AL-BĪRŪNĪ AND SCIENCE COMMUNICATION IN SANSKRIT

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Most of the scientific books of the Hindus in India in the eleventh century were composed in poetry, largely in certain favourite metres, to facilitate their being learnt by heart, and to preserve them from additions or omissions. The use of the metrical form, and the stress on poetic quality, often led to misty phraseology, and verbosity. The adoption of foreign words, their transformations according to Sanskrit rules, and the profuse use of synonyms to assist metrical composition, added to the difficulty of understanding. This made it arduous for foreign scholars who visited India to master the available knowledge or to transmit their own ideas effectively for a permanent impact. Al-Bīrūnī composed a translation of the Books of Euclid and the *Almagest* and dictated a treatise on the construction of the astrolabe, which do not appear to have become well known.

"Most of their books are composed in *śloka*", wrote al-Bīrūnī "in which I am now exercising myself, being occupied in composing for the Hindus a translation of the books of Euclid and of the *Almagest*, and dictating to them a treatise on the construction of the astrolabe, being simply guided herein by the desire of spreading science. If the Hindus happen to get some book which does not yet exist among them, they set at work, to change it into *ślokas* which are rather unintelligible, since the metrical form entails a constrained affected style, which will become apparent when we shall speak of their method of expressing numbers. And if the verses are not sufficiently affected, their authors meet with frowning faces, as having committed something like mere prose, and then they will feel extremely unhappy. God will do me justice in what I say of them."[1]

Abū-Rayhān Muḥammad Ibn Aḥmed al-Bīrūnī, or al-Bīrūnī, a fascinating Iranian scholar from Khwārizm, who travelled and wrote extensively in India in the 11th century A.D., sought to present "an accurate description of all categories of Hindu thought, as well those which are admissible as those which must be rejected",[2] in his invaluable book *Kitāb-ul-Hind*, commonly known as *Al-Bīrūnī's India*. In the chapter XIII of *India*, al-Bīrūnī wrote at some length on certain aspects of Sanskrit metres. "If we here take so much trouble with Indian metres, we do it for the purpose of fixing the laws of the *śloka*, since most of their books are composed in it".[3]

The importance of the metrical form in ancient and medieval Indian works on science in Sanskrit is further elucidated by al-Bīrūnī in his introductory remarks in the above chapter which deals with the grammatical and metrical literature of the Hindus. "Grammar is followed by another science,

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called *chandas,* i.e. the metrical form of poetry, corresponding to our metrics—a science indispensable to them, since all their books are in verse. By composing their books in metres, they intend to facilitate their being learned by heart, and to prevent people in all questions of science ever referring to a written text, save in a case of dire necessity. For, they think the mind of man sympathises with everything in which there is symmetry and order, and has an aversion to everything in which there is no order. Therefore, most Hindus are passionately fond of their verses, and always desirous of reciting them, even if they do not understand the meaning of the words, and the audience will snap their fingers in token of joy and applause. They do not want prose compositions, although it is much easier to understand them".[4]

Al-Bīrūnī deals with the advantages and disadvantages of poetic rendering of authoritative works, again and again. "The scientific books of the Hindus are composed in various favourite metres, by which they intend, considering that the books become corrupted by additions and omissions, to preserve them exactly as they are, in order to facilitate their being learned by heart, because they consider as canonical only that which is known by heart, not that which exists in writing. Now it is well known that in all metrical compositions, there is much misty and constrained phraseology merely intended to fill up the metre and serving as a kind of patch work, and this necessitates a certain amount of verbosity. This is also one of the reasons why a work has sometimes one meaning and sometimes another.

"From all this, it will appear that the metrical form of literary composition is one of the causes which makes the study of Sanskrit literature so particularly difficult."[5]

Al-Bīrūnī describes also the tendency to use synonyms profusely as an aid to versification. The use of synonyms according to him extended even to words from foreign languages also, by a process of translation and then of gradual transformation. "Of course in all this, the Hindus are actuated by the desire to have as many names as possible, and to practice on them the rules and arts of their etymology, and they glory in the enormous copiousness of their language which they obtain by such means."[6] This adds to the difficulties of understanding. Referring to the tendency of calling one and the same thing by a multitude of names, al-Bīrūnī says "If, in fact, one single name would be sufficient, all the other names save this one are to be classified as mere nonsense, as a means of keeping people in the dark, and throwing an air of mystery about the subject. And in any case this copiousness offers painful difficulties to those who want to learn the whole of the language, for it is entirely useless, and only results in a sheer waste of time."[7]

Synonyms have their uses. Not all synonyms have the same meaning, though they may ultimately connote the same thing. Al-Bīrūnī gives one possible explanation for the plentitude of Sanskrit synonyms. "These names have been invented simply to facilitate the versification of their metrical books. For this purpose they have invented so many names that one may fit into the metre if the others will not."[8]

The main points made out by al-Bīrūnī are the following:

(i) The science of *Chandas* dealing with metrical form of poetry was indispensable to Hindu writers since all their books were in verse, most of them in *ślokas;*

(ii) the Hindus placed great emphasis on symmetry and had aversion to everything in which there was no order;

(iii) the use of the poetic form alone was not adequate for acceptability even of science books, there had to be poetic quality as well;

(iv) the metrical form was intended to reduce corruption of the text by additions and omissions as well as to enable their being learnt by heart; and

(v) the liberal use of synonyms to facilitate metrical form rendered understanding difficult.

There were several important consequences of the insistence on poetic quality in the presentation of scientific results in metric form. One was that effective communication was impossible by a scientist unless he was a poet of some eminence as well. Some of the writings of Bhāskarācārya, which have had popular appeal are well known for their poetic excellence.[9] Examples of the different metres given in Sanskrit treatises on the science of metrics are choice specimens of poetry, mostly written by the authors themselves. Poetic quality generally meant the use of imagery and figures of speech, often giving rise to multiplicity of meaning. Further, workers in the practical fields of science other than Āyurveda, who had lower social status, and were not adequately learned in the niceties of the Sanskrit tongue, could not produce any scientific literature. Even if some of them had produced anything of poor or average quality, it would not endure. Thus important contributions to knowledge would come to the notice of the interested public only when some gifted encyclopeadist presented all the available knowledge in the field, in poetic form as a *saṃhitā.*

The use of the poetic form for scientific communication also made it difficult for scholars from other parts of the world to transmit new ideas to the Indians unless they had acquired mastery of Sanskrit or had the assistance of good Indian versifiers.

Al-Bīrūnī himself appears to have been instrumental in translating or otherwise rendering some works into Sanskrit. According to Professor Suniti Kumar Chatterji, the Sanskrit *Paṇḍit* was in evidence in rendering into Sanskrit verse, the subject matter explained to him.[10] Al-Bīrūnī's rendering into Sanskrit of the *Euclid,* the *Almagest,* and the construction of the astrolabe do not appear to have come down to us.

The remarks of al-Bīrūnī about the tragedy of prosaic translations—that if the verses are not sufficiently affected their authors meet with frowning faces as having committed something like more prose—may not have been untained by a personal element.

References

1 *Al-Beruni's India,* tr: Edward C. Sachau, p. 137.

2 The full title of the book *Alberuni's India* is "Taḥqīq māli'I-Hind min maqūlatin maqbūlatin fī'l-'aql au mardhulatin".

3 *Alberuni's India,* p. 147.

4 *ibid,* p. 136

5 *ibid,* p. 19

6 *ibid,* p. 299

7 *ibid,* p. 229

8 *ibid,* p. 140

9 "Out of a swarm of bees, one fifth part settled on a blossom of *Kadamba;* one third on a flower of *Silindhri;* three times the difference of those numbers flow to the bloom of a *Kutaja.* One bee, which remained, hovered and flew about in the air, allured at the same moment by the pleasing fragrance of a jasmin and a pandanus. Tell me charming woman, the number of bees." *Līlāvatī* by bhāskarācārya. Quoted by A. K. Biswas in *Science in India,* p. 12.

10 Chatterji, Suniti Kumar. "Al-Bīrūnī and Sanskrit", *Al-Beruni commemoration Volume,* p. 87.