Annotated Bibliography

[1] Davis, Philip J., and Hersh, Reuben. *Descartes Dream.* Boston: Harcourt Brace Jovanovich, 1986.

Discusses the impact of mathematics and the computer in society today. Has sections on time, ethics and art among other things. The text is very good at provoking thought.

[2] Davis, Philip J., and Hersh, Reuben. *The Mathematical Experience.* Boston: Birkhauser, 1981.

You've probably seen this already, it is a "must read" for anyone interested in the discipline of mathematics. This book provides a good overview of mathematics and the issues involved in mathematics. I have used this as a text for majors and non-majors. It is not an easy book to read and students have to grapple at times with the vocabulary and the ideas involved. In other words, they have to think; not a bad thing to require in a college course.

[3] Ernst, Bruno, *The Magic Mirror of M.C. Escher* New York: Ballantine Books, 1976.

A look at Escher's work can be very instructive when discussing the properties of different dimensions. Escher's tricks with two dimensional representations of impossible three dimensional constructions are only one example of his use of mathematical properties. Recursion and symmetry also abound. Ernst's treatment of Escher's work is interesting and thorough. (If you choose to read this book your paper should discuss the mathematical aspects of Escher's work.)

[4] Feynman, Richard P., *"What Do You Care What Other People Think?" Further Adventures of a Curious Character.* New York: W. W. Norton and Company, 1988.

I have a hard time talking about mathematics without straying into discussions of physics. As the courses in "math appreciation" I have taught have satisfied a math/science requirement I have not even tried to avoid it. Feynman's discussion of "The Making of a Scientist" is of interest in this context. I also use the film from his lecture series on "The Relationship of Mathematics to Physics" so it is interesting for students to hear his "voice" on a non-technical subject. (If you choose to read this book, make arrangements with me to view the film while I have it for my MATH 200 class.)

[5] Gardner, Martin, *Time Travel and Other Mathematical Bewilderments.* New York: W. H. Freeman and Company, 1988.

Martin Gardner has many "popular" mathematics books. I like the section on time travel in this one. This is light reading and fun.

[6] Halmos, Paul R., *I Want to Be a Mathematician, an Automathography.* New York: Springer Verlag, 1985.

As the book jacket says "Paul Halmos' life and professional career give fascinating insights into the relationship of a mathematician to society at large, to his colleagues, and, what is perhaps most complex, to himself. . ."

[7] Hawking, Stephen W., *A Brief History of Time, From the Big Bang to Black Holes.* New York: Bantam Books, 1988.

As I said, I can't seem to avoid touching on Physics and time is a theme that seems to recur. Stephen Hawking's discussion of time is fascinating.

[8] Jacobs, Harold R., *Mathematics, a Human Endeavor* New York: W. H. Freeman and Company, 1982 Second Edition.

This is really a text book but is full of straight forward, interesting applications of basic techniques. In addition the text is full of really good cartoons.

[9] Peterson, Ivars, *The Mathematical Tourist, Snapshots of Modern Mathematics*. New York: W. H. Freeman and Company, 1988.

This is just what it says "snapshots of modern mathematics" in language that makes it accessible to the layperson but interesting to the mathematician.

[10] Rucker, Rudy, *Infinity and The Mind.* New York: Bantam Books, 1982.

Reuben Hersh says "This is a fun book, a melange of logic, mathematics and mysticism. A special bonus are Rucker's personal recollections of conversations with Godel" [8] I ordered a copy after reading this and have not been disappointed. The role of infinity in the history and philosophy of mathematics is an important one, Rucker's treatment is wonderful.

[11] Rucker, Rudy, *The Fourth Dimension, a Guided Tour of the Higher Universes.* Boston: Houghton Mifflin, 1984.
This is another fun book. I have my students read it along with the section from *The Mathematical Experience* on four dimensional intuition and I show them the Strauss-Banchoff film on the Hypercube. The class discussions as we try together to solve some of Rucker's "puzzles" are interesting and illuminating. (I have a copy of the film and you should see it. I'll show it in class; if you want to see it again, I'm sure we can arrange something.)

[12] Ulam, S. M., *Adventures of a Mathematician* New York: Charles Scribner's Sons, 1976.

This is no longer in print. I use xeroxed copies (with permission). Students learn a little world history along with a mathematician's place in it. Ulam mentions many colleagues who were killed during the nazi occupation. His discussions of the Manhattan project are illuminating and sometimes disturbing. Reading this gives students an opportunity to know a famous mathematician as a person and to realize the importance of applied mathematics in the context of relatively recent history. (I can get you a copy of this from Kinko's for $14.70 if you are interested. Because of copyright problems you cannot go over there but the manager is coming over here to sell to my MATH 200 students.)

Book Review Assignment

The Assignment: Write a short reaction paper after (or while) reading one of the books on the annotated bibliography above. Also discuss the book in a short presentation to the class. Address the following questions/directions:

1. Was the book good? Would you recommend it? To whom?
2. Did you learn anything by reading the book?
3. Why did you choose this book?
4. Were there any ideas in the book, or prompted by the book, that you (or others) might be able to use in your classes?
5. Briefly summarize the main ideas (or interesting points) in the book.

The paper should be written in first person. No two people in the class may choose the same book and books are reserved on a first come basis by telling the instructor which book you plan to read.

Purpose: To explore the variety of popular literature related to mathematics. To provide an excuse/motivation for reading a book on the long list of interesting books one "should" get around to reading. The presentations should ensure that everyone gets some exposure to the ideas in the books read by the class.

Format: The paper must be typed and written in first person. Notes are appropriate whenever you are repeating an idea that came from someone else. In particular, the book being reviewed should be referenced. Any consistent recognized form of referencing is acceptable. I recommend MLA or APA format both of which are explained in the Holt Handbook used at SSU for English 101.

Length and Grading Criteria: Papers should be at least three double spaced typed pages and no more than five double spaced pages (10-12cpi with 1" margins on 8 1/2" x 11" paper). Papers will be graded on form, style and content. Included in form are grammar, spelling and punctuation as well as the physical presentation of the paper. Included in content is proper citation of sources, accuracy and interest. Included in style are readability, transitions and all the intangible things that make a good piece of prose. Presentations will be graded on content. Overall grade will be approximately 85%paper / 15%presentation. I am not going to give separate grades for the presentation and the paper but will give one grade for the review.

Deadlines: The book must be chosen by 6/27. Papers are due 7/23. Presentations will occur on 7/23.