

Rochester Institute of Technology

College of Science & College of Imaging Arts and Sciences

Distinguished Speaker Series



Artistic Representations of Mathematical Concepts and Ideas:

**Thursday November 9, 2006
Xerox Auditorium 9-2850
4:00 p.m./ Reception to follow**

*A New Field
in Search of a Name*

Richard Palais & Luc Benard

this year's winners of the NSF Science and Engineering Visualization Challenge for Illustration

The field of computer-aided mathematical visualization is now roughly a quarter of a century old, and while it has a substantial overlap with the far broader arena of computer graphics, its special goals and requirements give it a flavor all its own. In its early days, most examples of mathematical visualizations were created primarily by research mathematicians to portray some very special and poorly understood mathematical entity graphically in order to better understand some of its properties. Gradually a second important purpose was found for the visualization of mathematical concepts and objects; namely pedagogical applications to help students to better understand abstract mathematical concepts by seeing concrete visual representations of special examples. In both these cases, if the mathematical images turned out to be aesthetically pleasing, that was looked at as a bonus that sprang from the innate beauty of the mathematics involved. Recently however, a new sort of mathematical visualization has developed in which aesthetics places a more central and motivating role. Namely, some graphic artists have developed symbiotic relations with mathematicians, using as content for their artistic endeavors mathematical objects supplied by the mathematician, but taking what they get as raw material to which they add their artistic craftsmanship and aesthetic insights to create works of considerable beauty.

In this talk, we will first give a condensed overview of the history and the current state of mathematical visualization, using the program 3D-XplorMath to help us illustrate our points. Then, to conclude, we will explain the process of creation of the winning entry in the NSF and Science Magazine 2006 Visualization Challenge, a remarkable trompe l'oeil, that was on the cover of the September 22, 2006 issue of Science magazine, and is a good example of this new kind of artistic use of mathematical visualization.

Interpreting services available upon request subject to availability. Please submit request at <http://cbgs.rit.edu>

This event will be video taped