GRADUATE STUDENT COORDINATOR: MICHAEL VAN OPSTALL

A couple of days ago I was in the lounge before tea, somewhat furiously scribbling in my notebook and discussing formal power series rings with another graduate student. An outsider, clearly awed by our larger vocabulary, approached me and asked my permission to stay in what he had concluded was a "graduate mathematics study room." I assured him that it was fine that he occupy one of our coveted seats.

Having finished my discussion with the graduate student, the visitor came over and asked what I did. He related to me that after he took the undergraduate real analysis class that math was basically the same things over and over again. I was a bit intrigued, since, having taken real analysis, I assumed the student understood that we weren't just doing harder integrals than the 125 students. I assured him that graduate level mathematics was certainly not "more of the same," but he required evidence. He had not taken algebra, so certainly I could tell him there is an entirely different strange world to be unearthed in abstract algebra. I mentioned that in analysis our vector spaces get bigger, actually infinite dimensional, and dealing with that requires some creativity.

I was glad when he asked me what I was working on. I hoped to surprise him by explaining how fundamental some questions in mathematics are. Attempting to stick close to things that he had studied, I explained how eventually, many mathematicians discover differential equations they cannot solve, but are content to study properties of a solution. Then I realized, in a sense, my work is similar. I told him that I was working with some sort of strangely defined geometric object (the moduli space of stable algebraic surfaces). He interrupted me and asked, "What dimension is it?" I told him that was what I was working on. I drew some sort of nebulous amoeba-shape on my notepad and slashed a line through it. The line, I explained, was a certain distinguished geometric object, and really, all I hope to discover is the difference between the dimension of the amoeba and the line. The object that I am studying is itself the solution to a problem. It is not defined by equations that anyone knows, so I am forced to investigate the geometry by studying aspects of the problem to which the geometric object is a solution.

I usually do not have to answer this sort of question. Usually I have to defend mathematics against calculators and computers. Eventually another usual question arose, "How do you apply it?" Most of the work that graduate students in mathematics do is not directed towards a direct physical application. Instead, mathematicians hone their reasoning abilities on increasingly abstract and difficult problems (or abstract methods for solving seemingly innocuous problems) in order to better teach others how to do mathematics. However, mathematics created out of desperation with no dreams of application is often later picked up by someone else and applied. I told the student that we sort of build up a library of techniques and facts. Having done this, the machinery is available already when a theoretical physicist wants to know how strings move. The study of the moduli space of algebraic curves, a problem one dimension lower than my problem, has had immense applications in theoretical physics, although it started out of an obsessive desire for purely mathematical order.

No one knows better than a graduate student who is required to create new mathematics that mathematics is not at all a repetition of the same ideas and similar problems. I did not even mention how even "ancient" mathematics finds new applications, or at least applications not covered in the basic courses. I am sure this future economics graduate student will see this more and more clearly as he discovers game theory and the Black-Scholes equations.

UNDERGRADUATE LUNCHEON

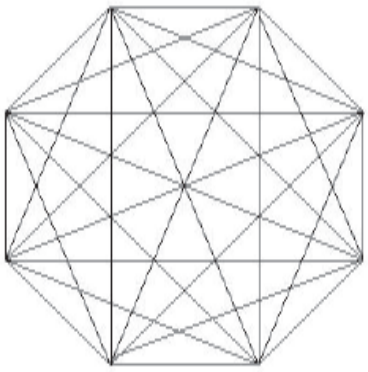
Each year, the Mathematics Department holds a luncheon to honor some of our outstanding undergraduates. Along with the honored undergraduates and their guests, interested faculty and friends of the department attend. Each award is presented by a faculty member familiar with the award winner's work, adding to everyone's enjoyment of the event. The luncheon honoring this past year's undergraduates was held on June 4th at the Faculty Club, and the award winners were:

- Outstanding student in first year honors calculus: Sheng-Fong Pai
- Outstanding student in second year honors calculus: Adam Wilson
- Highest Putnam Exam score by a UW student: Sheng-Fong Pai
- Gullicksen Award: Jeff Giansiracusa
- Outstanding ACMS student: Ryan Card
- Outstanding B.A. Liberal Arts Mathematics major: Jaime Lust
- Outstanding B.A. Teacher Preparation Mathematics major: Carly Thurston
- Outstanding B.S. Comprehensive Mathematics major: Tom Carlson, Kevin Klonoff

In addition, a special presentation was made to honor Ryan Card, Ernie Esser, and Jeff Giansiracusa, members of the UW's national award winning mathematical modeling team.

MATH PUZZLE

If every vertex of a regular octagon is connected to every other, then how many triangles will be formed?



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