Book reviews and refereeing

This is in response to the review of the book Gaṇita-Yuktibhāṣā which appeared recently in Current Science¹. While the reviewer seems generally appreciative of the two-volume work running into nearly 1100 pages, he has objected to the inclusion of an Epilogue on the revised planetary model of Nilakantha, which appears on pages 837–856 in volume II of the book. According to the reviewer:

‘Absence of Sarma during the final stages of publication of the work has facilitated the addition of some spurious content in the name of an epilogue to an otherwise perfect edition of Yuktibhāṣā.

Ramasubramanian [sic] et al.² have been overzealous in adding, their published work on Implied Heliocentric Picture of Planetary Motion, which is already under challenge, to the monumental work of Sarma. The epilogue as above which presents a speculative interpretation of the computational contrivance of Nilakantha’s Tantrasaṅgraha has no connection with Yuktibhāṣā at all. Reference to Tantrasaṅgraha at the outset in Yuktibhāṣā is only in a general sense to mean the traditional wisdom adapted for his particular epoch . . .

It is hoped that the publishers shall do the needful to relieve the great work of K. V. Sarma of the burden of a spurious thesis.’

The reviewer is entitled to his view that the planetary theory discussed in Yuktibhāṣā has ‘no connection . . . at all’ to the revised planetary model introduced by Nilakantha in his Tantrasaṅgraha and Āryabhaṭīya. Now that the critical edition of Yuktibhāṣā is available, he could have dealt with this issue in detail in a refereed journal article. However, he has chosen the columns of a book review to make the outrageous allegation that late K. V. Sarma, our esteemed co-author, would have disapproved of the Epilogue to volume II of the book as being spurious and not relevant for understanding the contents of Yuktibhāṣā.

Normally such allegations deserve to be ignored. However, since Current Science has allowed such allegations to appear in its book review section, we would like to make a brief response.

In his introduction to the two volumes, Sarma has clearly expressed his view that the planetary theory being discussed in chapter VIII of Yuktibhāṣā is founded on the revised planetary model introduced by Nilakantha, and refers to K. Ramasubramanian et al.² for a detailed exposition of it. According to Prof. Sarma (in his introduction to the book, vol. I, p. xlii),

‘Chapter VIII deals with the Planetary Theory and the computation of Mean and True Planets . . .

In a nutshell the planetary theory broadly is like this. The Earth is the centre and the Sun and the Moon go around the Earth. As for other planets, with Earth as the centre, the śīghra goes round the Earth with the mean motion of the Sun. The mean planet moves on a circle with śīghra as centre. The true planet is on the maṇḍocca circle with mean planet as its centre. Alternatively, the last two circles can be interchanged. This theory is advocated by Nilakantha in his commentary on Āryabhaṭīya and practically all later Kerala authors have followed suit. In fact Nilakantha tries to say that it was the view of Āryabhata also. If śīghra is identified with the Sun itself then this agrees broadly with the modern theory with the positions of Earth and Sun reversed. In fact the western astronomer Tycho Brahe (1546–1601) appears to have adopted a similar theory.’

Thus it may be noted that, in his Introduction to Yuktibhāṣā (cited above), Sarma has only reiterated this point and referred to our Current Science article³ for further details. The Epilogue to Volume II contains material based on this article and the Proceedings of a Conference held in 2000 to commemorate the 500 years of Tantrasaṅgraha, which was held under the guidance of Sarma, who also contributed the lead article⁴. This material was given as an Epilogue as it was felt by all the authors (including late Sarma) as useful background material for understanding the discussion in chapter VIII of Yuktibhāṣā on planetary theory. While we would very much welcome serious, scholarly criticism of our understanding of the planetary theories of Nilakantha and Jayyadhava, we believe that the kind of outrageous allegation made by the reviewer, that we have introduced spurious material which would not have been approved by our esteemed co-author who is no more, borders on the scurrilous and ought not to have found its way into the pages of this reputed journal. In any case, our response above should put such baseless speculation to rest.

Another point which seems to have confused the reviewer is the appearance of a reference to Tantrasaṅgraha in the context of the discussion in chapter V of

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Yuktibhāṣā on the avāntarayuga (intermediate cycle) of 576 years. According to the reviewer:

‘Text of the Yuktibhāṣā and the translation by Sarma do not refer to Tantrasaṅgraha in the discussion of the avāntarayuga of 576 years (210,389 days). Explanatory notes by Ramasubramaniam [sic] et al. give the impression that the minor period owes its origin to Tantrasaṅgraha of Nilaṅkanṭha. In fact, the Tantrasaṅgraha dyugaṇa or day-count of 1,577,917,200 could not have given the perfect integer day count of 210,389 days in 576 solar years... The arithmetic involved is 210,389 × 7500 = 1,577,917,500 of Āryabhata and not 1,577,917,200 of Nilaṅkanṭha.’

In our explanatory notes in the book (vol. I, p. 173), there is a reference to the avāntarayuga of 576 years found in Tantrasaṅgraha, but nowhere do we claim that this concept originates with Tantrasaṅgraha. And, unfortunately for the reviewer, the number of civil days is the same in both Āryabhata and Tantrasaṅgraha, namely 1,577,917,500. The wrong number 1,577,917,200 happens to be a typographical error on p. 173 of the book, on which the reviewer has built an entire fiction!

On a serious note, we would like to state that, having carefully studied both the texts, it is our considered view that Yuktibhāṣā closely follows Tantrasaṅgraha in its exposition of most of the topics, especially in the second part on astronomy. This is indeed made clear right at the beginning of Yuktibhāṣā, where it is stated that (see Sarma’s translation in our book, vol. I, p. 1):

‘Here, at the outset, with a view to expound, following the Tantrasaṅgraha, all the calculations as are needed for the computation of the motion of the planets, first the elementary calculations... are being set out.’

However, Yuktibhāṣā is not a commentary on Tantrasaṅgraha. In fact, it includes a lot of demonstrations and explanations of the background mathematics, as well as the results and procedures presented in Tantrasaṅgraha. If anything, the reviewer’s claim that ‘Tantrasaṅgraha has no connection with Yuktibhāṣā at all’, seems truly spurious.

We are disappointed that the reviewer has failed to present any scholarly review and critique of the book, and has only made some unwarranted allegations. The moral of the story, according to us, should be that even book reviews need some form of refereeing, or at least an exercise of editorial supervision.

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Unusual citrus

On a mid-November afternoon in 2007, we were on a casual visit to the garden at our Department of Botany, where we saw a twig hanging entrapped on a bough of a citrus tree (Citrus aurantifolia [Christm.] Swingle). Thinking that the twig might have been detached from some nearby tree, a routine happening, we overlooked it.

Later, on a closer look, we noticed that it was not a twig from another nearby tree, but a part of the same citrus tree. A side branch of the tree displayed a unique feature (Figure 1a). Instead of tapering into a deadened tip as all other branches did, this particular branch started broadening exuberantly beyond the tip, and became curved, acquiring a U-shape (Figure 1b). The diameter of the ‘tip’ measured 0.9 cm, which was the average value for the normal twigs. As it grew further, beyond the point of termination, it started broadening and ended into a node (1.6 cm). Beyond this, it broadened further, with a diameter of 2.3 cm.

Then the branch curved upwards, acquiring roughly the U-shape, and produced further two major nodes. From these nodes erupted a large number of smaller branches of varying diameters (1.0–1.9 cm). These

Figure 1.  a. Citrus tree distanad view: unusual feature in the box;  b. Close-up of the box.

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