Department inaugurates interdisciplinary lecture series

This past year the mathematics department inaugurated a new colloquium series dedicated to exploring the interactions between mathematics and other disciplines. The idea is for researchers in other areas to lecture on how they use mathematics in their work. There are manifold benefits. This fosters interaction between mathematicians and other researchers which leads to joint projects; indeed, some such collaborative projects have already begun in this way. Further, the mathematics faculty learns about applications of mathematics to real world problems, and these provide relevant and interesting examples to demonstrate the theory in mathematics courses. Finally, such interaction makes us more connected with the rest of the university and helps reverse the “compartmentalization” so prevalent in the modern university.

The National Science Foundation predicts that all sciences will see an increased use of mathematics in the near future. This has already happened in economics and is happening in biology with the rapid appearance of biomathematics and bioinformatics programs in universities throughout the country. Of course, physics and mathematics have been inseparable for centuries, and the social sciences have always relied on statistics—now more than ever.

This year, our lecturers in this series were: Professor Bill Fateley of the Chemistry Department, Professor Doug Goodin of Geography, Professor Larry Weaver of the Physics Department, Professor Byron Jones of Mechanical Engineering, and Professor Clare Nelson of Plant Pathology. Each described the mathematics, all of it quite deep, that is used in their discipline, and more specifically, in their research. Several lecturers even noted some interesting and unsolved mathematical problems that arise in their work.

All of this year’s lecturers were from other departments on our campus, but there are plans to expand the series to include speakers from other universities and researchers working in industry. If you are a mathematician working in a university or industry, or a scientist who uses mathematics, and might be interested in giving a lecture on a significant application of mathematics, please contact Professor Charles Moore of the mathematics department at cnmoore@math.ksu.edu.

Wayne O. Evans Distinguished Alumnus honored at Friends of Mathematics Banquet

Wayne O. Evans, our distinguished alumnus at the 2002 Friends of Mathematics banquet, is retiring from IBM in 1991, he established an independent consulting business specializing in computer security for the IBM AS/400. He has published a book on this topic and spends an average of 20 weeks per year traveling and lecturing on the IBM AS/400. His expertise is in demand throughout the world. He resides in Arizona.

In his address, entitled “What I learned at K-State that helped me in industry,” he began by observing that in all his years in industry he never had to prove a theorem, despite the fact that many of his mathematics courses attempted to train him in this skill. Nevertheless, this was valuable; mathematics courses had taught him to “learn how to learn,” a skill that was of absolute necessity in an industry that has seen, and will continue to see, rapid change. He offered a formula for success for a mathematician in industry, which he summarized with the acronym MATH: Motivation is important in an industry that looks for those who go the extra mile; Attitude is important to success and interactions with those around you; Teamwork is essential as most projects in industry are done in teams; Heart—empathy makes an individual strong. As a further observation, he noted how important it was to learn to write; good ideas are worthless if they cannot be communicated. He ended by remarking that the campus had changed quite a bit since he was here and that he was happy to see that K-State was doing so well.

Associated to the Friends of Mathematics banquet is the annual Friends of Mathematics lecture given earlier in the day. This year’s speaker was Professor Cameron Gordon of the University of Texas at Austin (see the article on lecture series in this issue). Professor Gordon gave an after-dinner talk at the banquet entitled “The Poincaré Conjecture: A Million Dollar Math Problem.” In his lecture, aimed at the layman, he gave a simple, clear explanation of the background necessary to understand the famous unsolved mathematics problem called the Poincaré Conjecture. This problem is one of seven problems that the Clay Mathematics Institute considers important and difficult. For each they have offered a prize of $1 million for a solution. After the...
First ever Prairie Analysis Seminar held at Kansas State

Kansas State and the University of Kansas are only about 90 miles apart, and the mathematics faculty of each university contains distinguished researchers working in similar areas, yet there has been regrettably little interaction between the two departments. At a reception after a mathematics conference about two years ago, Professor Marianne Korten of our department, and Professor Rodolfo Torres of KU, were chatting and lamenting this very fact. However, unlike many who have noticed this lack of interaction and simply accepted it, they decided to do something. Both do research in the area of analysis, and both KSU and KU have a substantial number of faculty who do research in analysis. They proposed to hold a joint analysis conference, sponsored by the two universities, which would be held once per year, with the venue alternating between the two universities.

After much groundwork, the first ever “Prairie Analysis Seminar” was held on the K-State campus on October 19 and 20, 2001. Approximately 30 researchers gathered to share their current research developments in the field. All analysts from K-State and KU were there, but the conference also attracted interested mathematicians from universities throughout Kansas, as well as from universities in Colorado, Oklahoma, Missouri and Texas. The keynote speaker, Professor Fang-Hua Lin of the Courant Institute of Mathematical Sciences of New York University and recent recipient of the prestigious Bôcher prize, delivered two hour-long lectures, with related hour-long lectures given by Professor Robert Hardt of Rice University and Professor Yisong Yang of Polytechnic University and the Institute for Advanced Study in Princeton. The program also included 15 one-half hour talks.

“We wanted to bring in leading research mathematicians to hold a conference that would draw mathematicians in analysis from throughout the region,” notes Professor Korten. “We also wanted to give mathematicians here in Kansas the opportunity to show their work. Of course, an important aspect of this is that it is a cooperative effort between KSU and KU, and it fosters interaction between mathematicians at the two universities and within the region.” The second annual Prairie Analysis conference is already planned for this Fall at KU and plans are being made to insure the continuation of this as an annual event. Importantly, this has served as a catalyst to further interaction, as there are now groups of researchers at KSU and KU in other areas of mathematics who are talking about similar gatherings.

Ronald Coifman delivers Stromberg lecture

Professor Ronald Coifman of Yale University delivered the sixth annual Karl Stromberg lecture on April 4, 2002. Professor Coifman is an internationally renowned researcher in harmonic analysis, Fourier analysis and wavelet theory. He is a member of the National Academy of Sciences and the American Academy of Arts and Sciences. He has received the Pioneer Award from the International Society for Industrial and Applied Mathematics and the National Science Medal, both in 1999.

His lecture entitled “Mathematical Transcriptions of the Real World, the Challenge to Harmonic Analysis: The Mathematics of Fateley’s Chemical Eye” described some of the challenges to mathematicians that arise in seemingly simple applied problems, such as information extraction and approximation. In particular, he considered the extraction of features from chemical absorption spectra, describing some of the methodology used. The data obtained in such experiments can be represented as functions or regions in higher dimensions; the most important mathematical issue here is our inability to analyze effectively functions and regions in higher dimensions.

One of the strengths of our department, among many, is our research accomplishments in the areas of harmonic analysis, complex analysis and Fourier analysis. Much of the credit for this goes to Karl Stromberg, who was not only an accomplished researcher, but was instrumental in establishing and developing a group of researchers in these areas. After his death in 1994, this lecture series was established by a gift from his widow, Salvación de los Puyos Stromberg, to honor the memory of her beloved husband Karl.

Previous lectures in the series have been Lennart Carleson, Thomas Wolff, Alexander Volberg, Elias Stein, and Thomas Körner.

Prominent speakers highlight lecture series

As usual, our many lecture series featured an impressive list of invited speakers.

In April, the sixteenth Isidore and Hilda Dressler lecture was delivered by Professor Maxim Kontsevich, who holds joint appointments at the Institut des Hautes Études Scientifiques in France and Rutgers University in the US. Among his many accomplishments, he received the Fields medal in 1998, mathematics highest and most prestigious award. His lecture, in algebraic geometry, was entitled “A new viewpoint in Non-Archimedian Geometry”. This lecture series was established by a gift from Robert and Leona Dressler in 1986 to honor Hilda Dressler, an M.D. in New York City, and the memory of Isidore Dressler, a mathematics teacher who was the author of over a dozen high-school mathematics texts.

The twentieth annual Friends of Mathematics lecture was given by Professor Cameron Gordon of the University of Texas at Austin. He currently holds the Sid W. Richardson Foundation Regents Chair at that university and among his many awards and honors are included a Sloan Foundation Fellowship and a Guggenheim Memorial Foundation Fellowship. In a lecture titled “The classification of knots,” he discussed developments in the history of knot theory as well as some elementary questions about knots that remain unanswered.

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In May, Professor Daniel Ruberman of Brandeis University delivered the nineteenth William J. Spencer Lecture. He has held several editorial positions for important journals and has been a Sloan Foundation Fellow. His lecture, in the area of four dimensional topology, was titled “Applications of 1-parameter Gauge Theory,” and he described how certain invariants can detect interesting geometric and topological properties of certain four dimensional manifolds. This lecture series was established in 1990 by the Department of Mathematics to honor William J. Spencer for his many contributions to mathematics and the College of Arts and Sciences. William J. Spencer received an M.A. in mathematics and a Ph.D. in Physics from Kansas State University, was president and CEO of Sematech in Austin, Texas until 1997, and is now Chairman Emeritus of Sematech.

The 2001 KSU Undergraduate Lecture Series in Mathematics

Lectures by a distinguished mathematician and thirteen alumni were the highlights of the 2001 Undergraduate Lecture Series in Mathematics at Kansas State University.

Eugene Lukac, a distinguished mathematician from the University of Oregon, visited Kansas State and gave a lecture on “The 15 puzzle, parallel computation, and 15,000-page proofs.” For his innovations in graph isomorphism and related issues, Professor Lukac was awarded the Delbert Ray Fulkerson Prize in Discrete Mathematics by the Mathematical Programming Society and the American Mathematical Society.

Edward Armbrust, classes of ’63 and ’65, gave a talk entitled “K-12 mathematics education in Washington State and Russia”, and other topics in which he discussed math questions from the Washington Assessment of Student Learning and mathematics instruction in classrooms in Khabarovsk, Russia. Edward taught public school in Rainier, Washington from 1967-1997. He is now working as a youth coordinator for a church in Olympia. Alice Boschmann (Harmon), classes of ’97 and ’99, showed how to do “Unconstrained nonlinear optimization” in Maple. She demonstrated, explained, and provided geometric motivation for the steepest-descent, Newton, and quasi-Newton methods. Alice is a manager at the European headquarters of American Express in London. Donald Brining, class ’69, told why “Getting to the top” is more than just being the best mathematician. He described ten factors necessary for success in both business and technical fields. Donald served from 1969 to 1989 in the United States Air Force as a computer systems analyst, Director of Systems Technology, Director of Information Systems Engineering and Commander of a Communications Squadron. Beginning in 1989, he served successively as Director of Data Processing, then Director of Central Services, and now County Administrator for Saint Lawrence county in New York.

Patrick Finney, class of ’63, spoke about “Appropriate choice making.” He reflected on how our choices profoundly affect the course of our lives, and he gave ways of improving our choice-making. He also described how to use statistics in an agricultural science career. Patrick is a scientist working at an Ohio Agricultural Research and Development Laboratory of Ohio State University. Xiaoliang Gan, class of ’92, gave an introduction to “Series, power series, and formal power series.” He also told some stories about Gauss and Weierstrass. Dr. Gan is a professor of mathematics at Morgan State University in Baltimore. Neil Hill, classes of ’98 and ’00, spoke on “My process of becoming an actuary.” He described how his K-State experiences influenced his career path. He also delineated the academic preparation necessary for an actuary. Neil is an actuary and works for the Security Benefit Group in Topeka.

Krishna Khemraj, classes of ’97 and ’00, presented “Mental math and the doomsday rule.” He showed John Conway’s doomsday algorithm and explained how it worked. Krishna is an actuary working for the Universal Underwriters, Zurich Financial Services Group in Olathe. Eric Lawrence, class of ’98, spoke on “What’s in math for me?” He discussed the benefits and opportunities in studying mathematics. Eric is now a math teacher at Garden City High School. Mark Lesperance, classes of ’90 and ’91, gave a talk entitled “Who wants to be an actuary? Play the auto rating game!” Mark is a Casualty Actuary working for Farm Bureau Insurance in Manhattan. Bernard McDonald, class of ’64, discussed “The National Science Foundation” and careers in math in the government. He also gave some personal recollections of the tragedy which occurred last September 11. From 1968-1984, Dr. McDonald was a member of the Department of Mathematics at the University of Oklahoma and rose to the rank of Professor and Chair. He currently is Executive Officer/Deputy Division Director for the Division of Mathematical Sciences of the National Science Foundation in Washington, D.C. In 1999, Dr. McDonald received the Distinguished KSU Mathematics Alumnus Award.

Don Myers, class of ’55, asked “Aren’t you glad you are a math major and what will you be doing thirty years from now?” He told how majoring in math opens up tremendous opportunities which can lead to a fulfilling and productive life. He also described his research assaying cores in open pit copper mining. He now is emeritus professor of mathematics at the University of Arizona in Tucson. In 1991, Dr. Myers received the Distinguished KSU Mathematics Alumnus Award. Jeff Poet, classes of ’91 and ’98, gave a presentation entitled “Good math doesn’t have to be difficult: Can factoring quadratics possibly be interesting?” He showed some lovely factorization patterns which he generalized. Dr. Poet is professor and Chair of the mathematics department at Ottawa University. Paul Schuette, class of ’86, discussed “When is mathematics applied?” He gave a truly down to earth application of mathematics by showing that many diverse phenomena obey a rank-size rule. Dr. Schuette is professor of mathematics at Georgia College and State University in Milledgeville.

Our goal in the Undergraduate Lecture Series is to introduce our students to the various applications and the many opportunities in mathematics. The lecture series includes presentations by our faculty and by outside speakers including our alumni, employers, and distinguished mathematicians from other universities. We cordially invite our alumni to give a presentation in the Undergraduate Lecture Series. If interested, please contact Dr. Thomas Muezenberger at 785-532-6750.
Department sponsors mathematics competitions

The department of mathematics is actively involved in sponsoring mathematical competitions at many levels.

Math Olympiad
This Spring the department sponsored the sixth annual Manhattan Mathematics Olympiad. Initiated by Professor Yan Soibelman of our department, the competition models similar competitions found in Russia and throughout eastern Europe. There are three categories of participants: fifth and sixth grade, seventh and eighth grade, and high school. In each category the participants are given an exam with only four questions, which they have three hours to solve. Naturally, these are difficult problems, and are deeper than what students see in their normal curriculum, but the problems are solvable using mathematics that students of their age should know. The idea is to test their ability to do “research”; students make conjectures, experiment, and follow many false leads before (hopefully) arriving at some conclusions.

This year there were over a hundred total participants. The first place winners were: Grades 5-6, Ben Chi, Grades 7-8, Jackson Swearer, and Grades 9-12, Alexander Soibelman. Second and third places as well as honorable mentions were given. All winners were honored at the annual Friends of Mathematics banquet; each received a certificate and a prize of a mathematics problem book.

See www.math.ksu.edu and follow the links to see some sample problems or to learn about next year’s competition in April 2003. Participation is free and all children in grades 5 through 12 are invited.

Professor Charles Moore with Parker competition winners. Professor Louis Pigno and wife Antonia in the foreground.

S. Thomas Parker Competition
Twelve Kansas State freshman and sophomores competed in the fifth annual S. Thomas Parker competition on April 13.

The format is the same as that of the mathematical olympiad; participants have three hours to solve four problems which can be solved using just freshman and sophomore level mathematics.

This year, no clear winner could be determined from three good exams, so the judging committee decided to declare three co-winners who would split the first, second and third place prize money. ($200 to each!) The three co-winners were: Kelly Blackwell, Eli May, and Mark Norfleet. Receiving honorable mention (and a $20 prize) were Gina Mercurio and Aaron Wech.

The competition was established in honor of the late S. Thomas Parker, who served on our faculty from 1947 until his retirement in 1982. After his death in 1990, a fund was established in his honor to support scholarships including this competition.

Visit www.math.ksu.edu/~zlin/mathcompet on the web to try your hand at some of the problems.

American Mathematics Competitions
These are held throughout the United States and are sponsored by the Mathematical Association of America, the American Mathematical Society, the Society of Actuaries, Mu Alpha Theta, the National Council of Teachers of Mathematics, the Casualty Actuarial Society, the American Mathematical Association of Two-Year Colleges, and the American Society of Pension Actuaries. These are held at three different levels: the AMC 8, AMC 10, and the AMC 12, for those in grades up to eight, ten, and twelve respectively.

Professor Tom Muenzenberger and administrative assistant Debra Webb of our department serve as exam directors for the State of Kansas and they handle all the administrative details of the examination within the state. State winners are invited to our annual Friends of Mathematics banquet where they receive a certificate noting their achievement.

2002 Ph.D. and Master’s recipients

Three graduate students received their Ph.D.’s this year.

Christopher Schroeder, advisor, David Surowski, dissertation title, “Cyclic coverings of regular affine maps” has accepted a position a Moorhead State University in Moorhead, Kentucky.


Tim O’Brien, advisor David Yetter, dissertation title, “A Skein-Theoretic Construction of Invariants of 3-Manifolds Associated to the Quantum Group $U_q(\mathfrak{g}_2)$,” will continue to live in the Washington D.C. area.

The department also awarded six Master’s degrees: Pavel Franc, Lindsay Hohn, Shama Jabeen, Curtis Kennedy, Heather Van Dyke and Ben Van Dyke.
A Conversation With Cameron Gordon

On the afternoon of April 25, 2002, Professor Cameron Gordon of the University of Texas at Austin delivered the 20th Annual Friends of Mathematics lecture (see the article, “Prominent speakers highlight lecture series”). That evening he delivered the keynote address at our annual Friends of Mathematics banquet. Earlier in the day, KSU professors David Auckly and Stefano Vidussi, together with graduate students Matthew Beswick, Curt Kennedy, and Ray McCubrey met for a conversation with Professor Gordon. What follows is a transcript of part of that conversation.

DA: This is Dave Auckly and I am helping to interview Cameron Gordon, who is doing us the honor of visiting for the Friends of Math Lecture. With me, I’ve got Stefano Vidussi, Ray McCubrey, Matthew Beswick, Curt Kennedy, and Cameron Gordon. Now that we are in here, let’s start with some of the basics. So, you were born in Scotland?

CG: The northeastern part of Scotland. The nearest big town would be Aberdeen.

MB: Do you miss it?

CG: I don’t miss the weather or the food.

CK: I noticed you were one of the twenty academic editors for the geometry and topology journal. This journal is fairly cheap. I was wondering what you thought about book and journal prices.

CG: Well, I guess there has been a lot of discussion and activity on this in the mathematical community. I think the physicists actually were aware of this even before the mathematicians were. Journal prices have been a big issue. In recent years, libraries had less and less money to buy journals. Journals became very expensive. People have the perception that the value that is actually added by a journal these days is decreasing because everybody writes their papers in TeX anyway. So, what do they do? Just sort of assemble it and then charge very high prices. For all these reasons, the mathematical community started getting interested in electronic publishing. Geometry/Topology was a response to that. It has actually been very successful.

CK: Will it become standard to publish mathematics electronically?

CG: I think it will be a while. Commercial publishers do seem to have a strong hold.

CK: I know a lot of books are being put up online, like calculus books. Do you think we should?

CG: I think publishers are aware that they are going to have to come to terms with the electronic media. If they are going to stay in business, they are going to have to do something. I am not quite sure what the ultimate result is going to be. I do sympathize with students. First of all, undergraduate textbooks are all far too big and thick.

CK: That is why they mark them up so much.

CG: Exactly. Calculus is this beautiful subject. It is based on very simple and beautiful principles. I think a big book detracts from the whole point of mathematics. The whole point of mathematics is to learn a few basic things like differential calculus and apply it to anything. Why write thousands of pages on where to find this and that? This makes the subject look much more complicated and intricate than it really is.

DA: When did you realize you were going to be a mathematician?

CG: Well, I thought I was going to be a scientist. I grew up with space exploration and all of that. Like a lot of kids in my generation, I did actually think I was going to be a scientist. I went to a boarding school when I was a little kid and there was no science taught at all. So, I did classics, like Latin and Greek. Then, I went to a prominent high school and the first day in class we were all asked if we wanted to do languages, science or classics. I had never heard of science so I said classics because it was the only one I knew. There were two of us in this Latin and Greek class. Luckily, there was a big epidemic of the flu that year. It was 1957 probably.

MB: Luckily?

CG: Luckily because all of the classes were disrupted. People were sick and so on. And so, while all of this was going on, me and this other guy were actually told not to go to our Latin and Greek class, but to go to some of these science classes. This was just amazing. We went to this chemistry class and thought ‘wow this is terrific stuff’. So, we immediately dropped Latin and Greek and got really keyed in on science. So, I thought I was going to do physics and chemistry, but then I guess later on I decided that mathematics was slightly more organized than chemistry was. I’d rather do math.

DA: So then it was after you realized that you were going to do math that you got distracted and became a rock star.

CG: Well, I don’t know that I became a rock star. Again, like a lot of kids of my age, the Beatles were very big so we also picked up guitars and formed bands. I played in a band called the Insect in the early 60’s. Then, I gave it up and I guess I took it up again about 15 years ago.

SV: Compare some of the university systems in Great Britain and the U.S.

CG: It may have changed a lot since my day. It is more of an elitist system than the U.S. It represents a much smaller percentage of people. It’s more specialized. If you were a math major, all you did was math. Here it is much broader. It takes longer here and perhaps people end up knowing even less about a specific subject, but they know much more, actually have a much broader education. Also, I think that because there are so many colleges. A typical state university covers such a broad spectrum and it caters to a big percentage of the population. Because of that large college system, the U.S. can support a lot of college research. So, you have institutions that are teaching at one end pre-calculus, and at the other end there is high level research going on. Whereas in the UK, I think it is all a little more concentrated. So, the research infrastructure is not what it is supposed to be.

CK: So, do you think the high schools are doing a good job?

CG: Well, in some ways. My kids went through high school in the U.S. I think there are problems with the way math is taught in the high school and the elementary schools. We all see this when we teach calculus at college. Somehow what mathematics really is, doesn’t seem to be communicated to kids.

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Conversation with Cameron Gordon, continued

effectively. It’s very unfortunate that kids have this sort of incorrect view of mathematics and it is very difficult to change. The students think, “you have to apply formulas to this, and you can’t think about a problem until you have been given a formula.” The idea is that it is just a logical way of thinking and here is the problem, what are we seeking, what do we know, and let’s try to organize this. Somehow, that’s all kind of lost and it’s a shame.

CK: Do you think it is probably a bulk of the teachers not knowing math to the extent that, say, a Master’s student would?

CG: It could be something like that. Certainly if you are teaching something and you don’t fully understand it, it is easy to retreat to formulas and I am sure that is part of it. Teachers are paid so little. I have worked with some high school teachers in Austin. A couple of us on the faculty got together with some high school teachers and designed a discrete math course. I have great respect for these high school teachers because they work really hard. The don’t get paid anything and they are really dedicated. I am not saying it is easy.

RM: What was the idea of the discrete math course?

CG: Well, it was trying to get across that math is something you discover. We tried to come up with interesting topics like probability which I think a lot of kids are capable of understanding and should find interesting. The idea was for people to regard mathematics as something you can discover, not this fixed body of knowledge. In this discrete math undergraduate class, we proved that if you have a graph then the number of vertices of odd degree must be even because every edge has two endpoints. One student proved this and then said the consequence of this, is, if we take the group of people in this room and shake hands with a bunch of people, it is not going to be possible for an odd number of you to shake hands with an odd number of people. After the class was over, one student said, “well, ok, you didn’t really mean that it is not possible”. I said, “well, yeah we proved this theorem by graphs”. He said no we just do it, we just shake hands. He understood the proof, but he hadn’t understood that it meant something about real life. I had a student who came to me during a calculus test and said he couldn’t remember the formula for the volume of a cube. That is the sort of question they ask that indicates to me that they miss the point of volume.

MB: There is this conflict between physicists and mathematicians. They don’t communicate where they should communicate.

CG: Well, physicists do think differently, and that’s probably as it should be. See, I think mathematicians are taught, correctly, that rigor is extremely important, but it’s not everything. For a start, there is this idea that mathematics is a formal system, where you make up some axioms and then sort of chase through the consequence of these axioms. That’s totally unreal. That’s really not mathematics at all.

CG: It’s not very creative, you know you’ve got pictures and so on, but on the other hand, it has to be accompanied by rigor. You have these grand schemes of how to prove this and that, but until you’ve actually nailed down all the details, it doesn’t cover it. I think physicists in some sense, are more pragmatic. If some thing clearly works and gives a useful answer, well that’s not to sit here and worry about making it work. But let’s go on and draw some conclusions and get on with it.

MB: It should be part of any researcher’s job to communicate his discussions to other researchers in different areas.

CG: Well, of course. You see subject areas of mathematics that don’t do that, and they just die. You can see this happening. I won’t mention any areas but you can look around and see these die because they haven’t made enough contact with other branches of mathematics.

CG: That’s again how it should be. It’s a whole organic system that evolves and changes and bits die out and new bits get born.

DA: What do you consider to be the milestones in your career - the best things that you’ve done?

CG: Oh, well, I’ve been very lucky in collaborating with some very good people. Obviously, the result that is best known is work with John Luecke on the knot-complement problem. That’s probably the most well known result. Also, I did some work with Andrew Casson.

SV: Is there any paper you regret publishing because it contains some wrong code or conjecture?

CG: No, I don’t think so. There are some papers I regret not publishing.

SV: You have not solved your mistakes, then?

CG: Well, I wouldn’t be surprised if somebody did find a mistake. Every time I get a letter from someone, at the start of it ‘I’ve just been reading your paper...’ and you’re thinking, ‘oh, no, no, they’ve found a mistake!’. But mathematics is funny. It somehow looks after itself. There are mistakes, but they are minor mistakes and usually they can be circumvented.

DA: So when you and John worked on the knot complement problem, John was one of your graduate students but he had already went away and come back at that point?

CG: Yes. In fact, it was a little bit funny because we started working on it while he was still a graduate student. And then he went to Courant as a post-doc. Then, when he was looking for a tenure track job, I thought well hey, it would be nice to get him back at Texas, so I said, great, we’re working on this knot complement program, and it would be really nice if we could work together, and so we hired him. But before he came, we finished the problem, but he came anyway, of course.

DA: So he was one of your first students, but not the first. How many students have you had?

CG: I think it’s somewhere in the low 20’s.

DA: So how many had you had before him?

CG: I think only two.

DA: Who are some of your other well-known students?

CG: Well, lets see. My first student was Rick Littleton. John Luecke, of course. I’ve had a couple of Japanese students, Mashiko Saito, Katura Miyazak; both are good. And Korean students.

CK: I have a light-hearted question. Suppose aliens invaded earth and you were taken away. But you are allowed to take one book with you. What book would that be?

CG: [laughter] Ok, that’s a good one. I think it would be Tristram Shandy. It’s a book by Laurence Sterne. It was written in the 18th century. It’s not a math book. It’s just a very funny autobiography of this guy, Tristram Shandy. It reads like a 20th century stream of consciousness. Halfway through the book he still hasn’t even been born, the author just keeps getting distracted. It’s just hilarious.

CG: I noticed in your talk yesterday that you said you thought mathematicians weren’t as literate as they once were. What do you think about that?

CG: Yeah. Maybe it was a cheap shot. But we communicate differently these days. The people I was talking about, Maxwell, Tate, Thompson, and Lord Kelvin. They had this correspondence between themselves;
Conversation with Cameron Gordon, continued

Thompson was "\textit{i}, Tate was "\textit{t}" and Maxwell signed himself "Dx", I think it was. But they wrote these beautifully literate letters, they wrote this poetry, I just think we communicate differently these days, with email messages, maybe a bit more hurriedly.

DA: When did you first meet Andrew Casson?

CG: Actually, I first heard a lecture by him. It must have been in the late 60's when I was a graduate student at Cambridge. He came down to give a talk on one of his big breakthroughs. Then when I went back to Cambridge in 1972, he was at Cambridge by then and we got together and started collaborating on knot theory. We did this work in 1974, '75. Then he came to Texas in 1980, and was there for four or five years.

DA: At Texas, who were you hired by? Was Moore still at Texas?

CG: No, Moore had died by then. I don't know exactly when but it must have been around 1970. We have a photograph of him looking suitably intimidating, sort of looking down at us in the department, but I never met him.

DA: Was Bing still active in the department?

CG: Oh yeah. Bing was active until Bing died at his desk trying to prove a theorem. His wife found him working on a problem. So yeah, he worked right up until the last minute.

CK: Another very general question. Do you watch TV?

CG: Very little.

CK: Well a lot of mathematicians don't watch TV.

CG: Well, it's usually not very good. The trouble with TV is that when it's really bad, there's no temptation to watch it. But there are some channels that are marginally interesting, like the History Channel, so especially when I'm traveling, I'll sit down in my hotel room and switch on the TV. Suddenly I've spent two hours watching some program that is marginally interesting. When it is all over, you think 'was it worth two hours of my life?'

CK: So, you would rather do mathematics?

CG: Oh, no. I mean TV is good if you are tired and you feel like reading or something. It is a nice way to do nothing, I guess.

Year 2002 graduates of the Math Department

This year the department graduated 16 mathematics majors. At the time this was written, several were still uncertain of their plans. What we do know is this:

- six are headed to graduate school: one in mathematics at the University of Michigan, two in mathematics at K.S.U., one in chemistry at the University of California, Berkeley, one in statistics at K.S.U., and one in economics at New York University
- one will be an actuary for Security Benefit Life in Topeka
- one will be an engineer working at National Instruments
- one will be a cryptologist with the U.S. Navy
- one plans to be a mom, with future plans to teach high school.

Best of luck to them: Seth Bishop, Jason Bulte, David Duffey, Trevor Fast, Brandon Greene, Scott Hill, Peter Pauzauskie, Chad Plummer, Ashley Prater, Scott Roths, Wesley Steuve, Meghan Williams, Sheila Willms, Renee Wilson, Andrew Young, and Sheena Zion.

Alumni Notes

1. Gary Clark, got a degree 1967 in Mathematics and, in 1969, a degree from The Air Force Institute of Technology. He is Civil Service Director and Pension Plans & Funds Director at the Department of Civil Service & Retirement, City of Lakeland, Florida.


3. Alan Maclean, Ph.D. 1974 in Mathematics was Associate Professor at Wichita State University until 1986, when he moved to Boeing, Seattle, WA. He is now retired from Boeing, where he held the position of Manager for Distributed Software Technology, Mathematics & Computing Technology.

4. Paul Schuette, B.S. 1984 in Mathematics, is Associate Professor of Mathematics at a college in Milledgeville, GA. He has been in his present position for 9 years.

5. Loren H. Koch, B.S. 1968 in Mathematics, retired after 33 years at Lockheed - Martin where she was Director of Airlift Operations. She lives in Marietta, GA.

6. Suzanne (Bradley) Smith, M.S. 1983 in Mathematics, is Computer Software Consultant at Vision Data Solutions, Kansas City. She was recently promoted to Microsoft Certified Professional.

Distinguished Alumnus, continued

Talk, those in attendance understood the statement of the problem, but alas, none had any ideas for making progress toward a solution.

In addition to the addresses by our distinguished alumni and Friends of mathematics lecturer, the banquet provides the opportunity to honor achievement. Numerous scholarships were awarded to undergraduates. Graduating undergraduates and graduates were honored. The mathematics department sponsors several mathematics contests (see separate article) and the banquet affords an opportunity to award certificates and plaques for outstanding achievement.

Your support makes a difference

Over the last several decades, the mathematics department has been graced with substantial gifts from alumni and friends. These gifts have enabled us to establish scholarships for talented undergraduates—the Hostinsky, Fuller, Miller, Stromberg, and Rector scholarships—and establish the S. Thomas Parker scholarship competition and Fung’s Achievement Award. We have also been able to establish the Dressler, Spencer, Valentine, Thomas, Stromberg and Friends of Mathematics lecture series, which bring the world’s best mathematicians to our department to lecture.

The importance of these scholarships and lecture series for mathematics at K-State cannot be overemphasized. These, together with smaller, less visible gifts, have had a profound impact on both our undergraduate and graduate programs and have raised the reputation of the department locally and throughout the country.

In its most recent survey, the American Mathematical Society ranked Kansas State’s mathematics graduate program ninety-first in the nation. There are hundreds of graduate programs in the U.S.; this ranking places us highest in Kansas and third in the Big Twelve (behind Texas and Nebraska). In the same survey, our graduate program was cited as one of the most improved since the last survey, 10 years before.

But our push for excellence is not confined to our graduate program. Recently our undergraduates have achieved success by winning many prestigious scholarships, and coveted internships, and have placed high in national mathematics competitions. K-State has won 45 Goldwater scholarships, second only to Princeton University. Twenty of the K-State winners have been mathematics majors. Recently a mathematics major won a Rhodes scholarship.

We would like to be able to continue to provide scholarships to attract top students. We are, and would like to continue to be, recognized for our use of computers and technology in our courses and the important skills these provide. These represent pressing financial needs for our department. We call on all our alumni and friends to continue to help us to attain our goal of becoming one of the top 50 mathematics departments in the United States and to allow us to continue to provide an excellent education for our students.

Alumni survey

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<th>Name</th>
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<td>Class and degree</td>
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<td>Recent promotions, awards, or special achievements in your work</td>
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<td>Personal happenings you would like to share</td>
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Notice of nondiscrimination

Kansas State University is committed to a policy of nondiscrimination on the basis of race, sex, national origin, disability, religion, age, sexual orientation, or other nonmerit reasons, in admissions, educational programs or activities, and employment (including employment of disabled veterans and veterans of the Vietnam Era), all as required by applicable laws and regulations. Responsibility for coordination of compliance efforts and receipt of inquiries, including those concerning Title IX of the Education Amendments of 1972, Section 504 of the Rehabilitation Act of 1973, and the Americans with Disabilities Act, has been delegated to Jane D. Rowlett, Ph.D., Director of Academic Services, Kansas State University, 204 Anderson Hall, Manhattan, KS 66506-0124 (785-532-4389).