

**Encyclopaedia of the History of Science,  
Technology, and Medicine in Non-Western Cultures**

HELAINÉ SELIN (Ed.)

# Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures

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With 1374 Figures and 107 Tables

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## Personal Note From The Editor

Many years ago I taught African history at a secondary school in Central Africa. A few years before, some of the teachers in the country had designed a syllabus that included pre-European history, since the curriculum, left over from colonial days, did not include any mention of Africa before the Portuguese. After a year of teaching from this revised version, I asked my students what they thought was the most significant moment in African history, and virtually all of them said it was the arrival of David Livingstone.

It may well be that that was the most important moment for Africa, but it shocked me at the time that no one considered any African achievements worth mentioning. Over these years I have come to see that the dominance of the West means not only that Westerners disparage the rest of the world but also that the rest of the world sees itself as inferior to the West. This book is meant to take one step towards rectifying that, by describing the scientific achievements of those who have been overlooked or undervalued by scholars in both the West and the East.

The book is more than just a compilation of disparate articles; it is a glimpse into how people describe and perceive and order the world. I hope the reader will do some exploring. In addition to reading about Maya astronomy, one can read about Mesoamerican mathematics and medicine, as well as a general article on magic and science, because all the fields are interrelated and entwined. It might be useful to read about astronomy in Africa and in Australia, to see how similar and different these cultures are. One can travel across disciplines, following the achievements of one culture, and across cultures, comparing the same discipline. And then it would be useful to read an essay on Transmission of Knowledge, or Rationality and Method, to put the articles and their contents in a broader philosophical and social context.

My hope, and that of the advisors and contributors to the project, is that the *Encyclopaedia* will expand the horizons of scholars, teachers, and students by illustrating how extensive the accomplishments of non-Western scientists are. May our future students never believe that science is limited to a fraction of the world.

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A note about the authors' names, especially Asian ones: I made many embarrassing errors confusing peoples' surnames and given names, but I was reluctant to change authors' names to conform to the Western style, as it went against the spirit of the *Encyclopaedia*. Therefore, I have left the names as the authors wrote them.

There is no cure for curiosity.  
Tim Davis, *My Life in Politics*, 2006

Dedicated with affection and admiration to Dr. Robert Friedlander,  
Sarajune Dagen, and the nurses in the brain surgery unit at Brigham and  
Women's Hospital, Boston. You saved my life.

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Bob, Tim, Lisa, Lisa: you're the best.

## Introduction to the Second Edition

“Some people now incorporate bits and pieces of information about other cultures’ science into their courses; we hope that in ten years, minds and curricula will have expanded to include much more of this material.” That line is a quotation from the Introduction to the first edition of the *Encyclopaedia of the History of Science, Technology, and Medicine in Non-Western Cultures*. Ten years has passed. What has changed?

The most dramatic change has been technological. When I began working on the first edition, in 1992, only a handful of people had email access, and that was especially true for people outside of Europe and North America. Just getting in touch with people was a major obstacle. Months, sometimes years, passed between the time an invitation was extended and accepted, and an article was sent, edited and sent back, and approved. Electronic books did not exist. Images and bibliographies were necessarily limited, as we did not want to make the encyclopaedia too large. Now we have an encyclopaedia that goes far beyond the limits imposed by print. We are in the midst of a new kind of scholarly communication.

The second change becomes apparent by looking over the scholarly literature in the field. In some disciplines, twice as many new books and articles were published in the last decade than had been published in the 10 years before the first edition. With the increase in scholarship, we find that we no longer have to defend our field of study. One of the weaknesses of the first edition was that we did not always eliminate the anti-Eurocentric language and occasionally allowed a polemical tone to come through. In the new edition, we move from advocacy to analysis.

Another advantage of the increase in relevant scholarship is that we have been able to find materials that we were unable to find before. This new edition includes sections on ceramics, architecture, water management, brewing, fishing, cosmology, and many more entries on ethnobotany, metallurgy, and on city and town planning.

What is perhaps even more interesting is that it is not just scholarly interest that has increased over this period. A lead article in the *New York Times Magazine* on February 23, 2003 discussed the field of ethnomathematics, which is a major focus of the encyclopaedia. In this area, the mathematical activities of many cultures, such as Indian geometry or mapmaking in the Marshall Islands, are recognized as mathematics, where before they were relegated to the field of anthropology and dismissed as not having any mathematical value. It is particularly relevant that educators have picked up this notion and are trying to study and teach science through the lens of culture. What a perfect time to expand the encyclopaedia and take advantage of this new interest.

### The Electronic Version

The web makes a cross-cultural, cross-disciplinary comparison especially easy. A reader can search “lunar mansions” and be taken to all the mentions of lunar mansions, not just in the articles specifically devoted to that topic, but in any of the rest of the encyclopaedia, as in the chapter on Ibn Majid, an Arab navigator of the fifteenth century. It also makes it possible to connect the philosophical essays with the more empirical ones, making it easier to broaden users’ views to include philosophical, social, historical, geographical, and scientific aspects. This is a conscious instrument drawn to promote cross-cultural interaction. The electronic edition has hyperlinks to other articles in the encyclopaedia, and to sites suggested by the authors. We have greatly increased the number of images. We hope to be able to continue to add to this over the years. We plan to keep the encyclopaedia updated. This means not just updating and adding to the research there, but being able to introduce new topics as they become available.

I think our prediction of 1997 has partially come true, and I hope the new edition will reach farther, dig deeper, and touch many more minds and hearts. As Tim Davis says in *My Life in Politics* (Aperture, 2006), “There is no cure for curiosity.”