CHAPTER 14
Mathematics and Dance Bibliography

We often get requests from students and researchers looking for information on mathematics and dance. Unfortunately, not much has been published on these subjects, and so we hope that this working bibliography may help point interested people to helpful sources.

Some items are included even though we do not currently have complete bibliographic information for them, and some of the sources we have only seen referenced in other works. We would greatly appreciate any additional references or missing information; please send these to schafferkarl@fhda.edu. These references were compiled during 1997-2001, and included visits to the Lincoln Center Library for the Performing Arts in New York City, and the Laban Center library, also in New York. The Lincoln Library classifications are included, where known, to simplify access to those references.

For those unfamiliar with dance and dance notation, a number of the references relate to the work of Rudolf Laban, and his followers. Laban developed the most commonly used dance notation, Labanotation, based on a very scientific analysis of human movement.

At the end we will soon include our dances which include significant mathematical ideas or inspiration. We would appreciate any information on dances or performances readers know about with strong connections to mathematics.

References


Blank, Carla, and Jody Roberts. Live on Stage: Performing Arts for Middle School Teacher Resource Book. Palo Alto: Dale Seymour Publications, 1997. Projects and activities that present a cross-disciplinary approach to teaching the performing arts,


Clements, Douglas H. and Michael T. Battista. Geometry and Spatial Reasoning, in Handbook of Research on Mathematics Teaching and Learning,


Dell, Cecily. A Primer for Movement Description: Using Effori-Shape and Supplementary Concepts. New York: Dance Notation bureau Press, 1977. Presents the system of effort-shape, a scientific system based on Rudolf Laban’s work, which is used to analyze dance and movement.


Hall-Marriot, Natalie Louise (nataliem@mosaix.com.au), and Don Herbison-Evans (don@socs.uts.edu.au). “A Computer Interpreter of Classical Ballet Terminology.” Imprint, Technical Report TR264, Basser Department of Computer Science, University of Sydney, Australia. Description of a project to develop a classical ballet interpreter to turn the written language of ballet into computer animations of the ballet.


Humphrey, Doris. *The Art of Making Dances*. New York Grove Press, 1959. Contains the proclamation that “symmetry is boring!” By this she seems to mean mirror symmetry. Humphrey was one of the seminal figures in Modern Dance and this book is a compendium of her craft.


de Laban, Juana. Dance Index, Vol. 5, No. 4, 1946, referenced in Thie, gives a description of a number of dance notations from ancient to present.


The groundbreaking study of the development of spatial thinking in children.


Slocum, Jerry, and Jack Bottermans, *The Book of Ingenious & Diabolical Puzzles*, New York: Random House, Times Books, 1994. Contains a short history of tangrams, and. This and other books by Slocum and Bottermans describe a variety of mathematical puzzles which may be made into entertaining dance props.


Thie, Joseph A. *Rhythm and Dance Mathematics*, Minneapolis: published by Joseph Thie, 1964 (once available from the Dance Mart, Box 48, Brooklyn, NY 11229.) Applies the mathematical technique known as correlation analysis to sequences of dance steps. Includes some analysis of dance and mathematics with a larger scope. This book is available in the Lincoln Center Library and in the Dance Collection of the Birmingham Public Library, in Birmingham, Alabama.


Wechsler, Robert. “Symmetry in Dance,” *Contact Quarterly*, vol. 15, #3, Fall 1990, pp 29-33, Northampton, MA. Examines various ways to use symmetry in choreography.

Wechsler, Robert A. *Analysis of ‘Reversals’ in the Cunningham Dance Technique. Issues Concerning the Perception of Symmetry in Dance.*, in Lincoln Center Library collection. Contact: robert@palindrome.de

Guys Dancing About Math—He and Stern, a dance teacher at Weber State University in Ogden, Utah, have been choreographing and performing dance pieces based on mathematical ideas. As founding members of the Dr. Schaffer and Mr. Stern Dance Ensemble, they and their company have performed for hundreds of thousands of people, including at dentists to join a deep and mathematical conversation. The connections between mathematics and dance are the heart of the matter, says Schaffer. Often look at the mathematical as. Chicago undergraduate mathematics bibliography. Somehow I became the canonical undergraduate source for bibliographical references, so I thought I would leave a list behind before I graduated. I list the books I have found useful in my wanderings through mathematics (in a few cases, those I found especially unuseful), and give short descriptions and comparisons within each category. I hope that this list may serve as a useful road map to other undergraduates picking their way through Eckhart Library. The learning guide Discovering the Art of Mathematics: Dance lets you, the explorer, investigate connections between mathematical ideas and concepts and dance related ideas and patterns. Moving in symmetry will lead to classifying types of symmetry and Frieze patterns. Dancing Salsa Rueda allows you to explore combinatorial ideas, while Contra Dancing will link with group theory and permutations. You will discover topological ideas while playing with different positions in Partner Salsa Dancing and use Maypole dancing to investigate fundamental domains and create beautiful geometric patterns.