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From Yāvanī to Saṃskṛtam

Sanskrit Writings Inspired by Persian Works*

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Jagannātha, the celebrated author of the *Rasagaṅgādhara*, received the title Paṇḍitarāya from the Mughal Emperor Shāh Jahān.¹ There is a story that seeks to explain how the title was conferred. Jagannātha, as the story goes, was passing through Delhi. One early morning, as he had his ablutions in the river Yamunā and was performing his prayers, two Muslims were quarrelling among themselves in Persian. The quarrel reached such a high pitch that soldiers came and hauled the two men to the emperor's court. Jagannātha too was ordered to follow and give witness. At the court, Jagannātha was asked to tell how the quarrel began. He replied that the two men were shouting in a language that he did not understand, but he could repeat every word which was uttered by them. And he did repeat all the Persian words the men said to each other, with correct pronunciation and perfect intonation. Shāh Jahān was so impressed at this amazing feat of memory that he immediately conferred on the young Jagannātha the title Paṇḍitarāya and gave him an appointment at the court.

There is, of course, not much truth in this story. It was obviously invented to illustrate the great mental faculties of Jagannātha. But unwittingly the story also draws attention to the supposed distance that lay between Sanskrit scholarship and Persian learning. There is another implication in the story as well: Shāh Jahān was seen by the Hindus as a just monarch who recognized merit even in a Hindu and rewarded it.

It is important to remember this fact in these days of general mistrust and agitations to undo the past wrongs. During the past decade, and particularly

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¹ Thus at the end of his *Āsaphavilāsa*, Jagannātha describes himself as *śrī-sārvabhauma-sāhijahāna-prasādādhigata-ṇḍitarāya-padavi-virājita*; see Aryendra Sharma (ed), *Paṇḍitarāja-kāvya-saṃgraha*, Hyderabad 1958, p. 85.

during the last three months, the relations between Hindus and Muslims in India have reached such a stage that the nearly one thousand years of their coexistence is apt to be forgotten. In these circumstances, it is all the more important to recall and to emphasize the long history of contacts, of co-existence, of intellectual exchanges. That there had been significant exchanges is undeniable, the most visual and concrete being the architecture in northern India; so also music.

But as philologists, our concern is more with the written word, with literary documents, with the interaction between the Islamic cultural tradition as reflected primarily in the Persian language on the one hand and the Hindu and Jaina cultural traditions as expressed in Sanskrit on the other. In the following pages, I should like to concentrate on the various Sanskrit writings that were inspired by Persian works.

II

It is well known that in the second half of the sixteenth century, the Mughal emperor Akbar desired that the Muslim intelligentsia be made familiar with the classics of Hindu thought. Therefore he established the *Maktabkhānā* or the bureau of translation where a large number of works were translated from Sanskrit into Persian.² In fact such exchanges began much earlier on the Indian soil.

One of the earliest to make significant contribution to this exchange is the famous Al-Bīrūnī. When we consider the enormous range of Sanskrit texts discussed by him in his celebrated *India*, it becomes clear that this would have been impossible without a close cooperation with a large number of Hindu scholars who not only taught him Sanskrit, but also lent him manuscripts and had long discussions on various aspects of Hindu thought. Al-Bīrūnī claims to have learnt versification in Sanskrit and to have composed tracts in Sanskrit on the astrolabe and other topics. These may have been the first Sanskrit works inspired by Persian/Arabic sources, but unfortunately these are no longer extant.

Though the *India* was Al-Bīrūnī's individual enterprise, he could not have acted without the knowledge, in fact, without the active encouragement of his patron Maḥmūd of Ghazna in whose entourage he had come to India. Maḥmūd issued his own coins in India. These carried the *Kalīma* and the year of issue in Sanskrit thus: *avyaktam ekaṃ muhamada avatārah. tājikīyena saṃvatā 418*. Suniti Kumar

²See especially, Saiyid Athar Abbas Rizvi, *Religious and Intellectual History of the Muslims in Akbar's Reign*, New Delhi 1975, ch. 6: Translation Bureau of Akbar, pp. 203-222.

Chatterji observed that this Sanskrit rendering of the *Kalīma* must have been done by Al-Bīrūnī himself.³ The *tājikīya saṃvat* 418 is the Hijrī year and corresponds to A.D. 1027.⁴

This practice of issuing coins with Sanskrit legends was continued in the subsequent centuries. In fact, when the Muslim rule was established in Delhi in the twelfth century, the Sulṭāns did not begin new coinage with Arabic legends. They adapted the existing Chauhan coinage of northern India, often with Hindu religious symbols, and just added their respective names in Nāgarī script. The names were modified to fit into Sanskrit. Thus Shahābuddīn became *sahāvādīna*, Shamsuddīn *samastadīna*, ‘Allā’uddīn *alāvādīna* and so on. The royal title Sulṭān was meaningfully Sanskritized into *suratrāṇa*, “protected by gods”.

I have argued elsewhere⁵ that in the eleventh and twelfth centuries, banking and minting in the Gujarat-Rajasthan-Delhi region was controlled by the Jainas. Their cooperation was, therefore, sought by the early Sulṭāns of Delhi for conducting their banking and minting operations. Owing to these reasons, the Jainas had better relations at the Delhi court. Even before the establishment of the Delhi Sultanate, contacts existed between the Jainas and Muslims on the west coast of India, which area had a long history of maritime relations with the Persian Gulf and the Arabian Peninsula.

Thus the Jainas came to play the role of mediators between the Islamic and Sanskritic traditions of learning in the early medieval period. To cite a prominent example, the Jaina banker Ṭhakkura Pherū⁶ was not only the assay master at the court of ‘Allā’uddīn Khaljī and four of his successors, he also disseminated a number of ideas from Islamic sources in his several writings in Apabhraṃśa. Thus, in his *Rayaṇaparikkhā* on gemmology, he discusses gems imported from Persia and their prices; in his *Dravyaparikṣā*, a manual on coinage, he talks of the Persian technique of purifying gold; in his *Gaṇitasāra* on mathematics, he teaches how to convert dates from the Hijrī era to the Vikrama era and vice versa.

This interaction continued with greater vigour in the second half of the fourteenth century under Sulṭān Fīrūz Shāh Tughluq. His varied interests in antiq-

³Suniti Kumar Chatterji, “Alberuni and Sanskrit,” *Alberuni Commemoration Volume*, Calcutta 1951, pp. 96-100.

⁴There are also coins extant that were issued in the next year, i.e. A.H. 419 = A.D. 1028.

⁵S. R. Sarma, “Thakkura Pheru and the Popularisation of Science in India in the Fourteenth Century,” *Shri Bhanwar Lal Nahata Abhinandan Grantha*, Calcutta 1986, Part 4, pp. 63-72.

⁶On his life and work, see S. R. Sarma, *Thakkura Pherū’s Rayaṇaparikkhā: A Medieval Prakrit Text on Gemmology*, Aligarh 1984, Introduction.

unities, in sciences and in engineering are well known. He gathered at his court at Delhi a number of Muslim, Hindu and Jaina scholars and attempted a systematic exchange of ideas. A booty of 1300 Sanskrit manuscripts from the Jvālāmukhī Temple in the Kangra Valley aroused Fīrūz's interest in Hindu learning. According to a contemporary chronicle called *Sīrat-i Fīrūz Shāhī*, Fīrūz got translated into Persian six Sanskrit texts dealing with astrology. One of these is the *Bṛhatsaṃhitā* of Varāhamihira. Several manuscripts of this Persian translation are extant.

At least two Jaina monks, Mahendra Sūri and his pupil Malayendu Sūri were at the court of Fīrūz and they must have helped in the translation of Sanskrit texts. They were also responsible for the reverse transmission of knowledge, viz. from the Persian into Sanskrit. In 1370 Mahendra Sūri wrote, on the basis of Arabic and Persian sources, the first ever manual in Sanskrit on the astrolabe entitled *Yantrarāja*. In about 1382, the pupil Malayendu Sūri wrote a commentary on this work.

As I have mentioned earlier, Akbar had actively sponsored the interaction between the two cultures by establishing a bureau of translation and by extending his patronage to a number of Hindu and Jaina scholars. Jaina monks like Bhānucandra Gaṇī and Hīravijaya Sūri spent long periods of time at Akbar's court and had theological discussions with him. I have shown elsewhere that Akbar instituted the custom of appointing Hindus as royal astrologers with the title *Jyotiṣarāja*—which became *Jotik Rāi* in Persian—and this custom was continued by his successors.⁷ I have also shown that Akbar's Jotik Rāi was Nīlakaṇṭha of Banaras, who was the author of a very popular work dealing with Islamic astrology entitled *Tājika-Nīlakaṇṭhī*. At the court of Jahāngīr, two astrologers named Keśava and Paramānanda enjoyed the title Jotik Rāi, probably one after the other. Likewise one Śrīmālaḥit was Shāh Jahān's royal astrologer.

At Akbar's translation bureau, and even outside of it, a large body of secular and religious texts in Sanskrit was rendered into Persian; and some Persian texts into Sanskrit as well. More importantly, a large number of Sanskrit works was composed under the direct or indirect patronage of Akbar or his courtiers. A detailed study of these writings is still awaited. I should like to mention one translation for which the translator received a fabulous reward. Maheśa Ṭhakkura translated an abridged version of the *Akbarnāma* into Sanskrit under the title

⁷S. R. Sarma, "Jyotiṣarāja at the Mughal Court," *K. V. Sarma Felicitation Volume*, Chennai 2000, pp. 363-371.

Sarvadeśavṛttāntasaṃgraha. For this service, he is said to have received the kingdom of Mithila from Akbar.⁸

A miniature painting from the *Akbarnāma* manuscript from the Museum of Fine Arts, Boston,⁹ offers us a graphic representation of the interaction between the Hindu and Islamic traditions of scientific knowledge.¹⁰ This painting depicts the birth of Jahāngīr. The lower register in this painting shows four astrologers seated on a carpet near the entrance to the royal harem. A lady of high rank has brought the glad tidings of the long-awaited birth of the heir to the Mughal throne, and the astrologers have set out to measure the time of the birth by means of a water clock, to determine the sun's altitude with the ring dial and to cast the horoscope.

The two astrologers on either side are Muslims and the two in the middle are Hindus, clearly distinguishable from their clothing. The dress and features of these four astrologers are so highly individualized that their pictures must be true-to-life portraits of four prominent astrologers of Akbar's court. Therefore it is possible to identify them. The elderly person on the right with a white beard can be Mawlānā Chānd who was the senior-most Muslim astrologer at Akbar's court and who drew up the horoscopes of both Akbar as well as Jahāngīr. His colleague on the extreme left, holding aloft a ring dial, can be Faṭḥullāh Shīrāzī. The two Hindus in the middle should be Nīlakaṇṭha and Kṛṣṇa Daivajña; they were not only the most eminent astrologers of the time, they were also mediators between the Hindu and Islamic traditions of astrology. Of these two, the second one from the left appears to be the principal member of the panel of astrologers. He is seated somewhat higher than the others; and it is him the lady from the harem is addressing. I should like to think that this is the portrait of Nīlakaṇṭha, who was Akbar's Jotik Rāi. The other Hindu who is drawing up the horoscope must be Kṛṣṇa Daivajña, who is said to be a favourite of Jahāngīr. Kṛṣṇa wrote an excellent commentary on Bhāskara's *Bījagaṇita*. He also wrote a commentary on Śrīpati's *Jātakapaddhati*, a manual on preparing horoscopes. In this commentary he included the horoscope of Khān-i Khānān 'Abdul Raḥīm Khān, who was an influential courtier of Akbar, at one time tutor to Jahāngīr, and himself a man of letters. More important still

⁸Cf. *Sarvadeśavṛttāntasaṃgraha or Akbaranāma of Mahāmahopādhyāya Maheśa Ṭhakkura*, ed. Subhadra Jha, Patna 1962.

⁹Reproduced in Stuart Cary Welch, *Imperial Mughal Painting*, London 1978, plate 16, pp. 70-71.

¹⁰S. R. Sarma, "Astronomical Instruments in Mughal Miniatures," *Studien zur Indologie und Iranistik*, 16-17 (1992) 235-276, esp. 254-260 and plate 3.

is the following. In Akbar's translation bureau, Ulūgh Beg's astronomical tables were translated into Sanskrit by the joint efforts of Hindu and Muslim scholars. The Muslims in the group were Faṭḥullāh Shīrāzī and Abū'l Faḍl and the Hindus included Kṛṣṇa Daivajña.

Under Akbar's successors, similar exchanges were continued. Notable in this connection is the translation of the *Upaniṣads* under the auspices of Dārā Shikoh.

It would be interesting to know how these translations were made. Fortunately, Abū'l Faḍl and 'Abdul Qādir Badāyūnī, two of the chief participants, give us some information about the procedure of translation adopted at the Mughal court. According to them, translation was not made by single scholars proficient in both the source language and the target language, in this case, Sanskrit and Persian. Rather the task was accomplished by teams of scholars, some proficient in Sanskrit and others in Persian. They did the work in three stages. First Hindu or Jaina scholars prepared a paraphrase in Hindi of the Sanskrit text to be translated. In the second stage, this Hindi paraphrase was translated into Persian by one of the several Muslim courtiers. Finally, the Persian translation was polished and put into elegant prose and verse by one of the more accomplished scholars, often Akbar himself supplying the appropriate phrase. The Hindus and Jainas who prepared the paraphrase in Hindi were known as *ma'barān* (interpreters) and the Muslims who rendered the paraphrase into Persian were styled *mutarajjimān* (translators). What resulted in this process cannot be termed an exact translation but rather a Persian paraphrase into which often the mediator's explanatory sentences crept in.

Such exchanges were not confined to the court of Delhi alone; they took place in provincial courts as well. It is well known that long before the establishment of the Mughal rule, even long before the establishment of the Muslim rule at Delhi, there have been contacts with Muslim merchants on the west coast, in what is now the state of Gujarat. Here were produced the first Sanskrit manuals to learn the Persian language and the first Sanskrit treatises based on Islamic astrology. Here was issued a Sanskrit inscription that records the construction of a mosque on land that was acquired legally from a Hindu temple. As we shall see later on, the Jainas of Gujarat played an important mediatory role between the two cultures.

In Kashmir also intellectual exchanges took place quite early. Mention must be specially made of Zayn al-'Ābidin who ruled Kashmir from 1420 to 1467 and who had a similar bureau of translation. It is said that he knew Sanskrit and

patronized many Sanskrit scholars like Śrīvara. The latter wrote a continuation of the *Rājatarāṅgiṇī* begun by Kalhaṇa and named it after the patron Zayn al-‘Ābidin as *Jaina-Rājatarāṅgiṇī*. Śrīvara was not only a court poet of Zayn al-‘Ābidin, but was the personal tutor of his sons as well. More important in the present context is the fact that he translated Mullā Jāmī’s *Yousuf-u Zuleikha* into Sanskrit under the title *Kathākautuka* and dedicated it to Zayn al-‘Ābidin’s successor Muḥammad Shāh.

In the southern kingdoms of Bijapur and Golconda too, the Sultāns patronized both Muslim and Hindu scholars and sponsored writings in Persian, Sanskrit and the local languages. An important outcome of these exchanges was the birth of Dakhini language, a forerunner of Urdu. At the court of Abul Ḥasan Tānāshāh at Golconda in the seventeenth century, several important works in Telugu and Sanskrit were produced. Relevant for our theme is the composition of the Sanskrit work *Śṛṅgāramañjarī* by Akbar Shāh.¹¹ This work deals with the subject of the *Nayikā-bheda*, that is, description of women in various psychological and erotic states, and contains strong refutation of several definitions given in Bhānu Mīśra’s celebrated work *Rasamañjarī*. Written in the polemical style of the traditional *śāstra*, the *Śṛṅgāramañjarī* is not influenced by any Persian work. The important point to be noted about this Sanskrit work is that it was composed by a Muslim Sufi saint Akbar Shāh. It is perhaps the only full length treatise in Sanskrit composed by a Muslim, aside from the slender *Kheṭākautuka* of Raḥīm which will be mentioned in due course. There is another merit to this book in the history of translation. Soon after its composition, it was translated into Brajbhāṣā by a certain Cintāmaṇi and this version in a way became the starting point for the “*Rīti*” poetry in Middle Hindi.

The last ruler who sponsored large scale exchanges in the realm of ideas and literatures was Sawai Jai Singh of Jaipur. Jai Singh had a definite purpose and precise plan for the translation activity.¹² Realizing the superiority of Islamic observational astronomy, he wished to have accurate and full translations of Islamic texts on astronomy. Therefore, he collected many Islamic texts and gathered Hindu,

¹¹ *The Śṛṅgāra Mañjarī* of Akbar Shāh, ed. V. Raghavan, Hyderabad 1951. See also the unpublished PhD thesis of my student Shahin Ahmad, “A Critical Study of the *Śṛṅgāramañjarī* of Akbar Shāh,” Aligarh Muslim University, 1986.

¹² S. R. Sarma, “Translation of Scientific Texts into Sanskrit under Sawai Jai Singh,” *Sri Venkateswara University Oriental Journal*, 41 (1998) 67–87. See also David Pingree, “Sanskrit Translations of Arabic and Persian Astronomical Texts at the Court of Jayasimṃha of Jayapura,” *Suhasi*, 1 (2000) 101–106.

Muslim, and—later on—European astronomers at his court. Here Sanskrit translations were made of Ptolemy's *Almagest*, Euclid's *Elements* and similar Greek texts, not directly from the Greek, but through the Arabic versions. Also original Arabic and Persian texts, especially on astronomical instruments, were rendered into Sanskrit.

I have spoken earlier of the methodology of translation adopted at the court of Akbar. Fortunately, there are some clues available about the methodology adopted at Jai Singh's court as well. Here a Muslim astronomer read out the original Arabic text and explained the meaning, sentence by sentence, in the local dialect of Hindi, to a Hindu astronomer who converted the sentences into Sanskrit and wrote them down. Thus, at the conclusion of his Sanskrit rendering of Theodosius' *Spherica*, Nayanasukha, one of the astronomers at Jai Singh's court, explains how he made the translation:

*idam arabībhāṣātaḥ ābida-saṃjñaiḥ kathitam
nayanasukhopādhyāyaiḥ saṃskṛte grathitam.*

"This [text] was explained from the Arabic language by one named Ābida; and it is composed in Sanskrit by Nayanasukha Upādhyāya."

Sometimes rough drafts of translations were prepared in Sanskrit by junior pandits with the help of Muslim scholars. Later these drafts were polished and edited by accomplished scholars like Jagannātha Samrāt or Nayanasukha Upādhyāya, who gave their name to the translation. A compilation called *Yantraprakāra* contains such rough translations of descriptions of astronomical instruments, culled from Ptolemy's *Almagest* and other later sources.¹³

Thus the procedure adopted at Jai Singh's court was similar to that at Akbar's *Maktabkhānā* and perhaps at other courts as well. At Jai Singh's court also there were interpreters (*ma'barān*) like Muḥammad Ābid and translators (*mutarajjimān*) like Nayanasukha. But there are two essential differences. First, both the interpreter and translator at Jaipur were well versed in astronomy; they only had to cross the linguistic barrier through a third language which must have been some form of Hindi. At Akbar's *Maktabkhānā*, on the other hand, the mythological and theological implications of the Sanskrit texts were not easily comprehensible and were often repugnant to persons like Badāyūnī. Again at the *Maktabkhānā* what were translated were not the full Sanskrit texts but short paraphrases in

¹³S. R. Sarma (ed & tr), *Yantraprakāra of Sawai Jai Singh*. Supplement to *Studies in History of Medicine and Science*, 10-11 (1986-87). Jamia Hamdard, New Delhi 1989.

Hindi. Jai Singh's translators, if at all, erred on the other side. According to David Pingree, "Muhammad Abida and Nayanasukha did not simply render the Arabic into Sanskrit literally, but expanded those passages that they found particularly difficult." Modern translation theory would call this semantic as well as communicative translation; "semantic" because it is faithful to the original in the source language, and "communicative" because it addresses itself to the needs of the audience in the target language by providing explanation of difficult concepts.

III

In 1938, A. B. M. Habibullah put together a classified list of Persian works that were either directly translated from, or based on, Sanskrit sources.¹⁴ The majority of works thus translated from the Sanskrit into Persian are scientific texts, dealing with astronomy, astrology, mathematics, music, medicine, veterinary medicine etc. Although Muslims were renowned for their expertise in the breeding and training of horses, or precisely because of this, they were fascinated by the Sanskrit works dealing with *Aśvaśāstra* or *Aśvacikitsā*. Several such texts were rendered into Persian under the title *Farasnāma* or *Shālihotr* (after the sage Śālihotra who is said to have composed the first book on horses).¹⁵ Moreover, epics like the *Mahābhārata* and *Rāmāyaṇa*; histories like the *Rājatarāṅgiṇī*, and narratives like the *Pañcatantra*, *Śukasaptati*, *Siṃhāsanadvātriṃśikā* and *Vetālapañcaviṃśati*, were also rendered into Persian. Indeed the lavishly illustrated manuscripts of the Persian translations of the *Mahābhārata*, *Śukasaptati* and of the *Pañcatantra* constitute important documents of Mughal painting. There were also attempts to understand, through Persian translations, the principal teachings of Hinduism and the chief doctrines of the various Hindu philosophical systems. Certain texts like the *Yogavāśiṣṭa* appealed to the Muslims so much that they were translated many a time into Persian.¹⁶

Compared to this wide range of texts translated from the Sanskrit into Persian, those that were translated from the Persian into Sanskrit have a much narrower

¹⁴A. B. M. Habibullah, "Medieval Indo-Persian Literature relating to Hindu Science and Philosophy, 1000-1800 A.D. A Bibliographical Study," *Indian Historical Quarterly*, 14 (1938) 167-181.

¹⁵See, for example, *The Faras-Nāma of Hāshimī*, ed. D. C. Phillot, Bibliotheca Indica 191, Calcutta 1910.

¹⁶On the other hand, not a single Sanskrit *kāvya* seems to have attracted the attention of the Muslim connoisseurs for translation into Persian. This does not, of course, mean that Muslims did not appreciate Sanskrit poetry. Indeed, some of the leading lights of Middle Hindi poetry, which is infused with Sanskrit poetic idiom, were Muslims like Jāysī and Ras Khān.

range. No attempt at all was made in any Sanskrit text to understand Islam.¹⁷ The subjects that attracted the attention of the Hindus were astronomy and astrology. Here too there were no direct translations from Persian or Arabic into Sanskrit until the time of Jai Singh. Again, Muslim astrology attracted much greater attention than astronomy. In fact Hindus took to several branches of Muslim astrology more readily than to the planetary theories in Islamic texts which eventually led to the Copernican revolution.¹⁸ In the realm of astronomy,¹⁹ Indian *jyotiṣīs* were much impressed by the Islamic astronomical instruments, notably the astrolabe.

IV

The astrolabe is a highly versatile observational and computational instrument. It has been rightly called the computer of the middle ages. With it time can be determined both in the daytime and at night, both in seasonal hours and in equal hours. One can measure the altitudes of heavenly bodies and the heights of distant objects. More important still is that it works like an analogue computer. For any given moment, one can read off directly from the dial the four points of the ecliptic such as the ascendant etc., which are important in horoscopy. Jābir al-Šūfī is said to have enumerated a thousand problems in spherical trigonometry that can be solved by means of the astrolabe.

The astrolabe was invented in Hellenistic antiquity but it reached its perfection in the Islamic world, whence it was transmitted westwards to Europe and eastwards to India. It was probably Al-Bīrūnī who introduced it into India, where it was enthusiastically received by Hindu and Jaina astronomers. Indeed, no foreign idea or object ever attracted the attention of Indian pandits as much as the astrolabe did.²⁰ Mahendra Sūri, who composed the first manual on the astrolabe

¹⁷When Mādhava compiled his *Sarvadarśanasamgraha* between A.D. 1370 and 1380, most of the Indian subcontinent was under Muslim occupation. In this book Mādhava set out to discuss all the philosophical systems and to refute them in favour of Advaita, yet he showed no awareness of Islam.

¹⁸On this, see especially, F. Jamil Ragep, "Tūsi and Copernicus: The Earth's Motion in Context," *Science in Context*, 14.1-2 (2001) 145-163.

¹⁹On the response of the Indian *jyotiṣīs* to Islamic astronomy, see David Pingree, "Islamic Astronomy in Sanskrit," *Journal for the History of Arabic Science*, 2 (1978) 315-330; idem, "Indian and Islamic Astronomy at Jayasiṃha's Court" in: D. A. King and G. Saliba (ed), *From Deferent to Equants: Studies in Honor of E. S. Kennedy (The Annals of the New York Academy of Science 500)*, New York 1987, pp. 313-328; idem, "Indian Reception of Muslim Versions of Ptolemaic Astronomy" in: F. J. Ragep and S. P. Ragep (ed), *Tradition, Transmissions, and Transformation*, Leiden 1996, pp. 471-485.

²⁰S. R. Sarma, "Yantrarāja: the Astrolabe in Sanskrit," *Indian Journal of History of Science*, 34 (1999) 145-158.

in Sanskrit in 1370, was so impressed by the versatile functions of this instrument that he called it *yantrarāja*, “king of instruments”.²¹ In his *Yantraprakāśa*, Rāmacandra Vājapeyin states succinctly that if you know the astrolabe you will know the universe as if it were a myrobalan fruit placed in your own palm (*yasmin karāmalakavad vidīte viditaṃ bhavet viśvam*).

Between the fourteenth and eighteenth centuries, more than a dozen manuals were composed in Sanskrit on the astrolabe. Many of these were based on Arabic and Persian sources. A few were directly translated. It has been already mentioned that the first Sanskrit manual on the astrolabe was composed by Mahendra Sūri in 1370 at the court of Fīrūz Shāh Tughluq. Fīrūz caused several astrolabes to be manufactured for the first time in India, and sponsored the composition of manuals on the astrolabe both in Persian and in Sanskrit. The astrolabes have not survived, nor did the Persian manual. There are, however, reasons to believe that at Fīrūz Shāh’s court, the Muslim astronomers on the one hand and Mahendra Sūri and his pupil Malayendu Sūri on the other worked in a close intellectual cooperation.²²

Within a quarter century after Mahendra Sūri’s work, i.e. about 1400, Padmanābha wrote the *Yantracintāmaṇi* and devoted the first chapter to the astrolabe. Yukiyo Ohashi has shown that this book follows the parameters of an unidentified Islamic source which is different from that of Mahendra Sūri.²³

After another quarter century, to be precise in 1428, Rāmacandra Vājapeyin discussed the astrolabe quite extensively in his *Yantraprakāśa*. This unique text describes the construction and the use of some 35 astronomical instruments. Some of these are traditional Indian instruments, or their variants, and some are clearly of Islamic origin.

Among the various texts produced at the court of Sawai Jai Singh in the first half of the eighteenth century, four titles deal with the king of instruments. The *Yantrarājāracanā*, attributed to Jai Singh, deals exclusively with the astrolabe. The eighth chapter of a compilation entitled *Yantraprakāra* also explains the use of this instrument. Furthermore, Naṣir al-Dīn Ṭūsī’s *Risālah-i Bīst Bāb dār Mārīfat-i Uṣṭurlāb* was rendered into Sanskrit under the title *Yantrarāja-vicāra-viṃśādhyaī*. Jai Singh also caused the composition of the *Sarvadeśīya-jarakālī-yantra* on the

²¹His manual was accordingly named *Yantrarāja*. Cf. Kṛṣṇasāṃkara Keśavarāma Raikva (ed), *Yantrarāja* of Mahendra Sūri with the Commentary by Malayendu Sūri, Bombay 1936.

²²S. R. Sarma, “Sultān, Sūri and the Astrolabe,” *Indian Journal of History of Science*, 35 (2000) 129–147.

²³See Yukiyo Ohashi, “Early History of Astrolabe in India,” *ibid*, 32 (1997) 199–295.

universal astrolabe invented by the Moorish astronomer al-Zarqal in Spain at the end of the eleventh century.²⁴

The composition of Sanskrit manuals on the astrolabe was accompanied by the manufacture of "Sanskrit astrolabes," i.e. astrolabes with markings in Devanāgarī script and with the time scale divided into *ghaṭīs* of 24 minutes instead of the hours of 60 minutes. About a hundred such Sanskrit astrolabes are preserved today in different collections all over the world.

V

Astrology is generally thought to be the most Hinduistic of all branches of learning, closely associated as it is with every aspect of Hindu religious life. There are many in India who consider Hindu astrology to be a "highly scientific" discipline. Last year attempts were made to introduce astrology in the universities because, as it was argued, it is one of most glorious legacies of Hindu learning. But the fact is that it is one subject which avidly borrowed from the Muslims. Two branches of Hindu astrology called *Tājika* and *Ramala* are entirely Islamic in origin. The traditional branch of Hindu astrology dealing with horoscopes is called *Jātaka*. Into this branch of horoscopy, the *Tājika* introduced many new techniques and also many Arabic technical terms. One such technique is *hāyana* or *varṣaphala*, i.e. the preparation of anniversary horoscopes or annual horoscopes.²⁵ This is the most sought after and most profitable branch of astrology today, everybody seeking to know his or her fortunes for the coming year. An offshoot of this are the weekly forecasts that newspapers print now-a-days.

The earliest Sanskrit work on *Tājika* is the *Gaṇakabhūṣaṇa* composed by Samarasimha in Gujarat in 1274. From this point on, scores of books were written in Sanskrit, with titles beginning with *Tājika-*, *Hāyana-* or *Hillāja-*. I have already mentioned the *Tājika-Nīlakaṇṭhī* composed by Nīlakaṇṭha in 1587. About the same time, a slender tract called *Khetakautuka* was produced by Akbar's courtier 'Abdul Raḥīm Khān. Though written in Sanskrit verse, this work is replete with Arabic astronomical and astrological terms.²⁶

²⁴See S. R. Sarma, "The *Ṣafīha Zarqāliyya* in India" in: Josep Casulleras and Julio Samsó (ed), *From Baghdad to Barcelona: Studies in the Islamic Exact Sciences in Honour of Prof. Juan Vernet*, Barcelona 1996, pp. 719-735.

²⁵See David Pingree, *Jyotiḥśāstra: Astral and Mathematical Literature*, Wiesbaden 1981, pp. 97-100.

²⁶Raḥīm also popularized versification in a mixture of languages, such as the following in

Another important work is the *Hāyanaratna* written by Balabhadra in 1629 under the patronage of Shāh Shujā. It is written in the style of a *nibandha* and contains valuable citations from the earlier authors.²⁷

The second class of Sanskrit astrological works that were influenced by Islamic astrology are the works on *Ramala*, which is a mode of divination by means of a special kind of dice.²⁸ This branch is not so widely spread as the *Tājika*; even so, many works were composed in Sanskrit, the names of which begin with *Ramala*, such as *Ramala-navaratna*, *Ramala-praśna*, *Ramala-rahasya*, and so on.

VI

Compared to these writings, Sanskrit translations of Persian or Arabic *belles-lettres* are rare. The first of these is the *Kathākaṭuka* (Kāvyaṃālā 71, 1901) composed by Śrīvara in 1505. It is a translation of Mullā Nūruddīn ‘Abdur Raḥmān Jāmī’s Persian classic *Yusuf-u Zulaikha*.²⁹ The poem is based on the story of Joseph and Potiphar’s wife as narrated in the Bible and Quran. Jāmī converts this story of Yusuf’s temptation by Potiphar’s wife into a parable of the human soul’s longing for the highest. Śrīvara rendered it into Sanskrit in 1505, that is within about 50 years after the original was composed. Śrīvara is faithful to Jāmī’s original, but makes two significant changes: The two introductory chapters of the Persian original are devoted to the praise of the Prophet Muḥammad and his miraculous journey to heaven. Śrīvara, on the other hand, praises Śiva in the first and the last cantos of his composition. At the end of the Persian original, Zulaikha’s youth and beauty are restored by Angel Gabriel. In the Sanskrit version, it is Śiva who rejuvenates Zulaikha and reunites her with Yusuf.

Śārdūlavikrīḍita metre:

dr̥ṣṭvā tatra vicitrītāṃ tarulatāṃ main thā gayā bāg men
kācit tatra kuraṅgaśāvanayanī gul toḍṭī thī khaḍī /
unmadyaddhanuṣā kaṭākṣaviśikhair ghāyal kiyā thā mujhe
tat sīdāmi sadaiva mohajaladhau he dil śukāre gujar//

²⁷See A. Weber, “Zur Geschichte der indischen Astrologie,” *Indische Studien*, 2 (1853) 236–287; 412–418.

²⁸David Pingree, *Jyotiḥśāstra*, pp. 79–80.

²⁹The *Kathākaṭuka* was brought to light by Richard Schmidt who compared it, in a monograph, with the Persian original, and later published the Sanskrit text together with his German translation; see his *Das Kathākaṭukam des Śrīvara verglichen mit Dchamis Jusuf und Zuleikha*, Kiel 1893; idem, *Śrīvaras Kathākaṭukam, die Geschichte von Joseph in persisch-indischem Gewand*, Kiel 1898. Subsequently, the *Kathākaṭuka* was published in India in 1901 as No. 71 in the Kāvyaṃālā Series. See also Rani Majumdar, “The Kathakautuka; A Persian Love poem in Sanskrit Garb,” *Journal of the Oriental Institute, Baroda*, 47.3–4 (March-June 1998) 283–287.

The second Sanskrit *kāvya* based on an Islamic source is the *Delārāma-kathā-sāra* (*Kāvya-mālā* 77, 1902) by Rājānaka Bhaṭṭa Āhlādaka. The title “Rājānaka” shows that Āhlādaka too flourished in Kashmir. That is all we know about him. It is probable that he also lived about the same time as Śrīvara did. The poem deals with the adventures of Ibrahīm and Murād, the two sons of Sultān Muḥammad of Aleppo. The book is named after a courtesan Dil-ārām who plays an important role in the story. The fortunes of the princes depend on the possession of a bird with a magic heart. I understand that there are several Arabic stories based on this motif. In our story the princes Ibrahīm and Murād wander in search of their lost kingdom and finally regain it. I too have been wandering in search of the Arabic original of the *Delārāma-kathā-sāra*, delightfully narrated by Āhlādaka whose name itself means “one who delights”. When I find the original, I shall be as delighted as the princes in the story were on regaining their kingdom.

VII

Unlike the other works mentioned earlier, these two *kāvya*s were directly translated from the Persian. This brings us to the question of Hindus learning Persian. In this context, I was delighted to discover more than a dozen Sanskrit manuals for learning Persian, which were composed during the four centuries between A.D. 1374 and 1764.³⁰ The most notable of this class of writings is Bihāri Kṛṣṇadāsa Miśra’s *Pārasīkaprakāśa*, which was dedicated to Akbar.³¹

The Jainas took a leading role in the propagation of Persian through the medium of Sanskrit. Many of the early texts of this class were composed by them. Several Jaina Ācāryas mastered Persian and composed poems in this language. Thus Jinaprabha Sūri, a contemporary of Sultān Muḥammad Tughluq, composed a hymn entitled *Ṛṣabhajinastava* in Persian language, but employing Prakrit and Sanskrit metres.

The earliest known Sanskrit manual for learning Persian is the *Yavana-nāmamālā* composed in 1364 by Vidyānilaya who appears to be a Jaina. Three manuscripts

³⁰S. R. Sarma, “Sanskrit Manuals for Learning Persian” in: Azarmi Dukht Safavi (ed), *Adab Shenasi*, Aligarh 1996, pp. 1-12; idem, “Teach Yourself Persian the Sanskrit Way: A Survey of Sanskrit Manuals for Learning Persian, A.D. 1364-1764,” to appear in *Shri Hazari Mull Banthia Felicitation Volume*. See also Claus Vogel, *Indian Lexicography*, Wiesbaden 1979, pp. 380-381.

³¹A. Weber, *Über den Pārasīprakāśa des Kṛṣṇadāsa*, Abhandlungen der Königl. Preuss. Über den zweiten, *grammatischen Pārasīprakāśa des Kṛṣṇadāsa*, Abhandlungen der Königl. Preuss. Akademie der Wissenschaften zu Berlin, Sitzungsberichte 41, Berlin 1889; Vibhūtibhūṣaṇa Bhaṭṭācārya (ed), *Pārasīkaprakāśa by Bihāri Kṛṣṇa Dāsa Miśra*, Varanasi 1965.

are said to be available of this text in some private Jaina manu-script collections. Fortunately more information is forthcoming about the next work, the *Śabdavilāsa* or *Pārasīnāmamālā* produced a year later, i.e. in 1365, in Gujarat. Its author was Salakṣa, a minister of King Haribrahma.³² Salakṣa justifies the compilation of a lexicon of foreign terms by claiming, quite rightly, that proficiency in several languages leads to high honour at the royal courts.

I have mentioned Bihāri Kṛṣṇadāsa Miśra's *Pārasīkaprakāśa* which was composed for Akbar. Kṛṣṇadāsa was a Śākadvīpiya Brāhmaṇa and sun-worshipper. He begins his work with an invocation to the divine sun. Likewise the vocabulary also commences with the Persian terms denoting the sun:

*śrīsūrya ukta āphtābo 'lāmanūro 'pi kathyate /
nāiyara ājamaś cāpi tavako bhuvaneṣu ca //8//*

"The divine sun is called *āftāb*; he is also said to be '*ālam nūr*, and again *nayyar-i a'zam*; *tabaq* [signifies] the worlds (*bhuvana*).

There are two sections in this work. The first contains a bilingual vocabulary (*kośaprakaraṇa*) in 269 stanzas spread over 22 vargas. The second section teaches grammar (*vyākaraṇaprakaraṇa*) through 398 *sūtras*. This is the first work to provide a systematic grammar of the Persian language. Kṛṣṇadāsa says that he did not study Persian systematically but picked it up just by listening:

*apathitvā tu tac chāstraṃ śrutvāivemaṃ karomy aham /
nyūnātirikatām atra kṣantum arhanti tadvidāḥ //7//³³*

Akbar's son and successor Jahāngīr encouraged an Assamese poet Karṇa-pūra to produce another manual called *Saṃskṛta-pārasīka-padaprakāśa* in 528 stanzas.³⁴ Like the previous manual by Kṛṣṇadāsa, this too is divided into two sections: vocabulary and grammar. Karṇapūra's exposition of Persian grammar in simple verses is extremely lucid in comparison to Kṛṣṇadāsa's.

³²Umakanta P. Shah, "Śabda-vilāsa or Pārasīnāmamālā of Mantrī Salakṣa of Gujarat," *Vimarśa: A Half Yearly Bulletin of Rashtriya Sanskrit Samsthan*, Vol. 1, No. 1 (1972), English Section, pp. 31-36.

³³Interestingly enough, here the word *śāstra* seems to have been used in the sense of language. Śrīvara also employs the word in the same sense when he calls himself *yavana-śāstra-pāraṅgama*, "expert in the Persian language". Āhlādaka too appears to be using the word in the same sense, when he states at *Delārāma-kathā-sāra* 1.2:

*eṣā kathā mausala-śāstra-dṛṣṭā bhūyiṣṭasadvācyamahāvīṣṭā /
manovinodāya satāṃ janānāṃ gīrvāṇavāṇyā kriyate mayādya //*

which may mean "this story, which is found in the language of the Mosul city, ... is now being rendered into Sanskrit by me."

³⁴Hariharaṇātha Yogin (ed), *Saṃskṛta-pārasīka-padaprakāśa*, Kashi, VS 2009.

Jahāngīr's successor Shāh Jahān commissioned yet another manual, but of a different kind. In 1643 Śrīmālajit, the royal astrologer with the title Vedāngarāya composed the *Samskṛta-pārasika-padaprakāśa*.³⁵ This manual teaches special vocabulary related to Islamic astrology and astronomy. It also teaches how to convert dates of the Hijrī era into dates of the Śaka era and vice versa. Vedāngarāya claims that his work will teach Persian to those who know Sanskrit, Sanskrit to those who know Persian, and both to those who know neither.

*saṃskṛtoktividī pārasījñatā pārasīvidī ca saṃskṛtajñatā /
taddvayāvidī ca taddvayajñatā jāyate 'tra tad adhīyatām idam //*

Apparently this vocabulary of astronomical and astrological terms was quite popular. So much so, within sixteen years of its composition, i.e. in 1659, a shorter paraphrase in 104 stanzas was prepared by Vrajabhūṣaṇānanda under the title *Pārasīvinoda*.³⁶ In the subsequent centuries special manuals of administrative terminology in Persian were produced. Thus some time around 1676 Shivaji ordered the compilation of the *Rājavyavahāraśāstra* by Raghunātha Paṇḍita.³⁷ A similar work containing Persian vocabulary related to administration and correspondence was produced at the instance of Sawai Madho Singh about the year 1764 by Dalapatirāya under the title *Yāvanaparipāṭyanukrama*.³⁸

All these works invariably attempt to teach Persian in the same manner as Sanskrit was taught. Traditionally a Sanskrit pupil is first made to memorize a lexicon and at the same time the tables of nominal declension and verbal conjugation. This is followed by the memorization of the *Laghusiddhāntakaumudī*. The lexicon that was learnt by heart was the *Amarakośa* which is in verse. The Persian-Sanskrit vocabularies are also composed in verse form and the vocabulary is arranged quite often in the same successive groups as in the *Amarakośa*.

Besides the vocabulary, some texts attempt to teach the grammar of Persian language as well. We have said that the first grammar lessons a pupil gets in Sanskrit are the tables of declensions and conjugations. The same pattern is also

³⁵I have used Ms. No. 1005/1882-92 of the Bhandarkar Oriental Research Institute, Poona.

³⁶I have used Ms. No. 166 of A. 1883-84 of the Bhandarkar Oriental Research Institute, Poona.

³⁷Published from Shivaji Press, Poona 1880; also published in *Śivacaritrapradīpa* (in Marathi), Bharat Itihas Samsodhak Mandal, Poona 1925. See P. K. Gode, *Studies in Indian Cultural History*, Vol. I, Hoshiarpur 1961; Vol. II, Poona 1960; Vol. III, Poona, where he frequently cites from this work.

³⁸See M. M. Patkar, "Yāvanaparipāṭī-Anukrama or Patraprasāsti," *Indian Historical Quarterly*, 14 (1938) 153-157.

followed in teaching Persian. Thus the *Pārasī-Dhāturūpāvalī*³⁹ begins with the conjugations of the root *śud*, “to be” (= Sanskrit *bhū*) in the present tense, with Sanskrit equivalents, in the following manner:

mī śavad bhavati; mī śavand bhavanti; prathamapurusaḥ
mī śavī bhavasi; mī śaved bhavatha; madhyamapurusaḥ
mī śavam bhavāmi; mī śavem bhavāmah; uttamapurusaḥ

After such tables, the Sanskrit pupil learns grammatical *sūtras* of Pāṇini, or their re-arrangement as in the *Laghusiddhāntakaumudī*. In imitation of this, Akbar’s courtier Bihāri Kṛṣṇadāsa composed the grammatical half of his manual in the *sūtra*-style. Jahāngīr’s protégé Karṇapūra also devoted nearly half of his manual to grammar which, like the lexical part, was composed in verse. By adopting the pattern of the highly complex Sanskrit grammar, these writers make Persian more difficult than it actually is.

It is quite obvious that this genre of works fulfilled more the intellectual curiosity on the part of the Sanskrit-using elite rather than the practical needs of the beginner. The large number of Hindus, in particular the Kāyasthas who distinguished themselves through their mastery over Persian, may have, on the other hand, learnt this language directly as the Muslims did. H. Blochmann observes that by “the eighteenth century the Hindus had almost become the Persian teachers of the Muhammadans.”⁴⁰

IX

Throughout the twentieth century, this subject of exchanges was treated in India from the narrow perspective of the bibliographer. Lists were made, and names were enumerated of books that were translated from Sanskrit to Persian, and vice versa, as I have done just now. It is high time that each of these translations is evaluated individually by comparing it with the original; by studying the technique of translation, by analyzing the precise context in which the translation was made. But for such a study, one needs expertise in Sanskrit on the one hand and Persian or Arabic on the other hand. A pioneer in this respect was Albrecht Weber, who published and discussed Bihāri Kṛṣṇadāsa’s *Pārasīkaprakāśa* and also Balabhadra’s *Hāyanaratna*.⁴¹ The two outstanding examples today are Professor David Pingree

³⁹Ms. No. 4644 of the L. D. Institute of Indology, Ahmedabad.

⁴⁰H. Blochmann, *Ā’in-i Akbarī*, Vol. 1, third revised edition, New Delhi 1977, pp. 377–378.

⁴¹See fn. 27 and fn. 31 above

of Brown University and Professor Michio Yano of Kyoto Sangyo University. India, unfortunately, failed to cultivate such expertise during the past half a century.

It is therefore highly gratifying that two young Japanese scholars have exhibited such expertise in recent years. One is Professor Takanori Kusuba of Osaka University of Economics. In 1986 he wrote a Master's thesis at Brown University on the Sanskrit translation of the Eleventh Chapter of the Book II of the *al-Tadhkira fi 'ilm al-hay'a* of Naṣīr al-Dīn Ṭūsī and its commentary by Birjandī. In February this year, an expanded version of this work was published under the title *Arabic Astronomy in Sanskrit* under the co-authorship of David Pingree.⁴² This book contains the critical editions of the Arabic original and the Sanskrit rendering, English translation, astronomical commentary, glossary of Arabic and Sanskrit terms.

The second scholar is Dr Kazuyo Sakaki, who was awarded the PhD degree by Aligarh Muslim University for her impressive thesis on Dārā Sukoh's Persian work *Majma'al Baḥrayn* and its Sanskrit version *Samudrasaṅgama*. Her thesis contains critical editions of the Persian and Sanskrit texts, their translation into English and a historical-philosophical commentary.⁴³ And now she is continuing similar studies in connection with a lost Sanskrit text called *Amṛtakunḍa* and its extant translations in Arabic and Persian.

I am happy to have known both these scholars. I hope their example be appreciated and emulated in India.

⁴²Takanori Kusuba and David Pingree, *Arabic Astronomy in Sanskrit: Al-Birjandī on Tadhkira II, Chapter 11 and its Sanskrit Translation*, edited, commented and translated, Brill: Leiden, Boston, Köln, 2002.

⁴³"Dārā Sukoh's Contribution to Philosophy of Religion, with special Reference to his *Majma'al Baḥrayn*," Ph.D. Thesis, Aligarh Muslim University, 1998.