Graduate Students and Applications

If you're a *Notices* subscriber with a North American address, chances are 4 in 10 that you're a graduate student. Almost all *Notices* subscriptions go to individual members of the AMS. Universities that belong to the Society as institutional members are allowed to nominate their graduate students for AMS membership as a privilege of institutional membership. Most member departments like to nominate all their eligible students. These nominee members number about 8,000 out of the 20,000 individual members of the Society based in North America. (There are about another 10,000 individual members elsewhere in the world, many of whom are reciprocity members, based on their membership in the national mathematical society of their country of residence.)

Graduate student readers of the *Notices*, like all readers of the *Notices*, are presumably interested in exposition of important mathematics, news and comments about the mathematics profession, feature articles about mathematicians and mathematical venues, developments in mathematics education, and the other regular topics and columns that make up the editorial content of the *Notices*. Indeed, graduate students may be better informed than the average AMS member. More than 45 percent of U.S. doctoral students study in a "Group I" department. ("Group I" is the terminology the Society uses for the departments highly rated by the National Research Council; the peer evaluation methodology used by the NRC means these are by consensus the leading U.S. mathematics departments.) This is, of course, very different from the institutional identifications of the membership in general, which is broadly distributed across all sorts of departments.

The *Notices* would, nonetheless, also like to serve its graduate student readers with articles aimed towards special student concerns. One such appears in this issue: Kris Fowler presents a beginner's guide to the mathematics literature. Her article is based on the book she edited, *Using the Mathematics Literature*, Marcel Dekker, New York, 2004, which is "aimed primarily at the new mathematics graduate student, but will also serve the researcher encountering an unfamiliar area," to quote its preface. And, of course, specialists will be curious about how the advice of Fowler's experts would compare with their own.

I would, by the way, be very interested in hearing from our graduate student readers about any special topics that they would like to see covered in the *Notices*.

I have noted in this space in the past that authors of recent and forthcoming books of interest to *Notices* readers might consider submitting an article to the *Notices* based on their book. I think Fowler's piece is a good example of how this can be done.

Also in this issue, David Cox considers the algebra that an applied mathematician should know or that a student interested in applications should study. His advice also should be especially useful to the student reader of the *Notices*. The algebra Cox refers to is the theory of commutative rings and their modules, a subject that many may be unaware has any applications at all. But Cox shows us how it can be used to solve problems in economics, geometric modeling, and splines.

In our other feature article in this issue, Thanasis Fokas and Li-Yeng Sung consider applications as well, this time of generalized Fourier transforms. Having both our features this month dealing with applications brings to mind another consideration. Articles about applications of mathematics appear regularly in the *Notices*, but as the Cox article points out, what mathematics constitutes applied mathematics, or doesn't, is not always going to be clear in advance. Even the terminology is a bit suspect: the usual mathematical antonym of "applied", namely "pure", has its own ordinary language meaning whose opposites, such as "adulterated", are not synonyms for applied. I've always thought that a good model here could be drawn from ring theory. In that subject, one has the subareas of commutative ring theory and noncommutative ring theory. An uninformed observer might think that these represent a dichotomy, but in fact the latter subsumes the former: a noncommutative ring is a not necessarily commutative ring. If we use similar conventions, then we could refer to applied mathematics and nonapplied mathematics, where by the latter we mean not necessarily applied mathematics, another synonym for which is "mathematics".

—Andy Magid

Letters to the Editor

Nonmathematicians Need Mathematics, Too

Richard Schaar's Opinion piece in the August 2005 *Notices* is must-reading for all, including nonmathematicians as myself. A knowledge of mathematics is indeed indispensable in an increasingly complex world. As an adjunct instructor in philosophy at a college near Chicago, I teach courses in ethics and in introduction to philosophy. I have done two books in philosophy, demonstrating in each the tacit logical and propositional structures of even the most existential statements. Currently I am completing a book on the phenomenological (nonviolent, social) war against terrorism, with concluding chapters showing the relevance to phenomenological philosophy of human factors, engineering, and how sets and functions can express the notions of nonviolent as well as conventional warfare.

We contradict ourselves when our pronouncements advocate colleges of arts "and" sciences; yet our students are led to believe that science, especially mathematics, is something completely different from, alien to, and basically irrelevant to understanding a given discipline and career.

—*Michael M. Kazanjian*
Adjunct Instructor, Philosophy
`mkazanji@depaul.edu`

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History, Mathematics, and Plagiarism

In the August 2005 *Notices* there are two letters, by Braver and Ewing, on which I wish to comment. It appears that Braver has confused a mathematics monograph with a history of mathematics book. In the latter, history is retold as accurately as feasible, while in the former, concentration is on research contributions. Recording of history will be how things in the ancient world were or were perceived to be, according to the writer. This is somewhat like a journalist's report. All reporters present the same story with substantial similarities or even sameness, and it may not be regarded as "plagiarizing", as can happen in stories or interpretations. Indeed, N. K. Artemiadis referred to M. Klein's three-volume work on p. 374, and his own narrative contains a lot more new information that could not be in Klein's book, published in 1972. After all, mathematics history is detailed as personal experiences of the writer whose creative aspect of the subject is completed or essentially ended. This is clear in both Klein and Artemiadis, as acknowledged by both. I have purchased a copy of the AMS translation and enjoyed reading it completely. The episode on Fourier and the difficulties to get his fundamental volume on "Heat" accepted by the French Academy is very interesting. On the other hand, the treatment of ancient mathematics in China and India is superficial, but this is not surprising. For an interesting corrective, with source material, on some of the latter, the mathematical community (especially in the West) can read the recent account of V. Lakshmikantham and S. Leela, entitled *The Origins of Mathematics*, University Press of America, New York and Oxford, 2000.

Thus I find Braver's letter to be emotional and beside the point. In fact one does not know how Klein's book fares with earlier writers on "plagiarism" or similar incarnations. There are mathematicians who write history as entertainment with truth taking a second place, as is well known.

I think that the AMS Executive Director Ewing's decision on "discontinuing publication of the book permanently" was hastily arrived at. This is a history book and should be available to the public. Also it appears that Klein's volumes did not go through a comparative critique with earlier translations or originals. Such an effort is simply useless. I hope that the AMS will reconsider this decision and make the book available, notwithstanding Braver's uncalled-for attack. [For comparison, one can read a similar (emotional) article entitled "Indian mathematical miseducation" by P. R. Masani, which appeared in the *American Math. Monthly* in 1964, pp. 671–6, and I commented on its unbalanced treatment in the same *Monthly* in 1965, pp. 661–4.]

—*M. M. Rao*
University of California, Riverside
`rao@math.ucr.edu`

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Hiring Should Be Fair

In response to "Gender and mathematics—again" by Roitman and Wood in the May *Notices*, I think the proper goal is fairness, i.e., hiring or promoting the best and most highly qualified people, without regard to what human subgroup they belong to. It is naive to think we can "consciously increase" the relative number of women without, ipso facto, decreasing the representation of other subgroups, as there are only a finite number of job openings.

A major university has in its body of slogans "where diversity is celebrated every day." However, this "diversity" is merely a code word for a new type of discrimination. There are few in southern California academia who wouldn't know what someone means who says he "wasn't diverse enough" after a failed interview.

Where is it written in stone that every profession has to have strictly proportional representation as to its ratios of various human subgroups anyway? We're all unique and different, by individuals and by groups; can't there be such a thing as honest preference? For example, is it a problem that 70%–90% of most English lit departments are female? If not, why not?

Well, I'm only an M.A., so wiser heads will have to figure this out. But even I know two wrongs don't make a right, and you don't fix a crooked game by further rigging it.

—*Joe Rieker*
San Diego
`wrycur@nethere.com`

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