

11-1-1996

Book Review: Ethnomathematics: A Multicultural View of Mathematical Ideas, by Marcia Ascher

Bernadette Anne Berken
St. Norbert College

Follow this and additional works at: <http://scholarship.claremont.edu/hmnj>



Part of the [Mathematics Commons](#), and the [Music Commons](#)

Recommended Citation

Berken, Bernadette Anne (1996) "Book Review: Ethnomathematics: A Multicultural View of Mathematical Ideas, by Marcia Ascher," *Humanistic Mathematics Network Journal*: Iss. 14, Article 13.
Available at: <http://scholarship.claremont.edu/hmnj/vol1/iss14/13>

This Book Review is brought to you for free and open access by the Journals at Claremont at Scholarship @ Claremont. It has been accepted for inclusion in Humanistic Mathematics Network Journal by an authorized administrator of Scholarship @ Claremont. For more information, please contact scholarship@cuc.claremont.edu.

Book Review: *Ethnomathematics: A Multicultural View of Mathematical Ideas*, by Marcia Ascher

Bernadette Berken
St. Norbert College
De Pere, WI 54115

Ethnomathematics: A Multicultural View of Mathematical Ideas. Marcia Ascher. Brooks/Cole Publishing, Co.: Pacific Grove, 1991. 203 pp, ISBN 0-534-14880-8.

Marcia Ascher's book *Ethnomathematics: A Multicultural View of Mathematical Ideas* is a superb treatise on mathematics from a multicultural point of view. The text focuses on a diverse collection of mathematical ideas and applications. Instead of limiting the scope of her text to the usual Eurocentric discussion, Ms. Ascher introduces the reader to the mathematical ideas of peoples who have generally been excluded from discussions of mathematics and the development /history of mathematics. These people are the ones who live in traditional or small-scale cultures, the indigenous peoples who live in places that were "discovered" and colonized by Europeans and include such diverse groups as the Inuit, Navajo, and Iroquois of North America; the Incas of South America; the Malekula, Warlpiri, Maori and Caroline Islanders of Oceania; and the Tshokwe, Bushoong and Kpelle of Africa.

In her introduction, Ms. Ascher sets the stage for her text. This introductory discussion acknowledges that "there is no single linear path along which cultures progress, with some ahead and others behind," that mathematics has no generally accepted definitions and that most definitions of mathematics are based solely on Western experience. Nevertheless, Ascher is quick to point out that although a particular culture may not classify an idea as "mathematics," traditional cultures most definitely express mathematical ideas in contexts that we westerners might call art, navigation, religion, record keeping, game playing, or kin relationships. In addition, Ms. Ascher acknowledges that as one views the mathematical ideas of others in their cultural context, one is limited by his or her own cultural and mathematical frameworks. Following this important introduction, Ms. Ascher guides the reader on an exciting journey that explores nu-

merous mathematical ideas in a variety of cultural contexts.

Chapter 1 focuses on the concept of numbers and the words, symbols, and understanding associated with them. The sets of number words of several cultures are examined and the patterns and arithmetic relationships are described. The importance of language and its relationship to number words is emphasized and Ascher includes a clear and informative discussion of numeral classifiers. She devotes a substantive portion of this chapter to a discussion of the Incas and the organization and use of quipus within their culture.

Graph theory is the focus of Chapter 2. It is here that Ascher examines the sand tracings of the Bushoong and Tshokwe in Africa, and the drawings of the Malekula of the South Pacific. She clearly establishes the fact that many different peoples have pondered similar mathematical problems relating to Eulerian paths and provides an excellent background discussion of the Bushoong, Tshokwe and Malekulan cultures as she explores graph theory ideas within the respective cultures.

In Chapter 3, Ascher explores the important mathematical idea of relations or the specified properties that link pairs of objects. She does this by examining the logic of kin relations. The native peoples of northern Australia (the Warlpiri) a group with a particularly complex kin system provide an excellent example that forms the basis for this discussion which draws upon ideas from group theory.

Games of strategy and chance and the logic of puzzles provide the basis for Chapter 4. Since every game can be seen as an expression of a particular culture, Ascher is careful to identify not just the rules of the game but also the simple objects used for it, the times and places for appropriate playing of the game, the

social settings, the level of concentration, the systems of rewards and all the other important aspects that make up the game. She includes an analysis of the American Indian game of Dish that is clearly rooted in the area of probability. This chapter also provides an excellent discussion of the Maori game of strategy known as Mu torere. Starting with a simpler version, Ascher leads the reader not only to an understanding of how to play Mu torere but also to a basic understanding of the mathematics connected with this game. A collection of river crossing puzzles from various cultures and the logic behind their solutions provide the final area of focus for this chapter.

The organization and modeling of space and time provides the content for Chapter 5. Because notions of time and space are so basic to the way we perceive, structure, and interpret our experiences, it is sometimes hard to understand or visualize the space-time ideas of other cultures. Nevertheless, Ascher successfully bridges this potential difficulty by her choice of examples. She includes apt discussions on the dynamic universe of the Navajo, the unique process and change dimension of the space-time concerns of the Inuit, and the navigational processes of the Caroline Islanders.

Spatial configuration is the basis of Chapter 6 which focuses particularly on symmetric strip decorations.

Ascher includes an introductory discussion of isometries, symmetry, and symmetry groups and describes and utilizes a four character naming scheme for the possible strip patterns. (This scheme was developed by Russian crystallographers and is now accepted as the international standard.) A discussion of perfect coloring is also included in this chapter. Rafter patterns of the Maori and strip patterns found on Inca pottery provide beautiful and illustrative examples for the discussion of strip patterns in this chapter.

The final chapter of the book affords Marcia Ascher an opportunity to weave together the mathematical ideas and philosophies that are the basis for her book. She connects these ideas and issues to mathematics education, emphasizing the need for a redefinition of the boundaries of mathematics, and a revision of our philosophy and history of mathematics.

This outstanding book is a clearly written text that is well-suited for the college undergraduate level. The diverse collection of mathematical ideas in their cultural context provides a challenging yet very interesting array of mathematical topics. Ascher provides extensive notes with appropriate references which afford the reader additional sources for reading and scholarship. Marcia Ascher's book *Ethnomathematics: A Multicultural View of Mathematical Ideas* is a rare gem of a book. Read it!

Psychosis

Lee Goldstein

Nooscopic insociability
Can drive the human intelligence of an incognizable numinosity,
Thenceforward, to the equations of the sphere,
While this programmatic transposition
Can also beget, through the unconscious, an incipient eidós
That splits the personal
And abets an insurgence of psychical energies
Unto the hallucinatory,
That is seeming or chaotic.

nooscopic: pertaining to the examination of the mind