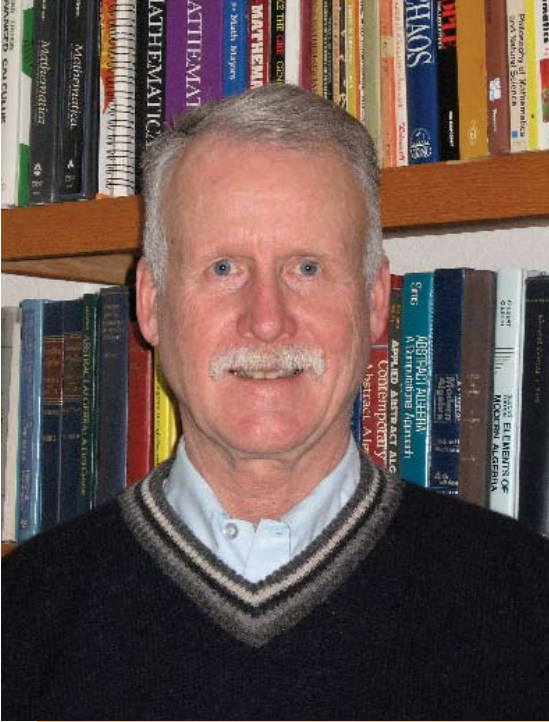


Visualization in Mathematics: Proofs Without Words and Words Without Proofs



Dr. Roger Nelsen
Professor of Mathematics
Lewis & Clark College

Abstract

It has often been said that a picture is worth a thousand words. This is especially true in mathematics, where a clever picture can cut right to the core of an idea. Roger B. Nelsen, this year's Bullitt lecturer, writes, "In English, the verb *to see* often means *to understand*." He will show how drawings can help us understand mathematical ideas and proofs.

As Martin Gardner once said, "... in many cases a dull proof can be supplemented by a geometric analogue so simple and beautiful that the truth of a theorem is almost seen at a glance." Roger B. Nelsen has shown this time and again in his many articles for *Mathematics Magazine* and his two books, *Proofs Without Words* and *Proofs Without Words II*.

During the 2007 Bullitt Lecture, Nelsen will use a little-known, elementary and powerful idea called the Fubini Principle in a variety of settings. The Fubini Principle simply says that if you count a set in two different ways, you will get the same result. He will use pictures to show how this elementary idea sheds light on mathematical questions from combinatorics, geometry, calculus and fast food.

Free and Open to the Public

7:00–8:00 p.m.
Thursday
March 29, 2007

Williams Auditorium
103 Ernst Hall

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dare to be great

Roger Nelsen grew up in Indiana, and received his B.A. degree in mathematics from DePauw University. He obtained his Ph.D. at Duke University, and since 1969 he has taught at Lewis & Clark College, where he is Professor of Mathematics. He has also held visiting positions at Mount Holyoke College and the University of Massachusetts at Amherst.

Nelsen's research interests lie in the area of mathematical statistics, where he uses copulas (multivariate distribution functions with uniform margins) to study dependence among random variables and to construct families of multivariate distributions. He also is interested in the process of visualization in mathematics, specifically how mathematical drawings help students understand mathematical ideas, proofs, and arguments.

Nelsen has published over 100 research and expository papers and four books: *Proofs Without Words: Exercises in Visual Thinking* (MAA, 1993); *Proofs Without Words II: More Exercises in Visual Thinking* (MAA, 2000), *An Introduction to Copulas* (Springer, 1999, 2006); and *Math Made Visual: Creating Images for Understanding Mathematics* (with co-author Claudi Alsina, MAA 2006).

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