Math through the Ages: A Gentle History for Teachers and Others by William P. Berlinghoff and Fernando Q. Gouvêa

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It was in response to the demands of mathematics teachers to use historical materials from different cultures in their teaching that led to our writing *Multicultural Mathematics: Teaching Mathematics from a Global Perspective* [see Nelson *et alii*, 1993]. In that book we attempted to combine three elements: a non-Eurocentric account of the development of mathematics, a justification for a historical and multicultural approach to the teaching and learning of school mathematics, and some suggestions and lesson plans for the teachers.

Berlinghoff and Gouvêa have similar objectives. However, their approach is different: history in about 60 pages sprinkled with anecdotes and biographies, followed by 25 sketches, usually between four and six pages long, which explore the development of mathematical concepts and notations that include perennial subjects such as zero, negative numbers, and pi as well as useful surveys of quadratic and cubic equations and the development of geometry. Topical subjects such as Fermat's Last Theorem and electronic computers are also covered. The book concludes with a useful list of reference texts as well as information from the Internet.

It is clear that the task that the authors set themselves, especially in their historical account in the early section of their book, is quite formidable. And the fact that they do succeed in providing a lucid and comprehensive account is the great strength of the book. The multicultural dimension is present in this historical account, but somewhat sparse after the 12th century. This is borne out by the total neglect of Kerala Mathematics of Medieval India in the period between the 14th and 16th centuries. Its importance may be gauged from the fact that it is the first occurrence of what may

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be described as a 'passage to infinity' that heralded the emergence of modern mathematics.[1] There are also errors of commission and omission when Indian mathematics is mentioned in the sketches. For example, Āryabhaṭa (oddly described as a 'Hindu'[2] mathematician) is supposed to have obtained an implicit value for pi of 62832/20000 around AD 530 [108–109] when the correct date is AD 499, the year of composition of his masterpiece *Āryabhaṭīya* in which this value first occurs. A similar neglect is also evident in the lack of discussion of Arab mathematics (described as 'Arabic Mathematics') after the 12th century. The contributions of Chinese mathematics are understated, especially in the historical section.

The underlying approach of the book is to concentrate on the *internal* development of mathematics and this is reflected in the items that are included in the readings and bibliography. Of course, as a result, the book avoids the historical pitfalls of retrospective privileging, but also at the same time does not emphasize the social-cultural context in which mathematics developed in different societies. The question of cross-cultural mathematical transmissions is also underplayed as result. Thus, on page 14 one reads:

> Were there contacts between civilizations and did the mathematics of one influence the other(s). For this period (i.e., the BC period) we don't know.

We certainly know more than the authors imply.

BIBLIOGRAPHY

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[1] For a short summary of Kerala mathematics, see pages 286–294 and pages 406–415 of item 78 of their bibliography.

[2] To the reviewer, an irritating aspect of this book is the somewhat indiscriminate use of the term 'Hindu': on page 88, the Jaina mathematician, Mahāvīra, is referred to as a 'Hindu mathematician'.