Inter-Science Meeting: Towards the *Qānūn 2030* Project

Institut de Mathématiques de Toulouse,
118 route de Narbonne,
Bâtiment 1R3, amphithéâtre Schwartz (aS) and salle Johnson (sJ)
Thursday 03 October 2024 and Friday 04 October

08 :15-10 :15 (aS)   **Opening**

Guillaume Loizelet : Inter-science challenges and the *Qānūn 2030* project

Jan P. Hogendijk : "On the unfinished character of parts of Bīrūnī's *Qānūn Masʿūdī*"

I will briefly introduce the *Qānūn Masʿūdī* (QM), its 11 "Books", the surviving Arabic manuscripts, as well as the Arabic editions, the Russian translation and the articles in Western languages that have been published to date. Then an example of the unfinished character of the work will be given, namely Bīrūnī's computation of the precession of the equinoxes, which he puts equal to the motion of the solar apogee. This is a strange story. I will distinguish between two versions of this computation in the QM with two different end results for the daily motion of the precession/solar apogee (one is 0;0,0,7,... the other is 0;0,0,8...). The two computations appear in a confusing way and are not really distinguished in the text of Books 6 and Book 9 of the QM, and one of the Arabic manuscripts (Berlin 1619) is different from all the other manuscripts that I have seen. In his list of own works written in 1035-36, Bīrūnī places the QM among the works which he did not yet complete.

A. Akhmedov, B. Abdukhalimov and F. Ibragimov : two scientific reports on "The Theorem of Sines" and on "Problems of preparing a Critical Text of the *Canon of Masʿūd* by al-Bīrūnī"

10:35-12 :35 (aS)   **Session I :**
          Sharing experience of editing and translating the *Qānūn* or other Bīrūnī's texts

This session, which will take the form of a panel discussion, will bring together colleagues who have already worked closely on Bīrūnī's texts, whether on editions, translations or commentaries. The idea is for each speaker to briefly introduce themselves for around 5 minutes, then highlight one or more significant experiences related to the editing, translation or commentary they have done (or are in the process of doing). This will be followed by a discussion (about 1 hour) between them around one or more questions. One question might be: what advice would you give to a young researcher wishing to work on a Bīrūnī's text? Another question might be: are there any specific pitfalls to be avoided, or on the contrary, are there specific features that can be exploited? But those are only two questions that could be discuss… The session will end with around 30 minutes of questions and discussions with all the conference participants.

14 :00-16 :00 (aS)   **Session II :**
                              Critical edition / Scholarly edition

This session, which will open with talks by Benno van Dalen and Matthieu Husson and continue in the form of a panel discussion, brings together colleagues who have produced editions based on manuscript witnesses.

Benno van Dalen* : "Editing the tables in al-Bīrūnī's *al-Qānūn al-Masʿūdī*"

The mathematical and astronomical tables form an important part of al-Bīrūnī's *al-Qānūn* and will need to be included in an edition of the work. In the case of a printed edition, I advocate the use of combined apparatus entries that show common causes of a range of deviations in a column or row of the tables (such as slides or miscopies), as opposed to entries for every individual deviation. On the other hand, one should seriously consider a digital publication of the tables (for example in the DISHAS database), so that users can more easily use the tables for their own purposes. With the very broad scope envisaged by the *Qānūn 2030* Project it would only be logical to provide at least basic mathematical analyses of the tables (e.g., establishing their parameters) and to investigate their relations to other sources. Here comes to mind, foremost, the dependence of al-Bīrūnī's tables on Abū l-Wafā and the influence of al-Bīrūnī's geographical table (which has previously been edited) on al-Khāzinī's Sanjarī Zīj, Ibn al-Shāṭir's *Jadīd Zīj* and several others.

Matthieu Husson : "On the notion of Scholarly edition"

Panel discussion :
The idea is for participants to take 5 minutes or so to introduce themselves briefly and then highlight one or more significant experiences in relation to the issues involved in critical/knowledgeable publishing. This will be followed by a discussion (about 1 hour) between them on the relationship between critical and scholarly editions. This is just one way of formulating the issues involved in editing a text… The session will end with around 30 minutes of questions and discussions with all the conference participants.

16:20-18:00 (aS)   **Session III :**
                              Linguistic considerations
Hamid Bohlul :

ʿAbd al-Raḥmān al-Khāzinī (fl. first half of the 12th century) authored his Book on *the Balance of Wisdom* in Arabic, the lingua franca of the time. However, biographical sources indicate that al-Khāzinī was originally from Byzantium, likely a native Greek speaker, and lived as a slave in Marv, Khurasan, where Persian was the prevailing language. Based on his extant text, it is evident that he had acquired a good command of Arabic, yet the language of this book still presents certain challenges. The text contains linguistic deviations from classical Arabic that complicate the comprehension of some passages. These deviations are evident in the specific terminology used by al-Khāzinī, the unconventional grammar found in parts of his writing, and, at times, the morphology of certain words. Moreover, the text reflects the influence of Neo-Persian, either through direct incorporation of Neo-Persian vocabulary or through Neo-Persian uses of Arabic terms. In this presentation, I will present several examples from the text and discuss how they influence the comprehension and interpretation of al-Khāzinī's work.

François de Blois* : The manuscript tradition of al-Bīrūnī's *Chronology*.

My paper gives an overview of the old complete and incomplete manuscripts of the *Chronology* and discusses their grouping and their relative value for the creation of a true critical edition.

Adam Benkato* : "The Chorasmian Lore transmitted by al-Bīrūnī".

In this presentation I will give an overview of the Chorasmian material that al-Bīrūnī records in his works, primarily the *Chronology*, as well as his remarks about the status of the langage in additional works such as the *Pharmacology*. As a native speaker of Chorasmian, al-Bīrūnī's works represent a unique perspective on the social context of the language. I will also situate al-Bīrūnī's information in context with the other extant Chorasmian language sources, both pre-Islamic and as transmitted in Islamic-era Arabic texts such as the *Qunyat al-Munya* and *Muqaddimat al-Adab*.

09 :15-11 :15 (aS)   Session IV :
                                                    Digital Humanities

This session, which will open with two talks by Farah Benamara and Jade Norindr and will continue in the form of a panel discussion, brings together participants with expertise or experience in digital humanities in relation to the processing of handwritten or edited Arabic texts.

Jade Norindr : Computer Vision Pipelines for Diagram Editions

This presentation explores the potential applications of computer vision in creating digital editions of astronomical diagrams. Following a brief introduction to the deep learning algorithms employed in the EIDA project for processing visual elements in historical sources – ranging from extraction to vectorization – I will discuss the prospects of AI-assisted editing for historical diagrams.

Farah Benamara* : NLP for Historical Documents

This talk presents an introduction to NLP and NLP for historical documents. I will review recent literature in the field with a focus on linguistic analysis (e.g., language identification, text repetition), language modeling, machine translation and information extraction (named entities, relation extraction, question answering). I will also question the use of recent large language models (e.g., GPT4, LLaMA) to analyse historical documents.

Panel discussion

The idea is for each of the participants to take around 5 minutes to briefly introduce themselves and highlight one or more significant experiences in the use of digital humanities and their potential. This presentation will be followed by a discussion (around 40 minutes) between them on questions that seem relevant. For example, what choices should be made upstream so as not to miss out on certain opportunities, what objectives are reasonable to aim for over the next 5 years, … The session will end with around twenty minutes of questions and discussions with all the conference participants.

11 :35-12 :55 (aS)   Session V :
                                   Multilinguism

The aim of this session, which will take the form of a panel discussion, is to discuss the various aspects of multilinguism in relation to the project to edit and translate al-Bīrūnī's *Qānūn*.

Multilinguism has been placed at the heart of the open science system promoted by the European Union, mainly because it enables science to be disseminated beyond the scientific community.

However, two other aspects of multilinguism may be worth discussing. The first, which is one of the pillars of the future *Qānūn 2030* project, concerns the consequences of producing (more or less) simultaneous translations (once the critical edition has been completed) in numerous languages. The second concerns the influence of al-Bīrūnī's multilingual skills on his own work. These two mirror aspects may provide an angle for discussion.

As far as the conduct of the session is concerned, each speaker will have a maximum of 10 minutes to introduce himself or herself briefly and, above all, to share his or her point of view. The questions I have raised above are of course just a few of many (for instance, there is also the question of access to secondary sources produced in different languages), and the speakers are entirely free to choose another angle.

There will then be about 30 minutes for discussion, first among the panel and then with the rest of the participants.

14 :00-16 :00 (sJ)   Session VI :
                          Bīrūnī's sources, context, posterity

This session, which will begin with a talk by Amir Mohammad Gamini and continue in the form of a panel discussion, will address a number of questions relating to the sources, the context of writing and the posterity of al-Bīrūnī's works, and in particular the *Qānūn*.

Amir Mohammad Gamini : "the origin of equant point in Bīrūnī's al-*Qānūn al-Masʿūdī* "

Ptolemy discusses only one type of eccentricity in his models of the superior planets, even though each planet actually has two: one for the center of uniform motion and another for the center of constant distance. To address the first eccentricity, he introduces the equant point but does not explain the eccentricity of the deferent's center.

Why is there a difference between these two eccentricities? Aburayhan Bīrūnī, in his work *al-Qānūn al-Masʿūdī*, suggests that the synchronization of the superior planets' motion with the Sun causes this difference. Meanwhile, the 13th-century astronomer Quṭb al-Dīn al-Shīrāzī proposes that "retrograde arcs" are the empirical basis for the second eccentricity and offers an argument to support this idea. I will compare these two suggestions in details.

Panel discussion

Each member of the panel will have up to 10 minutes to briefly introduce himself or herself and, above all, to briefly address one (or more, but time is short) of the aspects related to the theme of the session. There will then be at least 30 minutes for discussion, first among themselves and then with the rest of the participants.

16 :20-17:00 (sJ)   **General discussion**

17:00-17h15   **Closing**