

# Flatland Still Shapes Our World

Brown University's Thomas Banchoff Guest Lectures at Dartmouth by Allison Giordano '04

Over a century ago in London, a slim volume by the name of *Flatland* was published by the pseudonymous "A. Square." The author was soon to be revealed as the well-respected middle-aged headmaster of a London boarding school: Edwin A. Abbott. While he had published before, he was not particularly well-read, nor scientifically or mathematically inclined. He *did* have, however, a taste for biting social satire coupled with a boundless imagination.

On April 6, 2001, Thomas Banchoff, a professor from Brown University, lectured Dartmouth students in College Course 18, "Mathematics and Science Fiction." Banchoff's interest in Abbott's work is so great that he has written his own textbook on multiple dimensions and been the subject of at least one *Flatland*-based short story entitled "Messages Found in a Copy of *Flatland*." The professor, between questions from the class, detailed the aspects of Abbott's life that lead to his creation of the novel and its modern implications.

*Flatland's* social implications were far-reaching in its own time. Abbott's commentary was informed by his experiences as a headmaster, as well as his frustrating and almost futile efforts to educate his daughter well. Using the voice of "A. Square," he ironically advocated the social trends he despised to a ridiculous degree, causing some readers to be (mistakenly) outraged at his support of such ideals, while others were outraged at the satire they saw. Abbott satirized almost every possible target at the time, from the inequality of women to the value of education, to the Victorian era's immobile social hierarchy, to the trend toward excessive objective rationalization.

Abbott's satire was, however, a bit subtler with regard to rationalization. Its importance relative to religion particularly interested Abbott, an Episcopal priest and



Professor Thomas F. Banchoff, Brown University

teacher, who sought some manner in which to unite the swiftly diverging worlds of science and spirituality. He parodied the separation of society, in which the women's world was comprised of such concepts as love and loyalty, while men concerned themselves with such matters as science and logic. Through this fictitious medium, he seemed to argue that one needs neither to be rational to the exclusion of religion, nor religious without any rationality. This debate continues today.

Most importantly, however, he brought into public light the theory of multiple spatial dimensions (beyond the three perceptible to humans). By telling a tale of a creature in a two-dimensional world who has an edifying encounter with a three-dimensional square, Abbott highlighted our own limited perception of what might well be limitless dimensions. Only a month after the first printing, Abbott answered his many critics in the introduction to the second edition. He asserted that if, as many argued, the flatlanders must have *some* height to exist, than we three-dimensional creatures must have some thickness in the fourth dimension.

Theories surrounding the study of the fourth dimension (and beyond) still abound today, and interdisciplinary applications of these theories continue to multiply. Professor Banchoff noted, as examples, the fields of paleoecology and animation, mathematical and scientific modeling, and even some of his own work with a choreographer of modern dance. The result, "Dimensions," represents multiple dimensions and our limited understanding through the dancers' different degrees of freedom.

The very last item Professor Banchoff showed the class was a copy of *Flatland* he had recently purchased. It was a recent publication, entirely in Persian, and it demonstrated yet again the universal nature of Abbott's theories and commentary in *Flatland*. ■

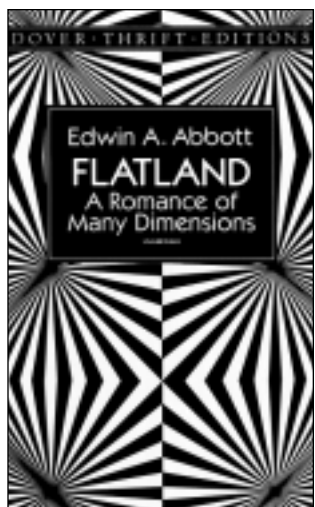


Photo Courtesy: Dover Thrift Editions

For more information, see Professor Banchoff's website at [www.math.brown.edu/~banchoff](http://www.math.brown.edu/~banchoff). (Photo used with permission.)