

## Preface

# Special issue in honour of Professor Bruno A. Boley



Prof. Bruno A. Boley

It has been my personal privilege to assist the editors of the journal in publishing this special volume honoring Professor Bruno A. Boley. The papers were first reviewed for presentation at the US National Congress of Applied Mechanics, Blacksburg, VA in June 2002. After a successful day of the special session the authors were requested to submit full journal papers for review. I thank all the participants who meticulously reviewed papers and suggested improvements. In the interest of keeping the highest standard and the page constraints, some very good papers had to be declined according to reviewers' advice.

My personal experiences with Professor Boley since 1988, when he returned to Columbia, were the main reason for my involvement with the Boley Session at the USNCAM 2002 and editorship of this special volume. I have been fortunate to discuss the academic future of engineering mechanics in the era of rapidly growing technology. I have grown to delineate the scientific aspect of our discipline and the information technology tools which makes certain research possible. One of the most intriguing of Professor Boley's insights, which contributed substantially to my own development, is that an effective use of the computing environment necessarily requires a firm grip on the scientific aspects of basic physical ideas we develop in our graduate courses of continuum mechanics. My favorite example is the development of a large displacement shell finite element that is concave on the surface. The needed second covariant derivatives can be routinely obtained for shape functions with square root singularities by computer (e.g., employing *Math-Tensor* replacement rules in *Mathematica*) once the theoretical development of strains in general tensors and strain-displacements in concave plane elements have been mastered with *pencil on paper*. I am ready to

argue with many who do not see the prime importance of the so-called ‘developed disciplines’, such as theoretical mechanics, that the impending applications in emerging fields, such as nanotechnology, will suffer miserably if the proper emphases on basics and fundamentals are compromised. When we sent out the request for papers for the Boley Session we got enthusiastic responses from the leading mechanics researchers, which indicated that many active researchers agree with Professor Boley’s philosophy on engineering mechanics education.

We wish Professor Boley a good health and long life and to paraphrase Professor Nemet-Nasser we would be celebrating Boley Sessions for years with Professor Boley in the audience present in every session for every paper. I end here with my deepest regards for the teacher of my own mechanics teachers.

G. Dasgupta

*Department of Civil Engineering and Engineering Mechanics*

*Columbia University, 610 Mudd*

*MC 4709, New York 10072*

*USA*

*E-mail address: gd18@columbia.edu*