
Preface

If you talk of the history of mathematics to any Indian mathematician, you are most likely to have two types of reactions. Firstly, his mind would immediately flash back to the great works of ancient Indian mathematicians, including even the mathematical contents of the Vedas which he might hardly have had a chance to look at. This is but natural. Apart from Indians, the whole world feels rightly proud of the importance of the great mathematical achievements in ancient India. Secondly, he remonstrates (and this may happen even in the case of a respectable Indian mathematician) that he does not know the history of mathematics, nor is he interested in knowing it; in fact, he has no time to learn it. However, the fact remains that as soon as a new mathematical work originates, its history begins along with it and keeps taking shape as the subject develops. Thus the history of mathematics cannot be separated from mathematics. As André Weil put it, the history of mathematics is in itself mathematics and no one should venture to enter the field unless he knows enough of mathematics.

Placed between these two extraordinary adventitious and redundant situations, the studies of the history of mathematics in India have suffered hopelessly. In fact, they have yet to be initiated in the right perspective. While a good university in every part of the world has a department/institute of study in the history and philosophy of mathematics, it is disappointing that there is hardly a university in India that provides facilities for such studies.

This has led to a deadening disposition: History of mathematics in India has come to mean the ‘history of ancient Indian mathematics’. While there is a vast ocean of world history of mathematics spread before us, Indians cannot afford to row in the backwaters of this vast ocean, however rich these may be. Moreover, how long could we continue doing so? After all, studies in the history of mathematics in India cannot be cramped to, say, up to the twelfth century C.E.

Regarding the objectives of this volume, the proposal was to publish a collection of contributed articles in the form of a book entitled *Ancient Indian Leaps into Mathematics*. The aim was to highlight significant, positive, and

concrete contributions made by ancient Indian mathematicians in the initial advancement of mathematics and possibly relate them to the developments elsewhere in the world in those days, particularly to those in Greece, the Middle East, China, and Japan. The author of an article to be included in the book was expected to take care of the following:

The article should not contain any vacuous, pompous or pretentious statements, and at no stage be verbose. Statements like the ‘Vedas contain all ancient knowledge’ and ‘there exists no knowledge outside the Vedas’ should be considered out of place. The article should not directly or indirectly be based on the contents or spirit of the book *Vedic Mathematics* by Jagadguru Swami Sri Bharati Krisna Tirathji Maharaj, for the simple reason that the contents of that book are neither Vedic nor ancient Indian.^{1,2}

Unnecessary praise for ancient Indian mathematics or any part thereof has to be avoided. The article need not be a research article on ancient Indian mathematics (mathematicians) and could very well be a ‘revisitation’ of the subject, but the exposition has to be very well-defined and concrete. A literary style of the exposition is welcome.

Articles describing concrete illustrations of the influence or connections of ancient Indian mathematics on Greek and Middle Eastern countries will be preferred. They should appear as one unit of the world history of mathematics, rather than belonging to one sector or civilization having nothing to do with the rest of the world.

Finally, and most importantly:

Unfortunately it is customary among most Indian scholars to exaggerate the achievements of a particular Indian mathematician to claim that he was better than the greatest of his time, without bothering in the least about the existence of others during that period. As many such claims are not actually true and it is almost impossible to prove them, their efforts in aggrandizing his real achievements ultimately result in belittling his work in the overall context of the world history of mathematics. Again, even more unfortunately, there has been a consistent tendency on the part of Western historians of mathematics and the Euro-centric scholars of history of mathematics, to ignore, let alone undermine, the mathematical achievements of ancient India. Their belief that except for the discovery of the concept of zero and the decimal representation of numbers, which, of course, is now universally accepted, everything else great in mathematics was done outside India is really untenable. The reason for such thinking is, in fact, somewhat easy to understand: The whole of Europe

¹ The interested reader is recommended to refer to: Dani, S. G.: Myth and Reality: on ‘Vedic Mathematics.’ An updated version of a two-part article in *Frontline* (Vol. 10, No. 21, October 22, 1993, pp. 90–92, and Vol. 10, No. 22, November 5, 1993, pp. 91–93).

² Neither Vedic Nor Mathematics: A statement signed by S. G. Dani, and et al. <http://www.sacw.net/DC/CommunalismCollection/ArticlesArchive/NoVedic.html>.

learned mathematics only through the Greeks. The present book aims to dispel this notion and place in a proper perspective the significant achievements of ancient India in the world history of mathematics.

The royalties from the publication of the work will go to the Indian Society for History of Mathematics to help overcome its financial infirmities.

What is it that we have done? Almost nothing! In the civil administration of every city or town, there are offices of ‘Assessors and Collectors’. Their job is to assess the properties of the residents in the area of their jurisdiction, evaluate taxes on these properties according to the rules, and collect the taxes for the government. This is precisely what we have done. Once the objectives were decided, we contacted a number of reputed scholars of the history of ancient Indian mathematics for their contributions. Not all came forward. However, those who did constitute a good (a well-defined) subset of the undefined collection. It is only for the reader to judge how far we have been successful in our humble mission.

As it is a unique endeavor, we had to tap many sources for assistance. Our first thanks go to the authors who were so enthusiastic to contribute their articles to the volume. We appreciate their patience to bear with us for almost 2 years to wait to see their work in print. Next, we are grateful to Professor Victor Katz who took pleasure, and pains too, to go through the whole manuscript, make significant suggestions to improve the text, including even rejecting an article on pertinent grounds, before writing the Foreword. Again, our thanks are also due to Satish Verma, SGTB Khalsa College, Delhi University, endowed with unusually skilled expertise, who helped us in preparing camera-ready copy of the manuscript. His knack of converting Sanskrit ślokās into their Roman rendering, and vice versa, was remarkable.

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