

Thoughts on Affirmative Action

by Mary Beth Ruskai

Department of Mathematics, University of Massachusetts, Lowell, MA 01854 USA

bruskai@cs.uml.edu

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I. Introduction

About 20 years ago, as a young assistant professor at the University of Oregon, I served on a new university-wide committee on the status of women. The group had a few men, including one young male who decided to enlighten us about the potential for backlash from the affirmative action programs then being introduced. When he was hired his official letter of appointment was delayed two weeks, supposedly because of affirmative action paperwork. He said that, while he fully supported the principle of equal rights, he saw no need to subject men to such aggravation and predicted that the university would lose many capable candidates as a result. We all agreed that the bureaucratic affirmative action rules seemed to add to the administrative burden without achieving the desired result. But IF an additional two weeks of paper-shuffling before faculty appointments were finalized could guarantee equitable treatment for all, it would seem a very small price to pay.

I remain skeptical of the extent to which official rules and policies of affirmative action are effective in achieving the desired goals. In those places where the number of women and/or minorities has increased significantly, I suspect that related factors, such as change in attitude among those in power, are more important. Therefore, instead of discussing affirmative action per se, I would like to comment on the related issues of standards, evaluation, and priorities.

Before doing so, let me address the suggestion that affirmative action be eliminated in favor of true gender-blind equitable treatment for all. I wish that we lived in a world where that was possible. But studies continue to show that hidden biases leave that an ideal to strive toward. In classical music blind auditions have worked well and been effective in increasing the number of women in major orchestras. However, successful implementation required such extreme measures as candidates performing shoeless (to avoid gender identification from high heels). Few situations lend themselves to blind evaluation. For grant proposal evaluation and speaker selection, track record is sufficiently important to make anonymity impossible.

Blind refereeing of papers has been successfully used in some fields. However, when it was advocated by AWM 20 years ago, it was vehemently rejected by the mathematics establishment. It might now be even harder to implement as electronic distribution of (author-identified) preprints increases. However, I cannot help wondering where those (such as Larry Shepp) who now vocally advocate gender-neutral evaluation were 20 years ago, and whether they ever tried to implement blind refereeing when they have served on editorial boards.

II. Education

A few years ago, an editor asked me to look into the allegation that MIT had adopted an admission policy of lower standards for women. Now, one could argue that the 20 point difference in average math SAT scores of male and female students admitted was hardly significant, especially for a group in which most scored above 700. But suppose, for the sake of argument, that it was. The women admitted subsequently performed, as measured by grades at MIT, as well or better than the male students. (Moreover, this is true across fields so that the women's success cannot be attributed to differential course taking.) If male and female students taking the same exams in the same courses get comparable grades, in what sense can standards possibly be lower? Even if the women's SAT scores were 200 points lower, if they subsequently did as well as the men would it matter that MIT used different admission criteria?

How did the SAT exam achieve its status as the ultimate measure of qualification? It may be useful if I recall the educational climate of the U.S. in the 50's. Many countries which have more uniform educational systems have long relied heavily on entrance examinations at various stages of the educational ladder. However, in the U.S., there has always been a great disparity of educational quality and curriculum in school systems in different settings -- urban vs. rural, inner city vs. suburban, private vs. public vs. church-related, etc. Nevertheless, there was a widespread belief that all children with *ability* should have the opportunity for a college education. In addition, there was recognition that some students with poor high school grades could do well in college. Therefore, great emphasis was placed on so-called *aptitude* tests (most notably the Scholastic Aptitude Test) in the hope and belief that they could identify those students who deserved the opportunity of a college education despite weak background or poor past performance. In other words, the SAT (with A = Aptitude rather than Achievement) was proposed as a mechanism for implementing what would today be called *affirmative action*. In addition to educationally disadvantaged students, another group was often targeted, namely, students whose poor grades were attributed to boredom or behavior problems. Because such students were usually male, there is a sense in which the SAT began as part of an affirmative action program for *white males*.

That high school grades could be an unreliable criterion for comparing students from different schools is understandable. However, I am suspicious of those who continue to dismiss reports that high school girls often achieve higher grades than boys by dismissing the girls' achievements as the result of being better behaved or more likely to do homework. My own experience has been that, in general, those students who do homework perform better on exams so that the precise formula I use to weight homework and exam scores has little effect on final grades. Assessment is a complex subject. However, despite the deficiencies of the SAT, there is a legitimate role for standardized tests as part of an evaluation process.

The city of Boston has two prestigious high schools (Boston Latin and Boston Latin Academy, formerly Boys' and Girls' Latin respectively) which use entrance examinations as part of their admissions criteria. Their affirmative action policies have come under scrutiny as the result of a highly publicized lawsuit filed by the father of a white girl who was not admitted to Boston Latin despite scoring slightly above the cutoff, allegedly to accommodate a 30% minority quota. Now this student had attended a private elementary school and,

despite being turned down by her first choice, was admitted to Boston Latin Academy, i.e. she was *not* denied the opportunity for a quality education. If, as in the MIT example, the additional minority students who were admitted performed well, I would see no great injustice here. However, the attrition rate of minority students at Boston Latin is extremely high.

Does this mean their admission policy should be changed? I'm not sure. Clearly, it makes no sense to deny one group admission unless most of the disadvantaged group succeeds. However, in the case of Boston Latin, it is not clear to what extent the failure of minority students is a consequence of a flawed admissions policy or failure of the institution to subsequently give them the support and encouragement needed. If special programs could help these educationally disadvantaged students succeed, so that by senior year they could graduate with the same standards as the others, it would be worth the small price of requiring a borderline student with privileged background to attend her second choice school. Indeed, some would argue that using past educational opportunity, rather than race or ethnicity, might be a fairer way to identify the affirmative action subgroup in this case.

There are also those who would argue that it is unfair to give some students more help after admission. I wonder about the priorities of those who tolerate treating students inequitably for 8 or 12 years as long as they are in different schools, but become outraged at attempts to subsequently accommodate them for one or two years in the same school. Consider an example in the culturally more important world of sports. Suppose that a youth soccer league included two teams, an extremely good one composed of children who had grown up playing soccer in another country and a group raised in the U.S. who had never played soccer before. Now suppose that a dedicated coach worked with the U.S. group which practiced long and enthusiastically so that, at the end of the season, the U.S. team actually beat the more experienced foreigners. Would we say that their victory did not count because they had extra coaching? Or because they practiced more (e.g., did their homework)? Or would we praise the coach and team members for their hard work and accomplishment?

In recent years, some people have advocated new pedagogies based upon "women's ways of knowing". Although I do not believe that women (as a group) have different learning styles, some of these pedagogical innovations (especially those based upon increased student participation) seem to be effective for many students, both male and female. However, I have also heard reservations expressed about the legitimacy of using non-traditional pedagogy. Once again, an athletic analogy may be insightful. Suppose that a new coaching technique or training regime turned out to be very effective with female athletes. Would the response be to discount the women's victories or to try the new approach with male athletes as well? Educational standards should be based upon the outcome of the learning process, not artificial measuring tools or conformity to tradition.

III. Mathematics Faculty

Robion Kirby claims (Nov.-Dec. 95 AWM Newsletter) that "... there is, *in print*, nothing remotely close to evidence or argument that women are discriminated against in the math community" (emphasis added). I'm not sure what standard Kirby is applying here --

mathematical proof? guilt beyond reasonable doubt? preponderance of evidence? a videotape of a meeting in which someone says, "we won't hire any women"? Two years ago I wrote an article entitled "Time for Advancement" (TFA) which (after being rejected by the *AMS Notices*) appeared (i.e., it is *in print*) in the Dec. 94 *MAA Focus*. The evidence there convinced many people, if not Kirby, that problems exist. Tables 1-3 repeat and update some of that information. (All the information in these tables is computed from data that appeared in the AMS-IMS-MAA Data Survey reports published in the *AMS Notices*.)

Discussion of the presence or absence of women at top institutions often becomes a debate on whether or not a particular woman is good enough for department X. Therefore, I feel strongly that it is more productive to focus on the many group II and III departments who have no women, one woman, no tenured women, etc. etc. even though they can not reasonably claim there are none good enough. [Here, and in the tables, I use the AMS classification which breaks doctoral mathematics departments into groups I (top 39, based on the 1982 NRC survey), II (next 43), and III; groups IV and V designate departments of statistics and applied mathematics respectively, RI denotes a research institute, and M and B denote departments whose highest degree is a master's or bachelor's.] Table 1. shows that there is little difference in the percentages of women among tenured faculty at groups I, II, and III, but that the proportion more than doubles as one moves to M departments and jumps again at the B level.

Contrary to what is widely believed, this disparity in the representation of women faculty is not simply an historical artifact. For example, women who received PhD's as recently as 1994 or 1995 were almost twice as likely a men to obtain their first position in a bachelor's departments. (18% of women vs. 10% of men in 1994 and 16% of women vs. 9% of men in 1995.) With the high percentage of women receiving PhD's in the 1980's, is it really credible that so few group II or III department managed to hire and/or tenure women faculty? Could more have been hired without lowering standards? The data in table II suggest that for the past 10 years at least 15% of the pool was female. But even if it was only 12% and a department made 8 hires in that 10-year period, the probability of *not* hiring a women would be only 36%. Now, for a given department this is not *prima facie* evidence of blatant discrimination. But it does make me extremely skeptical about the frequent claim that departments which have assiduously tried recruit women were unable to do so.

It is sometimes claimed that the disparity in hiring is a consequence of the fact that women are significantly more likely to get degrees in statistics and slightly more likely to receive PhD's from group II or III departments than group I. However, in the 4-year period 1988-91 (the first for which for which this data is available) women did not even get their first position *at* doctoral institutions (i.e. I-III+RI) at the rate at which they received them *from* group I departments. From 1992-95 women do seem to have achieved parity for first positions at doctoral departments. However, this was accompanied by assertions that women were receiving preferential treatment and a disproportionate share of the jobs, although the data do not support such claims. It seems worth repeating a statement I made in TFA, noting that the data now available for 1994 and 95 seem to support my parenthetical remark about "statistical fluctuations".

In 1993, several things occurred simultaneously -- the percent of women receiving PhD's from group I departments jumped from a previous high of 17% to 22%; the distribution of women receiving PhD's from groups I, II, and III was more uniform; groups II and III began to hire a few women from groups II and III as well as I, IV and V; women were hired by doctoral institutions at a rate slightly (very slightly) higher than that at which they received PhD's; and jobs were becoming increasingly scarce. The result was widespread claims that "women are getting all the jobs". When, for perhaps the first time in history, women finally began to get their fair share (any excess being well within the limits of statistical fluctuations), some men began to cry "foul".

After the article appeared, I received a lengthy e-mail message from a male mathematician who, after quoting the last sentence of this statement, said

Correct me if I am wrong, but I sense a feeling of, "So now you guys feel what we women have had to put up with for so long. I am not impressed with your complaint since I have seen a longer history of injustice."

I don't want to justify or ignore the injustice you have probably experienced, I only want to address the best way to correct it. Suppose a department store has a long history of overcharging women customers since that is what the male management wanted to do. But finally women and fair minded men rise to positions of power. Should they now overcharge men customers for a while, in order to balance the scales? While that may create better balance among victims, it does not restore the earlier female victims. It only creates more new victims of another type. Far better to strive for fair practices for all customers.

His analogy demonstrates the depth of his misunderstanding in interpreting "fair share" as "more than our share". A better analogy would be that the men, who as a result of price equalization now paid more than previously, began to complain about the "unfair" higher prices. An analogy that describes the current job situation would be that overall economic conditions changed so that *both* men and women now payed the *same* high prices that only women paid previously.

The data on first hires suggests that most of the substantial pool of women from the 80's did not not receive a first position conducive to research development. This may be why so few of them are now showing up among the tenured doctoral faculty. For example, Susan Landau (Mar.-Apr. 95 AWM Newsletter) tracked MIT PhD's from the period 1980-84. She found only two of fourteen women (i.e. 1/7) tenured at doctoral institutions (one in Group I and one in group III) although almost half the men had achieved this status, and one could hardly claim that women who received PhD's from MIT were not of high calibre.

Suppose we accept as a given that women who received PhD's before 1991 were discriminated against in the sense of not receiving equal treatment in their first position. Should we now give them preferential treatment even if it means lower standards? I feel that giving capable women who are not at top institutions research opportunities, such as an invitation to visit to one of the math research institutes or a targeted visiting professorship, is fully justified. However, hiring tenure-track faculty is another matter. What is needed is not differential standards, but a careful look at how we evaluate people and a recognition that there are many good women to be found struggling to do research at the less prestigious departments. Too often, departments confine their searches to the top institutions and react to promising candidates from elsewhere with " ... if she's really that good why is she at

Southwest Mediocre State University". Changing that attitude to one of "if she can do that quality work at Mediocre State, just think what she might achieve here at Pompous Research University" would greatly enlarge the pool without changing genuine standards of faculty quality. There is a high correlation between faculty productivity and institutional quality. What is unclear is whether this is cause or effect. There may be a few Ramanujan-like geniuses who would do good work anywhere. But there is a much larger pool of promising people whose career development will depend upon the type of opportunities they receive.

Kirby has suggested, using a greatly oversimplified model, that implementation of affirmative action would result in distributing women so that most were among the weakest members of their departments. I disagree. The uncertainty in our ability to evaluate people and predict their future development is simply too great. Moreover, the type of department into which junior people are hired and the way they are treated by senior faculty can affect whether they flourish or stagnate.

I do not believe that we should hire women who are "less qualified" than the men in a department. But I think we need to examine what that means and just how we decide that "A" is better than "B". Do we count publications? Citations? Amount of research grants? Number of invitations to speak? There are administrators who have proposed (and even implemented) a point system for evaluating faculty (e.g., 10 points for publishing in a prestigious journal, 8 points for a lower-ranked refereed journal, 5 points for a conference proceeding, 2 points for an invited talk, etc.) Such a system would give a mechanism for producing a definitive ranking, but would it be meaningful? Shouldn't we consider the quality of a paper and significance of the results? An evaluation process that attempts to assess quality as well as quantity is necessarily subjective. The challenge is to be subjective without being unfairly, or even inadvertently, biased.

This may be particularly problematic in the group II and III departments where the mathematicians being evaluated are good, but not great. Candidates (whether for a new position or for promotion) are not going to be superstars, and detractors will always be able to find something to criticize. Colleagues must then assess, not just whether the criticism is legitimate, but whether the flaw is of sufficient importance to affect the recommendation and whether scrutiny of other candidates would also reveal deficiencies. This may not be easy and retrospective reflection on the cases when marginal candidates were given the benefit of the doubt as compared to those treated more harshly may be insightful and reveal hidden patterns of discrimination that are not evident in individual cases. The right to base decisions on subjective academic judgments is an important and valuable one which carries with it heavy responsibilities.

IV. Conclusion

The man who sent me the message quoted above went on to describe his opposition to the MAA's prize for "outstanding performance by a woman on the Putnam Exam". Now this isn't an important issue to me. Whether or not I favored such a prize, I would respect someone who could not, as a matter of principle, vote for it, especially if that person had a record of active support of equitable treatment for all. But I am suspicious of someone who suddenly "gets religion" and decides to dig in his heels and take a stand for equity on the basis

of something as minor as the Putnam prize. Although he misinterpreted my statement above, his instincts weren't totally off the mark. In years past, I encountered instances of more serious discrimination than we would tolerate today. On those rare occasions when I would complain to a male colleague, the response was usually to admit that it was unfair while advising me to overlook it. In essence, I felt my colleagues wanted to make molehills out of mountains. Now, some of them seem to be making mountains out of molehills like the Putnam prize.

The danger of affirmative action is *not* that white males will suffer disproportionate injustice. Indeed, I have seen no convincing evidence of that. Most such claims are based upon anecdotes of outrageous incidents. My reaction to such anecdotes was described in a personal sidebar accompanying TFA. I strongly suspect that most tales of reverse discrimination will, at worst, turn out to be differences of opinion about the relative merits of individuals.

The real problem with affirmative action is that it is intended only to provide a temporary, if unsatisfactory, remedy to deep problems without curing the underlying cause. We must be sure that the existence of affirmative action does not deter us from addressing the serious problems which make it necessary and must strive to replace it by fair and equitable treatment for all. However, this will require significant changes in both the educational process and societal attitudes. The abandonment of affirmative action because it is no longer needed should be the culmination of that process; not the first step on the long road to true equity.

Table 1
% Women among Tenured Doctoral Faculty

	I	II	III	I-III	IV	V	M	B
% F 1991	4	5	5.5	5	7	3	11	14
% F 1992	4	5	5.5	5	6	6	12	15
% F 1993	5	6	6.5	6	6	5	11	15
% F 1994	4	6	7.6	6	7	5	13	15
# of Depts	39	43	88	170			≈250	≈1000
Approx # Faculty	1450	1300	1700		700	250	3000	4000

Table 2.
Doctoral Degrees in Math and Statistics in USA
% of Women among those receiving degrees FROM

Year	Math Depts			I-III	Stat		US Cit	ALL
	I	II	III		IV	V		
81-90	15	18	21	17	N.A.	N.A.	25	20
F 1991	16	21	21	18	29	21	24	20
F 1992	17	20	29	20	27	21	24	21
F 1993	22	22	24	22	28	26	28	24
F 1994	18	25	22	21	33	13	26	22
F 1995	19	28	23	22	24	26	25	23
88-91*	15-16	19-20	21	17-18	N.A.	N.A.		
92-95	19	24	24	21	28	22		

*For 1981-90, less detailed data is available. Because the % of women increased steadily in this period, it seems likely that the actual % for 88-91 is at the higher end of the above estimates.

Table 3
First Position of New Doctorates by Type of Department
% of Women among those receiving first position AT

	I	II	III	RI	I-III+RI	M	B
1988	13	26	7.5	17	15	18	20
1989	8	21	13	12	12	24	35
1990	12	16	19	9	14	19	18
1991	13	24	17	15	17	21	30
1992	21	17.5	12	16	18	18	30
1993	26	25	26	33	27	24	25
1994	14	17	32	24	21	34	33
1995	20	21	31	18	20	30	34
88-91	11	22	15	13	14	21	26
91-95	21	21	26	22	22	26	31