

2013 MEDALS & AWARDS

STRUCTURAL GEOLOGY & TECTONICS CAREER CONTRIBUTION AWARD

Presented to
Peter J. Hudleston



Peter J. Hudleston
University of Minnesota

Citation by Basil Tikoff

It is my honor and privilege to provide the citation for Peter J. Hudleston, who is the 2013 recipient of the Career contribution award from the SG&T Division of GSA. Peter is an internationally known and respected scientific researcher, for contributions on folding, ice deformation, shear zones, extracting rheological information from naturally deformed rocks, and transpression. While this list might seem disparate, there are traits that hold this work together: a very high level of integrity, thoroughness, creativity, and fairness. Those same traits also describe Peter as a person and his interactions at both a professional and personal level.

In some sense, Peter is an accidental geologist. He was born in Osterley, Middlesex in 1944. There is not much in his childhood that would indicate a career in geology. In the U.K. system, which requires that you pick a subject in order to be admitted to a university, Peter chose geology although he admittedly knew little about it. Peter did both his undergraduate and PhD work at Imperial College, London, working with John Ramsay for the advanced degree. Peter went on to do a 1-year postdoc with Hans Ramberg at Uppsala University. He then accepted a 1-year

appointment at the University of Minnesota, sight unseen and at late notice, fully intent on returning to the UK immediately afterward. During that time, he met his future wife Bronwen, and that — as they say — was that. He has spent his entire academic career at the University of Minnesota, including 10 years as Head of the School of Earth Sciences and 12 years as the Associate Dean for Student Affairs in the College of Science and Engineering. It is remarkable that Peter remained active in research despite these significant administrative duties.

Peter's scientific work has returned time and again to folding. His early work concentrated on determining folding mechanisms from fold geometry and strain patterns. His PhD work devised a new way to classify folds using Fourier analysis. Early in his professional career, because Minnesota wasn't cold enough, he went to the Canadian Arctic to study the flow and mechanics of glacial ice. Through this work, he was able to bridge the disciplines of structural geology and glaciology, by understanding the connection between the flow of ice and the resultant structures and fabrics. While folds and ice flow might seem like strange bedfellows, they both independently led Peter to an important topic: How can the rheology of naturally deformed rocks be determined from direct observations? Peter and his colleagues have used novel approaches to elucidate rheological parameters - such as stress exponent and effective viscosity contrast - from the geometry and strain patterns of geological structures. Peter has also made major contributions to our understanding of shear zones by recognizing that they require three-dimensional treatment as a necessary consequence of the geometry of observed shear zone networks. His documentation of deformation in the Vermilion District of northern Minnesota provided a critical early example of transpressional deformation and emphasized the importance of horizontal tectonism in the Archean. Despite the theoretical nature of the topics he studied, Peter was always an active field geologist at heart. His work was always based on the information that naturally deformed rocks provided.

Peter has taught classes in structural geology and related topics at the University of Minnesota for 43 years, from 1970 to the present. His clear intellect, warmth, humility, and fairness have inspired many students - including a number of undergraduates - to further their careers in geology. In his time at the University of Minnesota, Peter has had

18 PhD students and 11 Masters students complete their degrees with his supervision. Although it was often a struggle to keep pace with his long strides — both physically and intellectually — he was always very supportive of all of his students, regardless of gender or background. To be one of Peter's research students was to be given the privilege of intellectual freedom, a model of integrity, and gentle guidance when needed.

In addition to his research contributions, Peter has also been a contributor to, and statesman for the Structural Geology and Tectonics community, both in North America and internationally. His service to our field may be best exemplified by his work as an editor for the *Journal of Structural Geology* for 15 years. Often working with the head editor Sue Treagus, he was a stabilizing force for that publication. As an editor, Peter handled hundreds of papers and had a reputation for his fairness and helpfulness, especially to junior researchers and non-native English speaking scientists. A particularly illuminating example involved a manuscript that was originally rejected by the *Journal of Structural Geology* based on peer reviews, with Peter acting as the editor. An independent third party suggested to Peter that he had made an error, and that the manuscript was really a fundamental contribution. Peter re-read the manuscript, realized that the reviewers were not fair, and wrote the author of the rejected manuscript admitting that he has possibly made a mistake. The idea of doing the right thing, rather than worrying about status or ego, exemplifies Peter's approach to both scientific and personal interactions.

Speaking for myself, Peter has always been a source of inspiration for his uniformly and consistently high level of scientific and personal integrity. He thinks critically and deeply about a problem, clearly articulates his ideas but doesn't insist on them, is extremely fair in his attribution of others' contributions, and has never placed himself at the center of attention. Most importantly, perhaps, he has produced work of uncompromisingly high quality. In all he has done, both scientifically and personally, he has done it very well and with understated but undeniable class. Please join me in recognizing Peter Hudleston as the 2013 GSA SG&T division Career Contribution award winner of 2013.

Response by Peter J. Hudleston

Thank you, Basil, for your kind words. I am truly honored and most grateful to our

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division of the society for presenting me with its career award. I must say I feel somewhat guilty standing here, because, well ... just look at the list of previous awardees. These are people who have defined our discipline over the past fifty years. This is august company! I have been fortunate to know most of them and to have had two as close mentors.

As Basil mentioned, I found geology more or less accidentally, choosing it because it sounded like an interesting way of combining science with an excuse to be in the open air, which of course it is! It was serendipity that took me into geology, and it was John Ramsay who lit the light of structural geology for me when I was an undergraduate at Imperial College. John did this with his enthusiasm and his wonderfully clear lectures, embellished by illustrations on the blackboard of what can only be described as artwork. My first course in structural geology was not from John, however, but rather from Gilbert Wilson, who had been John's teacher. Gilbert seemed then ancient and venerable, but in fact was about my age now. He was a key figure in the emergence of structural geology as a distinct discipline. A plausible case can be made that Gilbert carried the seeds of modern structural geology to Europe from Wisconsin, taking what he learned there from Van Hise, Leith and Mead.

Imperial College in the 1960s was a great place for structural geology, with a highly interactive group of structurally inclined undergrads, postgrads, and post docs. It included the first groups of students in the Ramsay/Neville Price MSc course in structure. There were many field trips to the Alps and Scotland and animated discussions over tea and beer – in different places and at different times of day. The group included the infectiously enthusiastic Dave Elliott. Dave was a bubbling source of ideas and a great

influence on me. In Uppsala, I learned a lot from Hans Ramberg, another enthusiastic and irrepressible individual who had excellent physical intuition and could make seemingly any kind of structure in his lab using gravity as the driving force. He taught his course in English for my benefit, but would revert to Norwegian every time he dimmed the lights to show slides.

Then to Minnesota, which, as Garrison Keillor might say, is a pretty good place to be. So I stayed. I have had fine students who are now friends and colleagues. They have challenged me and kept me on my toes. Many are here this evening. I've also had great colleagues, including Christian Teyssier, whom I was lucky enough to encourage to come to Minnesota to take on structural geology while I was in departmental and later college administration. Christian, together with Donna Whitney, have ensured through STAMP — the same acronym as the session at this meeting - that we maintain a vibrant group in structure and tectonics in the department.

In my career, I have operated mostly at the S end of the S&T spectrum, with occasional forays towards the T. It was John Ramsay who got me interested in folds, the subject of my thesis, and I have been magnetically drawn back to them ever since. Part of their appeal, I am sure, is aesthetic. Folds, especially in crystalline rocks, are beautiful things. Folds in fact led me to ice — a fine example of a crystalline rock — thanks to my colleague Roger Hooke, who returned from Baffin Island with enticing pictures of recumbent folds in an ice cliff. How could I not go to check them out? It was also folds of enigmatic vergence in a greenstone belt that sparked my interest in Archean structure and tectonics.

As in my discovering geology in the first place, there has been much serendipity in the

choice of problems I have worked on. They have, however, all involved some combination of theory, analog or digital modeling, and fieldwork. In my work on folding, I have relied heavily on the theoretical underpinnings provided by others, especially Ray Fletcher.

I must mention my work as an editor for the *Journal of Structural Geology*. I joined the small team of editors in 1983 and 'stayed' for fifteen years. It was especially satisfying to work with Paul Hancock, the founding editor, and then with Sue Treagus, who succeeded Paul as chief editor. Both were sticklers for detail and kept a tight ship, as many here will know. Authors and editors all knew where they stood with Sue!

It is interesting to see how our discipline has changed with time. Certain topics come into prominence and then fade to become part of the fabric of the discipline and taken for granted, such as strain analysis, which was the in-thing when I was a student. What is impressive is the extent to which structural geology today is integrated with geochronology, geochemistry, petrology, geophysics and more to tackle big problems at multiple scales. This is producing fantastic results and portends well for the future.

My piece of all this has been small, but it has been most satisfying. I am grateful for having had the opportunities and freedom to work on interesting topics, in neat places, and with great colleagues and students. I could not have done this, however, without a stable home base, and I am most grateful to my wife, Bronwen, for providing that and for giving me unwavering support.

To the Geology Society of America and the Division of Structural Geology and Tectonics, once again, thank you for this great honor.