PROCEEDINGS OF
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In the name of God, the Merciful, the Compassionate

FOREWORD

Editing manuscripts and presenting them to scholars and researchers in a correct, printed and readable form is an enterprise in which many problems have to be faced.

Before printing began, when simple copyists copied out texts that they did not understand, the mistakes they made placed barriers between the text and its readers. Many examples of this survive.

In later days, established publishing houses generally ensured the soundness of the originals from which they took their printed texts by submitting them to specialised scholars who read, corrected and annotated them. They would then record their work modestly on the last page. We find an example of this at the end of Ibn Sayyidil's al-Mukhaṣṣas - which was published complete with diacritics: "...and all its corrections and comparisons are by al-Sheikh Muḥammad Maḥmūd al-Tarkāzī al-Shinqīṭ, and with him in the comparison al-Sheikh 'Abd al-Ghānī Maḥmūd who took such care in correcting it according to the original that he deserves much reward and more praise".

This process became a tradition widespread in dealing with works in religious and linguistic sciences. Later, people who dealt with literary texts (in manuscript) were emboldened to submit them to the process which Ahmad Zaki Bāsha named tabqāt (editing). This was carried out sometimes by learned specialists and sometimes by presumptuous copyists - and in both cases it was called 'editing' and it was up to the reader to decide on its true value. It is notable that nobody has yet dared to compile a biographical dictionary of the classes of editors, just as nobody in
the days of manuscripts compiled a biographical dictionary of the classes of copyists.

The extent to which this process has weighed down our written heritage varies with the content of each work. The continuity of our traditions of religious and linguistic sciences and of literature, the continued currency of their idiom and terminology, and the numbers of people working within them - all these have been factors which have made it relatively easy to identify errors, to complete texts using alternative (authorised) sources, to trace the etymology of poetic usages and generally to do detailed work on language. The overlap between these three fields (religious, linguistic and literary) has grown larger and - despite the entry of numerous interlopers - research into them is now fairly straightforward and methodologies of editing have been established. This is due to the extensive work done by great scholar-editors who paved the way for research and scholarship.

In the case of the basic sciences, though, matters have been different. These sciences, such as mathematics, astronomy and others, were neglected from the time we stopped contributing original ideas to them. This important part of our Islamic cultural heritage suffered a drastic interruption. When we came back to it, instead of using what was part of our own culture in content and terminology, we tried to glean it from those who had originally taken it from us and then developed it. Thus our heritage in these fields was forgotten and we remained ignorant of their idiom. The problem of dealing with this heritage is further compounded by the fact that most of our original scientific texts have now been lost through neglect.

The value of the nineteenth century Egyptian and Indian editions of important works of science, and those of the Orientalist presses is that they indicate the importance of this part of our heritage and the conceptual level at which our scientists had worked. They thus provide our researchers with the incentive to develop methodologies to publish these classical works: textually complete, edited and analysed. An activity which will chart the Arab and Muslim contribution to the forming of contemporary civilisation.

It was for these reasons that al-Furqān Islamic Heritage Foundation decided to hold its fourth conference on the subject of "Editing Islamic Manuscripts of Science" and, in this volume, we present the work of a select group of specialists who have recorded their experience in editing manuscripts of mathematics, astronomy and medicine.

The problems faced by these specialists while editing specific manuscripts raise issues around the establishing of a new and severe methodology which would be a base for serious work in the future. The experiences they describe bring to life the details of this academic work which is truly worthy of being taken as an example.

Alongside the methodological aspect, and the focused reviews of the development of Arab and Muslim science which we find here, these papers also serve to revive and renew important scientific values intrinsic to our heritage, values which have been forgotten or ignored but which are still original and fertile. They are to be found in the works of Thābit ibn Qurra, Ibn al-Haytham and al-Sijzi, all of whom represent high points in our culture which should never be forgotten.

We hope that research into Arabic and Islamic manuscripts of science will continue until their rich harvest is gathered and can be put to good use.

We pray that God may help us in this work and guide our steps to its just completion.

Ahmed Zaki Yamani
Chairman, al-Furqān Islamic Heritage Foundation
PREFACE

The papers published in this volume were presented at the Fourth Conference of al-Furqan Islamic Heritage Foundation on "Editing Islamic MSS of Science", held in Eagle House in Wimbledon, London, on 29th and 30th November 1997.

The Conference was organised into four panels over two days. After the registration of the participants, the inauguration speech of the Chairman and the Director's welcome address, Panel I began under the chairmanship of HE al-Sheikh Ahmed Zaki Yamani. The general subject of the panel was: The methods of editing scientific texts.

Professor Ibrahim Chabbouh read the keynote address, tracing the historical developments of the scientific heritage of Islam and pointing out the need for new catalogues and indices for the vastly scattered manuscripts. Due to the loss of links with the heritage, he argued, we need at present to establish firmly the meaning of Arabic scientific terms. His general conclusion is that this new awareness of the value of the heritage necessitates the publication of a specialised quarterly journal under the patronage of a scientific institute to promote the application of scientific methodology in publishing texts and catalogues. The main thrust is to highlight the distinctive Islamic contribution to civilisation.

Dr Roshdi Rashed was given the floor to present an excellent paper on the conceptual tradition and the textual tradition in Arabic manuscripts dealing with science. He identified seven types of problem that face scholars endeavouring to edit and study Islamic texts. These are: the absent text, the hidden text, the truncated text, the abridged text, the complete text in a unique manuscript, the complete text in multiple manuscripts, and the author's manuscript. He concluded his presentation with two
remarks: one, that the textual and conceptual traditions are inseparable, and two, that it is important for the future to develop certain branches of knowledge vital to the laying down of scientific foundations for research in both the textual and conceptual traditions.

Panel II, focusing on the problems of Editing manuscripts on astronomy, met in the afternoon of the first day of the Conference. It was chaired by Professor Dr Ilısanoğlu who gave the floor to Dr Ahmad Dallal. The main argument of Dr Dallal’s paper was that editing such manuscripts is an art, rather than a science with definite rules, regulations and procedures. This leads one to examine not only edited texts but also editors. The first prerequisites in an editor are a command of Arabic, and a knowledge of astronomy, mathematics and physics. He must also know the technical terminology and the historical context of the manuscripts he is editing and their cultural background.

Dr Julio Samsó surveyed in his presentation Andalusian astronomical sources and the work done on them, pointing out areas for future research. He maintained that unless new manuscripts are found, nothing spectacular will be done. Thorough research has to be undertaken in revising the catalogues of manuscripts in the libraries of the Magrib, and special attention has to be given to private collections and to Sufi Zāwiyas holdings, the contents of which are not known.

Dr David Pingree read a paper assessing the problems in editing Zīj al-Sanjārī which was divided into thirteen parts. The main body of the zīj is divided into ten maqālāt and each maqālah into aqsām and each qism into awābāh and each bāh into fūsāl. The problem is that the whole text is not found in the known manuscripts. His paper, valuable as it is, remains ‘preliminary’ in large part.

Dr Régis Morelon presented a paper on the corpus of the Arabic manuscripts of the astronomical works of Thabit b. Qurra. He found four questions arising from the corpus:

First, the translation of an ‘absent text’ is not sufficient to understand the original in full.

Second, two manuscripts of a lost original are not always easy to reduce to a single text.

Third, an abridged text may present new problems that are not easy to overcome.

Finally, a unique text may have problems of structure or marginal notes of the copyist or readers that further complicate the text.

Dr Morelon concluded that each case must be carefully studied before general conclusions can be drawn.

The second day of the conference launched Panel III focusing on Manuscripts on mathematics, under the chairmanship of Dr Roschdi Rashed. The floor was given to Dr Pascal Crozet to present his paper on Figures in manuscripts of geometry. He limited his examples to Sīghī of the 10th century, starting with his propositions, geometric figures and presentations. The usage of the terms shakl and sūrah are of great interest to students of the history of geometry in the 10th and 11th centuries, for geometric forms are determined by a number of ‘factors’ such as the point, the line, the surface, the angle and the ‘corp’. If we follow Sīghī’s vocabulary strictly, the abstract figure (shakl) becomes the central attention of geometry and not the representation (sūrah). But this alone does not help the historians of Islamic geometry solve the problems at hand. More in-depth research has to be done to penetrate into the heart of the problem.

Dr Hossein Masoumi Hamedani followed Dr Crozet with a paper dealing with the problems of having to ‘fill in the blanks’, using the example of one of Ibn al-Haytham’s manuscripts on optics. The text in question is On the Light of the Moon, which is considered so important by Dr Masoumi that it is in fact a turning point in the history of celestial physics. The only almost complete text is missing parts here and there. Translations followed suit, with no mention of the ‘truncated’ parts. One is therefore obliged to consult other manuscripts related to it, in an attempt to reconstruct the missing parts or ‘fill in the blanks’.

The last paper on Panel III was read by Dr Hélène Bellota. She used the example of the ‘very famous’ manuscript 2457 of the Bibliothèque Nationale de Paris. It is a small, leather-bound
volume of 220 folios by al-Siğzî. Some pages are badly stained, others are in a poor state of repair, and many passages remain blank and figures incomplete. What fascinates Dr Bellosta is that al-Siğzî follows the methodology of the traditional narrators of Hadîth in establishing a chain of authorities (ismâd) on the basis of which the text was authenticated.

After lunch Panel IV met under the chairmanship of Professor Ibrahim Chabbouh to deal with Manuscripts on medicine.

Dr Ibrahim Ben Murad presented a paper on the problems of technical terms in the formative period of the past and the prospects for the future, stressing the need for the development of a lexicon of the terms used in Arabic manuscripts dealing with medicine and related subjects.

The last paper in the conference was read by Dr Muhammad Zafir al-Wafâî on the problems of editing and publishing Islamic manuscripts of medicine in general and ophthalmology in particular. He reduced the problems to eight, as follows: locating the MSS, obtaining copies, reading (ie understanding) the texts, collating and comparing the different texts, updating the information, finding publishers and distributors and, finally, attracting financial support.

While each one of the papers presented at this conference is the result of its author’s level of scholarship and depth of interest, taken as a collection they reflect the ongoing interest of scholars all over the world in the Heritage of Islam. This volume is intended not only to glorify the past but to serve as a challenge to future generations of Muslims.

Yusuf Ibish
Editor

INTRODUCTION

Bismillah al-Rahman al-Rahim

Your Excellency Sheikh Ahmed Zaki Yamani, Chairman of al-Furqân Foundation, Learned Professors, Distinguished Guests.

I am honoured to welcome you to this conference on Editing MSS of Science in the Islamic Heritage. Individual works in the field of editing, cataloguing or imaging MSS are certainly noble and worthy of praise, whether undertaken by institutions or individuals. However, our manuscript legacy is huge, estimated at three million volumes of MSS; separate efforts, important as they may be, cannot possibly cope with it all. This work should be approached by a collective enterprise, subject to a strategic plan defining dimensions, roles, stages and priorities, combining the creative action of individuals and institutions in an integrated and dynamic performance. I hope that we may, with such a strategy, create the ‘Heritage Future’, if one can use such an expression, joining the bounty of the past with visions of the future. Such a strategy would set forth our national plan for dealing with our heritage of MSS among other things, and revive the hopes of salvaging our cultural memory.

To achieve such a strategy, I draw on my modest experience to lay before you a number of seed proposals on basic preliminaries:

1. We should start with a conference or symposium to be attended by representatives of all institutions concerned with
Heritage and Islamic MSS. They should agree on a preliminary design for co-operation and joint planning; all experts in the field should be consulted.

2. Founding an International Association of Institutions for Heritage Preservation to provide a regular research-oriented environment for editors and scholars, thus promoting co-operation and consultation in the field.

3. Setting up a generous fund for aiding and financing researchers working in this field everywhere, to help alleviate their isolation and sense of alienation. This would entail government responsibility, together with generous support from the great men of our age, patrons of learning and scholarship.

4. Compiling a full Index, to be regularly updated, of scholars and institutions working in the field of the Islamic Heritage, in order to facilitate communication in researching MSS.

5. Setting up a databank for thoughts and ideas on Heritage and Tradition, for the integration and development of recommendations by scholars and thinkers in general on what MSS should be edited, and what should be salvaged, and allocating priorities of work. It would be a rich source of reference for editors and researchers, providing them with a starting point for future work. It should be international and not bound within a regional or bureaucratic frame.

6. Inaugurating permanent institutes as well as extramural programs in universities and Heritage institutions to train a new generation of specialist editors with a full grasp of Bibliography, Arabic Writing, Text Studies, MS Studies, History and Sociology of Information in Islamic studies.

7. Training a new generation of bibliographers in the field of Arabic and Islamic texts and MSS. In Islamic culture there is a mass of studies and problems of bibliography, texts and information, requiring highly specialized experience and awareness of the variety and intricacies of the Arabic language. Arab scholars should carry the main responsibility for this task; the door is also open for orientalists who wish to contribute to the work, but that should not absolve the children of this nation from their responsibility to study this field.

8. Compiling a manual on editing MSS, including a resume of the basic experience of editors of various methods.

9. Expert professors should be encouraged to record their particular experience with every MS in hand, the problems he/she encountered and the solutions achieved, even in a little notebook. It is not enough that we know that the work was very difficult. We need to know the details.

10. Compiling an inclusive annotated dictionary of all terms relevant to Islamic MSS. It should gather in all idioms and concepts dispersed in both early and modern works, covering terms of paleontology, bibliography cataloguing and aspects of MS research - material, historical and environmental - as well as relevant methods of editing MSS.

11. Worthy efforts have been made in the domain of classifying and cataloguing MSS with a view to entering them in a union catalogue, but the problems of place dispersal and linguistic discrepancy are still there, together with differences in methods of cataloguing and dispersal of bibliographies.

12. As you know very well, bibliographies provide a guide to the text which they also represent, but making the text itself available for research is often still a problem. An international campaign should be launched for new progressive legislation to facilitate the circulation and imaging of MSS on paper, film or discs. Rigid bureaucratic legislation in many countries still makes it difficult for researchers to access even one MS.

13. It is now time to make use of advanced information technology to combine all bibliographies of MSS in one data bank of MSS around the world. There have been some efforts on
which to build, and there are many Arab librarians capable of the task, with necessary organization and support.

14. It is also time to enter all Arab and Islamic biographical material in this data bank. It should be extracted from books of biography, bibliographies, histories and Masters’ (Sheikhs’) educational programs, for biography is the twin art of bibliography.

15. I take this opportunity to warn against the practice of transliterating our catalogues and biographies into Roman letters; Arabic letters should remain the basis, aided and enhanced by Roman letters for wider access. Arabic names and titles should not be entered in our catalogues in Roman letters on the pretext of globalization; the world will have more respect for us if we preserve our original bibliographical message.

16. A necessary element in the required strategy is spreading the reading of our Heritage among all classes, from the highest grade of the educational ladder to the general mass of readers. We should make our heritage available to the general reader in well-chosen selections, with simplified editions for children.

17. One recommendation stands at the top of any list: great attention should be paid to preserving the Arabic language, for it embodies the Heritage of the Arab nation. It is enough to say that it carries the miracle of the Qur'an.

Some orientalist scholars have contributed good work in studying and editing this rich legacy, but the amount of work needed is still huge. We must realize that only the children of a nation can set it on its feet. The repository of our rich treasure is in ourselves and not on the high seas. Let us study, understand and assimilate our heritage and not just celebrate it as relics and museum pieces. We should all remember that there are heroic fighters at home who spend the best years of their lives salvaging and editing our legacy; we do not mention this in flattery but in apprehension and fear for the future of our Heritage. It would be wonderful to integrate the work of our scholars, for the responsibility is great, life is short and time flies. Honoured guests, let us do something before it is too late.

Kamal Arafat Nabhan
Director-General
Al-Furqan Foundation
Appendix One

BIOGRAPHICAL NOTES ON CONTRIBUTORS

HELENE BELLOSTA has a PhD in the history of science and knowledge, and has specialised in mathematics. She is a member of the Institut Francais d'études Arabes in Damascus.

IBRAHIM BEN MURAD is Professor of Arabic Language and Literature at the Faculty of Arts, University of Manuba in Tunis. He is a Founder Member of the 'Societe Lexicographique Arabe' in Tunis and has been its Director since 1994. He is Editor (1985-1993) of al-Majallah al-Mu'jamiyah and, since 1994, its Managing Editor. He is a member of several Arabic Language Academies and a very active participator in international academic conferences and seminars on Arabic Lexicography and on History of Science. He has published more than 10 books on his subjects of specialisation.

IBRAHIM CHABBOUH was born in Kairouan, Tunisia. He completed his MA at Cairo University in 1965 and also studied at the Sorbonne. He has worked on research into the conservation of Islamic heritage in Tunisia and elsewhere. His research and fieldwork earned him the title of 'Professor' in 1984. Among his many academic and administrative responsibilities are: Secretary-General of Al-Albawi Foundation, Amman (1995-); advisor to the Minister of Culture, Tunisia (1992-94); Head of the Restoration and Preservation project of the city of Kairouan, where he designed and established the Museum of Islamic Arts in Ruqadah; founder
of the laboratory for the Conservation and Preservation of Manuscript Parchment and Paper; Head of the Society for the Preservation of Civilisation; ALESCO adviser on matters of heritage (1979-91); Director-General of the National Library, Tunisia (1987-92); Director of the Centre for Islamic Arts and Civilisation, Tunis (1983-87); Member of Al-Furqan Islamic Heritage Foundation’s Board of Experts (1993-); Member of Bayt al-Hikmah Academy, Tunis (1985-); Member of the Académie Arabe, Damascus (1993-). He has published many works on Islamic art and cultural heritage, as well as catalogues of manuscripts. He has been given the Order of Cultural Merit (first class) and the Supreme State Recognition award, and holds the Agha Khan award for restoration.

PASCAL CROZET is the ‘Charge de Recherche’, Centre National de la Recherche Scientifique, (CNRS, Paris) in the Centre d’histoire des sciences et des philosophies arabes et médiévales in Villejuif, France. His main areas of research concern firstly, the history of geometry in the 10th and 11th centuries, and especially the works of al-Siǧzi, and secondly, the modernisation of exact sciences in Egypt in the 19th century.

AHMAD DALLAL studied mechanical engineering at the American University of Beirut and proceeded to a PhD from Columbia University, USA, with a dissertation on the Astronomical Work of Sadr al-Shari‘ah: An Islamic Response to Greek Astronomy. He has been given many awards and fellowships, including three from Yale University, where since 1994 he has been Associate Professor of Arabic and Islamic Studies.

HOSSEIN MASOUMI HAMEDANI has an MS in electrical engineering from the Sharif University of Technology, Tehran, Iran, where he is now lecturer in history and philosophy of science.

He also has a DEA in “histoire et épistémologie des sciences” from the University of Paris 7. He is an associate member of the Centre d’histoire des sciences et des philosophies arabes et médiévales (CNRS, Paris). His interests mainly lie in the history of science in Islam, especially in relation to philosophy. He has published several books and articles in Persian, on the history of science in Islam, and the history and philosophy of science in general. He is finishing a critical edition of some optical works of Ibn al-Haytham, with a French translation.

YUSUF IBISH is Vice-Chairman of Al-Furqan Foundation’s Board of Experts. He began his academic career as Instructor in Political Science at the American University of Beirut (1953-56) and obtained his PhD at Harvard University (1960) in political science and Islamic studies. He then worked as a teaching fellow in the Department of Government, Harvard University, before becoming Professor of Political Studies and Public Administration at AUB (1960-84), Henry Luce Professor of Religion and Ethics at Amherst College, USA (1982-85), Professor of Islamic Studies at the American University, Washington DC (1985-86), and senior scholar at Cambridge University (1990-91). He was Founder and Chairman of the Islamic Cultural Centre in Beirut and is a trustee of the Von Krammer Foundation, Basle, Switzerland. He is actively involved in the organisation of international conferences and art exhibitions on various aspects of Islamic civilisation and the Middle East. He has published over 30 books and more than 100 articles on various aspects of Islamic studies.

REGIS MORELON is Director of the Dominican Fathers’ Institute for Oriental Studies in Cairo and a researcher in the Centre National de la Recherche Scientifique (CNRS, Paris). He is currently working on a project to study the history of Arab astronomy in its first stages, from the 3rd to the 5th century Hijra.
DAVID PINGREE is University Professor at Brown University in Providence, Rhode Island, USA, and Chair of the Department of the History of Mathematics there. He has edited texts on astronomy, astrology, celestial omens, and astral magic in Akkadian, Arabic, Greek, Latin, and Sanskrit, and is particularly interested in the transmission of scientific knowledge within cultures and between them in order to clarify the forces that bring about change in scientific thought.

ROSHDI RASHED is Director of Research at the Centre National de la Recherche Scientifique (CNRS, Paris), Honorary Professor at Tokyo University and at the University of Mansürah in Egypt, and Director of the Centre d'Histoire des Sciences et des Philosophies Arabes et Médiévales (Paris). Since 1977 he has been awarded many national and international honours and medals. The most recent of these (20 September 1999) was 'La Medaille d'Or, Avicenne', awarded to Professor Rashed and his research team by UNESCO. Professor Rashed is a member of the Board of Experts of al-Furqan Foundation and of more than four Academies. He is the author of numerous works in the philosophy of mathematics, number theory, optics, and the history of Arab science and philosophy.

JULIO SAMSO was born in Barcelona where he has held the chair of Arab Language and Literature since 1982. He is on the advisory board of various periodicals including Al-Qantara and the Journal for the History of Arab Science. He has helped to organise exhibitions on astronomical instruments and the Andalusí scientific heritage. He is the prolific and distinguished author of several books and articles, both on the history of science and on Arabic language and literature.

MOHAMED ZAFIR AL-WAFÁṬ was born in Aleppo and obtained his MD (1967) from the University of Damascus. He specialised in surgery of the retina at Harvard where he taught from 1977 to 1983. He is the Head of Ophthalmic Surgery at the King Khalid Specialist Hospital in Riyadh and Founder (1996) of the al-Wafáṭ Centre for Ophthalmology in Damascus. He has collaborated in the editing of ten specialist MSS on ophthalmology.
APPENDIX TWO

The Conference was happy to host the following distinguished guests:

HE Professor Dr NĀŠIR AL-DĪN AL-ASAD, Director, al-Majma’ al-Malaki li-Buḥūth al-Ḥaḍarah al-Islāmiyyah, Mu’assasat Āl al-Bayt.

Professor Dr AHMAD FU’AD BĀSHĀ, Faculty of Science, Cairo University.

Professor Dr 'ABD AL-'AZĪM AL-DĪB, Faculty of Shari‘ah, University of Qatar.

HE Dr SHĀKIR AL-FAHĪM, Director, al-Majma’ al-'Ilmī, Damascus.

Professor Dr HUSAYN 'ABD AL-LAṬĪF AL-SHĀFI‘Ī, Faculty of Dār al-‘Ulūm, Cairo.