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The Newsletter of the Pacific Northwest Section of the Mathematical Association of America

Spring 2003

PNW-MAA Spring Meeting
Whitman College
June 19-21, 2003

The annual meeting of the Pacific Northwest Section of the Mathematical Association of America will take place June 19-21, 2003 at Whitman College in Walla Walla, Washington. Thursday activities include a Project NExT meeting, two minicourses, and an evening reception. The four invited talks as well as the contributed talks will all take place on Friday and Saturday. Please note that one of the invited talks will take place during the Friday evening banquet. The deadline for registering is May 30th. Additional meeting information is available on the conference web site at *http://pnwmaa.whitman.edu*. We look forward to seeing you in Walla Walla.

Invited Speakers

We are delighted to have **Charles W. Groetsch** (University of Cincinnati), **Allan Rossman** and **Beth Chance** (California Polytechnic University, San Luis Obispo), Underwood Dudley (DePauw University), and **Mike Beanland** (Triaxis Engineering in Corvallis, OR) as invited speakers.

Dr. Groetsch's research centers on inverse problems. He is the author of several books and papers in this area and is a recipient of the MAA's George Pólya Award. He has directed an NSF Undergraduate Faculty En-

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Visit the newsletter online at http://myhome.spu.edu/bgill/maa/

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hancement Workshop on the mathematics of inverse problems, MAA minicourses on inverse problems in the undergraduate classroom, and an NSF curriculum project on inverse problems for undergraduates.

Allan Rossman and **Beth Chance** will also join us as invited speakers and will conduct a minicourse on Saturday afternoon. Rossman & Chance specialize in undergraduate statistics education and frequently run workshops on teaching introductory statistics with active learning. Their current work includes an NSF funded project to develop a data-oriented, active learning post-calculus introduction to statistical concepts, methods, and theory. They are also co-editors of *Stats* magazine and co-authors of the popular *Workshop Statistics* series of textbooks.

Underwood Dudley's research is in the area of number theory. He has written several books, including *Mathematical Cranks*, *Numerology* (both published by the MAA), and a number theory textbook. He is the current editor of the *College Mathematics Journal*. He has also served as a Pólya Lecturer for the MAA and has received the MAA's Trevor Evans Award for expository writing.

Mike Beanland, Senior Engineer with Triaxis Engineering in Corvallis, OR, will give an invited address about the Stateline windfarm power plant.

Invited Lectures

Two Gentlemen of Verona: An Early Episode in Ballistics, Charles Groetsch, University of Cincinnati, Area: Math history and inverse problems.

Teaching Statistical Inference: Activities and Assessment, Beth Chance and Allan Rossman, California Polytechnic State University, Area: Statistics.

The Calculus Book is a Weighty Subject, Underwood Dudley, DePauw University, Area: Number theory. (Lecture at Banquet)

Wind + Electricity + Engineer = Number Crunching! Mike Beanland, Triaxis Engineering, Area: Wind power generation.

Short Courses

Mathematics for Business Decisions, Richard B. Thompson, University of Arizona. Time: Thursday afternoon. Cost: $20. For additional information on this workshop, see the article on p. 10 of this newsletter.

Visual Linear Algebra. Eric Schulz, Walla Walla Community College. Time: Thursday afternoon. Cost: $10.

Teaching Introductory Statistics with Data and Activities. Beth Chance and Allan Rossman, California Polytechnic State University, Time: Saturday afternoon. Cost: $10.

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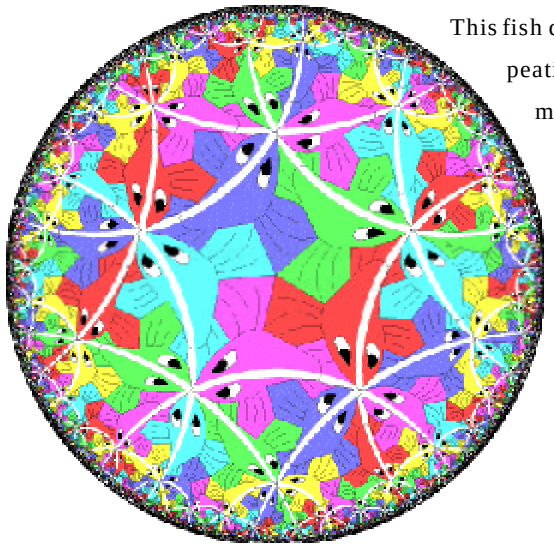
Math Awareness Month: April, 2003
Mathematics and Art



This fish design can be interpreted as a repeating pattern in the Poincaré circle model of hyperbolic geometry. It is based on the regular tessellation {10,3} and fish like those in in M. C. Escher's print *Circle Limit III*. For more information about the design, visit *http://mathforum.org/mam/*

Mathematics Awareness Month is held in April each year, with a goal of increasing public understanding of and appreciation for mathematics. Each year, a theme is selected for the month; this year's theme focuses on the connections between mathematics and art.

The connection between mathematics and art goes back thousands of years. The ancient Greeks and Romans used mathematics in sculptures and to design aesthetically pleasing buildings. In the 15th century Leonardo da Vinci wrote "Let no one read me who is not a mathematician." In the 16th century Durer employed mathematics to introduce perspective in drawings. In the 18th and 19th centuries mathematics was extensively used in the design of Gothic cathedrals, Rose windows, mosaics and tilings. In the 20th century geometric forms were fundamental to the cubists and many abstract expressionists. In recent decades several award winning sculptors have used topology as the basis for their pieces. The close connection between mathematics and art is most readily seen in the works of the Dutch artist M. C. Escher. Among the mathematical ideas represented in his work are: infinity, Möbius bands, tessellations, deformations, reflections, Platonic solids, spirals, symmetry, and the hyperbolic plane. The pattern above was inspired by one of Escher's hyperbolic prints.

The Mathematics Awareness Month poster for 2003 features an Escher-like computer-drawn tessellation of the Poincaré model of hyperbolic plane (shown above) created by Douglas Dunham, University of Minnesota Duluth. Copies of the poster can be purchased through the Mathematics Awareness Month web site *http://mathforum.org/mam/*. The web site also includes ideas for activities for Mathematics Awareness Month and a variety of essays, links, and recommended books and speakers.

regional networks will be in California, New York, North Carolina, Nebraska, and Ohio.

An extensive article on the PMET program and how MAA members can participate will appear in the March issue of FOCUS. For additional information, visit the PMET web site *http://www.maa.org/pmet*.

Mathematics for Business Decisions Workshop

A two-hour hands-on workshop on an innovative interdisciplinary course in mathematics for business students will be presented on Thursday, June 19 at the PNW section meeting at Whitman College by mathematician Richard Thompson of the University of Arizona. The MAA is proud to be publishing the course materials for "Mathematics for Business Decisions," for it is an important model of a mathematics department collaborating with another department in the development of mathematics course materials. To learn more about the course, go to *www.maa.org* and click on "Mathematics for Business Decisions takes off." Thompson is the principle author of the course, and he has seen the course grow from one section of forty students five years ago to more than 1200 students per term today.

Participants will receive two CDs containing all of the materials for the year-long course, a guided tour of the course in CD format, and an extensive instructor training & resource manual. Laptop computers will be provided for the use of participants during the workshop.

This two-hour workshop, which is funded by the National Science Foundation, can accommodate 10-12 participants and has a registration fee of $20. Since business mathematics courses are greatly enhanced by collaboration with business school faculty, we are especially interested in having business-mathematics faculty teams from the same institution attend. To foster attendance by business faculty, support for their lodging expenses may be available for one night.

Important Dates:

April 18, 2003	Deadline for PNW Section NExT applications (see p. 9)
May 1, 2003	Deadline to submit designs for section logo contest
May 30, 2003	Deadline to submit abstracts for contributed paper sessions for PNW section meeting at Whitman College (see p. 2)
May 30, 2003	Deadline for advance registration for PNW section meeting at Whitman College (see p. 3)
Jun 19-21, 2003	PNW Section Meeting, Whitman College, Walla Walla, WA
Jul 31-Aug 2, 2003	MAA MathFest, Boulder, Colorado
October 1, 2003	Deadline for submissions for Autumn 2003 PNW MAA newsletter
Jan. 7-10, 2004	Joint Mathematics Meetings, Phoenix
June 24-27, 2004	PNW Section Meeting, University of Alaska Anchorage
Aug 12-14, 2004	MAA MathFest, Providence, Rhode Island
Jan 5-8, 2005	Joint Mathematics Meetings, Atlanta

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Call for Contributed Papers

There will be sessions of 15 minute contributed papers on Friday and Saturday. The deadline for the submission of title and abstract is May 30th. Abstracts should be at most 300 words and should be submitted via the meeting "Submit Abstract" link on the meeting www page: *http://pnwmaa.whitman.edu*.

Contributed Paper Sessions

- **General Session.** Session Chair: John Fassett (*fassett@cwu.edu*), Central Washington University
- **Early Career Faculty Research Session.** Session Chair: Shannon Overbay (*overbay@gonzaga.edu*), Gonzaga University
- **Teaching Innovations in Multivariable Calculus Courses.** Session Chair: Stuart Boersma (*boersmas@cwu.edu*) and Tim Englund, Central Washington University
- **Undergraduate Research.** Session Chair: Jennifer Firkins (*jfirkins@linfield.edu*), Linfield College

Please contact the session chairs for further information about the sessions. However, all abstracts should be submitted through the www page.

In addition to these contributed paper sessions, there will be Department Chairs Session, chaired by Michael Boardman (*boardman@pacificu.edu*), Pacific University.

Students

Students are particularly encouraged to attend this conference. Activities aimed at students include the Undergraduate Research special session for student papers. In addition, all invited talks will be accessible to students. We encourage students to attend the banquet. There is a possibility of student funding. For more information on student activities, please contact Jennifer Firkins (*jfirkins@linfield.edu*).

Thursday Reception

There will be a free reception sponsored by the College on Thursday evening from 7 to 9 on the Whitman College campus. Details of how to get to the reception will be available on the conference web site.

Friday Banquet

There will be a banquet on Friday evening on the Whitman College campus. You may specify on the meeting registration form whether you will be attending the banquet (and whether you want vegetarian). Underwood Dudley will give his invited address "The Calculus Book is a Weighty Subject" at the banquet. The cost will be $20.

Accommodations

A list of local accommodations can be found on the meeting web page. Because the meeting is during the tourist season in Walla Walla, hotel accommodations are fairly expensive. However, very reasonably priced dorm accommodations

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tions will be available through Whitman College. Attendees will also be able to buy reasonably priced meal plans through the College that include breakfast and lunch. You may specify on the meeting registration form what accommodations you would like.

There are enough rooms in the dormitories for everyone and they are quite nice. The rooms are close to the meeting building and the dining hall. We encourage you to consider that option.

Registration

The registration form is available on the conference web site. The general fee for MAA members is $30. Please print out and complete the form and mail it before May 30th with a check made out to WHITMAN COLLEGE to

Laura Schueller
Department of Mathematics
Whitman College
Walla Walla, WA 99362

Additional Meeting Information

The annual PNW Project NExT workshop will be held on Thursday. For information, see the article on p. 8 of this newsletter or contact Jenny McNulty at *mcnulty@selway.umt.edu*.

Complete meeting information, including copies of the registration form, a tentative meeting schedule, and the electronic abstract submission form, is available at the meeting website

http://pnwmaa.whitman.edu

For all other questions, please contact one of the organizers:

Albert Schueller, Program Chair
Whitman College
schuelaw@whitman.edu

Laura Schueller, Accommodations Chair
Whitman College
schuellm@whitman.edu

Eric Schulz, 2-year College Chair
Walla Walla Community College
eric@wwcc.edu

Section Logo Contest

A winning design in the contest to create a logo for the Pacific Northwest Section of the MAA has not yet been selected, but several designs have now been received. The deadline to submit a design to Brian Gill (*bgill@spu.edu*) has been extended to May 1, 2003. The winning design will be announced at the section meeting at Whitman College. For additional details about the contest and guidelines for submissions, see the online version of *Matters Mathematical*, available at *http://myhome.spu.edu/bgill/maa/*.

The MAA's Professional Enhancement Program (PREP) will offer a wide variety of workshops during summer 2003. PREP workshops offer a chance to spend a few days exploring topics of mutual interest with colleagues from other institutions, with experienced leaders to guide the group towards a deeper understanding and broader perspective. Most of the cost of attending a PREP workshop is covered by the program. For additional information and registration materials, visit the PREP web site, *http://www.maa.org/prep*. A listing of this summer's workshops follows.

- ❑ Assessment at the Department Level
- ❑ Integrating Technology into Mathematics Instruction (A Focus on Pre-calculus/Calculus)
- ❑ Discrete Mathematics: An Early Foundation for the Study of Computer Science
- ❑ Knot Theory
- ❑ Leading the Academic Department: A Workshop for Chairs of Mathematical Sciences Departments
- ❑ Topics in Applied Casualty Actuarial Science
- ❑ Earth Math
- ❑ Active Learning Approaches to Teaching Mathematics Content Courses for Elementary and Middle-School Teachers
- ❑ Quantitative Literacy Across the Curriculum, Northeast Workshop
- ❑ Authoring Online Interactive Materials in Mathematics
- ❑ Abstract Algebra with GAP
- ❑ Creating and Teaching Courses that Integrate Biology and Mathematics
- ❑ Regression Analysis: The Heart of Statistical Methodology
- ❑ Presenting Mathematical Masterpieces and Powerful Techniques of Effective Thinking to Non-Science Students
- ❑ Quantitative Literacy Across the Curriculum, Northwest Workshop
- ❑ Mathematical Methods and Modeling for Secondary Mathematics Teacher Education

PMET: A New Program of the MAA

A growing set of national reports calls for better preparation of the nation's mathematics teachers by mathematics faculty. To help meet this need, the MAA is organizing a multifaceted program, Preparing Mathematicians to Educate Teachers (PMET).

The PMET program will have three major components:

(1) **Faculty Training:** Workshops of varying duration throughout the year and minicourses at professional meetings;

(2) **Information and Resources:** Articles in professional journals, panels at meetings, multimedia web sites and hard-copy material to support faculty instruction for teachers;

(3) **Mini-grants and Regional Networks:** To nurture and support grass-roots innovation in teacher education on individual campuses. The initial

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PNW Project NExT

New Experiences in Teaching

sponsored by The Mathematical Association of America

with support from the Exxon Education Foundation

Project NExT (New Experiences in Teaching) is a professional development program for new college-level faculty interested in "improving the teaching and learning of undergraduate mathematics." The national program was instituted in 1994 and provides workshops and an electronic network for its members. (More information on the national program can be found on the Project NExT web page *http://archives.math.utk.edu/projnext/* or in the article that appeared in the February, 1999 AMS Notices.) The PNW Project NExT is an extension of the national program to the sectional level. PNW NExT Fellows will meet once a year to discuss topics related to teaching as well as other issues of importance to beginning faculty. During the year, PNW NExT members will communicate via an electronic discussion group. In addition, there may be an opportunity for section fellows to participate in the national program.
For more information on the PNW Section NExT, including an application form, visit *http://www.math.umt.edu/pnwnext* and for general information on Section NExTs see *http://www.math.lsa.umich.edu/~glarose/pnext/sections/*.

Eligibility: The PNW NExT program is designed for new mathematics faculty who have an interest in teaching. Applicants meeting the following criteria are encouraged to apply.

- ❑ possess an interest in teaching mathematics,
- ❑ have a Masters or Doctoral degree in a mathematical science,
- ❑ hold a position at a post-secondary institution and be a non-tenured full-time faculty member,
- ❑ have either obtained a terminal degree within the last four years or are in the first four years of full-time college teaching,
- ❑ are available to attend the PNW NExT meetings for the next two years. (June 19-21, 2003 at Whitman Collge, Walla Walla, WA and June 24-26, 2004 at the University of Alaska, Anchorage, AK.)

Program: Workshops for PNW NExT Fellows will be scheduled in conjunction with the MAA sectional meeting. During the year PNW Fellows and Consultants will be linked together by an electronic network on which discussions can continue. Fellows are expected to participate in the PNW NExT meeting the following year and to interact with the new group of Fellows.

Support: Funding for lodging and registration for the first meeting will be provided. Institutions employing Fellows are expected to provide financial assistance for all other expenses associated with the two meetings. The level of this support should be addressed in the chair's letter.

Application Procedures: Applications should include the application form, brief teaching and scholarly activity statements, a vita, and a letter of support from one's chair (or other supervisor). The deadline for applications is April 18, 2003. Send two copies of the application packet to the address below.

Questions: Inquires can be sent by e-mail (*McNulty@mso.umt.edu*) or postal mail to Jenny McNulty, Department of Mathematical Sciences, The University of Montana, Missoula, MT 59812

June 24-27, 2004

Mark your calendar now!

Section Meeting in Anchorage, Alaska

The University of Alaska Anchorage will host the PNW-MAA 2004 meeting. This meeting will follow shortly after one of Alaska's most exciting days – the summer solstice. The meeting schedule will include adventures in both mathematics and Alaskan travel.

Although the meeting is over a year away, the host institution has already begun preparations. Ronald L. Graham, MAA President, and Ken Ross, a past MAA President from our section, will be keynote speakers. In addition, a George Pólya Lectureship will grace the meeting. Other sessions and activities planned for the meeting include

- ❑ Minicourses and the PNW Section NExT workshop on Thursday, June 24, 2004
- ❑ Invited addresses, contributed paper sessions, and banquet on Friday and Saturday, June 25th & 26th.
- ❑ Organized travel on Sunday June 27, 2004 for those so inclined. Two trips are being planned (Seward and Denali, south and north of Anchorage, respectively). Trips prior to the meeting (June 23, 2004) are also possible with sufficient guests.

Topics planned for paper sessions include dynamical systems, research by early career faculty, undergraduate research, and a general paper session. In addition to these more traditional meeting topics, a session addressing the applications of mathematics in the arctic is planned. Topics could include mathematics of the aurora, wildlife and biological modeling, oil production, and cold regions modeling. We also hope to have some teachers in the bush who will describe the rather unique challenges of teaching mathematics in very small native villages with rather distinct cultures.

To reduce the cost of travel, a block of University of Alaska Anchorage residence hall rooms will be available at reasonable rates. The possibility of reduced airline tickets from the northwest to Anchorage will be discussed with several major carriers next summer.

Start planning now to attend this wonderful meeting!

For additional information, contact Larry Foster (*aflmf@uaa.alaska.edu*) of the Department of Mathematical Sciences at the University of Alaska Anchorage.

High School Math Excel

by Carmen Schabel, University of Portland

Math Excel is a widely used program at the college level in which students in courses such as calculus enroll in workshops that supplement their regular lectures and coursework. In the workshops, students work collaboratively in small groups on activities which are substantially more challenging than the standard homework assignments and exam questions from their class. The program is based on the ideas of Uri Treisman and modeled on the Emerging Scholars Program at the University of Texas at Austin. Dave Damcke and Carmen Schabel from the the University of Portland direct a project which is adapting the Excel program to high school and middle school mathematics classrooms.

Carmen Schabel is in her second year on the faculty at the University of Portland. She has deep roots in our section, having received her Ph.D. in mathematics education from Portland State University in 2001, an M.A. in mathematics from the University of Oregon, and a B.S. in math from Seattle Pacific University. She is a fellow in the MAA's national Project NExT program. Carmen has received funding to support the High School Excel program through Oregon's Higher Education Dwight D. Eisenhower Professional Development Grant Program.

High School Excel at the University of Portland is a program that allows university students to assist in high school and middle school mathematics classrooms. University students facilitate small group discussions to help students learn mathematics.

The program originated with Dave Damcke observing the Math Excel program at Oregon State University. In Oregon State's Excel program, graduate students assist while undergraduates work in small groups to solve challenging mathematical problems. The graduate students provide guidance and ask questions, but never give solutions to the undergraduates. Dave observed that the undergraduate students had confidence in their ability to do mathematics as they worked with their peers. As a former high school math teacher, Dave knew many students who were capable of doing the mathematics, but lacked the confidence to work without his direct assistance. He believed that the Excel model would work at the high school and middle school level by using university students in place of the graduate students.

Fall of 2000 was the first semester of the program. Dave found a math teacher at a local high school who was willing to try the Excel model with her students. The following semester, two teachers at another high school joined the program. The program has grown to involve eight high school teachers at two schools, four middle school teachers, and 50 University of Portland students this spring.

Currently the program has four aspects: university students assistin high school and/or middle school classrooms on a weekly basis, weekly meetings with the university students and directors of the program (Dave Damcke and Carmen Schabel), monthly teacher meetings, and monthly Pizza Dialogues.

Some university students work with only one teacher once a week and others work with teachers at both the middle and high school levels. Students are either paid through the America Counts program or education students can receive field experience credit. Each week, teachers send the university students lesson plans so that they are prepared for assisting in the classrooms.

In the weekly meetings with the university students and the directors of the program, students share about recent classroom experiences, discuss ways to solve problems that occur in the classroom, and practice using questioning strategies to aid small group discussions. Regarding the weekly meetings one student wrote, "Being able to share our experiences in the classes I found very helpful. Being able to talk about the problems we face and how to work them out is great. We learn from fellow students who face the same situations." For example, a university student shared that she works with a student who frequently gets distracted from doing his work. She was unsure if the work was too easy for him or if he just did not know how to do the math. Students at the weekly meeting were able to give her some ideas for dealing with the situation.

The directors of the program meet with the group of teachers once a month. During these meetings, the teachers share how the Excel program has been working in their classrooms. One of the teachers has been with the program since it began and she is a great resource for the other teachers as they learn how to most effectivelyutilize the university students in the classroom.

At the Pizza Dialogues, university students, teachers, and the directors discuss the program while enjoying a pizza dinner. Teachers are available to answer students' questions about pedagogy, curriculum, and classroom management. Students are also able to give the teachers feedback concerning specific students and the classroom in general.

The Excel program is having a positive impact on all involved. The high school and middle school students are receiving the extra attention they need to succeed in their math class and the teachers are learning how to utilize other adults in the classroom. Our university students are gaining valuable classroom teaching experiences. Students have commented that they enjoy working in the different classrooms because they are able to see each teacher's style of teaching and how they approach issues in their classrooms. Also, the university students are learning about teaching in an environment that is different from the schools that many of them attended. The three schools we are working with are racially diverse, and most students are eligible for a free or a reduced price lunch. One student wrote, "I really enjoyed the experience of a new school environment (I have never been in an 'inner-city' school before). I was very surprised when I first walked into the school — I didn't expect to be seen as a minority." Finally, our mathematics department is benefiting from the program — students who were previously interested in elementary education now want to teach middle school math.

In the future we hope to continue to help high school and middle school students to think mathematically and expose university students to the possibility of careers in mathematics education.

For additional information, contact Carmen Schabel at schabel@up.edu.

Do you have a successful program that you would like to share with the other members of our section? Contact Brian Gill (bgill@spu.edu) about including an article in a future issue of Matters Mathematical.