Commentary

In My Opinion

Parting Shot

The end of January will see another change of secretaries for the AMS. In the 110 years of its existence, the AMS has had eight secretaries; Bob Daverman will be the ninth. That's fewer than the number of popes or chief justices of the Supreme Court in the corresponding years.

It was my philosophy as secretary to carry out the duties as prescribed in the various official and unofficial documents. I viewed the task as one of seeing that procedures as outlined in the Bylaws and as adopted by the Council were followed. I attempted to separate my personal opinions from opinions that were formed by interpretations of the Bylaws and Council directives.

It has been a wonderful ten years. The success of the meetings and publication programs has been excellent. The AMS has grown from a $10M operation to a $22M operation. Although membership has not grown at the same rate, the AMS has been able to reach out to many more mathematicians by its meetings and publications to help them teach and maintain their research interests. I have truly enjoyed working with all of you to create a better Society.

The secretary is mostly concerned with the internal operations of the governance of the AMS. I considered the position as the administrator of science policy of the AMS. This means that the secretary facilitated the creation of policy and saw that it was promulgated.

Under my watch the creation and administration of policy has become much more difficult due to the creation of two organizational stumbling blocks: the Editorial Boards Committee and the policy committees. My parting shot is to recommend the elimination of these committees.

Before the creation of the Editorial Boards Committee (EBC), all suggestions for appointments to editorial boards came from the Nominating Committee (NC), and suggestions for appointment as associate editors came from the Committee on Committees.

The EBC was created as a parallel to the Nominating Committee and was intended to be a committee of members elected by the membership and reporting to the Council that would concern itself with all aspects of the structure of the editorial boards of the Society. The tasks for the committee included, not exclusively, making recommendations to the Council for appointment to the standing journal editorial boards and making recommendations to the president for appointment of associate editors and others to other editorial committees. The original intent was that the EBC should also monitor the activities of the editorial boards, see that "standards" were being upheld in the journals, and see that the boards functioned carefully.

It sounded great, especially since some of the burden of oversight would be removed from the secretary. The recommendations by the EBC have been superb for the most part. The EBC has handled several very sensitive problems in the publication realm. Some very sensitive and difficult problems have not gone to the EBC. Due to many misunderstandings, the administration of these suggestions, the appointment process in general, and the monitoring of journal and publication problems have not gone well. Currently there is some overlap of areas of concern between the EBC and the Committee on Publications. It is very difficult to get individuals to stand for election to the EBC.

What should replace it? The nomination of editors for standing journal boards can be done by the Nominating Committee, as was done in the past. The NC works only in January and February on nominations for the fall elections. At other times of the year the task of identifying potential editors could be done by the members of the NC. Recommendations of associate editors can be handled by the Committee on Committees.

Problems regarding workings of editorial committees can be handled administratively, and problems of an ethical nature, such as disputes about reviews in the *Bulletin*, can be put onto other existing committees, such as the Committee on Professional Ethics.

There are five policy committees, four of them new during my time. The new ones are the Committees on Education, Meetings and Conferences, the Profession, and Publications. My suggestion is to "discharge with thanks" these four new committees, retaining the Committee on Science Policy.

I estimate that each of these committees costs in excess of $100,000 per year to operate, for a total cost to the AMS of $500,000 per year. (That's the dues of about 4,000 members or the data access fee of about 50 institutions.) The marginal cost of providing transportation, lodging, and meals for the members and guests of a committee is close to $25,000 per committee per year. The rest is my estimate of the cost of administration of the committees in Providence and elsewhere.

In addition to the financial cost there are enormous personal costs to the members of the Society and the administrators who take their jobs on these committees seriously. The president, the secretary, and the executive director are members of each of these committees and must travel to Washington, DC, or Chicago almost every weekend in the fall and often in the spring. What is accomplished?

Some of these committees have become involved with micromanagement of AMS affairs, especially in the area of meetings and publication, with no such charge from the Council. Some have come up with "mandates" that bear enormous hidden costs and that have not been sanctioned by the Council. Too often persons with specific agendas are appointed who then focus discussion on pet projects or ideas that completely bog down the operation of a committee.

Long lists of rules have evolved about how subcommittees should be appointed, how each committee should interact with other of these committees, and how chairs of the committees should share information. It's an administrative headache of the highest order.

What have been the results? About five action items per year have come to the Council from all of these committees. That's about $100,000 per item.

What should replace them? Let the Committee on Science Policy (CSP) continue to function as it did in the past by handling all the items of policy except those related to publications. Put the chair of CSP back on the Council, and include many Council members on the Committee. Broaden the charge to include educational policy matters and matters of the profession. Send all publication problems to the trustees. Put the Council back into the picture.

These are two relatively mild suggestions that I believe will improve the creation and administration of science policy within the AMS.

—Robert M. Fossum
Associate Editor

Letters to the Editor

Hidden Commercials

I would like to share with you the mixed feelings which I experienced while reading the article "Theory into Profit: Microsoft Invests in Mathematicians" by Allyn Jackson in the June/July issue of *Notices*.

A person who has to reboot his/her PC with Windows 95/98 a dozen times per day may admit that the *profit* obtained by Microsoft is mainly due to aggressive marketing rather than to high-quality products or an elegant *theory*. The PC-users community is starting to understand the damage of such an activity, and it was reflected in recent actions of the Justice Department. One could expect that Microsoft will try to recover its public image by new initiatives.

I have no doubt that Allyn Jackson tried to provide balanced coverage of Microsoft Research. But the theory of advertisement has its own psychological rules, which are actively used by public relations offices. Even a neutral mention of a product name works as a hidden commercial (do you remember the Windows logo written everywhere during 1995?). Considering this, I am not sure that the article could really be considered a neutral one.

I understand that the interaction of mathematics and industry is a very important and interesting topic. There is no doubt that they should be reflected in the Society's journals. For example, I will read with interest a paper which tells about and compares many other research units: AT&T, IBM (who is a long-term corporate member of the AMS, right?), etc., but not one preselected firm.

—Vladimir Kisil
Odessa State University

(Received August 13, 1998)

On Pontryagin's Autobiography

A May letter to the *Notices* by Joan Birman discussed Shafarevich in connection with a conference to honor the memory of Pontryagin. But the problem concerns not only Shafarevich. That discussion reminded me of passages in Pontryagin's short autobiography published by the main Soviet mathematical journal *Uspehi Matematicheskih Nauk* (cf. *Russian Mathematical Surveys*, 1978, issue 6). Let us consider only one (but the most vivid) example, and everything will be clear. Pontryagin wrote (p. 23): "The attempt was made by Zionists to take the international Union of Mathematicians into their hands. They tried to raise Professor N. Jacobson, a mediocre scientist but an aggressive Zionist, to the Presidency of the IMU. I managed to repel this attack." To those who don't know, it's necessary to explain that after World War II any anti-Semitic campaign in the Soviet Union was presented as fighting against at first cosmopolitans and then Zionists. Consequently, this rude attack against the famous mathematician N. Jacobson, who obtained a lot of fundamental results in algebra, explicitly demonstrates the views of Pontryagin and explains why such a person as Shafarevich is one of the leading organizers of the conference in question.

—Mark Burgin
University of California, Los Angeles

(Received July 22, 1998
Revised August 20, 1998)

Look to the Elementary Schools

David Sanchez (letter in September 1998 *Notices*) has some excellent data on American student performance in mathematics. I personally believe he did not identify the right problem. As an experienced AP teacher (both BC Calculus and Statistics) I feel that there are too few students taking AP mathematics courses, especially among minorities. Since I have taught mathematics from first grade through graduate school, I can look at the entire education spectrum and perhaps see what Sanchez cannot see.

I believe that the source of the problem lies in our elementary schools. We have elementary teachers who, in large part, seem ill prepared to teach mathematics. Based on my teaching in six different elementary schools and observing in many others, it is my belief that many (not all) elementary teachers do not like the subject. That could be overcome by meaningful staff development. But staff development is not all that is needed. The current system features a curriculum so watered down that most students enter sixth grade not knowing much beyond whole number operations, if that! Lack of ability grouping makes the teacher's job more difficult, as does a lack of understanding in many places that mathematics is a cumulative subject. We find fifth-grade classes with students who cannot add or subtract; students who can work with fractions, decimals, and integers; and everything in between. The teacher spends much of the year reviewing what the students should have learned in earlier years. The bright students are bored, while the less able students don't "get it" and believe that they will never "get it". Principals often fail to encourage staff development or to understand the elements of substantive curricular change; even if they are supportive, the resources may not be there. The parents are not worried; they proclaim, "I was never good in math and look how well I have done!"

If we had elementary schools where there were meaningful standards and opportunities for students to be challenged without being overwhelmed, we would find more students taking more mathematics in high school and college. In 1996–97 (while in a different district), I taught a fourth-grade class composed of minority children, many of whom were in single-parent, non-English speaking and/or poverty-level families. At the start of school they could barely multiply. By May they were successfully computing with mixed numbers, decimals, and integers and enjoying their work. It can be done if parents, teachers, school administrators, and mathematicians will join together to focus our efforts. Perhaps we can then worry that there will not be enough AP mathematics teachers.

—Murray H. Siegel
Greenville (SC) Public Schools

(Received August 20, 1998)

"Guide" Not a Guide

We believe that the paper of E. H. Lieb and J. Yngvason (*Notices*, May 1998, pp. 571–581), whatever its specific interest, cannot be considered "A Guide to Entropy and the Second Law of Thermodynamics", except in the narrowest of terms. More specifically, their paper does not seem appropriate to the *Notices* unless considerably more background and context for the reader were provided. Indeed, the paper strikes us basically as a further, not uninteresting, research contribution, whose publication would be entirely appropriate to a research journal.

A true guide to entropy and the Second Law would have to say much more about the broad nature of the subject, the historical background, and the extensive mathematical developments which have been published in the past thirty-five years by a large number of authors.

To obtain a flavor of these developments up through 1983, interested mathematicians might look at the textbook *A First Course in the Mathematical Foundations of Thermodynamics* by David Owen, which appeared in the Springer series Undergraduate Texts in Mathematics. Also, they may consult the extensive monograph *Mechanics and Thermodynamics of Continuous Media* recently published by Miroslav Silhavy (Springer, New York, 1996).

—Walter Noll and
William O. Williams
Carnegie Mellon University
James Serrin
University of Minnesota

(Received September 11, 1998)

Lieb and Yngvason Reply

We are pleased that our colleagues Noll, Serrin, and Williams found our contribution "not uninteresting". The works they cite offer important alternative perspectives and are among the references in our lengthy article to appear in *Physics Reports*. In our short May 1998 *Notices* article we directed the reader to the long article [7], which is easily available on two Web archives and which includes a historical account.

The word "Guide" in the title is, admittedly, slightly unusual, but a bit of color in the *Notices* is not a bad thing. What we had in mind was the famous Arabic work by Maimonides (a twelfth-century Jewish Spanish philosopher) entitled *Dalalat al-ha'irin* or *A Guide for the Perplexed*. To us and just about everyone else we know, the second law of thermodynamics is a subject that can perplex even the angels.

—Elliott Lieb
Princeton University
Jakob Yngvason
Vienna University

(Received September 13, 1998)

Perspective

At Hearing the News of Their Awarding Me the Kyoto Prize

I was overjoyed at the news of their awarding me the 1998 Kyoto Prize in basic sciences. My feeling of great happiness is beyond description. As a young man, I selected stochastic analysis as my lifework. In recognition of my long study of stochastic analysis, I will be awarded the prestigious Kyoto Prize. How happy I am! Obviously, at the news of my winning the prize, people will be aware that stochastic analysis is important. Scientists in the field will be encouraged to hear the news. It is obvious to me that mathematical sciences will make rapid progress.

In 1935 I entered the University of Tokyo. When I began studying at the Department of Mathematics, very few mathematicians were interested in probability. At first, I also had little or no interest in probability; however, I regarded the theory of probability as "a new mathematical field for researching random events" after reading papers written by foreign mathematicians: Kolmogorov of Russia (USSR in those days), Wiener of the USA, and Paul Lévy of France. In 1942 I devised stochastic differential equations. Stochastic differential equations are divided into two parts: the "average part" and the "random displacement part". On a special occasion, when the latter part is zero, they are treated as nonstochastic differential equations. In 1951 I improved the theory of stochastic differential equations and derived the conversion formula of stochastic differential equations (Itô's formula) from this theory. It consolidated the foundation of stochastic analysis. Unfortunately, very few people showed interest in the theory in those days. I was depressed, and at least ten years passed.

Since about 1960 an increasing number of mathematicians, from Japan and abroad, have become interested in stochastic analysis, whose theory has made rapid progress. As a result, Malliavan of France reached the apex of research on this theory. Nowadays stochastic analysis is widely used in new sciences, such as the theory of stochastic control, population genetics, and the theory of stochastic finance.

Such progress in theory and application of stochastic analysis is the fruit of the efforts of many researchers who worked in international cooperation. In winning the Kyoto Prize, I feel eternal gratitude to them.

Of course, nonstochastic analysis has also made rapid progress, pointing to the even further development of stochastic analysis. I will continue studying such branches in order to enrich the theory and application of stochastic analysis. I hope to continue to achieve results in my studies and thereby fulfill expectations of the Kyoto Prize councilors.

—Kiyosi Itô

—Reprinted with permission from the Inamori Foundation Newsletter, no. 3, August 1998.