

2.F. Mathematics, mysticism and pseudoscience

We have noted that the Pythagorean belief in the all – encompassing importance of numbers, which was extremely important for the development of mathematics, had a mystical side. In particular, some occult Pythagorean interpretations of numbers are discussed on pages 93 – 94 of Burton, beginning with the paragraph at the bottom of page 93 and continuing with the first full paragraph on page 94. We shall not be saying very much in this course about the ties between mathematics and subjects that are largely spiritual or make claims about the physical world that cannot be justified scientifically. However, some of these subjects — most notably astrology, numerology, and the occult side of alchemy (as distinguished from its pre – scientific side) — have definitely had impacts on the development of mathematics. Furthermore, from the earliest times until early in the 18th century, many important figures in the history of mathematics also devoted a great deal of time and effort to such subjects; noteworthy examples from the 17th century include J. Kepler, I. Newton and G. W. von Leibniz.

Since the astrology and astronomy were very closely tied to each other until they drifted apart in the modern area and separated more or less completely in the 18th century, it is not surprising that astrology and mathematics interacted frequently with each other for many centuries (even millennia). There is a brief but informative discussion of this interaction on pages 101 – 108 of the following classic work on mathematics which is written for a fairly general audience (see <http://www.ams.org/notices/199710/comm-millett.pdf> for a review of an expanded version of this book):

P. J. Davis and R. Hersh, *The Mathematical Experience* (Reprint of the 1981 Edition). Houghton – Mifflin, New York, 1998.

A more detailed summary of the astrological work of one prominent 16th century mathematician (G. Cardano) is given in the following online book review:

<http://www.siam.org/news/news.php?id=649>

Finally, here are some background references on astrology, including the differences between astrology and astronomy and the reasons behind modern scientific view of astrology as a form of pseudoscience:

<http://en.wikipedia.org/wiki/Astrology>

<http://members.fortunecity.com/templarser/astrolog.html>

<http://www.math.nus.edu.sg/aslaksen/projects/kh-uops.pdf>