manuscript of this book dates back to 1177 and is preserved in Chester Beatty Library, but the nominated Persian manuscript was transcribed in 1143), this self-study on Astrology is in essence written for a Persian-speaking girl and is abundant with the most original and oldest terms and expressions of the Persian language regarding history, traditions and chronology of the Iranians. The book in fact entails a concise compilation of abu-Rayhan's knowledge of Mathematics and Astrology. It is a treasury of scientific and literary benefits.

Al-Tafhim li Awa'il Sana'at al-Tanjim has always been used by scientists and researchers as a source for Mathematics and Astrology education due to abu-Rayhan's specific research methods that altogether placed him in a position higher than that of some of his great contemporaries such as Avicenna. Written in the early eleventh century for a young, Persian-speaking, female learner, it is interesting that the nominated book is not easily comprehensible for the academe and scholars in Mathematics and Astrology today. Its fame not only brought it a variety of reprints, but the book has also been translated into English, Italian, German and Russian.

The manuscript that is hereby nominated is known to be the oldest copy of *Al-Tafhim li Awa'il Sana'at al-Tanjim*. Transcribed in 538 HD/ 1143 AD, this copy was written less than 100 years after abu-Rayhan. This precious book bears excellent figures in both bright red and black with script also in both colours (bright red questions and black answers). It is preserved in the treasury of the Library, Museum and Archives of the Islamic Consultative Assembly. In 1939, the book was printed for the first time by Master Jalal-oddin Homaei. In 1972 AD, the Book was reprinted with Master Homaei's additions and under his supervision on the occasion of abu-Rayhan's millennium.

2 DETAILS OF THE NOMINATOR

2.1 Name (person or organisation)

National Committee for the Memory of the World (Iranian National Commission for UNESCO).

- 2.2 Relationship to the documentary heritage nominated
All nominations for inscriptions are made by the National Committee for the Memory of the World of the Iranian National Commission for UNESCO.
- 2.3 Contact person (s)
Ali Akbar Asha'ri (Mr), Chair of the National Committee for the Memory of the World of the Iranian National Commission for UNESCO.
- 2.4 Contact details (include address, phone, fax, email)
Entity: National Committee for the Memory of the World of the Iranian National Commission for UNESCO.
Organisational Post: Head, National Library and Archives of Iran and Chair of the National Committee for the Memory of the World of the Iranian National Commission for UNESCO.
Postal Address (Office): National Library and Archives of Iran, National Library Blvd., Haghani Highway, Tehran, Iran.
Telephone:
Office: (+98) 21 88 64 40 70
Fax:
Office: (+98) 21 88 64 40 72
E-mail: memory@nlai.ir

3 ***IDENTITY AND DESCRIPTION OF THE DOCUMENTARY HERITAGE***

- 3.1 Name and identification details of the items being nominated
Name: The Persian language manuscript of the *Al-Ta'fhim li Awa'il Sana'at al-Tanjim*.
- 3.2 Description

The book that is a self-study in Astrology begins with Geometry and Arithmetic and ends in Astronomy and Astrology. The Book entails 530 questions and answers. Questions are written in bright red, answers are black and figures are in both bright red and black. Each new topic starts with a question posed by an imaginary student and ends in an answer by an invented professor.

The nominated manuscript consists of 246 folios, 492 pages with 15 lines in each page; it is written in "Naskh" script on Thursday, 6 Safar 538 HD/ 21 August 1143 AD; copier is Mohammad Ibn Jourabi; cover is red leather; dimensions are 19.5×25; registration number is 2132. The manuscript is preserved in the manuscripts' treasury at the Library, Museum and Archives of the Islamic Consultative Assembly.

4 ***JUSTIFICATION FOR INCLUSION/ ASSESSMENT AGAINST CRITERIA***

- 4.1 Is authenticity established?
The Manuscript's authenticity is well validated by outstanding audits and experts such as Master Homae, Master Nafisi and Master Ha'eri.
The manuscript bears its copier's name, Mohammad Ibn Jourabi; it has a date of copy as of Thursday, 21 August 1143.
Properties pertaining to the manuscript's appearance including the script and type of paper all prove authenticity of the nominated manuscript.

4.2 Is world significance, uniqueness and irreplaceability established?

Al-Tafhim li Awa'il Sana'at al-Tanjim is one of the oldest and most valid scientific texts in Mathematics and Astrology. It boasts a deep scientific influence on the world since most Iranian and non-Iranian scientists have made use of this text in their scientific works and papers. The nominated manuscript is the oldest Persian version of the Book. It was transcribed less than 100 years after the death of its author. As a matter of fact, the nominated manuscript is the oldest Persian text in Mathematics and Astrology.

Al-Tafhim li Awa'il Sana'at al-Tanjim is translated into German, Russian, English, and Italian. Its significance led to many reprints in Iran, Tashkent, the United Kingdom, Russia and Italy.

Those scientists who have undertaken a survey of al-Biruni's works were so impressed by the exceptional character and talents of this great scientist that each has, in a way, praised his scientific character. So characteristic for his age is al-Biruni that George Alfred Leon Sarton introduces him as the greatest historian of science history in the contemporary era and identifies his period as the "Time of al-Biruni". Eduard sachau describes Al-Biruni as the greatest intellectual wisdom in history. Professor Pope also acknowledges Al-biruni's greatness by stating that scientists the world over ought to consider a high status for al-Biruni, without whom the history of Mathematics, Astrology and Geography would not have been completed.

This Iranian scientist is so high of rank that a cavity in the moon's semi-dark area bearing the coordinates of 94 degrees west and 18 degrees east is named after him. Iranians have named the day of 13 Shahrivar (4 September), after al-Biruni, the outstanding Iranian scientist.

4.3 Is one or more of the criteria of (a) time (b) place (c) people (d) subject and theme (e) form and style (f) social, spiritual and community significance satisfied?

(a) Time: The Book belongs to a period when Iranian scientists and scholars used the Arabic language to write their scientific works. By composing his book in Persian, abu-Rayhan contributed to the vivification of scientific Persian language. The nominated manuscript is the oldest Persian text in Mathematics and Astrology in addition to being known as the oldest Persian version of *Al-Tafhim li Awa'il Sana'at al-Tanjim*.

(b) Place:

The land of Khorasan used to be a centre for Mathematics, Astronomy and Astrology education and a gathering place for scientists and men of literature. Abu-Rayhan is one such personality. In the late 10th century and early 11th century, the world of Islam underwent a great rebellion and Biruni's hometown endured civil wars, one result of which was the coming into power of the Qaznavid dynasty. With the dawn of the Qaznavids, Iran's capital became the city of Qazneh. Abu-Rayhan's life entered a new stage with the rise of Mahmud Qaznavi, the Qaznavid king. *Al-Tafhim li Awa'il Sana'at al-Tanjim* was thus composed in a land, which was host to significant political upheavals of the time.

(c) People:

Al-Tafhim li Awa'il Sana'at al-Tanjim was written at the request of Rayhanah, the daughter of Hussein or Hassan Khwarizmi, in the form of question and answer to serve as a self-study. It seems that the socio-cultural structure of society at the time of writing this book was such that scientists such as abu-Rayhan prepared self-studies on Astrology, Astronomy and Mathematics education for new learners, altogether indicating the importance of education at that time. The age of abu-Rayhan was an era in which Astrology, Astronomy and Mathematics was immensely sought after by the Iranians and Muslims.

(d) Subject and theme:

Al-Tafhim li Awa'il Sana'at al-Tanjim is a scientific book in Mathematics and Astrology. The importance of this issue rests in the following items:

First, even though its composition dates back to over a thousand years ago, it is still considered an important scientific document in the Persian language and literature, indicating the importance attached to education by our scientists and their efforts to compose scientific issues in a simple, easy-to-understand language.

Second, Mathematics and Astrology were of prime importance for Iranians. Prior to *al-Tafhim li Awa'il Sana'at al-Tanjim*, many titles were written in Arabic on Mathematics, Astrology and the astrolabe, yet there was rarely any text in Persian on these sciences. Thus, *al-Tafhim li Awa'il Sana'at al-Tanjim* is considered as the oldest text on Mathematics and related sciences available in the Persian language. This book was greatly admired by scientists and astrologists after al-Biruni to the extent that most subsequent science books bore mention of its title or citations from its text.

(e) Form and style:

Al-Tafhim li Awa'il Sana'at al-Tanjim is a precious treasury abundant with old and original Persian terms and expressions. A most significant feature of this book is abu-Rayhan's endeavour in using scientific Persian terms and expressions given that the dominant language of science in his time was Arabic and all texts even those written in Persian had Arabic words and expressions in them. Unlike other books of the past, *al-Tafhim li Awa'il Sana'at al-Tanjim* is abundant with original Persian terms, expressions and grammatical features altogether making it a most valuable source for compilation of grammar books and glossaries in the Persian. The older a Persian text, the closer it is to the roots and origins of the Persian language and the farthest from mixture with foreign languages. This is even truer when the author of a text masters the language. *Al-Tafhim li Awa'il Sana'at al-Tanjim* is a living example of all these characteristics.

4.4 Are there issues of rarity, integrity, threat and management that relate to this nomination?

The manuscript is preserved in the library of the Islamic Consultative Assembly and there is no threat detected in relation to this nomination.

5 LEGAL INFORMATION

5.1. Owner of the documentary heritage (name and contact details)

5.2. Custodian of the documentary heritage (name and contact details, if different to owner)

Responsible Entity: Library, Museum and Archives of the Islamic Consultative Assembly.

Postal Address: Library of the Islamic Consultative Assembly, Baharestan Square, Tehran-Iran.

Tel: +98-21 33 13 78 10

Fax: +98-21 33 13 78 13

E-mail: khpr2000@yahoo.com

Emergency call number: +98-912 52 39 778

5.3 Legal status:

(a) Category of ownership

National

- (b) Accessibility
Accessibility to the manuscript depends on the rules governing the library.
- (c) Copyright status
Library of the Islamic Consultative Assembly
- (d) Responsible administration
Library of the Islamic Consultative Assembly
- (e) Other factors

6 MANAGEMENT PLAN

6.1 Is there a management plan in existence for this documentary heritage? YES/NO

There is now a high resolution (300 dpi) color scan available for use by researchers

7 CONSULTATION

7.1 Provide details of consultation about this nomination with (a) the owner of the heritage (b) the custodian (c) your national or regional *Memory of the World* committee

(a) *the owner of the heritage*:-----

(b) *the custodian*:-----

(c) *Your national or regional Memory of the World committee*: Over 20 meetings were held with the presence of evaluation experts and skilled professors for a close assessment of the manuscript of concern. Available directories of existing manuscripts were closely studied. The National Committee of the Memory of the World of the Iranian National Commission for UNESCO in cooperation with the Committee's group of evaluators then selected and confirmed nomination of the manuscript of concern.

PART B – SUBSIDIARY INFORMATION

8 ASSESSMENT OF RISK

8.1 Detail the nature and scope of threats to this documentary heritage (see 5.5)

This manuscript is preserved under standard conditions; temperature and humidity of the treasury are fully under control.

9 ASSESSMENT OF PRESERVATION

9.1 Detail the preservation context of the documentary heritage (see 3.3)

The nominated manuscript is preserved along with other available manuscripts (about 25,000) at the library of the Islamic Consultative Assembly under semi-appropriate conditions. The manuscripts' treasury is equipped with theft and fire alarm and Kidde fire extinguishing system. Necessary measures are also taken in respect to the treasury's temperature and humidity control and AC systems. The original copy is never lent to users.

Appendices

Abu-Rayhan's inventions, discoveries and researches

- The principle of leveling the sphere and drawing geographical maps (Cartography);

- Artesian well;
- Abu-Rayhan's scale, a most precise scale in the history of science ;
- Astrological principle of «Tasviyeh al-Boyout»;
- Astrological principle of «radius»;
- The speed of light and sound;
- Calculating the area, circumference and radius of a sphere;
- Geographical length and width and the direction of Qiblah in cities;
- Modality of determining the head and place of «Mihrab» in mosques;
- Observation in Astrology;
- The Earth's movement;
- The Sun's movement;
- Physical properties of diamond and emerald;
- Ebb and flow in rivers and lakes;
- Geometrical shapes of flowers and blossoms;
- The possibility of the occurrence of vaccum;
- Researching the production of honey;
- Observing solar and lunar eclipse;
- Historical research about the Sasanid dynasty;
- Organising movement squares in chess;
- Constructing special tools for observation purposes;
- Constructing geographical spheres;
- Proposing the theory of the existence of American continent.

Abu-Rayhan's Chronology

- 362 AH /351 hegira : Born on Thursday, 18 of Dey (a month in the Persian calendar corresponding to December/January in the Christian calendar ; in this case it is January) in a village in the suburbs of «Kath»;
- 368 AH/ 357 hegira : studied in the school of the city of Jourjaniyah for a period of one year;
- 369 AH/ 358 hegira: continued his studies in the school of Rousta;
- 379 AH/ 358 hegira: calculated the mid-day height of the sun at the age of 17 in «Kath»;
- 385 AH/ 373 hegira: observing the summer solstice in a village at the south of «Kath»;
- 387 AH/ 375 hegira: observed solar eclipse on a Saturday in late May (7 Khordad in the Persian calendar);
- 391 AH/ 379 hegira: wrote the book of «Asar Al-baqiyah» in Gorganj in the name of Qaboos ibn Voshmgir of the Al-e Ziar dynasty;
- 393 AH/ 381 hegira: observed two instances of lunar eclipse on Saturday, 6 Esfand (late February) and Sunday, 29 Mordad (late August), respectively in Gorganj;
- 394 AH/ 382 hegira: observed a lunar eclipse in Jourjaniyah on Sunday, 20 Mordad (late August);
- 408 AH/ 396 hegira: moved from Jourjaniyah to Qaznah in the company of Sultan Mahmud Qaznavi;
- 409 AH/ 397 hegira: calculated the geographical width of Jaykhour, located in the vicinity of Kabul, using a plumb line;
- 412 AH/ 400 hegira: observing the winter and summer solstice and the vernal and autumnal equinox in Qaznah;
- 416 AH/ 404 hegira: finished writing the book of «Tahdid Nahayat al-Imkan»;
- 418 AH/ 405 hegira: wrote his essay on «Istikhraj al-Athar fi Dayirat»;
- 420 AH/407 hegira: finished writing the Book of *al-Ta'fhim li Awa'il Sana'at al-Tanjim* (Instructions in the Elements of the Art of Astrology);
- 421 AH/ 408 hegira: wrote the book of «Tahghigh ma lil-Hind» and gifted his essay of Masoudian law (Qanoon-e Mas'oudi) to Sultan Mahmoud Qaznavi;

- 425 AH/ 412 hegira: Drew-up a directory of the books written by Mohammad Ibn Zakariya Razi as well as a directoy for his own 113 volumes;
- 442 AH/ 429 hegira: passed away on Friday, 13 of Rajab/ 6 Azar (late November in the Christian calendar).