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Sanctioning Knowledge*

Sancionar el conocimiento

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In this paper, I discuss stories about rulers and princes of three dynasties - Abbasid, Norman and Timurid – and their narrative representation as prime knowers of the mathematical sciences, geography and history. I argue that they constitute one set of positive forms of sanctioning or contesting knowledge in those societies by prescribing hierarchies of knowledge forms and hierarchies of people and institutions that decide about the veracity of knowledge. I suggest that these stories share their origin and meaning in an environment of legitimizing propaganda for the various rulers and princes. I also claim that the value and position of scientific knowledge in these stories differ, starting from what apparently were personal interests of a ruler and leading to its integration into what was considered necessary for the education of a prince and the cultured behaviour of a ruler. Hence, these stories about knowledge and rulers present images of knowledge that delineate the status of scholars in those three societies and thus define possibilities and set boundaries for learning and practicing scholarly fields.

Key words: History of science; Narratives about knowledge and rulers; Abbasids; Normans; Timurids; social norms.

En este artículo se estudian historias sobre gobernantes y príncipes de tres dinastías - ʿabbāsí, normanda y timurí – y su representación narrativa como conocedores de las ciencias matemáticas, la geografía y la historia. Se argumenta que constituyen un conjunto de formas positivas de aprobar o impugnar el conocimiento en esas sociedades, prescribiendo jerarquías de formas de conocimiento y jerarquías de gentes e instituciones que deciden acerca de la veracidad del conocimiento. Se sugiere que esas historias comparten su origen y significado en un contexto de propaganda legitimadora para varios gobernantes y príncipes. También se afirma que el valor y la posición del conocimiento científico en esas historias difieren, empezando por lo que en apariencia eran los intereses personales de un gobernante hasta su integración en lo que se consideraba necesario para la educación de un príncipe y la conducta cultivada de un gobernante. Por tanto, esas historias sobre conocimiento y gobernantes presentan imágenes del conocimiento que delinean el status de los sabios en esas tres sociedades, definiendo posibilidades y estableciendo límites para el aprendizaje y los campos de estudio que se podían practicar.

Palabras clave: Historia de la ciencia; sobre conocimiento y gobernantes; ʿabbāsíes; normandos; timuríes; normas sociales.

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In this paper I wish to look at a few examples of forms of controlling knowledge that do not consist first and foremost of acts of censorship or material destruction. Rather, they proceed through the evaluation of results, public performances, and the establishment of norms and boundaries. I suggest considering not merely the contentious and the adversarial, but also the innocuous and the seemingly 'normal' or 'natural' as results of controlling knowledge.

The simple thesis I am pursuing is well-known from sociology, psychology and today's academic institution of peer-upheld norms and boundaries for scholars, and the knowledge they produce and distribute. Positive forms of sanctioning establish these norms and boundaries with long-term efficacy.[1] Such positive forms of sanctioning knowledge are primarily rules that prescribe how scholars may speak, write, argue, verify, and in short exercise their profession, and the practices for learning the behavior that conforms to these rules. Positive forms of sanctioning include rules for how to dress or interact with other members of society. Stories are a further positive form of sanctioning knowledge, because they link knowledge to other appreciated or condemned sociocultural practices, thus attributing values to different forms of knowledge. Other forms encompass practices of valorizing and ranking knowledge and its particular group/s of practitioners, such as honors, prizes, monuments, laudatory speech acts or titles. Due to various limitations of time, page number, and the process of reviewing, I cannot offer a survey on the broad range of positive forms of sanctioning knowledge documented in different written, instrumental, visual and other material sources.[2] Hence, I have decided to focus on discussing stories about how scholars and princes in different historical circumstances thought about the issue of authority in relationship to knowledge. I found this information in stories told in texts about astronomy/astrology and geography from the ninth, twelfth and fifteenth centuries composed in Abbasid Baghdad, Norman Palermo and Timurid Shiraz or Isfahan.

[1] <http://plato.stanford.edu/entries/social-norms/>.

[2] Examples are structural prescriptions for scholarly texts, among them titles, introduction, chapters, subchapters, conclusions or epilogues, deductive or narrative styles of writing, modes of verification and proof, modes of explanation such as examples, recipes or descriptions, the permissible roles of illustrations, para-scientific elements such as dedications and matters of functionality like the relationship between page, text and image.

I accepted the invitation to contribute reflections on how knowledge was controlled or sanctioned in specific medieval societies within the domain of the mathematical sciences, because this is an important topic for understanding how those societies perceived such scientific knowledge, and what status and functions they accorded to it and its representatives. Historians and historians of science rarely address such questions when Islamicate societies are concerned; in fact, historians of Islamicate societies often avoid the study of scientific sources altogether. If they have to take a stance, they prefer to rely on secondary literature, which they cannot evaluate with regard to its reliability or the nature of its claims.[3] Historians of science in Islamicate societies usually focus on the technical content of the texts or instruments they study, and treat historical sources as if they were containers of facts.[4] Thus, the stories I discuss in this article are either unknown to the one or the other, or have been dealt with incompletely. Elements other than technical data like numbers, types and places of observations, or historians and titles are rarely, if at all, taken into consideration by authors of science. Historians often ignore such technical details or modernize them to fit today's knowledge and values. Depending on their methodological commitments, they tend either to take non-technical features at face value, or to consider them as rhetorical devices, propagandistic elements or forms of self-aggrandizement.[5] A dialogue between the

[3] See for instance El-Hibri, *Reinterpreting Islamic Historiography*, pp. 95-96.

[4] Examples are the discussions of stories on the astronomical expeditions under caliph al-Ma'mūn by Mercier, "Geodesy," in particular pp. 176-81; King, "Too Many Cooks ... A New Account of the Earliest Muslim Geodetic Measurements," in particular pp. 229-231.

[5] See for instance Ahmad's and Houben's modernizing and 'factual' readings of parts of al-Sharīf al-Idrīsī's preface to the *Nuzhat al-mushtāq* in Sayyid Maqbul Ahmad, "Cartography of al-Sharīf al-Idrīsī," in particular p. 156; Houben, *Roger II of Sicily: A Ruler between East and West*, p. 104 against El-Hibri's primary emphasis on the caliph's propagandistic self-representation in the stories about al-Ma'mūn and the rhetorical strategies of later historians for criticizing this propaganda in a veiled manner, and his often speculative evaluations of these stories and their elements: El-Hibri, *Reinterpreting Islamic Historiography*, pp. 101-142. El-Hibri explicitly stated his break with previous historiographical approaches. He did not wish to construct a factual history nor "social, political or religious interpretations on the basis of the chronicle's information." He rather wished to apply methods of literary criticism and searched for "the originally intended meaning in the narratives", which he believed was not a presentation of facts, but the interpretation of political, social, religious or cultural issues through the technique of providing commentary (El-Hibri, *Reinterpreting Islamic Historiography*, p. 13). My own position, rather, sits between these two opposites. I consider it more plausible to assume that chroniclers from any given time period and location strove for several goals situated within their cul-

technical content and context of such stories and non-technical elements is, to the best of my knowledge, never established. One important reason for this imbalanced treatment of stories in scientific texts or texts about scientific themes is insecurity with regard to methods of analysis. This is an issue I cannot address in this paper in a satisfying manner. It will have to remain a task for further research. I will nonetheless highlight some of the questions that should be pursued in such future research, to indicate my awareness of the problems involved in my own proposed interpretations.

1. Al-Maʾmūn's authority to decide on matters of astronomy

In Arabic geographical and astronomical literature there are numerous versions, some brief, others detailed, about astronomical expeditions ordered by the Abbasid caliph al-Ma'mūn (r. 198/813-218/833) in order to determine various astronomical parameters, among them the *qibla* of Baghdad and the length of 1º of terrestrial latitude. The latter is reported to have served for determining either the length of the Greek *stade* or the size of the earth's circumference, which are two different aspects of the same problem. Many technical features of these stories contradict each other or are open to doubt, as Raymond Mercier and David A. King have pointed out in their analyses.[6] Because several of the texts are also corrupt and cannot be restored in a convincing manner, we do not know and perhaps cannot know what happened in the early ninth century. In order to prepare the ground for interpreting the stories that I have chosen on the basis of Mercier's and King's works, the first task is to establish the main points of agreement and disagreement between the reports. This will help in recognizing the main threads of each story and to sort them into groups. Subsequently, I will describe and discuss those elements of the stories that concern activities describing or setting norms and establishing relationships between the stories' actors.

tural and intellectual contexts. These contexts would have included the narration of certain factual items, reporting on narratives delivered by earlier and/or contemporary writers or speakers, as well as statements by the compiler or narrator of the given chronicle, whether of an evaluative or other such nature. The qualitative and quantitative distribution of these features and their specific forms varies between different cultures and their social groups.

[6] Mercier, "Geodesy," pp. 176-181; King, "Too Many Cooks," pp. 229-231.

1.1. Relations between the extant Arabic reports on al-Ma'mūn's interest in astronomy

The three accounts about al-Ma'mūn's interest in astronomy that I will discuss here are extant in five textual settings and differ, not surprisingly, in important details. Sanad b. ʿAlī (3rd/9th c.) and Khālid b. ʿAbd al-Malik al-Marwarrudhī (*fl.* 217/832), who apparently participated in one or two of the expeditions, produced accounts as eyewitnesses; one apparently in written form (Sanad), the other submitted orally (al-Marwarrudhī). Ḥabash al-Ḥāsib (d. after 253/867) and Yaḥyā b. Aktham (d. 242/857) claim to have written down what they heard from al-Marwarrudhī.

Sanad b. ʿAlī's account has been preserved by Ibn Yūnus (*fl. ca.* 380/990). An extract of Ḥabash's account has been transmitted by Ibn Yūnus as well as Abū l-Rayḥān al-Bīrūnī (362/873-440/1048). In addition, the first two parts of Ḥabash's account are found in a seventeenth-century collection of astronomical texts given by a Muslim scholar from Sanaʿa to a Rabbi before the latter left for Jerusalem.[7] Most or all of Yaḥyā b. Aktham's report seems to be preserved in a ninth/fifteenth-century copy of a seventh/thirteenth-century Egyptian treatise by the unknown writer Sirāj al-Dīn wa'l-Dunyā.[8]

In his analysis of the different versions of these accounts, King emphasizes that the records by Ḥabash al-Ḥāsib, Yaḥyā b. Aktham and Sanad b. ʿAlī are often at variance. Several of the numerical results, the places of the expeditions, the number of the teams and their composition do not agree.[9] Sanad's account agrees with Ḥabash's report in some of the numerical results and the number of the teams. In other respects, namely the location where one of the two groups operated, these two reports differ.[10] Sanad's presentation agrees here with that by Yaḥyā b. Aktham. On the other hand, Sanad's report deviates from both ac-

[7] Langerman, "The Book of Bodies and Distances of Ḥabash al-Ḥāsib."

[8] King, "Too Many Cooks," p. 222.

[9] These differences are: the desert of Sinjar versus the desert between Tadmur and perhaps al-Raqqa; two teams (Ḥabash al-Ḥāsib) or only one team (Yaḥyā b. Aktham); Yaḥyā b. Aktham's report adds Yaḥyā b. Abī Manṣūr as a team member. King, "Too Many Cooks," p. 217.

[10] This location is described as having been in the desert between Tadmur and perhaps al-Raqqa.

counts with regard to who participated in the expeditions and who took the decision to form the two different groups.[11]

These differences are most likely the outcome of copying, the scholarly aptitude of the various copyists, and the different levels of scientific competence of the original authors. Khālid b. ʿAbd al-Malik al-Marwarrudhī, Ḥabash al-Ḥāsib and Sanad b. ʿAlī were professional astrologers patronized by the caliph, while Yaḥyā b. Aktham was a judge, and for some time al-Ma'mūn's chief judge.

King considers the reported values, despite their differences, as 'too good' to be true and doubts that an expedition would have carried all the heavy material either to the desert of Sinjar, 200 km north of Baghdad, or to the Syrian desert, some 500 km away, when the same measurements could have been carried out in the capital itself. He sees, however, in the survival of Sanad b. ʿAlī's report a confirmation that some expedition did indeed take place under al-Ma'mūn.[12]

Mercier, by contrast, suggests that the expedition to the desert north of Palmyra did not take place in the time of al-Ma'mūn and may not have taken place at all, since the location is not suited for such undertakings. But at the same time he believes that its report recalls a set of pre-Islamicate measurements executed near Tadmur.[13]

It is, however, undoubted that al-Ma'mūn was in al-Raqqa in 218/833 during a campaign against the Byzantine Empire, since he died there.[14] Hence, some astronomical activities could have taken place in the desert between al-Raqqa and Tadmur during that campaign.

Taking these deviations into consideration, we can make out three different story lines in the extant reports on the astronomical expeditions, based on their technical and institutional content. These differences cannot be resolved and are not the subject matter of my discussion. They suggest nonetheless that the basic story about one or more astronomical expeditions ordered by al-Ma'mūn for solving specific problems should not be considered as completely lacking in reli-

[11] It adds Sanad and does not mention Yaḥyā b. Abī Manṣūr (d. 215/830). It claims that al-Ma'mūn took the decision about the composition of the team. King, "Too Many Cooks," p. 210.

[12] King, "Too Many Cooks," pp. 229-230.

[13] Mercier, "Geodesy," pp. 180-181.

[14] Cooperson, *Classical Arabic Biography: The Heirs of the Prophets in the Age of al-Ma'mūn*, pp. 32-33.

ability or, phrased differently, that this type of story was produced for the sole purpose of providing another element in the caliph's extensive and long-term engagement with narrating himself.[15] A better understanding of the relationship between these different levels of storytelling with regard to al-Ma'mūn's astronomical projects will only be achieved once we have brought together all the early forms of stories about al-Ma'mūn's interest in the mathematical sciences and natural philosophy, with all extant scientific texts from the period of his reign, and examined the ways in which they dialogue with one another.

1.2. Norm-setting features of the reports

For the purpose of studying attitudes towards the mathematical sciences and the relationship between rulers, scholars and judges, the issue of whether the expeditions in fact took place, in the described form/s or at all, does not truly matter. The important issues for the present purpose of studying positive forms of sanctioning knowledge are rather the following two: (1) the reports were written by or ascribed to different well-known actors of the early third/ninth century who represent the inter-human relationships in different forms; what is the meaning of these differences? (2) These reports were transmitted by leading representatives of the mathematical sciences, as well as later authors probably from the milieu of the religious scholars; both groups of transmitters present the stories' protagonists as competent and trustworthy narrators of the main (technical, institutional and relational) points; can we recognize traces of change in the reports that might explain the differences between their content and modes of narrating?

As a first result, we can see that the general role of caliph al-Ma'mūn as an active participant in the determination of worthwhile tasks for astronomical research, and his leading role in the evaluation of the final results, were already accepted as socio-culturally sound one century after the events. Three centuries later, the transmitter of a version of Yaḥyā b. Aktham's account found it unproblematic to present a story about a judge who was versed in astronomy to some degree, knew

[15] For these efforts and their content see El-Hibri, *Reinterpreting Islamic Historiography*, pp. 101-108.

the people who were experts in this field, could answer the ruler's questions and acted as a liaison between the two sides. The transmission of the stories by Ibn Yūnus and al-Bīrūnī reflects the role courts and dynasties played in the daily practice of the mathematical sciences during the fourth/tenth and the fifth/eleventh centuries, while the transmission of Yaḥyā b. Aktham's report by an anonymous copyist of Sirāj al-Dīn wa'l-Dunyā's text bespeaks the changed socio-cultural context of these sciences, which were now taught by *madrasa* scholars.

Secondly, we discover substantial differences between the parts of the reports preserved by the later transmitters. Ibn Yūnus was barely interested in the socio-cultural aspects of the astronomical activities.[16] All he takes over from the reports he claims to have read is "that al-Ma'mūn ordered that one degree of a great circle on the surface of the earth should be measured."[17] Al-Bīrūnī also summarized his sources, including Ḥabash al-Ḥāsib's report. Like Ibn Yūnus he was primarily interested in the technical aspects of the expeditions and their conflicting reports about the final numerical results, though he paid more attention to the socio-cultural components of the reports. He stressed much more than Ḥabash al-Ḥāsib the religious meaning of the determination of the *qibla*, and preserved the latter's comments on why al-Ma'mūn became interested in the length of a *stade* and which projects he commissioned.[18]

Thirdly, the differences between the two summaries of Ḥabash al-Ḥāsib's text as reported by Ibn Yūnus and al-Bīrūnī and the form found in the third version transmitted by two seventeenth-century Yemenite scholars are substantial. This seems to imply that the differences between the technical details of these versions of Ḥabash al-Ḥāsib's text and the report attributed to Yaḥyā b. Aktham are perhaps the result of a modification inserted in the original of Yaḥyā's text by the seventh/thirteenth-century transmitter.

It is not at all surprising to find that the clear differences between the textual environments of the reports are accompanied by differences with regard to their technical content, as well as their descriptions of the social behavior of the reporters and their patron. Context and content of a text condition each other, even if not always in the same sub-

[16] King, "Too Many Cooks," pp. 210-211.
[17] King, "Too Many Cooks," p. 211.
[18] King, "Too Many Cooks," pp. 214-215.

stantial manner as in the case of the reports on al-Ma'mūn's astronomical interests. Ḥabash al-Ḥāsib described two projects in the treatise he authored himself. The task of the first project was to determine the length of 1º of a great circle of the earth. When discussing it, the author speaks of the project's purpose and result, the way in which he acquired the information, and the function of the transmitters of the result. The task of the second project was to measure the azimuth of the *qibla* of Baghdad. Here, the story talks of how the caliph distrusted the scholar's result, asked for a second opinion by a surveyor, and then chose between the two deviating results and evaluated their difference.[19]

The copy of Sirāj al-Dīn wa'l-Dunyā's treatise presents Yaḥyā b. Aktham's story as part of a chapter, which deals with "some aspects of geometry (*al-handasa*) relating to the size (*dawr*) of the earth."[20] He introduces it, in opposition to the following report itself, as an explanation of the reason that led al-Ma'mūn to commission observations.[21] Yaḥyā, as cited in the copy, does not talk at all about what motivated the caliph's questions, but merely states them. He adds a third project to the two also described by Ḥabash. In this project the caliph inquired about the maximum distance between the earth and the moon.[22]

Both reports portray al-Ma'mūn as an intelligent man, interested in knowledge, eager to check its veracity and willing to go to significant lengths to obtain answers to questions of personal as well as religious relevance. This portrait is not very different from the one that Ibn Abī Ṭāhir Ṭayfūr (d. 280/893), al-Ma'mūn's first biographer, drew of the caliph through reports and anecdotes told by his courtiers: "If the reports are any guide, the caliph's associates thought of him as a quick-witted, fair-minded and enterprising leader, temperamental but quick to forgive."[23]

The differences in detail between the two reports are substantial. This also applies to their description of the human relationships. According to Ḥabash's report, provided below, the caliph knew how to find answers to his questions. He read the right books, discovered the proper questions, inquired about their solution with the right kind of people, criticized them for the unreliability of their knowledge, and in the end simply

[19] King, "Too Many Cooks," pp. 217-220.
[20] King, "Too Many Cooks," p. 223.
[21] King, "Too Many Cooks," p. 234.
[22] King, "Too Many Cooks," pp. 223-224.
[23] Cooperson, *Classical Arabic Biography*, p. 48.

sent his court experts – astrologers and craftsmen – to do the work and find the correct answer. In the case of the first project, he ordered Yaḥyā b. Aktham to produce a written testimony of al-Marwarrudhī's oral report to the judge. In the second project, Ḥabash does not mention the judge as a mediator. He describes the caliph as receiving direct, oral information from the scholar/s and the surveyor/s who had measured and calculated the different values. Furthermore, Ḥabash portrays the caliph as capable of evaluating the results and explaining their differences.[24]

> (...) (Ḥabash) said that the Commander of the Faithful, al-Ma'mūn, wanted to know the size of the earth, so he made some investigations about this and found that Ptolemy had stated in one of his books that the circumference of the earth was so many thousand *stades*. Thereupon he asked the interpreters about the meaning of *stades* and they gave different interpretations. [He said about their interpretations:] "They do not dispense with (?) what we wanted to know." {The text is corrupt here.}
>
> (Al-Ma'mūn) therefore sent out Khālid ibn ʿAbd al-Malik al-Marwarrudhī, ʿAlī ibn ʿĪsā al-Asṭurlābī and Aḥmad ibn al-Buḥturī the surveyor together with a group of surveyors and craftsmen including carpenters and brass-workers, to make correctly the instruments which they would need, transporting all of them to a place which they selected in the desert of Sinjār. (...)
>
> I heard this (information) in this book {*sc.* in this book of mine?} from Khālid ibn ʿAbd al-Malik al-Marwarrudhī as he was conveying it to the Qāḍī Yaḥyā ibn Aktham. Yaḥyā [had been] ordered [by al-Ma'mūn] {the text appears to be corrupt here} to write down for him {sc. for al-Ma'mūn} all that Khālid told him, so he wrote (it) for him. I have written what I heard from Khālid himself.
>
> The Commander of the Faithful al-Ma'mūn – may God be pleased with him – (also) wanted to measure the azimuth of the *qibla*. So he sent out (someone) at the time of the lunar eclipse to measure the longitude between Mecca and Baghdad. (That person) found that the meridian of Mecca was west of that of Baghdad by approximately three degrees.
>
> (...)
>
> When Khālid ibn ʿAbd al-Malik al-Marwarrudhī submitted (this) value of one degree of the earth('s circumference) to al-Ma'mūn, (the caliph) wanted to check it and so he [sent out] {reading *wajjaha* for *wajada*} someone {singular! – compare the account of Yaḥyā ibn Aktham} to measure the road between Baghdad and Mecca by the shortest road (...)
>
> (...) Al-Ma'mūn said that this was not to be regarded as excessive because there must be (in addition to) the flat parts, inclines up and down on (the road) amounting to this (difference).[25]

[24] My focus in the following quote is the description of the caliph and his inter-human relationships. Hence, I have omitted almost all technical details.

[25] King, "Too Many Cooks," pp. 218-220.

Yaḥyā's report as transmitted in the seventh/thirteenth century presents a significantly different picture. Yaḥyā speaks of the caliph as curious, but in need of help since he lacked knowledge. He presents himself as a trustworthy person in possession of a part of the information the caliph had asked for, as a participant in all the relevant meetings between the caliph and the astrologers, and as having been entrusted with writing down the oral report of the head of the research group. Only this last point is confirmed by Ḥabash. According to Yaḥyā, the caliph knew, however, enough to ask pertinent questions about procedures and results. He did not trust the results that his astrologers had arrived at through observing a lunar eclipse in the two cities, measuring times and latitudes, and calculating differences, sums, products and a square root, but rather preferred to have them checked by measuring the shortest road between the capital and Mecca.

> (...) ({Yaḥyā b. Aktham} reported:) The Commander of the Faithful al-Ma'mūn became very excited about knowing the size of the earth. So he asked me and I told him that the astronomers familiar with geometry (*al-muhandisūn min aṣḥāb al-najāma*) had knowledge of these matters. So he summoned Khālid ibn ʿAbd al-Malik al-Marwarrudhī, Yaḥyā b. Abī Manṣūr, ʿAlī ibn ʿĪsā and Aḥmad ibn al-Buḥturī, and they chose a group of brass-workers and carpenters (to assist them in making instruments). Al-Ma'mūn questioned them on the way to proceed and they answered him in unison that it was easy. (...)
> Then al-Ma'mūn told them that he would like to know the azimuth of the *qibla* and the distance between Baghdad and Mecca, and they replied that (they could do) this at the time of a lunar eclipse. (...)
> Al-Ma'mūn wanted to check the calculations made by Yaḥyā {*sc.* Yaḥyā ibn Abī Manṣūr} and his colleagues, so he sent out someone to measure the road to Mecca, and they {plural! – compare the account of Ḥabash} found that (the number) of miles between Baghdad and Mecca by the shortest and straightest route was 700 and 10 miles, which was about 6 miles more than the calculation. Al-Ma'mūn pronounced that the calculation was more accurate and that the difference was due to the depression (*istifāl*) of the *wādī*s and the elevation (*irtifāʿ*) of (hills) on the surface of the earth. When he had become convinced of this, he became excited to know the maximum distance of the moon from the surface of the earth, so he asked them about this and they answered (...).[26]

The reason for the caliph's distrust, confirmed by both reporters (and their transmitters), is not explained by either of them. Ḥabash simply states that al-Ma'mūn wished to verify the quantity (*miqdār*) that

[26] King, "Too Many Cooks," pp. 223-225.

al-Marwarrudhī had submitted to him as the result of the measurements and calculations. Yaḥyā's statement that the caliph wished to check what Yaḥyā (b. Abī Manṣūr) and his colleagues had calculated may point, however, to the cause of the caliph's distrust or perhaps insecurity. The methods applied by the astrologers were not at all as simple as they had claimed when asked by al-Ma'mūn about their procedure, at least not for someone untrained in all the technicalities. Hence the caliph may have preferred to test the result achieved by observation and calculation against a simple measuring method, although how the craftsmen executed the measurement is not specified. Such an interpretation of Yaḥyā b. Aktham's description seems to be supported by the beginning of the sentence he uses to introduce the third topic that the caliph wanted information about from his experts, namely "after he had been reassured" (or, as King translates: after he had become convinced of this) (*fa-lammā sakanat nafsuhu*).

These reports and their variants reflect and reinforce three norms or beliefs: 1) knowledge is related to social hierarchies; 2) knowledge needs scholarly and technical experts; 3) knowledge needs to be verified; substantially different methods, sources and experts can be used in this process. The two main differences in the descriptions of the specific skills of the caliph, and his roles in the verification of transmitted knowledge and the production of new knowledge, indicate two interpretations of the first norm. According to the versions of Ḥabash's narration, the caliph is supposed to acquire the needed knowledge through his own activities and high intellect. He represents the highest human representative of knowledge and acts as an arbiter or final evaluator. The story put into the mouth of Yaḥyā expresses a less exalted view of the relationship between the caliph and expert knowledge. Here, the worldly ruler is allowed to be a human who needs advice and support, but who learns in the process the necessary elements to successfully play the role of undisputed evaluator in the end.

1.3. Issues of interpretation

The differences regarding the display of the caliph's role in the reported astronomical activities raise three questions of interpretation and one fundamental question of methodology. The questions of inter-

pretation are the following: (1) what was the function of these reports? (2) What is the meaning of the fact that the "scientists" appear to concede the dominant role as well as expertise to the caliph, while the jurist describes his prince as in need of help, guidance and information? (3) What do these different features tell us about the stories' potential to sanction the production, distribution and evaluation of the specific kind of knowledge discussed in the reports? The methodological question is whether it is acceptable to focus on this limited sample of stories to achieve some reliability of interpretation, or whether it is necessary to contextualize the three stories and the forms in which they were transmitted by later writers. In light of the second half of this question, it is important to ponder what necessary and/or sufficient contexts in quantity and quality might be, how we might be able to rank them, and what kind of methods has to be applied to establish relationships between the possible meanings of such contexts for the originally chosen objects of analysis. This easily leads to an infinite regress, since we would have to ask the same kind of methodological question on each contextual level. Hence it is clear that there is no ideal solution to the difficult problem of how many objects of study and comparison we need to access in order to carry out a solid and fair analysis of the three stories about the astronomical expeditions under al-Ma'mūn and their subsequent transmission. This practical impossibility of reaching a satisfying degree of soundness in research and reliability in results does not mean, of course, that no effort to contextualize should be made. In the case of the three reports discussed so far, a thorough analysis of the possible ramifications of their modes of storytelling should take into account four lines of investigating context. The first line consists of a comparative analysis of the modes of storytelling within these texts, which is what I am offering in my paper. The second line would consist of comparing these stories and their various elements with extant scientific texts composed by the participants in the described activities. Such an approach to local contextualization would perhaps improve possibilities for evaluating the technical features of the stories. Since, within the framework of this paper, I am not interested in verifying the stories' technicalities, I have not studied such extant witnesses to the astronomical research undertaken at al-Ma'mūn's court. The third line of contextualization would extend the study of the local conditions horizontally. It should collect references to these reports in scientific

texts, historical chronicles, literature and perhaps religious texts from the third/ninth, fourth/tenth and seventh/thirteenth centuries, as the moments in time when these reports were transmitted by Ibn Yūnus, al-Bīrūnī and Sirāj al-Dīn wa'l-Dunyā. The task is to determine the additional information that these references provide on the representation of the reports' meaning and the modes of narration chosen by the transmitters. The fourth line of contextualization would extend the study of the local conditions vertically. It would collect and analyze other stories told by the reporters on caliph al-Ma'mūn's scholarly skills and knowledge, with some focus, perhaps, on the mathematical sciences. I have tried to find some examples belonging to this fourth line, but was not particularly successful within the time left for revising my paper. The few statements by Yaḥyā b. Aktham that El-Hibri presents as examples of both recognition of the caliph's scholarly stature, and of including the caliph's scholarly interests within his propagandistic self-representation, discuss al-Ma'mūn's knowledge of *fiqh* or the future.[27] As such they do not lend themselves to establishing a clear, direct relationship to the stories of interest to me in this paper. The contextualization of stories about technicalities of the mathematical sciences in such chains of narrative would require greater methodological and analytical skills than those that I currently dispose of.

As for the three questions concerning the function of these three reports on the astronomical expeditions in the time of al-Ma'mūn, their standard interpretation refers to the reports' factual nature, i.e. their position as the last element in the execution of specific scientific projects. In this factual function, the reports are taken to be indicative of a large and long-term research program in the mathematical sciences that was commanded, financed and evaluated by the caliph. Since reporting on research results and organizing our research as longer-term projects are features of our own scholarly practices, this function was seen for a long time as unproblematic. Al-Ma'mūn was accepted as being akin to the director of a research institution. The first doubts as to this function of the reports and their interpretation are those formulated by Mercier and King, summarized above. Their reasons for doubting are geographical and scientific in nature, i.e. they imply that the reports are, after all, not serious scientific reports, since their data is unrealistic in quality

[27] El-Hibri, *Reinterpreting Islamic Historiography*, pp. 110-112 *et al*.

and content. They do not go beyond this step of expressing doubts. They do not ask whether the idealized nature of the technical data could have had a further function in addition to being technical data. Different answers to such a type of question can be imagined, and thus will have to be explored in the future.

The idealized nature of the data corresponds to the seemingly idealized nature of the caliph's technical and epistemological skills in the reports of the astrologers. This idealization, then, could speak to the narrative function of the reports, which could have been to propagate this image of the caliph's exceptional intellectual abilities. El-Hibri suggests that the caliph and his advisors did indeed include praise of the caliph's knowledge across a broad range of disciplines in their efforts to legitimize al-Ma'mūn's appropriation of the caliphate and his right to continue appropriating control and power over territories, people and holders of such knowledge.[28]

We should not forget, however, that the astrologers' glorification of the caliph as superior to them in expertise and discernment may reflect nothing more than standard social forms exercised in a hierarchical relationship such as that between patron and client, ruler and subject. Before we can read the astrologers' language as more than such a standard mode of rhetoric, and indeed as an intentional element of caliphal propaganda, we need a systematic, comparative study of other depictions of al-Ma'mūn's role as the leading scientific expert of the day. While such a methodological demand goes substantially beyond the scope of this paper, at least some comments can be offered thanks to El-Hibri's discussion of the caliphal propaganda efforts and their treatment by later chroniclers. El-Hibri emphasizes that the description of al-Ma'mūn's religiosity, for instance, "is grounded in his learnedness in the areas of *fiqh*, ḥadīth and the art of reasoning. (...) Al-Ma'mūn's campaign of self-idealization no doubt provided the initial impetus for this overly favorable representation, but in the end it leaves us wondering how the *'ulamā'* reacted to this official trend of flattery. In theory, the *'ulamā'* were probably willing to accept the pietistic pretensions of al-Ma'mūn, so long as these merely connoted erudition or a scholarly interest in the religious sciences."[29] This interpretation seems to suggest

[28] El-Hibri, *Reinterpreting Islamic Historiography*, pp. 101-108.
[29] El-Hibri, *Reinterpreting Islamic Historiography*, pp. 109-110.

that specific items of scholarly knowledge were seen as individual features of this particular caliph and as carrying no strong significance for how later chroniclers evaluated the caliph's idealizing self-representation. Since the reports on the astronomical projects are replete with such specific, minute details of scholarly knowledge, and since the particular scholarly knowledge discussed in two of the three projects (circumference of the earth; distance between the earth and the moon) has no direct bearing on the caliph's claims to religious leadership, it is more plausible to suspect that the narrative mode used by the astrologers was not strongly relevant to al-Ma'mūn's legitimization campaigns.

What then does the much less glorifying and more personalizing language that we find in the report attributed to Yaḥyā b. Aktham signify? Can it indeed be the mode of expression of the original report based on al-Marwarrudhī's oral account of the first expedition? Or do we have to consider such personalized language as very improper for a caliphal client and judge, and hence need to assume interference on the part of the transmitter/s? If the latter were the case, what might have been the aims of the transmitter/s' change to a supposedly different mode of expression than that of the original text? Would they have had an interest in divesting the caliph of extraordinary intellectual capabilities and hence of his function as a learned role model? These questions again go far beyond the scope of this paper. They are, however, important to raise and study, since they might lead us to new insights into the values upheld and contested by different groups of *madrasa* teachers and their public with regard to the mathematical sciences. Such values are, as stated in the introduction, at the heart of positive sanctions of knowledge, and maintain or undermine norms, rules and boundaries of knowledge. As I have pointed out before when discussing the modifications to Ḥabash's text at the hands of Ibn Yūnus and al-Bīrūnī, it is more likely than not that Sirāj al-Dīn wa'l-Dunyā adapted Yaḥyā b. Aktham's text to suit his own needs. Hence, it is impossible to decide without further inquiry whether the image of the ruler as presented in this report belongs to the early third/ninth century or to the seventh/thirteenth century, and thus whether it refers to an Abbasid caliph, an Ayyubid *mālik* or a Mamluk sultan. But independently of which dynastic ideal or real ruler is addressed in this report, a closer study of the extant form of the report ascribed to Yaḥyā b. Aktham reveals interesting details with regard to norms and rules for practicing knowledge.

The language ascribed to Yaḥyā b. Aktham describes the three projects as individual points of personal interest, caused by the caliph's increasing zeal, ardor or, as King translates, excitement (*samat himmatuhu*). They are not portrayed as related to the realm of (religious, military or other forms of) politics. Not even the second project that Yaḥyā's report shares with those of the astrologers and which centers on an important religious issue, namely the determination of the prayer direction between Baghdad and Mecca, is described based on more than purely technical terms and inter-human relationships.

The suggested status of these three specific projects as personal questions about technicalities corresponds well with the fact that al-Ma'mūn's early biographers, like Ibn Abī Ṭāhir Ṭayfūr and Muḥammad b. Jarīr al-Ṭabarī, do not mention any of them.[30] This could imply that the mode of storytelling presented in the extant version of Yaḥyā's report was not impossible in the early third/ninth century. If that could be supported by other stories told by Yaḥyā b. Aktham, this report could be read to mean that al-Ma'mūn did not promote a coherent, long-term research program carried out by his expert clients. If the text is reliable in the sense specified here, then al-Ma'mūn's astronomical interests may have been an astronomical equivalent of the problems tackled in recreational mathematics, only much more expensive.

The report contains details that support an early date for its compilation. It agrees in its technical details in principle with the reports of the astrologers, i.e. it possesses the necessary technical elements to be accepted as having been derived from al-Marwarrudhī's oral account of the first project. It agrees furthermore in principle with the astrologers' description of the second project. This strengthens its acceptability as a text which was compiled in the context of al-Ma'mūn's astronomical interests and activities, and in dialogue with the reports of the astrologers. The deviations between the three reports leave no doubt, however, that the text ascribed to Yaḥyā b. Aktham is not a simple note-taking of what al-Marwarrudhī had told the judge. The text preserved by Sirāj al-Dīn wa'l-Dunyā is a transformed literary document, which in all likelihood was composed or continued after the two astrologers had written their accounts, since it adds a further, previously unaccounted for astronomical project to al-Ma'mūn's activities.

[30] Cooperson, *Classical Arabic Biography*, p. 43.

Does such a reading of Yaḥyā b. Aktham's report as transmitted by Sirāj al-Dīn wa'l-Dunyā contradict the traditionally offered claims about the importance of astrology for the early Abbasid caliphs, including al-Ma'mūn? I do not think so. None of these three projects is directly related to astrology. The language of Yaḥyā's report reveals how its author (or its transmitter) thought he could portray the caliph and his own (or Yaḥyā's) role in these three specific projects. A larger investigation of the stories told by al-Ma'mūn's contemporaries will hopefully shed more light on the variations that can be found in such narratives. Here, El-Hibri's interpretation of fourth/tenth-century accounts about al-Ma'mūn as mostly a later, subtly negative hagiography needs to be taken into account.[31] This is, however, too large a task for this paper. The overarching issue of al-Ma'mūn's personal engagement with astrology proper also needs to be investigated in more detail, if we want to find out whether or not these three projects were seen as belonging to astrology or representing other kinds of knowledge.

2. Rulers as pinnacles of knowledge

As we saw in the previous stories, the final decision about the validity of conflicting results lay at the end in the hands of the caliph. The long-term impact of al-Ma'mūn's attention to specific scientific problems was twofold. First, numerous sons of caliphs and their relatives received in childhood and adolescence a sound introduction to philosophy and related fields of knowledge by leading scholars of the day, such as Yaʿqūb b. Isḥāq al-Kindī, who was Aḥmad b. al-Muʿtaṣim's tutor. The same applies to sons of courtiers, as was the case with the sons of Muḥammad, the oldest of the three Banū Mūsā, taught by Thābit b. Qurra, a protégé of the Banū Mūsā and a leading scholar in his own right. Some of these children, like Muḥammad b. Jahm al-Barmakī (3rd/9th c.) or Jaʿfar b. al-Muktafī (907-987) became noteworthy scholars themselves in adulthood.[32]

Secondly, al-Ma'mūn and his alleged relationship to the philosophical and mathematical sciences grew into a role model. It was either

[31] El-Hibri, *Reinterpreting Islamic Historiography*, pp. 101-108.

[32] Matvievskaya and Rozenfel'd, *Matematiki i astronomy musul'manskogo srednevekov'ja i ich trudy (VIII-XVII vv.)*, vol. 2, pp. 54, 161.

approved of as something to be emulated, or rejected as having introduced alien thoughts and culture into the ideal Islamicate society, hence laying the ground for corruption and digression from the right path. Later stories about two Timurid princes of Shiraz and Isfahan, Iskandar Sulṭān (r. 811/1409-817/1414) and Ibrāhīm Sulṭān (r. 818/1415-838/1435), and two Norman rulers of Sicily, Roger II (r. 1130-1154) and William I (r. 1154-1166), can be considered as successors in form to the same kind of narrative, since they share certain structural elements. They present the respective ruler as the person who decided which knowledge was good enough to be included in the write-up of the historical or the geographical project pursued by scholars at each of the two courts. As in the case of al-Ma'mūn, the scholars did most of the work, the results of which they then presented to the ruler. However, the stories about Roger, William, Iskandar and Ibrāhīm also contain several new elements. Here, the ruler does not only invite the scholars to discuss their findings and opinions, but also allegedly participates in sessions at which different informants, for instance ambassadors, travelers or visiting scholars, present their particular pieces of knowledge to the scholar in charge of the project. A further difference with respect to the stories about al-Ma'mūn is that the later stories about princely competence in the sciences incorporate statements about the ruler's solid education in specific fields. This enumeration encompasses, in the case of the Timurid prince Iskandar, almost all disciplines presented in other sources as standard scholarly education in the given period. Such a comprehensive description of the prince's education implies that the prince was equal to the scholarly class in his training for knowledge-based activities, including disputes and decisions. In the case of the Norman kings Roger II and William I, the descriptions name those sciences and skills that are the heart of the books which follow this laudatory passage about the princely patron. Roger II had Greek and Arab tutors with whom he studied philosophy, the mathematical sciences, medicine and political theory. William I came to the throne when he was thirteen years old, and his education was thus not yet complete, and is not specified in the material examined for the purposes of this paper. Iskandar Sulṭān studied a broad range of scholarly disciplines, and presents himself, as we will see below, as the author of a *summa* on astronomy and astrology. Moreover, he ordered his palace workshop to include mathematical, astronomical, astrological, medical

and alchemical texts by well-known ancient, Ilkhanid and Timurid scholars in the illustrated compendia which the calligraphers and painters produced for him.[33] Information about Ibrāhīm Sulṭān's education is less specific. The surviving artwork ascribed to him and his patronage proves his excellent training as a calligrapher and poet, and his intimate familiarity with religious and other literature.[34]

2.1. Norman and Timurid princely education in the sciences

Al-Sharīf al-Idrīsī (493/1100-560/1166?) seems to describe his first Norman patron's scientific training in the geographical work *Nuzhat al-mushtāq fī 'khtirāq al-āfāq*, which he produced at the latter's court, allegedly under the guidance of Roger himself, speaking in the preface of Roger's infinite knowledge of the mathematical and practical sciences, which enabled the prince to make extraordinary inventions, full of novelty. Because these marvelous innovations are talked about in all the cities, provinces and districts of the Norman realm, there is really no need for al-Idrīsī to discuss them, but because they are so wonderful, he will do so nonetheless.[35] Here the princely scholar is portrayed as superbly educated, intelligent and inventive in those sciences constituting the theoretical and technical basis for the project described in the book following this preface: universal geography and map making. Roger appears not only as the wise ruler, but as the expert qualified for this specific scholarly enterprise. Parallel to underscoring this point, however, al-Idrīsī tells his readers that this Norman prince was much better than any royal before him, that he was admired for his incomparable wisdom, and that he dazzled everybody with the products of his mind and hands.

> His knowledge of the mathematical and practical sciences was countless. It was not limited by a boundary because he (learned) each of their disciplines in perfec-

[33] Soucek, "The Manuscripts of Iskandar Sultan;" Roxburgh, *The Persian Album 1400-1600: From Dispersal to Collection*, pp. 111-115.

[34] Roxburgh, *The Persian Album*, pp. 39, 40, 73, 121; <http://www.metmuseum.org/toah/works-of-art/13.228.1-2>.

[35] Al-Idrīsī, *Opvs geographicvm*, p. 5. For the difficulties in interpreting this passage compare Houben, *Roger II of Sicily*, p. 104 and Jaubert's French in Jaubert, *Géographie d'Édrisi, traduite de l'arabe en français*, p. XVIII.

> tion (*al-ḥaẓẓ al-awfā)*, shooting at it with the seventh arrow of *maysir* (i.e. being extraordinarily successful). Indeed, he himself made wonderful inventions and strange innovations, which no prince (achieved) before him, while he did it single-handedly. They indeed were manifest (when) eye-witnessed and clear in their demonstration and proof. Due to their use (*masīruhā*) in the cities and (the fact that) they were talked about in all the provinces and districts, we dispensed with mentioning them in a detailed and versatile (manner) and with presenting them individually, not combined together. But if we went to describe them and wrote down the thought about their (construction), laying them out one after the other, his masterpieces would dazzle us by their wonderful meanings and their powerful intentions. He who counts all the little pebbles obtains the furthest of goals![36]

This enumeration of Roger's extraordinary capabilities in the mathematical sciences and practical matters is part of a long panegyric in which Roger is described as the best of the best. He is called the most excellent of all of God's creatures. He is a prince who governs with perfect justice and impartiality. He also is an administrator who has established the best order and conditions for the greatest felicity. He is a leader of armies on land and sea, which only see the greatest success since they are under divine protection. Not surprisingly, he is a man for whom the doors of future events open, while they remain closed for others. His character and his behavior are the best imaginable.[37] Hence, Ahmad's reading of this short passage as an expression of al-Idrīsī's admiration for Roger's concrete knowledge and skills, because he himself did not yet understand geography, map making and the mathematical sciences, misses its full integration into this rhetorical device of adulation of the ideal prince. Even if Roger indeed was a bright, scholarly-minded ruler and a gifted craftsman, al-Idrīsī's preface does not aim at presenting a reliable biography of the Norman or at comparing their respective qualifications.[38]

Roger's son William I receives much shorter, but still lavish praise for his high intellectual level and his allegedly excellent education, in Henricus Agrippus preface to his translation of Plato's *Phaedo* from Greek into Latin, composed for an English friend in 1160.[39] According to Henricus, William spoke as if he were a philosopher, someone who

[36] Al-Idrīsī, *Opvs geographicvm*, p. 5.
[37] Al-Idrīsī, *Opvs geographicvm*, pp. 3-4.
[38] Ahmad, "Cartography of al-Sharīf al-Idrīsī," p. 156.
[39] Houben, *Roger II of Sicily*, pp. 98-99.

could not be outdone by others, in short, as someone who is absolutely the best with one exception – his own father. As in the case of his father, knowledge and education are clearly linked to princely power and military success. But while the description of William's intellectual achievements is pure flattery, the depiction of his military enterprises encompasses a mixture of territories both temporarily lost and recovered, as well as recently abandoned. Henricus apparently wrote this laudatory piece shortly before the outbreak of the great rebellion of the Sicilian nobles in November 1160. While not completely flattering the king with regard to his stature as a soldier, Henricus clearly did not wish to spell out the various threats to which Norman rule in Sicily was exposed during William's rule. Hence, his depiction of the king also reflects more the ideal than the real man. The point to highlight is that this ideal made explicit room for concrete, secular sciences.

> There is not such another one in the world, whose court is a school, whose retinue is a *Gymnasium*, whose own words are philosophical pronouncements, whose questions are unanswerable, whose solutions leave nothing to be discussed, and whose study leaves nothing untried, whose lordship is acclaimed by Sicily, Calabria, Lucania, Campania, Apulia, Libya and Africa, whose victorious hand stretches out to Dalmatia, Thessaly, Greece, Rhodes, Crete, Cyprus, Cyrene and Egypt, and whose already glorious deeds are rendered more glorious and shining by his father, that great [King] Roger.[40]

The image that Timurid sources paint of Iskandar Sulṭān's knowledge and skills goes beyond al-Idrīsī's and Henricus Agrippus' rather brief panegyrics of Roger and William as the most knowledgeable and most successful among the princes. Not only is Iskandar's education in the sciences spelled out in much greater detail, but he is moreover portrayed as being directly involved in his self-representation as the best author who ever wrote about the sciences of the heavens. His knowledge enhances his qualities as a just ruler. Divine guidance lets him find the right path in all his endeavors. Constructing himself as the pinnacle of wisdom, justice and virtue undoubtedly was an important goal in Iskandar's pursuit of recognition by his relatives, with whom he competed for power. Because this legitimizing narrative is in such stark conflict with Iskandar's unwise, unjust and non-virtuous behavior,

[40] Houben, *Roger II of Sicily*, p. 98.

which finally cost him his rule, eyes and life, the strong reference to education, scholarly practice and intellectual superiority testifies to the cultural value of the specific kinds of knowledge enumerated and incorporated in the sources connected with his name.

Iskandar describes his education as having comprised *kalām*, *ḥadīth* and other fields of the religious sciences, history, *ʾilm al-hayʾa* (planetary theory), astrology and *ʿilm al-ḥurūf* (letter magic), if the preface to a lost handbook on astronomy and astrology, allegedly authored by the prince, can be trusted.[41] He portrays himself as having mastered all parts of the available canon of the 'rational' and the 'traditional' sciences, be it major disciplines or branches thereof. Of note is the preface's emphasis on the certainty of this acquired knowledge. It may delineate one boundary that Iskandar Sulṭān did not wish to trespass, at least rhetorically, i.e. stepping into domains of knowledge that were contested and open to doubt and challenge. His interest in *ʾilm al-ḥurūf* in particular might have induced him to offer such a declaration.[42] Except for this one boundary, the other elements all belong to the category of positive control or supernatural protection. They guarantee the prince's maturity in matters such as demonstration and purpose of reflection, beyond what the best of his scholarly clients had been able to achieve.

> Thus speaks the servant of God, the Exalted and the Master who commands there his servants, Iskandar, son of ʿUmar Shaykh – may God pardon them both and be satisfied with them. (...) In addition to upholding the rules of law and fairness and to accomplishing the duties of justice and solicitude towards his subjects – 'because one hour of good deeds is equivalent to seventy years' – he spent the wealth of his time and the quintessence of the duration and the moment for acquiring the certain sciences and things of knowledge and for accumulating the veritable virtues and perfections that are the capital of eternal beatitude and the ornament of perpetual fortune. (...)
>
> Guided by the sovereign favor and privileged by divine direction (...) he became informed and instructed in the sum of the sciences in a short time, the rational ones as well as the revealed ones, the fundamental ones as well the derived ones. He

[41] This preface is preserved in a collection compiled by the Timurid historian and scholar of the mathematical and other sciences Sharaf al-Dīn ʿAlī Yazdī or one of his intimates, as Aubin believes. No other part of the astronomical and astrological *summa* ascribed to Iskandar has yet been found. Aubin, "Le Mécénat Timouride à Chiraz," p. 80.

[42] For more on this topic, see the recent study by Melvin-Koushki, *The Quest for a Universal Science: The Occult Philosophy of Ṣāʾin al-Dīn Turka Iṣfahānī (1369-1432) and Intellectual Millenarianism in Early Timurid Iran*.

> pushed the verification of the discussions and goals of all of (these sciences) forward to a degree that the gifted and masterful (students) of this art had not begun to achieve. In each of these sciences he discovered marvelous questions and astonishing points according to the expression, 'the masters of power are inspired', as well as delicate finesses; and all this thanks to God's grace which He dispenses on whom He wishes.[43]

Undoubtedly, diligence in childhood and youth, royal blood, virtue and divine grace had turned Iskandar into the preeminent knower.

As these excerpts demonstrate, the three princes are described or describe themselves not merely as successful soldiers and conquerors of lands and titles, but also as masters of the sciences. They have become men of the sword and the pen. This transformation is recognized by their clients, who lent legitimacy to it by telling stories about their patrons as the highest authority in matters of knowledge.

2.2. Roger's embodiment of geographical knowledge

The narrative about Roger's geographical knowledge in al-Idrīsī's *Nuzha* points first to the shared reading of the available geographical literature, much of which was in Arabic. Finding many discrepancies and contradictions, Roger was sorely disappointed. First he turned to the living sources of knowledge, the scholars of his court. He discovered sadly that they did not know more or better information than the books they read. Hence, they were of no help. He sent orders to scholars in his realm, looking for those who had traveled widely. He invited them to come to court and interviewed them alone and in groups. His former experience repeated itself. There was simply no agreement between them. "He affirmed where they agreed and kept (this information), but questioned where they differed and declared (this) for invalid."[44] In order to lend the appropriate weight to this royal enterprise, al-Idrīsī states that this search for information and sifting through the reports took not merely one or two years, but fifteen. There is, it seems to me, no way to corroborate whether such a lengthy period of time is indeed a reasonably fair description of the acquisition and com-

[43] Aubin, "Le Mécénat Timouride à Chiraz," p. 81.
[44] Al-Idrīsī, *Opvs geographicvm*, p. 6.

parison of data by the Norman king and his client. It may be more an instance of elevating praise than a correct estimate of the process of collecting and reflection, in particular because al-Idrīsī emphasizes that Roger devoted all his time to the study of this art.[45] When the preparatory phase had come to its end, the king had second thoughts about his choices:

> He wished to ascertain the correctness of what these people had agreed upon with regard to the longitudinal differences between localities and their latitudes. So he had brought to him a drawing board [*lawḥ al-tarsīm*], (on which) he traced with iron instruments (each item, while examining in the same time) the aforementioned books and (chose what) he preferred among the claims of their authors. He examined with discernment all of this in its entirety until he came to know the truth about (these values).[46]

If this is a correct description of Roger's contribution to the production of the world map and thus to the book *Nuzhat al-mushtāq*, its later medieval designation *Roger's Book* would be more appropriate, and the authorship should at least be divided between al-Idrīsī and the king. But neither did al-Idrīsī consider this his duty nor did Roger insist on highlighting his royal contribution. Hence it is much more likely that this part too is a euphemistic portrayal of a patron by his client. The fascinating aspect of this passionate praise of Roger's scholarly qualities is the insistence on the methods – reading, comparing, interviewing, evaluating, selecting, constructing a draft map, comparing again and again until the truth was found satisfactory. Fairclough's analysis of the political language of New Labour highlighted a general feature of today's public language, whether political, commercial or professional.[47] Today's rhetoric of actors replaces human agency with the agency of abstract things such as the market, the corporation or the government. The language of princely adoration, however, operates differently. It collapses all human actors into the figure of the ideal ruler. The head of a dynasty is transformed into the abstraction of all the contributors to their various projects. The individual share of each one of them is thus hidden beneath the aura of an all-knowing king. Their specific know-

[45] Al-Idrīsī, *Opvs geographicvm*, p. 6.

[46] I have altered Ahmad's English translation here since I felt it was too free. Al-Idrīsī, *Opvs geographicvm*, p. 6; Ahmad, "Cartography of al-Sharīf al-Idrīsī," p. 159.

[47] Fairclough, *Critical Discourse Analysis: Papers in the Critical Study of Language*.

ledge has to be merged into one great whole of geographical knowledge, authorized by al-Idrīsī as the only relevant other knower. As a consequence, the readers of the work were deprived of the possibility to learn the names of the other participants, to study the different types of knowledge they contributed, and to evaluate the appropriateness of Roger's and al-Idrīsī's choices. Hence, they too were transformed by this story into passive recipients of royally filtered knowledge.

2.3. Ibrāhīm Sulṭān's power to decide on matters of historical knowledge

In 1425, roughly ten years after Iskandar Sulṭām's execution, another Timurid prince, Ibrāhīm Sulṭān b. Shāhrukh, was governor of Shiraz. Like his grandfather Tīmūr, his father Shāhrukh, and his predecessor and cousin Iskandar Sulṭān, Ibrāhīm Sulṭān patronized the production of historical and geographical literature in order to tell and retell the coming to power of his ancestors and their dynastic legitimacy. The oeuvre that Sharaf al-Dīn ʿAlī Yazdī (d. 858/1454) composed around 827/1425, at least in its extensive introduction and first chapter, is often called *Ẓafarnāme* (The Book of Triumph). It is seen to emulate, rephrase and extend Niẓām al-Dīn ʿAlī Shāmī's (d. before 814/1411-12) work of the same name commissioned by Tīmūr before 1404.[48] The well-known preface of ʿAlī Yazdī's version of Timurid history presents the same perspective on the relationship between ruler, scholar and knowledge as al-Idrīsī's preface to his *Nuzhat al-mushtāq*. Although many scholars, literati and scribes allegedly participated in compiling the book, the ruler is superior in both body and mind. He is the only person who decides as to 'truth', 'facts' and 'falsehood'. The ruler "exerted (concern and attention) from the beginning to gather and arrange this composition."[49] Copies of all previous versions of histories of Tīmūr, whether in verse or prose, were collected and brought before him for perusal. "(T)hree classes of men, readers, witnesses and wri-

[48] Forbes Manz, "Tamerlane and the Symbolism of Sovereignty;" Thackston, *A Century of Princes*. *Sources on Timurid History and Art*, p. 63. Ando takes a different position emphasizing that the work's original title was *Fatḥ-nāma-yi Ṣāḥib-Qīrānī*: Ando, "Die timuridische Historiographie II: Šaraf al-dīn ʿAlī Yazdī," p. 221.

[49] Thackston, *A Century of Princes*, p. 65.

ters" served in reading each one of the manuscripts and checked whether each event was described as they reminded them as immediate participants.[50]

> After being apprised of the contents of the manuscripts and eye-witness accounts, and upon repeated examination and investigation of every jot and title, His Highness declared with his pearl-raining, jewel-dripping tongue what he decided to be correct and true, and the clerks wrote it down. Once again it was read aloud for verification and recorded. If the slightest detail remained unclear or in doubt, or if there was a discrepancy between the manuscripts and the narrators, messengers were dispatched to the ends of the realm and trustworthy witnesses, upon the veracity of whose word in that affair there was reliance, were interrogated. In this manner episode after episode was verified and penned in the royal assembly, reread several times and corrected so that the gathering, writing and ordering of this history and the introduction of each story in its proper place (...) were absolutely the results of His Highness's gracious concern. Then, as commanded, it was written in a clean copy in the version that had been decided upon, and once again it was listened to in the royal assembly. It was compared with the first draft and master copy, and the greatest effort was exerted to correct errors. Emendations that occurred to the royal mind were made (...).[51]

Care, attention, knowledge, honeyed words and numerous highly educated advisors, witnesses and scribes, while essential ingredients of the story about how the Timurid prince achieved the production of yet another history of his grandfather and the dynasty he had forged, nevertheless did not satisfy Sharaf al-Dīn as he sought to persuade his readers of the supreme quality of his new compilation. Before describing the ubiquitous and decisive role of Ibrāhīm Sulṭān in the genesis of his creation, Sharaf al-Dīn underlined that his history "shall be distinguished in three ways from all other histories of rulers and possessors of might and majesty written in prose or poetry by the ancients or moderns in Arabic or Persian."[52] The first point that set it apart in its author's mind was that the hero of its story, Tīmūr, "himself was concerned to collect his greatest exploits."[53] These were not usual exploits, but undertakings decreed by destiny. The second point arose from the author's own machinations. Never had any author of a historical account of ancient or modern kings, he proudly claimed, explained

[50] Thackston, *A Century of Princes*, p. 65.
[51] Thackston, *A Century of Princes*, p. 65.
[52] Thackston, *A Century of Princes*, p. 63.
[53] Thackston, *A Century of Princes*, p. 64.

every affair in such detail as he himself did.[54] The third point was the veracity of his account resulting from the incredibly painstaking attention that Tīmūr had paid to ascertaining the truth of what he collected:

> (...) for the Ṣāḥib-Qīrān, while traveling and otherwise, was constantly accompanied by great turbaned lords, sayyids, ʿulema, and jurisprudents, and by people of learning and wisdom, Uighur *bakhshī*s and Persian secretaries. As commanded, a group of them continually verified every deed and word that issued from His Majesty and everything that happened to the domain and subjects and laboriously wrote them down. It was ordered that every event be recorded exactly as it happened, without any interpolation, addition or subtraction, particularly concerning any person's bravery and courage, that there be no hypocrisy nor magniloquence, and especially in what concerned His Majesty's bravery and daring, that in that there be absolutely no exaggeration. It was also by imperial command that the writers of eloquence clothed it in phrased garments and composed it in prose and poetry with the same proviso. Many times in the royal assembly they read it for the royal hearing so that total reliability was ascertained by verification. In this manner the Turkish verse and Persian prose versions comprising His Majesty's great exploits were written and composed.[55]

As the many extant illuminated copies of Sharaf al-Dīn's history prove, his presentation of Tīmūr's glorious deeds was well appreciated among his heirs. Many of his successors praised his style as eloquent and elegant. Current historians, in contrast, have found no agreement about the work's significance and meaning in the overall course of the rich Timurid historiography. Ando, for instance, considered it as a "kind of scientific history" situated "in the intellectual atmosphere" of fourteenth- and fifteenth-century Iran.[56] Woods named it "the best known representative of early Timurid historiography."[57] Quinn appreciated it as a typical representative of what constituted in his view the outstanding feature of Timurid historiography: imitation.[58] All of them, though, acknowledge that the ideological program so poetically and forcefully presented by Sharaf al-Dīn was the common thread that bound all Timurid histories of the fifteenth century together. This program aimed to prove Tīmūr's legitimacy as a Chinghizid imperial ruler, and the

[54] Thackston, *A Century of Princes*, p. 64.
[55] Thackston, *A Century of Princes*, p. 64.
[56] Ando, "Die timuridische Historiographie II: Šaraf al-dīn ʿAlī Yazdī," p. 246.
[57] Woods, "The Rise of Timurid Historiography."
[58] Quinn, "The Timurid Historiographical Legacy: A Comparative Study of Persianate Historical Writing," pp. 19-32.

rightfulness of Shāhrukh's succession.[59] This struggle for legitimacy necessitated each family member's participation in shaping historical discourses that adapted previous narratives to new conditions, and elevated the deeds of the family leaders to the realm of the divinely destined. The most remarkable feature of these narratives is their insistence on the truth value of the new accounts. The very fact that 'truth' is guaranteed by the care, attention and labor of the family's head or one of the princes speaks to the censorial nature of the entire procedure. Thus it is not surprising that at the center of this discourse stands ever-present control – control of information, style, presentation and people. No group that disposed of knowledge-related skills is left out of Sharaf al-Dīn's depiction. Alternative accounts could thus flow only from the pen of foreign visitors like Ibn ʿArabshāh (791/1392-854/1450) or Ruy González de Clavijo (d. 1412).

Timurid control was, however, not the only force that gave Timurid historiography its limits. As Maria Szuppe has noted, "Timurid historiography is firmly rooted within the Persian literary tradition of official court histories of the post-Mongol period (...) (as well as being nourished by local traditions of regional history)."[60] While Tīmūr and his successors may not have wished to break the hold of this tradition since it was sanctioned by major historiographical works of the Ilkhanid period, they were not completely free in the choice of their self-representation. The need for legitimation forced them to accept the narrative forms of their predecessors and the tastes of their subordinate elites. Censorship and control is thus a complex cultural enterprise with more than one dominant actor and more than one option for the lower-ranking participants to act within the limits prescribed by the censor.

2.4. Princely images of science

In addition to censorship, the stories about the Normans and the Timurids also speak to issues other than just the power to control knowledge. By focusing on the sciences as a tool for control by rulers and a marker of princely excellence, they indicate that the various sciences were held in high esteem in the middle of the twelfth and begin-

[59] Szuppe, "Historiography v. Timurid Period."
[60] Szuppe, "Historiography v. Timurid Period."

ning of the fifteenth centuries in Norman and Timurid societies, respectively. The prince's reputation as a 'prime knower' serves to complete and exalt the ruler's persona. The excessiveness of praise, the uniqueness of each prince's scholarly prowess and the capability of the narrators to find ever more glowing words that overtrump the already fulsome tribute paid to the previous royal hero of knowledge, do more than apotheosize just the figure of the magnificently knowing ruler. Indeed, the royal glory radiates back to the sciences and to secular knowledge in general. The ruler as the arbiter of knowledge is thus the figure of triumphant science. The narratives embody the cultural success of ruler and science in Norman as well as Timurid society. Furthermore, they reflect the belief in science's fundamentally hierarchical nature. Being the head of a ruling house lends sufficient credibility to claims to superior knowledge and to the right to organize knowledge production, as one of the domains under his princely command. Control of knowledge appears here not as a vice, but as a virtue inscribed in the nature of kingship, such that science and kingship condition and complement each other.

3. Epilogue

In the few stories I have been able to offer in this paper, I have suggested that positive forms of control shape knowledge and its spaces to an even greater extent than negative forms, because they determine behavior by setting norms and rules, and by allowing or restraining debates and compromises.

The stories told about scholars and rulers in scientific texts constituted an important medium for negotiating values and shaping beliefs and behavior. These stories indicate that positive control includes elements of exclusion, eradication and at times even institutionalized censorship. However, not all of these negative forms of control necessarily entail distorting or even discarding knowledge. Excluding an axiomatic-deductive style of thinking, speaking or writing about mathematics, for instance, can encourage a livelier atmosphere in class and a less formalistic research practice. Likewise, institutionalized control of knowledge may in fact stabilize criteria for expertise and its professionalization. Contradictory narratives often mirror contested values

and ideals of knowledge, and may point to the impossibility of finding closure. The stories discussed in my paper indicate that while knowledge and its practices changed dramatically throughout these periods, knowledge continued to be highly valued among important groups of elites. Rulers and their relatives invested themselves in stories about their intellectual prowess in many different fields of knowledge. Scholars struggled ruthlessly with their colleagues over social standing, intellectual reputation and material affluence in this life using knowledge, including that of the mathematical sciences, as a tool and a weapon. While the narratives of rulers as 'prime knowers' speak to the triumph of science among the warrior elites, narratives of scholars as 'warriors for *madrasa* chairs and profitable marriages', which could not be dealt with in this paper, bear witness to the usefulness of knowledge, including mathematics and astronomy, beyond its application to practical problems of a Muslim's daily life, such as inheritance distributions, architecture or prognostication. Hence it is not at all surprising that courts established hierarchies of knowers and included doctors and astrologers in their elaborate courtly protocols and honors. Knowledge is portrayed here as the property of elite groups, and as invested with the power to sanction access to itself.

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