HROSWITHA

by John H. Lienhard

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Today, a medieval nun writes some fancy mathematics. The University of Houston's College of Engineering presents this series about the machines that make our civilization run, and the people whose ingenuity created them.

I have here a book of Albrecht Dürer's prints. Sandwiched in among saints, martyrs, and allegorical figures are two drawings of people kneeling before kings to present them books. In one, a man offers the comedies of Hroswitha to Frederick the Wise of Saxony. In the other, Hroswitha herself hands that same book to Otto, first emperor of the Holy Roman Empire.

Hroswitha was born to Saxon aristocracy in AD 932 -- 500 years before Dürer. She joined a Benedictine cloister as a girl and spent the rest of her 70 years there. She's best known for her literary works -- comedies based on the legends of saints. She wrote with the conviction that nuns must stretch their minds to the glory of God; and her works express the full range of tenth-century scholarship. They reflect a sure knowledge of the Latin and Greek classics in the original languages.

Hroswitha wrote her comedies with the life-giving animation that the mystery and miracle plays made popular in the High Middle Ages -- after her death. But her writings had another remarkable dimension. Hroswitha was also grounded in science and mathematics. That understanding shines through her works.

For example, she tells about the three daughters of Wisdom -- Faith, Hope, and Charity -- being asked their ages. They answer in abstract terms, expressing numbers in the mathematical language of Boethius. Boethius was a sixth-century Roman Christian scholar whose textbooks had shaped medieval mathematics.

Hroswitha also talked about perfect numbers. Those are numbers that equal the sum of their factors. Six, for example, can be divided by 1, 2, and 3. But it also equals the sum of 1, 2, and 3. Perfect numbers are very hard to identify -- just try to find the next one after six. Hroswitha identified four.

Dürer made his etchings for a reissue of Hroswitha's works on the 500th anniversary of her death. By then scholarship among women had first risen in the medieval renaissance -- then it had fallen again into disrepair. It's ironic that, by the time Hroswitha's works appeared in the new medium of print, the intellectual liberation of medieval women had been put back into hibernation.

I'm John Lienhard, at the University of Houston, where we're interested in the way inventive minds work.

(Theme music)

Source material on Hroswitha is thin. The *Encyclopaedia Britannica* includes a brief account of her life. See also:

Smith, D.E., *History of Mathematics*, Vol I. New York: Dover Pubs. Inc., p. 189 and context.

Osen, L.M., *Women in Mathematics*. Cambridge, MA: M.I.T. Press, 1974, pp. 34-35.

The first four perfect numbers quoted by Hroswitha were VI, XXVIII, CCCCXCVI, and VIII millia CXXVIII (6, 28, 446, and 8128.)

For more on Hroswitha, see the following Catholic Encyclopedia site: http://www.newadvent.org/cathen/07504b.htm.