

Making Math Exciting

James Allen Morrow

Dept. of Mathematics

University of Washington

Box 354350

Seattle, WA 98195-4350

morrow@math.washington.edu

The Mathematical Contest in Modeling is an important event at the University of Washington. It has attracted our best students, and the success of our teams has made the Department, the University, and the community very proud. Publications such as the *University of Washington Daily*, *Columns Magazine*, the *Seattle Times*, and the *Seattle PI* have published articles about our winning teams. The *Seattle Times* even wrote an editorial praising them. The winners have been introduced at special events and praised highly by the UW President at Regents' meetings. The result is that the Mathematics Department has become widely respected, and consequently outstanding students are selecting mathematics as their major.

Publicity about our success has contributed to continuing interest in the contest, making it easy to recruit talented and enthusiastic participants. We are usually able to form some teams consisting of experienced competitors and others with promising newcomers. It is important to give younger students the chance to participate, since experience in the contest is a good (but not perfect) predictor for success. The contest is also addictive—students are anxious to compete again and are willing to spend time preparing.

Teams are formed in October so that they will have several months to work together. It is a good idea to have a variety of talents on each team. Many team members are double majors and have experience using mathematics to solve problems. Interest is such that we are also entering teams in the ICM.

Preparation for the contest consists of

- frequent team meetings;
- reading winning papers;
- discussions of judges' comments;
- discussions with previous teams (particularly winning teams), who talk about their experiences and give advice;
- preparation of facilities (office space, computing accounts and equipment, library access, printers), and
- arranging the working environment well in advance.

Students need to become familiar with

- \LaTeX , in order to minimize time dealing with document preparation—this means making sure that appropriate software is available and correctly installed; and
- library and on-line resources that will have to be used to find information.

Research experience and experience working on a team are very important. The difference between classwork and tests is enormous. Students need to have the experience of formulating problems and dealing with inevitable failed attempts to find solutions. A good way to gain this experience is to participate in summer Research Experiences for Undergraduates (REUs), work on independent projects, and work with a group to attack problems in specific areas.

Students need to learn to work together to contribute ideas and constructive criticism. We try to form teams that have compatible personalities; in many cases, the teams consist of students who have already been working together informally on homework and test preparation. Each team will have its unique way of assigning responsibilities. One person may have computational skills, one person may have mathematical modeling experience, another may have good expository skills.

An intangible yet definite feature of the contest is the excitement that it generates. It has become a high point of the year for the students. It is their Super Bowl and they await it nervously, yet with confidence. The energy of the teams seems boundless. Only someone with the physical strength of youth can exert such an intense, concentrated, effort. Our faculty marvel at the quality of the output produced in such a short time under stressful circumstances. The results have been so rewarding that the University and the wider community eagerly anticipate the event and constantly ask for information.

The best way to end this essay is to quote some of the students.

- An MCM contestant: “I am glad (after 15 hours of sleep, that is) that I did this contest. I got to work with such brilliant minds on a problem that I would have never done otherwise. We learned so much in the process and got pushed so hard. Now every time there is a stressful situation, I’ll always think back about the MCM and realize that there could be worse situations. It was an unparalleled experience all together.”
- An ICM contestant: “At the start of the contest, we said that our first and foremost goal was to be better friends at the end than the beginning, and I’m very proud that we succeeded. We were able to come to consensus on almost everything, and work out our difficulties when we couldn’t.”

Perhaps COMAP didn’t realize when the contest was first suggested how much it would do to make math exciting!

About the Author



James Morrow graduated from Adamson High School in Dallas TX in 1959. He received a B.S. in mathematics from Caltech in 1963 and a Ph.D. in mathematics from Stanford in 1967; his thesis advisor was Kunihiro Kodaira. He was an Instructor at the University of California–Berkeley, from 1967 to 1969, and he has been at the University of Washington since 1969, where he is Professor of Mathematics.

He served one term as Graduate Program Coordinator, two terms as Undergraduate Program Coordinator, has directed an REU program since 1988, and has been the director of Mathday for high school students since 1993. He has been the advisor of four Outstanding MCM teams. He won the Distinguished Teaching Award at the University of Washington in 2003.