Publisher's Editorial

The Doug Faires Lifetime Achievment Award for 2019

Solomon A. Garfunkel
Executive Director
COMAP, Inc.
175 Middlesex Turnpike, Suite 3B
Bedford, MA 01730–1459
s.garfunkel@comap.com

Introduction

COMAP is proud to announce award of the Doug Faires Lifetime Achievement Award to **Chris Arney, Emeritus Professor, U.S. Military Academy**.

The purpose of the award is to encourage and recognize efforts to start modeling teams at both the high school and college levels. We dedicate this award to Doug Faires, who provided us with the perfect example of the goals that we wish to attain.

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About Doug Faires

During his tenure at Youngstown State, Doug was the recipient of numerous awards, including the Outstanding College/University Teacher of Mathematics by the Ohio Section of the Mathematical Association of America and five Distinguished Faculty awards from Youngstown State University, which also awarded him an Honorary Doctor of Science in 2006.

For nearly two decades, he was a member of the council of Pi Mu Epsilon National Mathematics Honorary Society, including a term as president. In addition, he was awarded the MacDuffee Award by Pi Mu Epsilon for lifetime service in 2005. Doug was a Co-Director of Examinations for the American Mathematics Competitions for 8 years and has been a long-term judge for the COMAP Interdisciplinary Contest in Modeling (ICM™). He authored or co-authored more than 20 books, including 10 editions of the classic *Numerical Analysis* (Cengage Learning, 2015).

A tireless champion of undergraduate research in mathematics, Doug was a driving force behind the establishment in 2006 of the Center for Undergraduate Research in Mathematics at Youngstown State. Doug had served earlier as a faculty advisor for the Mathematical Contest in Modeling (MCM™). He gave talks to local high schools, inviting them to form modeling teams to compete in the HiMCM™(COMAP's high school modeling contest). He recruited and mentored high school faculty advisors and invited the advisors and their teams to Youngstown State, where the teams met one another, and the experienced members of the college teams mentored the high school students. Long-term bonds were formed, and each year college and high school teams were encouraged to participate in the modeling contests. Later, Doug served as a final judge for the MCM, where he again was a true leader.

Lifetime Achievement: Chris Arney

His Background

Chris Arney is a graduate of the U.S. Military Academy with a Ph.D. in mathematics from Rensselaer Polytechnic Institute. After active duty, including teaching at the U.S. Military Academy, he served as a Dean and Acting Vice President for Academic Affairs at the College of Saint Rose in Albany, NY. He subsequently had various tenures as division chief and program manager at the Army Research Office in Research Triangle Park, NC, where he performed research in cooperative systems, information networks, and artificial intelligence.

His Contributions

Chris is the founding Director of the Interdisciplinary Contest in Modeling (ICM). In 1999, Chris came to COMAP with an idea for such a contest. The thought was to expand on the ideas of the already established Mathematical Contest in Modeling (MCM) by posing problems that required a deep understanding of one or more disciplines outside of mathematics. Through his tireless efforts, he has succeeded in making ICM an integral part of our yearly contests, so that MCM/ICM is now a fixture on the mathematics education scene. In 2019 alone, 11,000 teams worked on the interdisciplinary problems of the ICM.

Since the founding of the ICM, Chris has been its Director, which has involved not only organizing the contest, but also finding judges, leading them in their deliberations, writing the contest report and other pieces, and above all encouraging participation. Under his leadership, the number of ICM problems has expanded from one general problem to three featuring distinct areas: operations research or network science, environmental science, and policy modeling. He has offered student teams the opportunities to work on some of the "wicked" problems of the 21st century.

It is no exaggeration to say that this work would not have succeeded without Chris. This is on top of the work he did and continues to do to make all of our contests and all of COMAP a success. I honestly don't believe that we would be here without him. This year marks his last as ICM (founding) Contest Director. We simply want to say thanks. I have often said, when discussing myself vis-a-vis COMAP, that some ideas are better than the people who have them. If that is a rule, then Chris Arney is the outstanding exception.

Thanks, Chris!

My Experiences with the MCM/ICM

We know about the metaphor of "standing on the shoulders of giants" to boost ourselves through building on the contributions of others. I never reached any of the giant's shoulders, but I was blessed by the opportunity to learn from and work with people who were master educators in modeling (my vision of giants).

Doug Faires was one of the modeling giants—his great books from precalculus to numerical analysis and his wonderful volumes on mathematics for competitions were part of my mathematics upbringing. After being a team advisor for the first three years of the MCM, I judged the MCM with Doug for several years and shared a passion for the mathematics software package Derive, which morphed into the problem-solving system for some Texas Instruments calculators.

There were many others of Doug's generation who gave great service to mathematical modeling—Ben Fusaro, Frank Giordano, Marie Vanisko,

Paul Campbell, and COMAP's director Sol Garfunkel come to mind. My fortunate opportunity was to see them in action, so I could then mimic their ways.

My exposure to the interdisciplinary form of modeling came from great schools like Carroll College (Montana) and Harvey Mudd College, where mathematics helped to connect curricula in many disciplines; so when the National Science Foundation supported the Project INTERMATH consortium back in the 1990s and 2000s, I was hooked and started the ICM.

The modeling contests are great motivators for students to build modeling and problem-solving skills. What I like most about my experiences with the modeling contests are the comments that I often hear from students. When they tell me about their own contest experiences, they are excited and inspired. Students see the problems as realistic, authentic, and relevant to the global issues that they are concerned with. They treasure their experiences of collaborating with other students while confronting complex problems with their team's creativity and skills. To students, modeling is a form of freedom to explore, to innovate, and to have fun. The contest takes endurance and tremendous breadth of interdisciplinary skills, so successful students take pride in their effort and results.

My only regret was not having an opportunity like the MCM and ICM when I was an undergraduate 50 years ago. I will miss my colleagues at final judging, but I intend to check the COMAP Website next February so I can get excited over the challenging problems that next year's contestants will model, solve, and explore. I thank COMAP for these wonderful opportunities, experiences, and memories, and I am honored and humbled to receive the Douglas Faires Award.

—Chris Arney

About the Author

Solomon Garfunkel is the founder and Executive Director of COMAP and Executive Publisher of this *Journal*.

He served on the mathematics faculties of Cornell University and the University of Connecticut at Storrs, but he has dedicated the last 35 years to research and development efforts in mathematics education. He was project director for the Undergraduate Mathematics and Its Applications (UMAP) and the High School Mathematics and Its Applications (HiMAP) Projects funded by NSF, and directed three telecourse projects: *Against All Odds: Inside Statistics*, *In Simplest Terms: College Algebra*, and *For All Practical Purposes: Introduction to Contemporary Mathematics*.

Publisher's Note

The unusual size of this ICM issue—double the size of a usual issue of this *Journal*—is a happy consequence of ICM Director Chris Arney having successfully elicited an unusual suite of very thorough commentaries, by judges, authors, and experts, on the ICM Outstanding papers.

The large number of pages necessitated the one-time designation of this issue as a double issue of the *Journal*.

Vol. 40, No. 4 will contain Outstanding papers and commentaries for the 2019 MCM.