# Deaths and Didactics

The May 1958 Bulletin of the American Mathematical So*ciety*, at that time the only "member publication" of the AMS, came in two parts: Part 1, bound in the standard green cover, contained the usual *Bulletin* material; Part 2, 129 pages bound separately in a distinctive blue cover, was a memorial tribute to John von Neumann. In the tribute, authors such as Kadison, Murray, Ulam, Kuhn, and Tucker discussed von Neumann's mathematical contribution in expository articles that still make interesting reading nearly fifty years later. The *Bulletin* published a similar "Part 2" issue in January 1966, this time in a memorial tribute to Norbert Weiner. Also bound separately in blue covers, this tribute featured articles by, among others, Levinson, Doob, and S. Mandelbrojt. Although the *Bulletin* previously had, and subsequently did, publish memorial/obituary articles, I don't know of any more of these separately bound tributes.

When the *Notices* moved to its current format in 1995. it became the venue for memorial articles. As this format has evolved, such articles have come to consist of a number of (sometimes as few as two, sometimes as many as four or five) short articles about the subject's mathematical work and life by colleagues, students, etc. Examples include the elaborate one about A. Borel in the May 2004 Notices, a short one about W. Tutte in the March 2004 Notices, and a midsize one about D. Spencer in the January 2004 Notices. These articles are coordinated by a lead author who takes responsibility for recruiting the others and making sure that the various component pieces are nonoverlapping and cover the subject's accomplishments adequately. Lead authors for memorial articles may volunteer or they may be solicited. Subjects of memorial articles are mathematicians whose work is generally recognized to be of wide consequence and lasting impact. Usually this is obvious; on occasion the Notices Editorial Board discusses potential subjects. Sometimes no article may appear, even for a worthy subject: it may not be possible to recruit a suitable lead author, or a lead author may not be able to complete the project. But we seem to average about two or three memorials per year. Let's say there was an additional missed opportunity, so a total of four potential subjects per year. Let's also say that it is clear by the time most potential subjects are thirty-five that their life work will merit a *Notices* memorial and that they live to be eighty-five (may it be one hundred twenty, of course). This means there are about 200 such mathematicians of all ages in any given year. If this represents one percent of the active and retired research mathematicians worldwide, there would be 20,000 total, and this number seems about right.

What about the other 99 percent of us? From time to time, the *Notices* receives unsolicited obituary articles

from colleagues and mathematical descendants of deceased mathematicians who would not be candidates for our standard memorial articles. In such cases, I invite the authors to instead contribute an expository article on a mathematical topic in an area of interest of the deceased. Such articles would undergo the standard *Notices* editorial process and, if accepted, would prominently note that they were written in memory of the deceased. Although so far no such articles have been received, I am happy to extend this invitation to all *Notices* readers.

Of course, for many years, the *Notices* has also carried a section of brief "Deaths of AMS Members" announcements. With this issue, the *Notices* inaugurates an additional way to memorialize: we will accept contributed brief (250 words or shorter) mathematical obituaries. The subject should be a research mathematician of some consequence, the contributions may be edited for style and content, and we will carry only one obituary for any subject. Lance Small's obituary of Alfred Goldie in this issue (see "Mathematics People") can be a model.

I want to shift from necrology to pedagogy. This issue of the Notices contains another article representing a new direction. In his feature "You Could Have Invented Spectral Sequences", Timothy Chow gives a tutorial introduction to his topic. Sometimes I like to characterize the ideal Notices expository mathematical article as the ideal colloquium. Chow's is more like the ideal graduate student seminar: he's developing the subject, or rather a simplified model of it, in a self-contained situation. Unsolicited contributions of such articles are welcomed. Notices readers with novel ways to explain core mathematical topics are invited to submit articles or proposals for articles. Explanations of mathematical topics are nothing novel for the Notices. Our popular "WHAT IS ...?" series of brief explanatory articles appears in almost every issue, including this one, where Shahn Majid tells us "WHAT IS... a Quantum Group?" Articles in this series are by invitation, but readers are welcome to suggest future topics.

-Andy Magid

The *Notices* welcomes unsolicited manuscripts. Information about writing for the *Notices* appears in the June/July 2005 issue, pages 660–661. Inquiries may be sent to notices@aftermath.math.ou.edu.

# Letters to the Editor

## **Calculus Before College**

Although the goal of finding common ground among mathematicians and mathematics educators is admirable, much of what appeared in the article "Reaching for common ground in K-12 mathematics education", October 2005, pp. 1055–1058, was of the motherhood-and-apple-pie variety. For instance, it's reassuring that all could agree that teachers should use a variety of instructional strategies or that calculators actually have an appropriate place in education.

But one item stood out as strange. The group apparently considered it "a fundamental premise" that by the time they leave high school, a majority of students should have studied calculus.

I'll ignore the ambiguity of the phrases "should have" or "studied calculus", and won't ask why the group thinks "a majority" should do this rather than some other percentage.

Rather, I wonder why this is here at all. This is the only area of mathematics beyond arithmetic that the group identifies specifically as a goal. By contrast, the word "statistics" does not appear anywhere in the article. Neither calculus nor statistics is part of the traditional K-12 mathematics education, but certainly the average citizen has far more need to understand basic ideas of statistics than basic ideas of calculus. A glance at our daily newspapers or a conversation with one's doctor makes clear that we all make important decisions based on understanding of statistical information and ideas.

Perhaps the group took for granted that a foundation in statistics should be part of the K-12 curriculum. If so, that is a positive step, and I wish they had said so. I would ask Richard Schaar to poll his group and ascertain which, if any, of them thinks calculus has a higher priority for a high school graduate than statistics and why, and what percentage of students they think should have studied statistics by the time they leave high school. In fact, it's still a challenge today to get high school students to take three years of high school mathematics, so getting a majority of them to calculus is in the distant future, even if that were a priority. If the group meant the calculus goal as simply a dream, I wish they had made that clear.

On a different note, I would observe that while the group included at least one major critic of the K-12 mathematics curriculum projects that the National Science Foundation has funded over the past fifteen or so years, it included no one who has been part of the development of those projects. (Full disclosure: I am the codeveloper of one of those.) I suggest that any future dialogue of this sort show more balance.

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### **Resolution of Singularities**

The October *Notices* contains a lovely interview with Heisuke Hironaka, which does a marvelous job of capturing his personality. Furthermore, the panel on p. 1010 correctly suggests that his resolution of singularities involves subtle, lengthy, and technical methods yielding a result of fundamental importance. However, the panel leaves the false impression that there has been, as yet, no progress made in simplifying and advancing his work. In fact, there has been a lot!

Progress was gradual at first, but picked up speed about ten years ago. Whereas Hironaka's proof is existential, now there are constructive proofs which have been implemented in the computer algebra systems Maple and Singular; see Villamayor's article "An introduction to constructive desingularization", arXiv:math.AG/ 0507537, 26 July 2005, and the other recent introductions by Cutkosky, by Hauser, and by Matsuki cited there. Furthermore, in his article "Resolution of singularities—Seattle lecture", arXiv:math.AG/0508332, 17 Aug 2005, Kollár shows that it is now possible to prove Hironaka's full theorem in the last two weeks of a first course in algebraic geometry!

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### Identifications

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