From Mathematics to the Mathematical Sciences

Lynn Arthur Steen, September, 2009

On the occasion of the opening of the Mathematical Sciences wing of Regents Hall, St. Olaf College

Mathematics, the science of patterns, is the ideal liberal arts major. It is a universal language employed by people of all cultures and epochs. It has an ancient history with rich roots in the civilizations of Babylonia, Egypt, Greece, India, and China. It enabled the scientific revolution and spawned the age of computers. It offers tools for calculation, standards for inference, and paradigms for persuasion. Today, patterns studied by mathematicians can be found in virtually every part of the undergraduate curriculum—from the natural and social sciences to music and art, language and philosophy, history and politics.

To be honest, these highfalutin ideas were not much on my mind when I was in college. I was more interested in finding subjects that I both liked and was good at. I began by focusing on subjects that appealed to me in high school—physics and mathematics—but then discovered philosophy, a field that was entirely new to me. Even as a senior I still could not decide, so I applied to graduate school in all three fields. When finally forced to make a decision, I settled on mathematics because it was what all three of my interests had in common.

When I came to St. Olaf in 1965, mathematics was a small department with a highly structured curriculum and relatively few majors. In this respect it was not unlike mathematics at most other liberal arts colleges of this era: a service subject focused on supporting the physical sciences and preparing students to teach high school mathematics. By stressing the liberal arts value of mathematics and encouraging students to shape their majors to resonate with their other interests, the department gradually grew to become one of the five most popular majors on campus.

Now, nearly half a century later, mathematics is joined with its sister disciplines of statistics and computer science in a family of mathematical sciences that, while sharing important tools and habits of mind, exhibit quite different approaches to understanding and solving problems.

Together the mathematical sciences provide students with unparalleled opportunities to build a secure foundation for whatever challenges they will face after college. Graduates with expertise in the mathematical sciences are in demand in fields as diverse as architecture, cinema, epidemiology, finance, and linguistics—not to mention such old standbys as engineering, physics, and genetics. Today none of the separate mathematical sciences is alone sufficient: virtually all of today's challenges require a synthesis of mathematics, statistics, and computer science.

So to students who wonder whether the mathematical sciences are for them, I say: give them a try. The more courses you take, the more you will see the connections and patterns that form the heart of the mathematical sciences. And the more you learn, the better prepared you will be for the quantitative, logical, and symbolic demands of whatever field you eventually enter. The mathematical sciences offer an ideal major for every Ole, especially those who may be unsure about their future careers.