MSCS ⚜ MESS

MSCS Colloquium

Take What You Have Gathered From Coincidence: Understanding and Using Randomness

Whom: Matt Richey (St. Olaf)

Where: RNS 310

When: Monday, March 5th | 3:30 p.m.

About the talk: What does it mean to be random? We encounter randomness every day -- it's part of how we talk about the weather, sports, and even love. Despite being so familiar, randomness has proven to be an elusive idea to pin down. Even mathematicians have struggled to define randomness, leading to competing and sometimes conflicting definitions. Whatever it is, randomness is a driving force behind many modern computational algorithms. These algorithms --- the Metropolis Algorithm, Markov chain Monte Carlo Methods, and others --- use randomness as the secret ingredient that makes it possible to tackle famously difficult questions such as the Traveling Salesperson Problem. Using many pictures (and even a few Bob Dylan references), this lecture will look at the historical quest to define randomness and illustrate how randomness allows us to solve many of today's most challenging applied mathematics problems.

About the speaker: Matt is originally from Kentucky and received his B.A. from Kenyon College and his Ph.D. from Dartmouth. He came to St. Olaf in 1986 and has been here ever since. His areas of research are Applied Mathematics, Mathematical Computing, and Bayesian Computational Statistics. In addition, Matt has designed and implemented software for the industry, and is a consultant to the college's efforts to redesign the student information system. In his spare time (the little

(cont.) that remains) Matt enjoys running, listening to music, and cooking. He is also involved in a life-long effort to correct the commonly held belief that the sacrifice bunt in baseball is an effective strategic ploy. So far, he has failed.

Pi Mu Epsilon MathFest 2018

Trendier than Burning Man, more exciting than Coachella, the biggest festival of the year is coming soon: MAA's MathFest. This year's meeting takes place *August 1st -4th* in *Denver, CO*. Whether you would like to submit an abstract to present your research at the conference or just want to attend a mathematical experience unlike any other, visit the [MathFest](#) homepage for more information. Additionally, there is a separate session for members of Pi Mu Epsilon, who are strongly encouraged to attend, and more information about abstract submission, travel funding, and registration can be found at the [PME Math-Fest Website](#). Early-bird registration ends *April 15, 2018,* and abstract submissions are due *June 8th.*

Weekly Theorem

Chicken Theorem– The chicken must precedeth the egg.

Proof– Let a chicken x exist in space Ω at time t. Simultaneously, let an egg y exist in the same space Ω at the same time t. Next, let $f(\,.\,,t):\Omega \rightarrow \Omega$ be the temporal life function of chickens in space, defined such that $f(x,t) = y(t)$. Clearly, it follows then that $f(y,t) = x(t)$. Furthermore, as f is a function of life and chickens are certainly not immortal, it must be invertible. It follows directly then that

$$f(y,t) = x(t)$$

$$f^{-1}f(y,t) = f^{-1}x(t)$$

$$y(t) = f^{-1}(x,t)$$

$$f(x,t) = y(t) = f^{-1}(x,t).$$

Therefore, as f is it's own inverse it must be an Involution, and therefore cannot be an Evolution. Thus the chicken must precedeth the egg as claimed.

Calendar: Significant Figures

Pi Day, Wed, March 14

PME Induction Ceremony - Monday, March 19, Colloquium Time 3:30pm, RNS 310

MSCS Recital - Wednesday, April 18

Math Across the Cannon - Tuesday, April 24

Senior Banquet - Tuesday, May 8

Relaxation Station - Friday, May 18, Monday-Wed May 21-23