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## Mathematics and the Arts — A Bibliography

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# Mathematics and the Arts—A Bibliography

compiled by

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January, 1993

Despite its length, this bibliography is just a beginning. Please, dear reader, send me other items to include, so that the list will become more comprehensive and more useful. As you scan the present list you will find that some items have been annotated, and others await annotation. I will continue this process and will appreciate whatever assistance others can give to the effort.

## INTRODUCTION

For many years, I have made brief mention of visual art, music, and literature in the mathematics courses that I have taught. Students have been surprised and pleased to learn of these links. At length, I decided that I wished to develop a full course on "Mathematics and the Arts." I am grateful to Bloomsburg University for a one-quarter released time to build this list of references on which a course may be based.

This collection begins with a list of items suitable for a general reader, imagined to be a college freshman who knows a bit of calculus and who enjoys mathematics and has interest in examining connections between mathematics and other arts. Selected items from this first general list may serve as texts for the "Mathematics and the Arts" course.

Following the general list, are specialized lists of references for topics listed below; these references will enable students to begin investigations for projects or term papers.

Aesthetic Standards for Mathematics and Other Arts  
Biographies/Autobiographies of Mathematicians  
Mathematics and Display of Information (including mapmaking)  
Mathematics and Humor

Mathematics and Literature (fiction and fantasy)

Mathematics and Music

Mathematics and Poetry

Mathematics and the Visual Arts

Themes that recur again and again in these lists are: infinity, non-Euclidean geometry, ratio, repeated pattern, and symmetry.

In developing my list, I owe a debt to three others who have compiled previous lists from which I have been able to learn and select. These are:

Hutchinson, Joan P., "Summertime and the living is . . .," *AWM Newsletter*, Vol 22, No. 4 (July-August 1992), 9-11

Hutchinson focuses on books in which mathematicians (especially women) play a significant role. Her list includes authors Sophia Kovalevsky (*Vera Barantsova*), Virginia Woolf (*Night and Day*), Charles Kingsley (*Hypatia*), Saul Bellow (*The Dean's December*), Rebecca Goldstein (*The Mind-Body Problem*), Marge Piercy (*Small Changes*), Lynne Sharon Schwartz (*Rough Strife*), Scott Turow (*Presumed Innocent*), Charles Baxter (*First Light*), Michael Crichton (*Sphere*), Erik Rosenthal (*The Calculus of Murder* and *The Advanced Calculus of Murder*), Robert A. Heinlein (*The Number of the Beast*).

Koehler, D. O., "Mathematics and Literature," *Mathematics Magazine*, Vol. 55 No. 2 (March 1982) 81-95.

Koehler features works in which mathematical ideas play a significant role in the content. Featured authors include: Jonathan Swift (*A Modest Proposal*), Robert Coates (*The Law*), Thomas Pynchon (*Gravity's Rainbow*), Jorge Luis



Borges (*Death and the Compass, The Garden of the Forking Paths, and The Library of Babel*), Lewis Carroll (*What the Tortoise Said to Achilles, Alice in Wonderland and Alice Through the Looking Glass*), Douglas Hofstadter (*Godel, Escher, Bach*).

Lew, John S., "Mathematical References in Literature," *Humanistic Mathematics Network Journal*, vol. 7 (April, 1992), 26-47.

Lew's list contains over three hundred items that he and his father have gathered from their lifetimes of reading; some involve substantive mathematics while many are works in which a mathematical concept receives only a brief mention; he includes novels, plays, poems, science fiction tales, short stories, essays, biographies, and collections.

#### MATHEMATICS AND THE ARTS— GENERAL REFERENCE

Blumenthal, Howard J., *The Complete Time Traveler: A Tourist's Guide to the Fourth Dimension*, Berkeley, Ten Speed Press, 1988.

Boles, Martha and Rochelle Newman, "Art, mathematics and nature in the interdisciplinary classroom," *Leonardo*, Vol 21. (1988) No. 2, 182-86.

Bronowski, Jacob, *The Ascent of Man*, Boston, Little, Brown and Company, 1973.

This book was written to complement a BBC film series of the same name; Chapter 5, "The Music of the Spheres," deals with mathematics and harmony and symmetry.

Bronowski, Jacob, "The Imaginative Mind in Art," and "The Imaginative Mind in Science," *Imagination and the University*, University of Toronto Press, 1964. Also found in *The Visionary Eye: Essays in the Arts, Literature and Science*

Buchanan, Scott M., *Poetry and Mathematics*, J. B. Lippincott, 1962.

Crowe, Donald, "Symmetry, Rigid Motions, and Patterns," *The UMAP Journal*, vol. 8, no. 3 (Fall 1987), pp. 207 - 236.

An introduction to "border" and "wallpaper" patterns.

Davis, Philip J. and Reuben Hersh, *The Mathematical Experience*, Boston, Birkhauser, 1981.

Selections of interest in this collection of brief essays include: "The Aesthetic Component" (168-70), "Pattern, Order, and Chaos" (172-9), "Intuition" (391-9), "Four Dimensional Intuition" (400-5), "True Facts about Imaginary Objects" (406-11).

Dienes, Z. P., *Mathematics Through the Senses: Games, Dance, and Art*, New York, Humanities Press, 1973.

Activities for children that enable them to learn mathematics through artistic activities.

Ellis, Havelock, *The Dance of Life*, Riverside Press, 1923.

Reflections on the art of living.

Eves, Howard, *In Mathematical Circles* (1969), *Mathematical Circles Revisited* (1971), *The Other Side of the Equation* (1971), *Mathematical Circles Squared* (1972), *Mathematical Circles Adieu* (1977), *Return to Mathematical Circles* (1988), Prindle, Weber, and Schmidt.

Collections of mathematical stories and anecdotes by an eminent geometer and historian of mathematics.

Fauvel, John and Jeremy Gray, editors, *The History of Mathematics: A Reader*, Macmillan, 1988.

A collection of readings that includes the works of mathematicians, letters, poems, and excerpts from plays and novels; attempts to give an historical outline of mathematical activity from ancient to modern times and to show the role that mathematics has played in culture.



- Gardner, Martin, *The Ambidextrous Universe: Mirror Asymmetry and Time-reversed Worlds (Second Edition)*, New York, Charles Scribner's Sons, 1979.
- Chapter 1 — "Mirrors"
  - Chapter 2 — "Lineland and Flatland"
  - Chapter 3 — "Solidland"
  - Chapter 5 — "Art, Music, Poetry, and Numbers"
  - Chapter 17 — "The Fourth Dimension"
- Gardner, Martin, "Hypercubes," *Mathematical Carnival*, New York, Vintage, 1975.
- Chapter 3 — "Aleph-null and Aleph-one,"
  - Chapter 4 — "Hypercubes,"
  - Chapter 18 — "Piet Hein's Superellipse"
- Guillen, Michael, *Bridges to Infinity: The Human Side of Mathematics*, Los Angeles, Jeremy P. Tarcher, Inc., 1983.
- Hardy, G. H., *A Mathematician's Apology*, Cambridge University Press, 1969.
- Some well-written biographical remarks from an eminent mathematician.
- Henderson, Linda D., *The Fourth Dimension and Non-Euclidean Geometry in Modern Art*, Princeton University Press, 1983.
- Henderson focuses primarily on French art and artists and on Cubist ideas as she explores the effects on art (during 1900 - 1930) of the new, non-Euclidean geometries developed during the nineteenth century.
- Hinton, C. Howard, *The Fourth Dimension*. Allen & Unwin, 1904.
- In careful detail, Hinton analyzes the changes that take place in perception as one moves from one to two and two to three dimensions, and deduces some properties of perception in a four dimensional space. Using colors to help keep things straight, he devises a model of a four-dimensional solid.
- Hinton, Charles H., *Speculations on the Fourth Dimension: Selected Writings of Charles B. Hinton*, with an introduction by R. V. Rucker, Dover, 1980.
- Essays by a nineteenth century mathematician who endeavored to teach everyone to see four dimensional space and who anticipated some of Einstein's discoveries.
- Hofstadter, Douglas R., *Godel, Escher, Bach: An Eternal Golden Braid*, New York, Basic Books, 1979.
- Hughes, Robert, *The Shock of the New, Revised Edition*, New York, Alfred A. Knopf, 1991.
- This book is a revision of a book originally written to accompany a BBC television series written and narrated by Hughes. Although it provides few references to mathematics or science, this book documents the changes in art (primarily in painting and during the period 1880-1914) that accompanied or followed major changes in scientific thought.
- Kapraff, Jay, *Connections: Geometric Bridge Between Art and Science*, New York, McGraw-Hill, 1991.
- Introduces the reader to many ways in which geometry underlies the creation of beautiful structures and serves as an intermediary between the harmony of the natural world and the humans who perceive it. The book grew out of a course, developed by the author, that related mathematics and design.
- Kasner, Edward, and James R. Newman, *Mathematics and the Imagination*, Redmond, WA, Tempus Books, 1989.
- Keyser, Cassius J., *Mathematics as a Culture Clue and Other Essays*, Scripta Mathematica, 1947.
- King, Jerry, *The Art of Mathematics*, New York, Plenum, 1992.
- What is mathematics? What is beautiful? What is art? Provocative questions and answers are raised in this easy-to-read book



by a mathematician who is also a poet.

McLuhan, Marshall and Harley Parker, *Through the Vanishing Point: Space in Poetry and Painting*, New York, Harper & Row, 1968.

A collection of poems, pictures and notes by the authors; sometimes thought-provoking.

Manning, Henry Parker, *Geometry of Four Dimensions*, Dover, 1956. Also *The Fourth Dimension Simply Explained*, Dover, 1960.

First published in 1914, Manning explores the geometry of four-dimensions by taking "natural" extensions of two and three dimensional Euclidean geometry.

Maor, Eli, *To Infinity and Beyond: A Cultural History of the Infinite*, Boston, Birkhauser, 1987.

Geometric maps, tiling the plane, the Mobius strip, mirror reflections, and Maurits C. Escher are among the subjects of this provocative book

May, Kenneth O., "Mathematics and Art," *The Mathematics Teacher*, October, 1967.

Moritz, Robert E., editor, *Memorabilia Mathematica*, New York, Macmillan, 1914.

Morse, Marston, "Mathematics in Our Culture," *The Spirit and the Uses of the Mathematical Sciences*, edited by T. L. Saaty and F. J. Weyl, New York, McGraw-Hill, 1969.

Morse, Marston, "Mathematics and the Arts," *Bulletin of the Atomic Scientists*, vol. 15 (1959), no. 2, Also in *The Yale Review*, June, 1951.

Newman, James R., *Mathematics: A Small Library of the Literature of Mathematics*, presented with Commentaries and Notes by James R. Newman, Redmond, WA, Tempus, 1956, 1988.

Essays of interest found in this collection include: "Topology" by Richard Courant

and Herbert Robbins (I, 573-90), "Durer as a Mathematician" by Erwin Panofsky (I, 591-612), "Symmetry" by Hermann Weyl (I, 659-711), "Infinity" by Hans Hahn (III, 1565-83), "Mathematics as an Art" by John William Navin Sullivan (III, 1985-95), "A Mathematician's Apology" by G. H. Hardy (IV, 1999-2014), "Mathematics of Aesthetics" by George David Birkhoff, (IV, 2175-86), "Mathematics of Music" by Sir James Jeans (IV, 2253-88), A selection from "Flatland" by Edwin A. Abbott (IV, 2361-73), "What the Tortoise Said to Achilles and Other Riddles" by Lewis Carroll (IV, 2375-86), "Mathematics for Golfers" and "Common Sense and the Universe" by Stephen Leacock (IV, 2433-48).

Peter, Rozsa, *Playing with Infinity: Mathematics for Everyman*, NY, Simon & Schuster, 1962.

Polya, George, "Some Mathematicians I Have Known," *American Mathematical Monthly*, Vol. 76 (1969), 746-752.

Reid, Constance, *From Zero to Infinity: What Makes Numbers So Interesting*, New York, Crowell, 1961.

Renyi, Alfred, *Dialogues on Mathematics*, San Francisco, Holden-Day, 1967.

Robson, E. and J. Wimp, Editors, *Against Infinity: An Anthology of Contemporary Mathematical Poetry*, Parker Ford, PA. Primary Press, 1979.

These poems use mathematical concepts—zero, infinity, prime, distance, circle, and the like—to create poetic images.

Rucker, Rudy, *The Fourth Dimension: Toward a Geometry of Higher Reality*, Boston, Houghton Mifflin, 1984.

Sections I and II suggests ways to visualize objects in a geometry with a different number of dimensions than three.

Rucker, Rudy, *Infinity and the Mind: The Sciences and Philosophy of the Infinite*, Boston, Birkhauser, 1982.



Chapter 1 gives a short history of the various ways in which the term "infinity" is used.

Smith, David Eugene, *The Poetry of Mathematics and Other Essays*, Scripta Mathematica, 1934.

Zipin, Leo, *Uses of Infinity*, Washington, DC, Mathematical Association of America, 1962.

#### Aesthetic Standards for Mathematics and Other Arts

Birkhoff, George David, *Aesthetic Measure*, Cambridge, MA, Harvard University Press, 1933.

The author has developed a systematic means of analysis of aesthetic properties of music, poetry, and visual art using quantitative measures.

Borel, A., "Mathematics: Art and Science," *The Mathematical Intelligencer*, Vol. 5, No. 4 (1983), 9-17.

Brooks, Cleanth and Robert Penn Warren, *Understanding Poetry, (Third Edition)*, New York, Holt, Rinehart and Winston, 1960.

Aesthetic standards for poetry that may be compared with aesthetic standards for mathematics.

Bunch, Bryan, *Reality's Mirror: Exploring the Mathematics of Symmetry*, New York, Wiley, 1989.

Explores the importance of mathematical symmetry in modern science, especially physics.

Day-Lewis, Cecil, *The Poet's Task*, Clarendon Press, 1951.

Day-Lewis describes the role and responsibility of poets and poetry; his ideas also apply to mathematicians and mathematics.

Dorwart, Harold L., "Configurations: A Case

Study in Mathematical Beauty," *The Mathematical Intelligencer*, Vol. 7, No. 3, 31-48.

Franke, Herbert W., "Mathematics as an artistic-generative principle," *Leonardo*, Vol. 1989 supplement, 25-26.

Frost, Robert, "The Figure a Poem Makes," from *Complete Poems of Robert Frost*, Holt, Rinehart and Winston, 1967.

Gardner, Martin, "A mathematical aesthetic applied to modern minimal art," *Scientific American*, Mathematical Games, November, 1978.

Halmos, P. R., "Mathematics as a Creative Art," *American Scientist*, Vol. 56, No. 4 (1968), 375-389.

Hammond, Allen, "Mathematics, Our Invisible Culture," *Mathematics Today*, Lynn Steen, ed., New York, Springer-Verlag, 1978.

Hargittai, Istvan, ed., *Symmetry: Unifying Human Understanding*, Elmsford, NY, Pergamon Press, 1986.

Essays on symmetry in music, visual arts, mathematics, and the sciences.

Hargittai, Istvan, ed., *Symmetry 2: Unifying Human Understanding*, Elmsford, NY, Pergamon Press, 1989.

Huntley, H. E. *The Divine Proportion: A Study in Mathematical Beauty*, New York, Dover, 1970.

Janaway, Christopher, "Plato's analogy between painter and poet," *The British Journal of Aesthetics*, Vol. 31 (January 1991), 1-12.

Kapraff, Jay, *Connections: Geometric Bridge Between Art and Science*, New York, McGraw-Hill, 1991.

Introduces the reader to many ways in which geometry underlies the creation of beautiful structures and serves as an intermediary between the harmony of the natural world and the humans who perceive it.



- Krull, Wolfgang, "The Aesthetic Viewpoint in Mathematics," *The Mathematical Intelligencer*, Vol. 9, No. 1, 48-52.
- Papert, Seymour, "The Mathematical Unconscious," *On Aesthetics and Science*, Judith Wechsler, ed., Cambridge, MA, MIT Press, 1978.
- Peter, Rozsa, (Translated by Leon Harkleroad), "Mathematics Is Beautiful," *The Mathematical Intelligencer*, Vol. 12 No. 1 (Winter 1990), 58-62.
- Pickover, Clifford A., "On the aesthetics of Sierpinski gaskets formed from large Pascal's triangles," *Leonardo*, Vol. 23 (1990) No. 4, 411-417.
- Pickover, Clifford A., "Mathematics and beauty: a sampling of spirals and strange spirals in science, nature and art," *Leonardo*, Vol. 21 (1988), No. 2, 173-181.
- Schoenberg, Arnold, *Style and Idea*, New York, Philosophical Library, Inc., 1950.
- Wills, David, "Which is the most beautiful?" *The Mathematical Intelligencer*, Vol. 10, No. 4, 30-31.
- Zee, Anthony, *Fearful Symmetry: The Search for Beauty in Modern Physics*, New York, Macmillan, 1986.
- Biographies/Autobiographies of Mathematicians**
- Albers, D. J. and G. L. Alexanderson, *Mathematical People: Profiles and Interviews*, Boston, Birkhauser, 1985.
- Albers, D. J., G. L. Alexanderson, and C. Reid, *More Mathematical People: Contemporary Conversations*, Boston, Harcourt Brace Jovanovich, 1990.
- Box, Joan Fisher, *R. A. Fisher: The Life of a Scientist*, New York, John Wiley and Sons, 1978.
- Dick, Auguste, *Emmy Noether, 1882-1935*, Boston, Birkhauser, 1980.
- Hoffman, Paul, "The Man Who Loves Only Numbers," *The Atlantic*, Vol. 280 No. 5 (November 1987), 47-74.
- Halmos, Paul, *I Want to Be a Mathematician: An Automathography*, New York, Springer-Verlag, 1985.
- Infeld, Leopold, *Whom the Gods Love: The Story of Evariste Galois*, New York, McGraw-Hill, 1948.
- Kanigel, Robert, *The Man Who Knew Infinity: A Life of the Genius Ramanujan*, New York, Scribner, 1991.
- Kingsley, Charles, *Hypatia*, New York, Garland, 1975.
- A historical novel about an early mathematician.
- Koblitz, Ann H., *A Convergence of Lives, Sofia Kovalevskaja: Scientist, Writer, Revolutionary*, Boston, Birkhauser, 1983.
- Preston, Richard, "The Mountains of Pi, a Profile of David and Gregory Chudnovsky," *The New Yorker*, March 2, 1992, 36-67.
- Reid, Constance, *Courant in Göttingen and New York: The Story of an Improbable Mathematician*, New York, Springer-Verlag, 1976.
- Reid, Constance, *Hilbert*, New York, Springer-Verlag, 1970.
- Ulam, Stanislaw M., *Adventures of a Mathematician*, New York, Scribner, 1976.
- Wiener, Norbert, *I Am a Mathematician*, Garden City, NY, Doubleday, 1956.
- Mathematics and Display of Information (including mapmaking)**
- Casas, Fernando R., "Polar perspective: a graphical system for creating two-dimensional images representing a world of four dimensions," *Leonardo*, Vol. 17 (1984) No. 3, 188-194.



Dickinson, Carol, "Crossroads of art and science (the art of cartographer Hal Shelton), *Southwest Art*, Vol. 18 (September 1988), p. 44+.

Freudenthal, Hans, *Mathematics Observed*, New York, McGraw-Hill, 1967.

Freudenthal writes about the nature of mathematics and of mathematical thinking; Chapter 1, "Measuring the world," and Chapter 5, "The art of drawing badly," include some of the mathematical ideas used in mapmaking.

Rickey, V. Frederick and Philip M. Tuchinsky, "An Application of Geography to Mathematics: History of the Integral of the Secant," *Mathematics Magazine*, vol. 53, no. 3 (May, 1980), 162-166.

Sachs, J. M., "A Curious Mixture of Maps, Dates, and Names," *Mathematics Magazine*, vol. 60, no. 3 (June, 1987), 151-158.

Tufte, Edward R., *Envisioning Information* (1990) and *The Visual Display of Quantitative Information* (1983), Cheshire, Conn., Graphics Press.

Tufte designs displays of information in ways that help readers to understand and digest it. See also "Up from Flatland" by Phil Patton in *The New York Times Magazine*, January 19, 1992.

Woodward, David, "The image of the spherical earth (history of the representation of the earth), *Perspecta*, Vol. 25 (1989) 2-15.

### Mathematics and Humor

Eves, Howard, *In Mathematical Circles* (1969), *Mathematical Circles Revisited* (1971), *The Other Side of the Equation* (1971), *Mathematical Circles Squared* (1972), *Mathematical Circles Adieu* (1977), *Return to Mathematical Circles* (1988), all published by Prindle, Weber, and Schmidt.

Collections of mathematical stories and anecdotes by an eminent geometer and historian of mathematics.

Fadiman, Clifton, *The Mathematical Magpie*, New York, Simon and Schuster, 1962. Also *Fantasia Mathematica*, 1958.

*Magpie* is a collection of essays, rhymes, and anecdotes, many of them amusing. *Fantasia* also contains a number of short stories.

Leacock, Stephen, *Literary Lapses: A Book of Sketches*, Montreal, Gazette Printing Co., 1910.

"Boarding House Geometry," pages 19-20.

"A, B, and C. The Human Element in Mathematics," pages 118-125.

Leacock, Stephen, *Too Much College or Education Eating Up Life*, New York, Dodd, Mead and Co., 1940.

Chapter IV — "Mathematics Versus Puzzles"

Levin, Martin, ed., *The Saturday Review Sampler of Wit and Wisdom*, New York, Simon and Schuster, 1966.

"Accidental You, Fully Covered Me" by Hayes B. Jacobs, 296-297.

"Confessions of the World's Fastest Reader" by Clifford D. Owsley, 251-253.

"The Permanent Traffic Solution" by Harland Manchester, 161-162.

"60,000,000 Projections Can't Be Wrong," by Ralph Schoenstein, 279-281.

Peter, Laurence J., *Peter's Quotations: Ideas for Our Time*, New York, William Morrow & Co., 1977.

Quotations about statistics (452-3), logic (307-8), facts (187-8), education (172-7), knowledge (280-2), problems (408-9), science (436-8), and many other topics.

Paulos, John Allen, *Mathematics and Humor*, University of Chicago Press, 1980.

Simpson, Adrian P., "The Infidel Is Innocent," *The Mathematical Intelligencer*, 12 (1990), No. 3, 42-51.



An informal introduction to nonstandard analysis; uses humor.

### Mathematics and Literature (fiction and fantasy)

Abbott, Edwin, *Flatland*, New York, Barnes & Noble, 1963.

A fantasy about life in two dimensions that explores the dilemma that human beings have when they try to imagine a number of dimensions other than three.

Asimov, Isaac.

Several science fiction stories by Asimov that include mathematical ideas are found in the collections of Clifton Fadiman and Rudy Rucker.

Borges, Jorge Luis, *The Aleph and Other Stories*, New York, E. P. Dutton, 1970.

Borges, Jorge Luis, *Labyrinths: Selected Stories and Other Writings*, New York, New Directions, 1964. See also *Borges: The Labyrinth Maker*, by Ana Maria Barrenechea, New York University Press, 1965.

Burger, Dionys, *Sphereland*, New York, Crowell, 1965.

A sequel to *Flatland*; a fantasy about curved space and an expanding universe.

Carroll, Lewis, *The Annotated Alice: Alice's Adventures in Wonderland and Through the Looking Glass*, illustrated by John Tenniel with Introduction and Notes by Martin Gardner, New York, Brumall House, 1960.

Carroll, Lewis, *More Annotated Alice*, with illustrations by Peter Newell and notes by Martin Gardner, New York, Random House, 1990.

This book serves as a supplement to the 1960 edition.

For more by Gardner on Carroll as logician and mathematician see also *Scientific American*, March 1960, pp. 172-76.

Carroll, Lewis, *A Tangled Tale*, New York, Odark Books (The Third Press), 1885, 1974.

Ten amusing tales, each embodying a mathematical question; written for children.

Doyle, Sir Arthur Conan, *A Study in Scarlet and The Final Problem*

Doyle's Sherlock Holmes mysteries contain a little bit of mathematics and many references to logic or "the science of deduction." See particularly *A Study in Scarlet*. In *The Final Problem* one meets Professor James Moriarty, "The Napoleon of Crime," described as an embittered and ruthless mathematical genius.

Fadiman, Clifton, *The Mathematical Magpie*, New York, Simon and Schuster, 1962. Also *Fantasia Mathematica*, 1958.

*Magpie* is a collection of essays, rhymes, and anecdotes, many of them amusing. *Fantasia* also contains a number of short stories.

Fauvel, John and Jeremy Gray, editors, *The History of Mathematics: A Reader*, Macmillan, 1988.

A collection of readings that includes the works of mathematicians, letters, poems, and excerpts from plays and novels; attempts to give an historical outline of mathematical activity from ancient to modern times and to show the role that mathematics has played in culture.

Gordon, Isabel S. and Sophie Sorkin, editors, *The Armchair Science Reader*, New York, Simon and Schuster, 1959.

A collection of stories, poems, and essays about science (including mathematics) and scientists.

Hardwick, Michael, *The Complete Guide to Sherlock Holmes*, New York, St. Martin's Press, 1986.

Gives information about where to find what in Sherlock Holmes mysteries.



Hutchinson, Joan, P., "Summertime and the living Is . . .," *AWM Newsletter*, vol 22, no. 4 (July-August 1992), pp. 9-11.

Hutchinson points out these novels featuring female and male mathematicians as lead characters: *Hypatia* by Charles Kingsley, *The Dean's December* by Saul Bellow, *Rough Strife* by Lynne Sharon Schwartz, *Presumed Innocent* by Scott Turow, *First Light* by Charles Baxter, *Murder Misread* by P. M. Carlson, *Why Call Them Back From Heaven?* by Clifford D. Simak, *Sphere* by Michael Chrichton, *The Calculus of Murder* and *The Advanced Calculus of Murder* by Erik Rosenthal.

Juster, Norton, *The Phantom Tollbooth*, New York, Random House, 1965.

A children's story in which a Mathemagician shows Milo the way to wonderful worlds.

Juster, Norton, *The Dot and the Line: A Romance in Lower Mathematics*, New York, Random House, 1963.

A straight lines learns versatility in the effort to win the affection of a dot who is hopelessly in love with a squiggle.

Kingsley, Charles, *Hypatia*, New York, Garland, 1975.

Koestler, Arthur, *Drinkers of Infinity, Essays*, New York, Macmillan, 1969.

Knuth, Donald, *Surreal Numbers*, Reading, MA, Addison-Wesley, 1974.

A mathematical novelette "about how two ex-students turned on to pure mathematics and found total happiness."

Koehler, D. O., "Mathematics and Literature," *Mathematics Magazine*, Vol. 55 No. 2 (March 1982) 81-95.

Koehler features works in which mathematical ideas play a significant role in the content. Featured authors include: Jonathan Swift (*A Modest Proposal*), Robert Coates (*The Law*), Thomas

Pynchon (*Gravity's Rainbow*), Jorge Luis Borges (*Death and the Compass*, *The Garden of the Forking Paths*, and *The Library of Babel*), Lewis Carroll (*What the Tortoise Said to Achilles*, *Alice in Wonderland* and *Alice Through the Looking Glass*), Douglas Hofstadter (*Godel, Escher, Bach*).

Lenz, Jerry, "Geometry and other science fiction," *Math Teacher* 66 (1973), 529.

Levin, Martin, ed., *The Saturday Review Sampler of Wit and Wisdom*, New York, Simon and Schuster, 1966.

"The Permanent Traffic Solution" by Harland Manchester, 161-162.

"60,000,000 Projections Can't Be Wrong," by Ralph Schoenstein, 279-281.

Lew, John S., "Mathematical References in Literature," *Humanistic Mathematics Network Journal*, vol. 7 (April, 1992), 26-47.

Poe, Edgar Allen, "The Purloined Letter," *Poetry and Tales*, Viking Press, 1984, 680-698.

One of the characters explains why a mathematician cannot be a poet.

Pynchon, Thomas, *Gravity's Rainbow*, New York, Viking Press, 1973.

Rucker, Rudy, editor, *Mathenauts: Tales of Mathematical Wonder*, New York, Arbor House, 1987.

A collection of twenty science-fiction stories about math, most written since 1960. Includes stories by Rucker, Douglas Hofstadter, Isaac Asimov, Martin Gardner, and others.

Schwartz, Lynne Sharon, *Rough Strife*, New York, Harper & Row, 1980.

Turow, Scott, *Presumed Innocent*, New York, Farrar, Straus, Giroux, 1987.

Wilmott, Richard, "The Gnome and the Pearl of Wisdom: A Fable," *Mathematics Magazine*, vol. 50, no. 3 (May, 1977),



### Mathematics and Music

- Babbitt, Milton, "Twelve-tone Invariants as Compositional Determinants," *The Musical Quarterly*, vol. 46, no. 2, pp. 246-259, New York, G. Schirmer, Inc., 1969.
- Budden, F. J., *The Fascination of Groups*, New York, Cambridge University Press, 1972.
- Groups and musical scales and forms—  
Chapter 23; Groups and bell-ringing—  
Chapter 24.
- Clough, John, "Musical Scales and the Generalized Circle of Fifths," *American Mathematical Monthly*, 93 (1986), No. 9, 695-701.
- Cohen, H. Floris, "Simon Stevin's Equal Division of the Octave," *Annals of Science*, Vol. 44 (1987), No. 5, 471-488.
- Some insight into the search for scientific explanation of what is pleasing to the ear.
- Forte, Allen, *The Structure of Atonal Music*, Yale University Press, 1973.
- Gardner, Martin, "The arts as combinatorial mathematics, or how to compose like Mozart with Dice," *Scientific American*, Mathematical Games,
- Gardner, Martin, *Fractal music, hypercards and more . . .*, New York, Freeman, 1992.
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