GEOMORPHORUM

Newsletter of the Geomorphology Specialty Group of the Association of American Geographers

Issue No. 1, 2005/6 M. Slattery, editor

TABLE OF CONTENTS

SPECIALTY GROUP OFFICERS

Mike Slattery
Chair
Dept. of Geology and Institute for Environmental Studies
Texas Christian University
PO Box 298830
Fort Worth, TX 76129 USA
phone 817-257-7506
m.slattery@tcu.edu

Anne Chin
Secretary-Treasurer
Dept. of Geography
College of Geosciences
Texas A&M University
College Station, TX 77843 USA
Phone 979-845-7155
chin@tamu.edu

Susan Millar
Awards Committee
Dept. Geography
Syracuse University
200 Eggers Hall
Syracuse, NY, 13244.
swmillar@maxwell.syr.edu

Dorothy Sack
Advisory Board
Dept. of Geography
122 Clippinger Labs
Ohio University
Athens, OH 45701, USA
phone 740-593-7897
sack@ohio.edu

Frank Magilligan
Advisory Board
Dept. of Geography
Dartmouth College
Hanover NH 03755-3571, USA
phone 603-646-1475
magilligan@mac.dartmouth.edu

Greg Pope
Advisory Board
Dept. of Earth & Environ. Studies
Mallory Hall 252
Montclair State University
Montclair, NJ 07043 USA
phone 973-655-7385
popeg@mail.montclair.edu

MESSAGE FROM THE INCOMING CHAIR

by Mike Slattery

In the first 2004 issue of Geomorphorum, Greg Pope noted that "Geomorphology is alive and well". If the 6th International Conference on Geomorphology is any indication, I can only concur with Greg! I write this editorial just two days after touchdown from Zaragoza, so the column will no doubt be littered with evidence of jetlag. Nevertheless, there are things to cover, specifically (i) the issue of naming the student paper and research awards, (ii) how to invest the proceeds from the sale of the CD-ROM, (iii) the GSG web page, and (iv) issues arising from the conference in Zaragoza.

As many of you know, Bob Pavlowsky, past chair of the awards committee, presented to us the notion of naming both the Graduate Student Research Awards and the Graduate Student Paper Awards. Many felt that this was a good idea but also that it should not be done in haste under the time constraints of a business meeting. To be sure, this is an important naming opportunity that should be done with great consideration. The motion from the floor was that the Officers and Advisory Board discuss the matter and make a recommendation to the group at next year's business meeting. We intend to do this, but I also felt I should update you on our discussions and also make it clear that we are completely open to suggestions from the membership as we move forward on this.

One of the Officers raised the question of "significance" – that is, what is the significance of naming an award after a particular individual? They suggested that the naming should honour someone who has made significant contributions to those areas represented by the student awards. For example, for the Student Research Award, perhaps it should be named after someone who has made significant contributions to training graduate students? For the paper presentation award, perhaps the named person might be someone who had consistently participated in and presented papers at AAG meetings? The general feeling among the Officers and Advisory Board is that some "meaning" should underlie the attachment of an individual to an award. There is also ongoing discussion regarding gender representation on these naming occasions (for

example, Mike Woldenberg suggested Marie Morisawa be given serious consideration), as well as representation within the discipline (one concern raised at the Denver meeting was that most of the suggested names were fluvial geomorphologists). We are also considering whether we should limit the candidates to those who have passed away (as some felt it may be awkward to honour someone still alive, unless there were good reasons to do so) as well as whether the named person should have been a geographer and/or a member of the AAG. I welcome your thoughts so that we may present a proposal in Chicago.

The second issue focuses on what to do with the money raised from the sale of the Geomorphology CD-ROM. We are moving ever closer to our goal of establishing a $10,000 endowment for student research. Currently, the total proceeds from our sales are slightly shy of $9,000, and I hope that this will continue to grow over time. I had a conversation with Doug Richardson and he suggested the most efficient way to use this money is to invest it into a fund that is currently managed by the AAG. Administratively, this makes the most sense, especially if our investment goals are in line with those of the long-term AAG fund. We both came to the conclusion that the most obvious outlet for this is the Mel Marcus Physical Geography Fund. The goals of that fund are exactly in line with what I intended the money to be used for – namely, student research. The general feeling among the Officers and Advisory Board is that we should invest that money now and use the five or so percent ROI to increase the amount of the awards for students, especially the Graduate Student Research Awards, since those support direct research costs. Again, I welcome comments and feedback from the membership, but I intend to make a proposal at the business meeting in Chicago that we invest $8,000 of the proceeds in the Mel Marcus Physical Geography Fund and use the annual income from that to raise the Masters award from $200 to $400 and the Ph.D. award from $400 to $600. I will also propose that a committee be set up to oversee the fund for consistency and long-term viability. I hope that each of us will continue to pursue ways to increase the endowment into something of real substance.

The next issue is the web page (http://www.cas.sc.edu/geog/gsgdocs/index.html). Allan James, our Web Editor, has simply done a marvelous job over the years in keeping our web page updated and informative. AJ, as we all know him, cornered me in Zaragoza and felt that "it was time" that we had new blood take over the web page. This may seem a somewhat thankless task, but it is so important for our group and our discipline to have a current and ever-changing web page and that takes time. AJ has certainly gone beyond the call in this regard. So, if anyone is interested in taking over the web page, please let me know.

Finally, to the IAG in Zaragoza. It was good to see familiar faces from this side of the pond, but the general feeling among delegates was that turnout from North America was low, and indeed it was. Certainly, the timing is not perfect – I literally walked into my first class and said "welcome to Principles of Environmental Science, see you in a week." And there is certainly no shortage of meetings here at home between the AAG, GSA, AGU, and other specialty gatherings. But this is our "Olympics of Geomorphology", if you will, and we should support it wholeheartedly. I thought the meeting was really good – some presentation rooms were too small, but overall it was well-organized and the Spanish hospitality was predictably outstanding. The 2009 meeting is in Melbourne in June, so that should be more conducive to our participation. For my sins I was elected to the Executive Committee of the IAG as Head of Publications, taking over from Carol Harden. Thanks Carol for all your hard work over the past four years. The BGRG also sponsored a reception in Zaragoza for overseas members. Paul Bishop, the Vice Chair, and I chatted at length about how the GSG and the BGRG could increase collaboration. I think there is a perception that the BGRG is only open to people in the UK, but they have a strong international membership and are looking to increase the US base. The subscription rate is well-priced: 50 pounds for five years, and that gives you access to ESP&L for just 38 pounds/year. Please consider joining the BGRG, and all the relevant info can be found at http://www.bgrg.org.

Thanks, and until next time – cheers! *Mike*

MINUTES OF THE GEOMORPHOLOGY SPECIALTY GROUP BUSINESS MEETING,
Wednesday, April 6, 2005: Denver, Colorado

Greg Pope, Chair
Mike Slattery, Secretary/Treasurer

Greg called the meeting to order on time.

Announcements from the Chair

1) Greg expressed congratulations to GSG member Dick Marston on becoming the next President of the AAG. Dick in turn expressed his thanks for the strong support he received from many GSG members and what an honour it is to be able to serve in this capacity.

2) From the Specialty Group Chair's meeting –

   Greg raised the issue, discussed at the Chair's meeting, of the future of the AAG annual meeting. One central question was: are people being allowed to contribute too many papers? Greg noted that a better venue and better time slots for poster sessions

would be desirable. There was a consensus that poster sessions should be better organized – i.e., where they are located, similar to the GSA. Another question raised: what would happen if the GSG reviewed abstracts? What would the ramifications be? A suggestion put forward was that perhaps the regional meetings are the best place for a student to start rather than the annual meeting.

Greg also asked if union versus non-union hotels should be a concern for future AAG sites. The unanimous consensus was that it should not matter. Greg also raised the question of field trips not being accessible to people (e.g., non-US citizen's; disabled people) and noted that we need to plan ahead for such occurrences.

The AAG is exploring the possibility of offering a third journal at reduced prices as part of membership. Geomorphology and Physical Geography were both mentioned as obvious choices, and a suggestion was made to poll the membership by email.

Will Graf reported that the USGS has a new research arm for geography and is committed to hire 20+ PhD's from around the country to begin integrating geographer's into the USGS. This was greeted with enthusiasm.

Greg reported on the AAG council urging geographers to get our ideas out in the media and noted that we should be seeing enhanced media coverage at the annual meeting.

3) With regard to events, Greg reminded members about the physical geography reception on Friday evening, the Blackwell Lecture, the student paper session and the awards luncheon. The GSG will be sponsoring a table at the luncheon.

Specialty Group Reports

1) Minutes – The minutes from the 2004 business meeting in Philadelphia were approved as posted on the GSG web site.

2) Treasurer's report (Slattery) – the Geomorphology Specialty Group's financial status is healthy. A balance of $11,005.32 was reported as of 3/31/05. Disbursements of $300 went toward the physical geography reception, $380 toward the awards luncheon, and $1,100 toward the student research and paper awards. At present, the Geomorphology Specialty Group has the largest balance of any AAG specialty group. Discussion was then initiated as to how we might use these funds, the majority of which was raised via sale of the CD-ROM. Several ideas were raised, including increasing the amount of student awards, increasing the number of awards, starting a permanent scholarship, among others. Andy Marcus suggested the executive committee examine this issue and make a recommendation to the membership as soon as possible. All agreed.

3) Web editor's report (James) - Allan James asked that we begin to look for a replacement web editor. Greg acknowledged AJ's substantial contribution to the group.

4) Naming the students awards – Bob Pavlowsky, chair of the awards committee, suggested that the GSG consider naming the student research and paper awards. Following proposal of the motion, the membership voted on the issue and it passed with widespread support. Bob then handed out ballots with several names but several people felt that we were rushing this important naming opportunity. Andy Marcus, with support from several in the audience, suggested that the executive committee examine the issue and make a recommendation to the membership. This was agreed upon.

5) IAG – Carol Harden, publications officer for the IAG, talked about a possible proposal from the American contingent for the 2009 meeting. She noted that San Antonio or San Francisco were being discussed and that Nick Lancaster was going to potentially make a presentation at the IAG meeting in Zaragoza.

Publications and conferences

1) Dick Marston (OSU) noted that the Annals remains an excellent place for geomorphologist's to publish and urged membership to consider our flagship journal more frequently. Dick also commented on the strength of Geomorphology, now producing 2,500 pages per year with over 20 special issues in production. The journal remains good value at $96 per year for members of the GSG. Jon Harbor (Purdue) also noted that Earth Science Reviews continues to welcome manuscripts and urged the membership to consider this outlet for longer papers.

2) The following upcoming meetings were announced: the 36th Binghamton Symposium at the State University of New York, Buffalo (October 7-9) and the 6th International Association of Geomorphologists in Zaragoza, Spain (September 7-11).

Appointments

Awards Committee: Scott Lecce (East Carolina) nominated to the committee. Unanimously approved for appointment.

Secretary Treasurer: Anne Chin (Texas A&M University) nominated. Unanimously approved

Awards

The specialty group awards were then given out (see below).

Business meeting adjourned at approximately 9:00pm, followed by beer, as always.

ANNOUNCEMENTS

The G.K. Gilbert Award for Excellence in Geomorphic Research, the Mel Marcus Distinguished Career Award, and the Graduate Student Research Award.
The deadline for submission of relevant materials is February 1, 2006. Please visit the Specialty Group website for further details about these awards or contact Susan Millar (at swmillar@maxwell.syr.edu). The web address:

http://www.cas.sc.edu/geog/gsgdocs/awards.html

Fluvial Geomorphology Sessions at the AAG Annual Meeting Sponsored by the Geomorphology Specialty Group
Chicago (March 7-11, 2006)
The following fluvial sessions have been organized:

Sediment Transport in Fluvial Systems I
Organizer: Mike Slattery

Peng Gao, *Suspended sediment transport in an intensively cultivated watershed in southeastern California*

David W. May, *Early Holocene Alluvial Sedimentation in an Ephemeral Stream Channel in Western Nebraska*

Robert T. Pavlowsky, *Geomorphic Assessment and Restoration Plans for the Ward Branch Restoration Project, Springfield, Missouri*

Jordan Clayton, *Spatial and temporal variability in bed load transport in a gravel-bed river bend*

Frank J. Magilligan, *The use of short-lived fallout radionuclides to quantify transitional bed load transport in a regulated river*

Sediment Transport in Fluvial Systems II
Organizer: Mike Slattery

Scott Lecce, *The 1999 Flood of the Century: Extraordinary Hydro-meteorological Event or Human-induced Catastrophe?*

John Faustini, *Assessing Sediment Sources and Impacts in Wadeable Streams in the John Day Basin, Oregon*

Michael Slattery, *Environmental Magnetic Analysis of Sediment Samples From the Lower Trinity River, Texas, USA*

Mark Alan Fonstad, *Spatial Maps of River Hydrodynamics Produced by the Unification of Remote Sensing and Cellular Automata Modeling*

Allan James, *LIDAR Map Data for Delineating Channel Headwater Networks but Not for Sediment Budgets*

Short Interactive Paper Session: Fluvial geomorphology
Organizers: Lisa Boulton and Martin Lafrenz
Presentations in this session will discuss preliminary results from ongoing research addressing a broad range of fluvial geomorphic topics, including flow dynamics, lateral migration, channel morphology, sediment dynamics, and watershed disturbance. Presentations will be five minutes in length followed by a roundtable discussion focused on providing constructive feedback to presenters and discussing the implications of the research presented.

James D. Riley, *Flow dynamics and channel morphology at natural confluent-meander bends*

Mark Lange, *Suspended Sediment Transport At A Tidal River Divergence*

Brendan Thomas Yuill, *Using Bed Texture Maps to Understand the Morphodynamics of Ephemeral Channels*

Lisa Boulton, *Sediment Storage and Channel Widening in a Channelized Tributary*

Jessica Block, *Vertical and Lateral Stability of Bedrock and Alluvial channel systems: Central Arizona's Salt River Paleo Geomorphology Constrained by Late Quaternary Geologic History*

Martin D. Lafrenz, *The Influence of Different Sized Contributing Areas on Stream Channel Morphology*

Mr. Jeff Dahoda, *Geographic Information Science Analysis of Factors Affecting Acidity in Crab Orchard Creek Watershed, Cumberland and Morgan Counties, Tennessee*

Mark Gossard, *Sediment budget approach to evaluate urban-related instability in an Ozark Stream*

Stacey Armstrong, *Detention basin influence on Ozark stream stability*

Karen Williams, *Energy expenditure in a burned watershed: Fish Creek, Glacier National Park*

Ms. Sabrina Rust, *The role of fluvial geomorphic features in the distribution of freshwater mussels (Bivalvia: Unionidae) in the Kiamichi River, Oklahoma*

Human Impacts in Geomorphology
Organizer: Bill Renwick

Dan Royall, *Hydraulic Biotope Composition in Urban and Rural Piedmont Streams*

Martin Roberge, *Timing and response of stream morphology to urbanization*

Anne Chin, *Perceptions of wood in rivers and challenges for stream restoration*

James Hyatt, *Sedimentary Records of Human-Induced Landscape Change Associated with Massive Soil Erosion in Georgia*

William H. Renwick, *Reservoir sedimentation in Ohio: Evidence of long-term trends in erosion and sediment delivery.*

Aeolian Geomorphology I
Organizer: Jean Ellis

Doug Sherman, *Error Analytics and Wind Blown Sand*

Jean Ellis, *Quantifying Unsteadiness in Aeolian Saltation*

Steve Namikas, *Spatial and Temporal Variability in the Surface Moisture Content of a Fine-Grained Beach*

Bernard Bauer, *Moisture and Temperature Trends on an Active Aeolian Beach Surface*

Patrick Hesp, *Evolution and Dynamics of a Prograded Transgressive Dunefield Barrier in Southern Brazil*

Aeolian Geomorphology II
Organizer: Jean Ellis

Jen Booth, *Wind Flow Characteristics: A Comparison Between Artificial and Natural Vegetation*

Paul Gares, *Influence of topography on wind flow and sediment transport over a blowout at Jockey's Ridge State Park, NC*

Patrick Pease, *The influence of topography and approach angles on local deflections of the wind field in a coastal blowout*

Graziela Miot, *Coastline orientation and aeolian sediment transport on a headland bay beach in Southern Brazil*

Aeolian Geomorphology III: Dunes
Organizer: Jean Ellis

Harry Jol, *Coastal Foredune Genesis and Growth: A Ground Penetrating Radar Perspective*

Suzanne De Vries Zimmerman, *Seasonal Sand Deposition and Vegetation Patterns on a Large Parabolic Dune on the Southeastern Shore of Lake Michigan*

Bradley Schrotenboer, *Locating Alternative Sand Sources for Michigan's Foundry Industry: A Geographical Approach*

Emily Timmons, *Chronology of Eolian Activity in a Coastal Dune Complex Near Holland Michigan: Insights From Sediments in Small Dune Lakes*

Aeolian Geomorphology IV: Great Lakes
Organizer: Jean Ellis

Deanna van Dijk, *Foredune evolution on the east shore of Lake Michigan*

Edward Hansen, *Parabolic Dune Complexes, Southeastern Coast of Lake Michigan*

Rob Vink, *Wind or Human Activity? Changes to a Michigan Landmark Dune*

Mary Louise-Byrne, *Sand transport and coastal dune evolution at Pinery Provincial Park, Ontario, Canada*

The British Geomorphological Research Group invites you to take part in its 2006 annual conference, "Geomorphology and Earth System Science". The meeting will be held in the heart of England, at Loughborough University, UK from Wednesday June 28th to Friday June 30th, 2006.

For more information, please visit the GESS website at http://www.lboro.ac.uk/departments/gy/gess/index.htm

The deadline for submission of abstracts is Friday December 23rd, 2005. There is an international line-up of keynote speakers with diverse perspectives from across geomorphology, and beyond. The conference will focus on understanding the relations between geomorphological processes and global change:

- Interaction of surface processes with climate, land-use and tectonics at regional and global scales and on instrumented, Holocene and longer timescales.
- The manifestation, propagation and preservation of geomorphological indications of change at these scales.
- Managing and mitigating the geomorphological implications of large-scale environmental change.
- Tools for understanding the roles of geomorphology in the Earth system, including modeling, remote sensing and geochronology.

All interested researchers and practitioners are welcome! In addition to the BGRG membership and wider, international geomorphological community (IGU), we hope to welcome those affiliated with cognate international organisations including Geological Societies, Quaternary Research Associations, and Geophysical Unions. For further information please contact Stephen Rice (s.rice@lboro.ac.uk) or Mark Macklin (mvm@aber.ac.uk)

The 6th International Conference on Aeolian Research
The 6th International Conference on Aeolian Research (ICAR VI) will be held at the University of Guelph, Canada from Monday July 24 to Friday July 28, 2006. This meeting brings together researchers interested in the many diverse areas of inquiry focusing on the entrainment, transport and deposition of sediment by wind including applied aspects of aeolian research.

The ICAR VI Organizing Committee hopes to attract individuals and papers from the many different disciplines and research areas focusing on aeolian processes. In particular, we would like to attract individuals working on coastal aeolian processes, global dust transport and modeling and anthropogenic effects on aeolian entrainment and transport. It is also our intent to highlight recent research, particularly by younger investigators and graduate students.

The conference will consist of three and a half days of technical sessions with both oral and poster presentations. Posters will be an important and integral part of the conference and should be viewed as being of equal value to oral presentations. Graduate Students are encouraged to submit papers and posters. The conference proceedings will be published in special issues of /Geomorphology (double volume) and Earth Surface Processes and Landforms/. In addition to the technical sessions there will be a full day field trip looking at the coastal dunes of the Lake Ontario, one of Canada's Great Lakes.

For more details, to register and to submit abstracts please visit the ICAR VI website at:
http://www.uoguelph.ca/icarvi/index.cfm

Additional information can be obtained from:
Dr. W.G. Nickling (nickling@uoguelph.ca)

GEOMORPHOLOGY SPECIALTY GROUP AWARDS FOR 2005

Student Awards

Outstanding student paper: For Ph.D. students, Jordan Clayton, Dept. of Geography, Univ. Colorado, was awarded $200 for his paper entitled *The Influence of Surface Sorting on Particle Mobility in Gravel-Bed River Meanders* (Advisor: John Pitlick). For M.S. students, Maya Hirsch, Dept. of Geography and Geology, Southwest Missouri State University, was awarded $100 for her paper *Sources and Transport of Sediment-Bound Phosphorous in Agricultural Streams, Des Moines Lobe, Iowa* (Advisor: Robert Pavlowsky).

Student Research Award (Master's category - $200) was presented to Rebecca Manners, Geography Dept., University of North Carolina, for her proposal *Determining the function of the not so large woody debris: An hydraulic evaluation of the maintenance of large woody debris (LWD) jams* (Advisor: Martin Doyle).

Student Research Award (Doctoral category - $400) was presented to Mark Lange, Geography Department, University of Southern California for his proposal *Spatial-temporal patterns of suspended sediment transport at a tidal river bifurcation* (Advisor: Bernard O. Bauer).

Grove Karl Gilbert Award

Presented to Mark Fonstad (Texas State University) and Andrew Marcus (University of Oregon) for their paper *Self-organized criticality in riverbank systems*, Annals of the Association of American Geographers 93(2): 282-298.

Citation by Dick Marston:
I am pleased to nominate the following paper for the 2005 Grove Karl Gilbert Award to be presented by the AAG Geomorphology Specialty Group at the 101st Annual Meeting of the AAG in Denver, 5-9 April. .

Mark Fonstad and Andrew Marcus have authored an article that constitutes a major advance in understanding the spatial distribution of riverbank failures. Their analyses reveals that an inverse power-law relationship exists between the frequency and magnitude of streambank failures. This relationship has been described and explained using a conceptual model known as "self-organized criticality" (SOC) that "...refers to systems in which a suite of local and very different processes generates a singular global pattern." The power (log-log) relationship is characteristic for all SOC systems. What is especially interesting to geomorphologists is that bank failures are usually seen as a disequilibrium form, but when viewed as a self-organized critical system...banks poised to fail through the system...a new view of bank failures emerges. Fonstad and Marcus demonstrate that bank failures follow a strong tendency to develop an inverse power-law relationship between magnitude and frequency in both simulation models, their own field data (in the upper Yellowstone River basin), and using data collected by an independent researcher on another river. The study is placed in context by pointing out that the power law does not explain the process by which bank slopes fail, but rather that the magnitude and frequency of the features obeys a power law. Nevertheless, like all good geomorphology, this study points out that the slope and intercept of the power curve could be related to other geomorphic controls, such as channel gradient or basin-wide morphometry, and further investigation along these lines may add some predictive capability over space and time to the process of bank erosion.

The Fonstad and Marcus paper reflects the type of understanding afforded by examining basic geographic principles. First, they have documented the spatial dependency of the bank erosion process, even while avoiding the reductionist approach of place-specific analyses of cause-and-effect. Second, they demonstrate that bank erosion operates at multiple, interlocking scales...a fundamental paradigm in geography. Third, their analyses predicts power-law scaling of bank failures through time as well as through space. Finally, as we seek quantitative geomorphic criteria to assist in better management of rivers,

this study of bank erosion as a SOC system helps remind us that the streambank failure is far from an equilibrium form, but is an event that is likely to occur throughout the stream network in a regular pattern.

COMMENTS BY MARK FONSTAD AND W. ANDREW MARCUS ON THEIR ACCEPTANCE OF THE GK GILBERT AWARD

Comments by Mark Fonstad

Both Andrew and I would like to thank the Geomorphology Specialty Group awards committee for this honor, Richard Marston for initiating our nomination, and the many others who have supported this paper since its publication.

The "Self-organized criticality in riverbank systems paper" grew out of a large, EPA-funded project developed to find the direct, quantitative linkages between watershed uses and processes and river patterns, and it ended with a theory that places specific limits on how much of that linkage can actually be known. Who says you can't make a career out of negative results?

This project, based around the rivers of northern Yellowstone National Park, allowed us to measure many properties of rivers at high resolution over large distances. One of the linkages between watershed uses and rivers is the instability of a river's banks, and we mapped the presence or absence of active riverbank instability over approximately 100 kilometers of several streams. The next obvious step was to relate the positions of presence or absence of failure with other geomorphic variables, such as available stream power or channel confinement. The result of this approach that was typical of many geomorphic analyses was to find barely any relationship at all. Scatter was everywhere in the regression lines. Then we began to think about Wolman's difficulties in sorting out why rivers below dams could behave so radically differently from one other, and then about Jonathan Phillips's multiple modes of adjustment, and finally about whether the scatter itself could tell us something about the probability of failure.

We were dimly aware of Self-Organized Criticality (SOC) theory and its postulated power laws for the magnitude and frequency of geomorphic events, but its possible connection with the multiple modes of fluvial adjustment completely escaped our thinking until we tried graphing our data as magnitude and frequency plots. That was a simple exercise, yes, but one that took us about six months to think of. We wrote a simplistic cellular automata model of sediment transport through channels and from riverbanks that produced the same power law magnitude/frequency relationships as our Yellowstone field data displayed. While this didn't prove SOC (in our view, no one ever has), it certainly made the work interesting and plausible.

The decision to submit our work to the *Annals of the Association of American Geographers* was not straightforward. SOC theory was exploding onto the scientific scene, and we thought about submitting to journals ranging from *Nature* to *Environmental Management*. However, the *Annals* afforded us something very important: the page space and freedom to speculate on the possible implications of our work. To be able to put such thorough speculation, such guessing, into the same article as the primary data analysis allowed us to present our work as a unified whole, and not have it leak out a little at a time in half a dozen articles and conference papers. We thank the editors of the editors of the *Annals* and Basil Gomez in particular for allowing us this freedom.

The two of us are deeply indebted the hard work of the other two members of Team Fluvial, Jim Rasmussen and Carl Legleiter, both excellent geomorphologists and wonderful friends. Carl destroyed his track career for us by hobbling around in the icy waters of Soda Butte Creek each summer, and Jim completed the survey himself by climbing out on a log suspended 80 feet over the treacherous Icebox Canyon to map the river - against our explicit orders! To their efforts we would like to add those of our project's hardy field assistants: Justin Balhiser, Wendy Bigler, Chad Heidtke, Brent Nickola, and Keith Van Etten.

We had basically been looking for a way to better connect geomorphic field observation with the geospatially continuous data sources provided by remote sensing and digital elevation models. The utility of walking down the river and conducting high resolution visual surveys of riverbank patterns was a cheap, fortuitous last second add on to our protocols, a throwaway bit of data collection compared to the "real survey work" we were also doing. Both of us have completed many traditional surveys based on regularly spaced cross-sections, and both of us are somewhat sobered that had we chosen that type of procedure for the bank failure work, we would not have observed the magnitude-frequency relationships that ultimately led to this paper. It certainly begs the question: "What other geomorphic properties are we missing simply because geomorphologists are looking at the wrong scale?"

The SOC model of geomorphology is not a panacea. It obviously does not explain a great deal of fluvial geomorphology (for example, repeating bedforms) much less all of the discipline. Nevertheless, the sandpile model of geomorphology postulated by SOC is highly infectious, it makes a lot of predictions, such as how a human action will transfer instability to neighboring areas, how common geomorphic events of a certain size should be, and also the probable limit of predictability of river channel change through space and time. We could not have easily speculated on the SOC behavior without the observational patterns, measured at the right scale, kindling our imaginations.

My mother, the fantasy cartographer Karen Wynn Fonstad, passed away this month, not long after being ecstatic upon hearing of this award. At her drafting table, she taught me many things; she taught me that imagination was more important than reality, because the reality I saw was mostly what I already expected to be there. I like to think that her advice helped us to look at the river in a new way.

We are deeply indebted to our colleagues in the Geomorphology Specialty Group for this honor. Thank you.

Comments by W. Andrew Marcus

I wish to add my thank you to Mark's comments. This award is particularly meaningful to me because the AAG is my professional home, and within that home, the Geomorphology Specialty Group is my family. That sense of family is particularly profound at this moment. The first professional talk I ever gave was given under the auspices of the Geomorphology Specialty Group. The specialty group award that will be given after this one, the Melvin G. Marcus Distinguished Career Award, is named after my father; a fact that still brings great pleasure, joy and an occasional tear to me and my family.

But the family connections go deeper today. As some of you know, it was with great sorrow that we witnessed the loss of Mark's mother, Karen Wynn Fonstad, to cancer just three weeks ago. Karen was internationally known as a cartographer, but not for the types of maps we classically produce in our research environments. Rather, she was the author of atlases of the imagination, including the *Atlas of Middle Earth*, *The Atlas of Pern*, the *Atlas of the Land*, and many others. A small joy in the sorrowful time of losing Karen is that the Awards Committee notified us of this award well over a month ago. Mark's mother and father, a physical geographer like Mark, thus knew of this award prior her death. And this is an award that brought Karen real pleasure, not only because Mark is her son, but because she contributed the cartography to the article. As a contributor she thus shares in this award. As for me, the fact that Karen contributed to this article now means as much to me as the award itself. My thanks to the specialty group are thus doubly felt; no one could know just how timely, poignant and special this award would be. Thank you.

There are also two members of the Geomorphology Specialty Group who unknowingly contributed much of the methodological and intellectual foundation for what went into this article. Mike Slattery had the integrity to stand up and give a talk at AAGs some years in which he talked about trying to link channel change to upstream disturbance. He used the classic approach of documenting channel change with cross sections. He reported with honesty and clarity that despite his teams' extensive field work and analysis, they were unable to demonstrate significant links between morphologic change and upstream impacts – even though he knew that linkages must exist. It was this talk that led Mark and me to develop the mapping scheme for our research, in which we used the "100 m sprint technique" where we mapped a large suite of variables every 100 m for 180 km of stream bank. The moral to this tale – reporting negative results is important. Thank you, Michael.

Mark and I also owe a deep debt to Jonathan Phillips, whose unswerving commitment to evaluating the potential for nonlinear behavior in geomorphic systems has profoundly influenced our thinking over the years. Jonathan had led by example, always providing critical citations from outside geography that demonstrate proof of concept, strong empirical evidence, and qualitative and quantitative models of the system. It was Jonathan's thinking that opened our eyes to the possibility of SOC behavior; it was his example that helped us structure our article.

Finally, I want to take a moment to philosophize about research directions in geomorphology. Our present research approaches for studying contemporary geomorphic systems are dominated by mechanistic, process-based approaches - as they should be. But at the heart of these approaches is a giant assumption that we sometimes talk about, yet rarely explicitly evaluate – the assumption that we can scale up from local processes to system-wide prediction.

But what if a system is in a self-organized critical state? If this is the case, then the system-wide distribution of magnitude and frequency of events are knowable, but this system-wide knowledge cannot be used to predict behavior at a given point, nor can understanding at one point (or even a lot of points) be used to explain system-wide distributions. We can't scale up, or down, in an SOC system. In an SOC system, one can explain individual changes after the fact, but can never foresee them.

The system, at least in this sense, is unknowable.

And who among us hasn't experienced this sense of the unknowable at an intuitive level? Sitting by the stream, year after year, I always have felt on the cusp of revelation, as though the stream was about to speak to me in its secret language, reveal its heart in a way that would let me finally, at long last, look at its parts and explain the whole! But then, as though to spurn me, the stream will shift in a wild and unexpected way – the unexpected log carried from upstream that chokes the channel, the sediment slug cut loose from a debris flow, the abrupt unraveling of an armored bed, the bank collapse aided by a rodent hole - all work to thwart me, year in, year out. I could always explain the change after the fact, but never could have foreseen it.

As we look at rivers, we should therefore think of testing the often untested and unstated assumption - that process models can be scaled up from local physics to predict basin scale behavior. Otherwise, we risk that trap that Roger Coates warned us of in his 1713 Preface to Sir Isaac Newton's *Principia Mathematica*:

> Those who assume hypotheses as first principles of their speculations… may indeed form an ingenious romance, but a romance it will still be.

Do I even dare point to all the situations where we (including myself) form models based on scaling up, only to create a "romance?" Insofar as we wish to use process models to predict behaviors or identify cause and effect, we should ask this question with regard to: distributed watershed models, sediment transport equations, even Mark's and my favorite – cellular automata, to name just a few examples.

Rather than focusing on expanding evermore the application of mechanistic models to basin scales, which is our discipline's trajectory of research endeavor, Mark and I argue that more research needs to focus on first principles of system behavior. If we wish to avoid pursuing illusory outcomes, we should ask more often: "Is the system chaotic, at the edge of chaos, or predictable?" or "Can we scale processes up or down in this system?" Might there be some geomorphic equivalent to the Heisenberg Principle, which by demonstrating the limits of knowledge, radically improved our ability to understand the nature of matter and energy?

Mind you, neither Mark nor I saying all systems are SOC or non-linear. In fact, rather surprisingly for people who have just won an award for research into SOC, we are not even certain that SOC exists as a distinct organizational framework in nature. It sometimes seems to us that SOC is an elegant conjecture built up to explain a consistent pattern – a pattern that might be explained by multiple other organizing theories. But most scientists working with SOC are willing to admit that SOC is not proven and is based on a series of unclear assumptions. Can we say the same thing when we scale up with so-called "deterministic" models to explain entire river systems?

To those of you familiar with literature on nonlinear systems, there is nothing new in what we are saying. But given the emphasis we continue to see in much geomorphic research, we believe it is worth reiterating.

Oscar Wilde had it right when he said "The true mystery of the world is the visible, not the invisible." In an SOC system, our inability to predict is NOT because a process or parameter is invisible to us; it's NOT because we need to measure more or model better. Rather, the system organizes itself, right before our very eyes, in ways that are fluid, mysterious and beyond our ability to know. Is this not a beautiful thing; to know its form, but to find it forever perplexing? It is this tantalizing mystery, the desire to grab and hold this shifting ghost-like creature, almost seen, but never entirely perceived, that draws us again and again to rivers. It is why, I believe, most of us who are river scientists are - in the very truest sense of the word – "haunted" by rivers. If we not only acknowledge this mystery, but embrace it, try to define what we can NOT know as well what we can, then our fascination, our appreciation, and our understanding of rivers will only grow.

Melvin G. Marcus Distinguished Career Award

Awarded to Don Johnson (University of Illinois). Randy Schaetzl nominated, and read the citation (summarized here):

Have you ever seen someone vacuuming up tiny ant mounds from a bicycle parking lot at 5:30 am? Do you know anyone who is not from Wisconsin but totally admires the power of badgers? And can you think of a man who spends far more time thinking about pedogenic models than those in Sports Illustrated? There's only one person who fits all these queries - Donald Johnson, Professor Emeritus from the University of Illinois.

Don is a soil geomorphologist. But he is also a zoogeographer, a naturalist, and a geoarcheologist. He has published on such topics as frost heaving, lunar soils, sampling devices, Scotland's Loch Ness monster, Mammoth hunting, camels and feral goats, caliche formation, computer animations of soil processes, groundwater recharge in Egypt, tree uprooting, Pleistocene stratigraphy, the Iowan erosion surface, paleosols as evidence of earthquakes, post-settlement alluvium, and the swimming powers of elephants. As a group, Don's papers are, to quote one reviewer, "thoughtful and elegantly argued papers that remain essential reading for soil scientists, geomorphologists and Quaternary researchers."

Don's work has great depth as well. His continued research efforts on pedoturbation and biomechanical slope processes will be a lasting legacy; it has advanced theory. Breadth and depth in research: the mark of a distinguished scholar.

Don has always been an innovator, a deep thinker and a master synthesizer. His approach to the natural world is akin to that of Charles Darwin; they both have the ability to examine some apparently simple process, ask insightful and penetrating questions, and then work toward an answer. In that vein, Don's scholarly contributions do more than provide data and analysis - they go to the heart of academic inquiry and provide valuable models and paradigms which the rest of us will be using for decades to come. He is a teacher and mentor who continually presents new thoughts about old problems and by so doing stimulates new generations of scientists. Not many of us can do that; Don always has. According to Jonathan Phillips, Don is a "cranky conventionalist."

QUOTE True conventionalists rarely stray far from conventional wisdom and thus tend to make competent but incremental advances. Cranks are iconoclastic and

unconventional, but their work is so far removed from, and ungrounded in, accepted modes of rhetoric that their arguments are dismissed. It is the cranky conventionalistthe innovator who works outside the established norms, but whose evidence and arguments are grounded within them that fosters the fundamental advances of the field. UNQUOTE

And yet, Don's career is not just about his research. It is about his students and colleagues, acquaintances and friends, who carry the flag of his ideas and recount stories from his field trips. Don's students have always been captivated by his enthusiam for science, his broad intellectual outlook and his remarkable ability to synthesize seemingly disparate bits of knowledge.

Lastly, I draw attention to the man receiving the award - one who is unselfish, humble, and willingly gives due credit to colleagues and students. Although Don has received many awards, he is approachable and genuine, willing to listen, and a person who values other points of view.

To sum it up, Don's distinguished academic career is measured by the people who treasure his company, are infected by his enthusiasm, and appreciate his insight. His writings and teaching have influenced us all, and his work will continue to do so long after the last papers have gone to press. It is in this vein that Jennifer Horwath and I nominate Donald Lee Johnson, a person who Vance Holliday referred to as the "single most influential US geographer in the study of soils since Sauer and Thornthwaite", for the Mel Marcus Distinguished Career Award.

Editor's note: we will publish Don's comments online as soon as they become available.