Ed Nelson Lectures Begin

The Mathematics Department has established the Edward O. Nelson Memorial Lecture Series. The Edward Nelson Lecture Series is a series of mathematical talks to be presented here in the Mathematics Department. The lecture series is named after the late Dr. Ed Nelson, who served in the UND Mathematics Department beginning in 1950. Ed retired in 1993 and passed away in 2010 at the age of 86.

Dr. Gail S. Nelson presented the first lecture in the series on March 20, 2013. The title of her talk was “Magical Properties of Farey Sequences.” Gail is Dr. Ed Nelson’s daughter. She has served as a Professor of Mathematics at Carleton College in Northfield, Minnesota, for many years. She holds a B.S. degree from UND and a Ph.D. in Mathematics from the University of Minnesota.

Professor Rick Gillman, of Valparaiso University, presented the second lecture of the Ed Nelson Lecture Series on October 11, 2013. The title of his talk was “Why Do Left-Handed People Survive?” Professor Gillman holds B.S. and M.A. degrees from Ball State University and a D.A. degree from Idaho State University. Valparaiso University is located in Valparaiso, Indiana, not far from Chicago.

We would like to thank Dr. Nelson and Dr. Gillman for presenting their talks here!

New GTA’s Join the Department

Several new GTA’s have begun work here in the Mathematics Department.

**Jasper N. Barlich** is from Minot, North Dakota. He earned his undergraduate degree at Norwich University, in Northfield, Vermont, where he majored in Mathematics and minored in Engineering Sciences. Jasper enjoys working on cars, driving, and target shooting. He also enjoys video games.

**Iva Bilanovic** is from Bemidji, Minnesota, and she completed her bachelor’s degree at Bemidji State University. She majored in Mathematics and earned minors in Political Science and Biochemistry.

**Christopher Hellmann** grew up on a farm near the town of Holdingford, in central Minnesota. He completed his undergraduate degree at the University of St. Thomas, in St. Paul, Minnesota, where he majored in Applied Mathematics and minored in Mechanical Engineering. Christopher still enjoys working on the farm when he has the chance to do so.

**Manoj Khanal** is a native of Kathmandu Nepal. His undergraduate degree is from the University of Wyoming, where he majored in Mechanical Engineering. He enjoys playing the guitar, and he also likes to play soccer with his friends.

**Ryan Ogren** is from Minneapolis, Minnesota. He attended Augsburg College, in Minneapolis, and completed a bachelor’s degree in Mathematics there. Ryan enjoys playing cards, especially 500, and he is an avid biker. He is fascinated with the enneagram, an ancient personality assessment tool.

**Alex Sidles** is a native of Bossier City, Louisiana, and he holds an undergraduate degree in Mathematics from UND. For hobbies, he enjoys singing and acting. Alex also enjoys playing the ukulele and the guitar, but he acknowledges that he is not very good at either!

We wish all of our new GTA’s the best of luck here!
New Lecturers

Dr. Eun-Jung Youn began service as a Lecturer in our department last fall (fall 2013). Dr. Youn holds a Ph.D. degree in Mathematics from the University of Iowa. She is married to Professor Doojin Hong, who also serves in the UND Mathematics Department.

Last fall Brenda Olson served as a Lecturer here in the UND Mathematics Department. Her appointment was for only one semester, however, so she is no longer here. Ms. Olson received her master’s degree in Mathematics from UND in 2004. She says that it is exciting to work at UND, and that coming here is like coming home. When Ms. Olson is not teaching mathematics, she enjoys camping, fishing, and cheering for the UND hockey team. She is from Oslo, Minnesota. We hope that she can serve here again sometime soon!

2013-2014 Scholarships Awarded

The Mathematics Department has selected the following four students to receive scholarships for the 2013-2014 academic year:

Michael F. Mullen (Jay O. & Marie Bjercaas Scholarship)

Jacob E. Denault (Ronald C. & Ann C. Bzoch Memorial Scholarship)

Philip D. Eaton (Paige Plagge Memorial Scholarship)

Katie M. Roche (Judy Ann Utton Memorial Scholarship)

We would like to thank the donors who have made these scholarships possible!

Dunnigan Receives Award

UND Mathematics Department faculty member Dr. Gerri M. Dunnigan received the North Dakota Spirit Faculty Achievement Award in 2013. According to an April 24, 2013, posting in UND’s University Letter, this award was established “to recognize significant contributions by faculty in teaching, research and service.” Dr. Dunnigan was one of several UND faculty members to receive this award in 2013. We extend our congratulations to Dr. Dunnigan for her award!

Where They Are and What They Are Up To

Tina (Melby) Coleman (M.S., 1991) visited the Mathematics Department in July 2013. Tina and her family are currently living in the St. Cloud, Minnesota, area. Before moving away from Grand Forks a few years ago, Tina served as a Lecturer here in the UND Mathematics Department.

Dr. Steve Hample (M.A., 1970) is currently living in Bozeman, Montana. He is employed as an investment adviser.

Aaron Novotny (M.S., 2012) and his wife are moving to the Lubbock, Texas, area. Aaron’s wife is graduating from UND with an M.D. degree in family medicine.

Mary Townsend (M.Ed., 2012) is an Assistant Professor in the Science and Mathematics Division at Mayville State University, in Mayville, North Dakota. She is also working on a Ph.D. in Education here at UND.

Daniel Perlov (M.S. 2006) graduated with a Doctor of Chiropractic degree from Northwestern Health Sciences University in Bloomington, Minnesota on April 12, 2013.

Travis Wolf (B.S., 2007) has completed a Ph.D. in Mathematics at the University of Iowa and is now an Assistant Professor at the University of Mary in Bismarck, North Dakota. You can read more about Dr. Wolf in the 2012-2013 issue of the Math Log.

Dwight Wendschlag (M.S.M.E. with a Mathematics minor, 1975) is retired after thirty-seven years in the petroleum industry and is currently doing some consulting work. He says that his applied mathematics studies at UND complemented his mechanical engineering work very well and that this greatly enhanced his career. In the course of his work, Dwight has often used numerical simulation, and his mathematical studies have helped him to obtain the necessary foundation for much of this simulation work. He writes: “I will be forever grateful to UND & Dr. [David] Uherka for the role he played on my graduate committee and in the classroom.” You can reach Dwight and his wife Peggy at 1000 Ranch Lane, Kalispell, MT 59901. Their home telephone number is (406) 755-3224.
Ryan Wenaas (M.Ed., 2011) is currently serving as a lecturer in the Mathematics Department at North Dakota State University. In the fall of 2013, he taught four sections of College Algebra at NDSU, one of which was in the large-lecture format. He also taught a fifth class at the Fargo campus of the North Dakota State College of Science (NDSCS). Altogether, he had over 250 students. Ryan and his wife Mariah have bought a house in West Fargo. They also have a cat named Digits. (See photograph.) Ryan writes, “His name is Digits for two reasons the first being it is a cool name since I am a math person and the second being that he is a polydactyl cat with 5 extra toes.”

Anna Young Eberhart was born on January 9, 2014. Anna is the daughter of Katrina (Nagel) Eberhart and Eric Eberhart. Katrina received her M.S. degree from UND in 2007.

**Faculty Footnotes**

Anthony Bevelacqua has published the article “Another irreducibility criterion” in the American Mathematical Monthly.

P. Caputo, A. Faggionato, and Timothy Prescott have published the article “Invariance principle for Mott variable range hopping and other walks on point processes” in the journal Annales de l’Institut Henri Poincaré Probabilités et Statistiques.

Ryan Zerr presented the talk “Being Mathematically Inquisitive: How a Simple Beginning Can Lead to a Wealth of Interesting Questions” at the North Dakota Undergraduate Mathematics Conference (NDUMC) at Minot State University, in Minot, North Dakota, on September 21, 2013.

**Promotions and Tenure**

Dr. Anthony J. Bevelacqua and Dr. Ryan J. Zerr have been promoted to the rank of Full Professor. Dr. Bevelacqua has been with the UND Mathematics Department since August 2000. He received his Ph.D. from the University of Kentucky, and his research specialty area is abstract algebra. Dr. Zerr received his M.S. degree in Mathematics from UND in 1998, and in 2003, after completing his Ph.D. in Mathematics at Iowa State University, he returned to the UND Mathematics Department. Dr. Zerr’s research specialty area is C*-algebras. His wife Jessica serves as a Senior Lecturer in UND’s English Department.

Jeremiah Bartz (M.S., 2006, B.S., 2004) has completed his Ph.D. in Mathematics at the University of Oregon. His dissertation dealt with hyperplane arrangements. Dr. Bartz now serves as an Assistant Professor in the Department of Mathematics at Francis Marion University in Florence, South Carolina. He says that completing his Ph.D. would have been more difficult if he had not worked through the master’s degree program here at UND.

Dr. Ryan Zerr, Dr. Laurie Geller, and Daniel Leingang, at Minot State University on Saturday, September 21, 2013.
Dr. Doojin Hong has been promoted to the rank of Associate Professor. He has also been granted tenure. Dr. Hong came to the UND Mathematics Department in 2007. He holds a Ph.D. degree in Mathematics from the University of Iowa. His research specialty area is differential geometry. He is married to Dr. Eun-Jung Youn, who currently serves as a Lecturer here in the Mathematics Department.

The Math Log congratulates professors Bevelacqua, Hong, and Zerr for their promotions and tenure. They have all done very good work here!

**Millspaugh Gets Married**

Richard Millspaugh and Penny Chmielewski were married on July 26, 2013. Richard is a Professor here in the Mathematics Department. He received his Ph.D. from the University of Oklahoma in 1989 and came here in 1990. His research specialty area is topology. He has previously served as Chair of the Department. Penny has previously worked at Sisters of St. Benedict, in Crookston, Minnesota. She is currently employed at Altru Hospital in Grand Forks, where she serves as Infant Bereavement Coordinator and Holistic Care Coordinator. We are very happy for Richard and Penny!

**2013 Math Track Meet Canceled**

The 2013 UND Math Track Meet was canceled due to bad weather. The Math Track Meet is an annual event in which selected students from Grand Forks area schools come to Witmer Hall here on the UND campus to work on mathematical problems. Students compete for individual and team awards based on their work. The 2013 Math Track Meet was to have been on Monday, February 18, 2013 (Presidents Day). We plan to hold the 2014 Math Track Meet on February 17, 2014.

**Births**

Henry Thomas Bevelacqua was born on January 27, 2013. Henry’s parents are Anthony and Stacey Bevelacqua. Anthony is a Professor here in the Mathematics Department.

Serenity Joy Minnotte was born on April 30, 2013. Her parents are Michael and Krista Lynn Minnotte. Michael is a Professor here in the Mathematics Department, and Krista Lynn is an Associate Professor in UND’s Sociology Department.

Emily Rose Prescott was born on August 6, 2013. She is the daughter of Timothy and Cynthia Prescott. Timothy serves as an Assistant Professor in the UND Mathematics Department, and Cynthia is an Associate Professor in UND’s History Department.

**Gilsdorf Publishes Book**

UND Mathematics Department faculty member Dr. Thomas E. Gilsdorf has recently published a book entitled *Introduction to Cultural Mathematics: With Case Studies in the Otomies and Incas.* In this book, Dr. Gilsdorf examines the use of mathematics in various cultures. The book is intended to serve as a textbook for courses in cultural mathematics at the university level, i.e. university courses in which the objective is to study the connections and interactions between culture and mathematics.

One of the main themes of Dr. Gilsdorf’s book is number systems. Most people grow up in societies which use the traditional base 10 number system. But in his book, Dr. Gilsdorf explains how people of certain past and present cultures have used other bases. For example, ancient Babylonians used a base 60 number system. Other indigenous cultures in Mexico and Central America use a base 20 number system. The book also describes “number gestures” and “number symbols.” It contains a figure showing how people of the Arusha Maasai culture in eastern Africa use the fingers of one hand to represent the numbers 1 through 9. It also has figures showing numbers expressed in terms of ancient Egyptian symbols.

**Modular Arithmetic**

Dr. Gilsdorf’s book discusses some more unexpected ways in which mathematics is used in different cultural activities around the world. One example of this is the idea of divination, or fortune-telling. Dr. Gilsdorf describes how the people of the Caroline Islands, in the Pacific Ocean, have developed a fortune-telling procedure which uses the idea of modular arithmetic. Another cultural group, on the island of Madagascar, in

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the Indian Ocean, has developed a fortune-telling technique which uses Boolean algebra. Practitioners of these fortune-telling techniques would probably use other words to describe their methods, but the mathematical ideas are the same as some of the ones you may have studied here at UND.

Dr. Gilsdorf’s book devotes a chapter to the idea of kinship relations, i.e. the relations between a person and his or her ancestors, descendants, brothers, sisters, aunts, uncles, and other relatives. The book specifically discusses the Warlpiri people, an aboriginal group in Australia. The Warlpiri have developed a kinship system consisting of eight different relations. Under this system, one can combine any two of the eight relations to form a new one. In the end, the eight relations, together with the combination operation, constitute a group of order eight, just like the groups that you may have studied in an abstract algebra course here at UND.

The book also discusses calendars, geometric patterns in artwork, and games. It contains numerous tables, drawings, and illustrations. Each chapter contains a set of practice exercises. The last part of the book devotes special in-depth attention to the mathematics of the Otomi and Inca cultures. The Otomies (pronounced “oh-toh-MEES”) are a cultural group in Mexico. The Incas, as you may know, controlled a large empire in South America prior to the arrival of the Spaniards.

Pyramids and Snakes

Last summer, the Math Log editor met with Dr. Gilsdorf to discuss his book and his reasons for writing it. Dr. Gilsdorf’s interest in cultural mathematics began during the 1992-93 academic year, when he was on a temporary leave from UND. He spent the year at Cinvestav, a research center in Mexico City, where he conducted research in functional analysis with his collaborator, Dr. Carlos Bosch. During his spare time, Dr. Gilsdorf was able to do some sight-seeing. He visited the pyramids at Teotihuacán, Uxmal, and Chichén Itzá. He was particularly intrigued by a pyramid at Chichén Itzá. At certain times of the year, the pyramid casts a shadow in the form of a snake. It soon became clear to Dr. Gilsdorf that the builders of the pyramids must have known something about mathematics. He began to read books dealing with the mathematics of other cultures, and before long, he was teaching courses in cultural mathematics here at UND. These courses began as special “topics” courses, but they later became a permanent course: Math 217 (Introduction to Cultural Mathematics).

Over the years, Dr. Gilsdorf developed extensive course materials for Math 217. Most of his ideas were adaptations of material from existing books and journal articles, but he also gathered some new information directly. He went on leave from UND two more times, again working in Mexico, and he made several trips to Mexico during the summer to visit with the family of his wife Elisa and with his research collaborators. Through the course of these trips, he had enough spare time to interview some of the Native American people of Mexico and learn more about their cultural practices. Dr. Gilsdorf’s course materials eventually reached a form suitable for a book, which John Wiley & Sons published in 2012.

Dr. Gilsdorf is once again on leave from UND. He is spending the 2013-2014 academic year at the Istituto Tecnológico Autónomo de México (ITAM), an institution of higher learning in Mexico City. He has learned to speak Spanish as a second language and is teaching mathematics courses in Spanish at ITAM. He is also continuing his research in functional analysis with Carlos Bosch and other collaborators at ITAM. We wish Dr. Gilsdorf the best of luck in his current activities, and we look forward to seeing him back here at UND this fall!

The Pseudo-Sum

By Larry Peterson

Most of you have probably heard of the new Ralph Engelstad Arena here on the UND campus. The “Ralph” is the home of the University of North Dakota men’s hockey team. It seats over eleven thousand people and was made possible through the generosity of the late Ralph Engelstad. Many of you may also remember the old Ralph Engelstad arena. The old Engelstad arena was located just east of UND’s Memorial Stadium. I say “was,” because work crews demolished the old Engelstad Arena last summer (summer 2013). The UND men’s hockey team played in the old Ralph from 1972 to 2001. More information on the old and new Ralph Engelstad arenas is available on the Web. Visit http://www.theralph.com

Go to the menu entitled “The Ralph,” and click on “Hockey History.”

3. A topics course is a course which does not cover any particular predetermined set of topics. The content of a topics course may vary from semester to semester. A topics course usually has a special name and number. For example, the current UND catalog lists the course “Math 405: Selected Topics in Mathematics.” This is a topics course.
UND plans to construct a new indoor sports facility at the site of the old arena. Watch alumni publications, such as the Math Log, for the latest developments relating to the new facility.4

The President’s Address

Another interesting event here on the UND campus relates more closely to the Mathematics Department. As you may remember from the 2012-2013 issue of the Math Log, UND Mathematics Department faculty member Dr. Ryan Zerr has been elected to serve as Chair of the UND Senate. As part of his duties as Senate Chair, Dr. Zerr presided over a meeting on November 19, 2013, in which UND President Robert O. Kelley presented his “State of the University” address. The meeting took place in a large lecture hall, and over one hundred people were present. Shortly after the meeting began, Dr. Zerr introduced President Kelley to the audience, at which point President Kelley proceeded to deliver a lengthy speech describing some of the important issues and recent events at UND. After the President’s address, Dr. Zerr spoke for about five minutes. He discussed recent actions of the University Senate and summarized his views on some of the issues that the University currently faces. But as Dr. Zerr noted to me later, most of the people in the audience came to hear President Kelley. For this reason, Dr. Zerr decided to keep his own comments brief!

Maybe I should be brief as well! In any case, please keep us posted on your activities! We welcome news from all of you, both recent students and students from decades ago, even if you don’t have a graduate degree. And you can also send us pictures! Digital pictures are fine, but we can also scan in old-fashioned pictures and put them in the print and on-line versions of the Math Log.

As always, I hope that things are going well for all of you!

The following persons are responsible for monetary gifts to the UND Alumni Association specifically designated for the improvement of the Department of Mathematics. Numbers in parentheses indicate the number of gifts since the last issue of the Math Log, if more than one. We thank you for your generosity!

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If you would like to make a monetary contribution to UND, to the UND Mathematics Department, or to one of our scholarships, please make checks payable to the “UND Alumni Association” or to the “UND Foundation.”

Your generosity is gratefully acknowledged and sincerely appreciated!

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Your teachers and friends are wondering what you are doing. Help us satisfy their curiosity! Photos are also welcome!

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2013-2014