Controversy about Women in Science: A Sober Look

Comments of Panelist William Menke

Heyman Center, Columbia Univerity, February 9, 2007

I would like to speak to you informally about some of my experiences as Chair of Columbia University's Department of Earth and Environmental Sciences, a term that I finished in 2004. I emphasize that everything I'll say consists of opinions and anecdotes, and thus differs fundamentally from the systematic scholarship that we have heard during the formal presentations.

I would also add that although I am an active proponent of the recruiting of women faculty members, my own past is checkered. I do not consider myself to have been especially successful in this endeavor.

The reason that there are so few women earth science faculty is that we are making women earth scientists very few faculty-level job offers. In earth science, the gender differential is being driven primarily by our pattern of hiring, and not by the gender diversity of the pool of potential faculty members. This is not to say that the pool is a fifty-fifty mix of men and women. It's not; even at the most junior levels it's only about one third women. But our rate of hiring women is substantially less than that.

I believe that the issue of schema, as described so eloquently by Prof. Virginia Valian in her presentation today, is fundamental. So I would like to describe some of my observations that relate to how the schema of our mostly-male earth science faculty have influenced our hiring.

Hiring, as you know, requires agreement among the members of a department. A consensus in favor of a particular candidate must be built, and a vote for that candidate must pass. The political dynamics of this process cannot be ignored, because in the end what counts are votes. If the votes are not there, then a hire cannot be done, regardless of the brilliance of the candidate as perceived by the minority. The process of consensus-building is therefore crucial to any hiring, but especially to the hiring of women.

Consensus needs to start at department policy level. At any given time, there will be some sub-disciplines that are fairly highly populated by women scientists and others that have almost none. The same is true for levels of seniority. The pool of women candidates is usually larger at the Assistant

Professor level than at the Full Professor level. If a department's priority is focused at hiring a Full Professor in a sub-discipline that has almost no women, I guarantee to you that no woman will be hired. The department's priorities are not in and of themselves exclusionary, but they have the effect of excluding women, nonetheless.

Many of the searches in my department are focused on extremely narrow sub-disciplines. I believe this to be a mechanism for conflict-avoidance within our faculty. We cover many fields and we fiercely defend the intellectual importance of our own sub-disciplines. So we have reached a compromise: you get you turn at a hire, and then we get ours. But once again, in an era where the pool of women is small, the chance that a top woman candidate is available in just that sub-discipline at just that right time is small.

A successful candidate requires a strong advocate within the department. Finding such an advocate is often problematical for women candidates in a heavily male department. One approach is for the Department Chair to specifically ask a senior member of the department to be that advocate. In may cases, a senior man might have a high opinion of the woman, but be waiting on the sidelines out of a sense of caution, a fear of being perceived by colleagues as foolish. The validation of the candidate as worthy of attention by the department leadership may be all that it takes.

People don't like to back a candidate who they think might lose - for instance, lose out to some other candidate during the deliberations of a search committee. Any candidate perceived as having a weakness, or of being in some sense risky, is going to have a hard time rising to the top. It doesn't matter that the weakness is only a perceived weakness, that is, one created by bias. This problem isn't limited to women candidates, but in my experience it impacts women candidates disproportionately, because their dossiers are often perceived as containing flaws, such as weak letters of recommendation.

Bias in letters of recommendation is in my opinion the single biggest impediment to the hiring of women. To illustrate, I'd like to read for you two sets of letters, drawn from a recent postdoctoral competition in which there were about one hundred applicants. Alex and Drew are two candidates, one a man and one a woman, who made the top-ten cut. (That's not their real names, but rather two names picked from a gender-neutral list that I found

on the web). Here are the most superlative sentences for Alex found in each of three letters of recommendation (sanitized a little, to preserve anonymity):

"I have personally never met any young ocean or earth scientist that could match Alex's insight".
"The quality of Alex's manuscript was so high that it was accepted with only minor, editorial revisions".
"Beyond doubt Alex belongs to the top 5% postdoctoral researchers in my field".

And here are Drew's:

"I would have to place Drew at or near the top of the list".
" ... Drew never loses sight of the larger scientific goals".
"Drew is quite smart and grasps concepts effortlessly".

I see from your reaction to Drew's letters that you have already guessed that Drew is the woman. Phrases like "I have to place", rather than "I place" and "quite smart", rather than "very smart" are dead giveaways. Still, keep in mind that Drew was in the top 10% of candidates, and that her letters contained absolutely no negatives. I wonder whether her letter-writers intended their letters to sound as qualified as they do? Drew was highly-rated, but even if you were an advocate for Drew on a search committee (as, in fact, I was), you would have a hard time arguing that her dossier was superior to Alex's, especially if you had only one position to offer and if Alex had a strong advocate on the search committee, too (which, in fact, he did).

I believe that Columbia University should systematically seek to reduce the bias in letters of evaluation. I'm not sure how this can be done; it's a subject that will require scholarship. But we have control over both the people we ask and the way that we ask them. So perhaps we can succeed in this goal.

Another problem that I have encountered is that women's scholarship is often perceived as "more risky" or "less mainstream" than men's. It's another form of perceived weakness that can hurt a woman's chances of being hired. I don't know if the perception of a woman's scholarship being different is just that, a perception caused by some subtle bias on the part of men, or whether there really is some difference in emphasis in men's and women's research programs. But to illustrate how damaging this perception

can be, I want to read you something.

A few years ago, we interviewed a woman candidate for an Assistant Professorship in my department. I attended her talk, and was very impressed with her. I hoped other members of my department would be, too. The next day, all of us faculty received this letter, written by a very prestigious fellow faculty member (an older white male). Again, I've sanitized it to retain anonymity:

"I was extremely impressed with Carol. She's clearly brilliant, articulate and excited about the science. For sure, she would make an excellent faculty member. However, I'm disappointed by the direction she's been taking. She makes a strong case that important aspects of atmospheric chemistry are related to the presence of bacteria in the air. I buy this. The problem is that I consider the chances of harnessing this information in a useful way to be very, very small. I suspect that rather than learning important things about the atmosphere, she will become embroiled in the intricacies of bacterial biochemistry. Is this an area into which the Department should plunge? I don't think so. Rather we should seek to maintain our excellence in inorganic atmospheric chemistry".

This letter effectively ended our consideration of this candidate, especially since its writer was himself an expert in Carol's field. Perhaps if some other prestigious and equally expert faculty member had jumped in the fray and said that he thought that Carol's work would fundamentally revolutionize the field, the case could have been further pursued. None did. I, myself, am a seismologist with no credibility in Carol's area of expertise, so I could not contribute to this debate.

Young women competing for Assistant Professorships encounter other hurdles as well. Sometimes, a young woman is not perceived as being intellectually above the department's cadre of postdocs. This is a special problem for my department, because of our association with the Lamont-Doherty Earth Observatory, a huge research institute with many excellent postdocs and research scientists. Of course, if a woman candidate were clearly worse than one of our postdocs, I could hardly recommend that we hire her. But in many cases I believe that we are letting our familiarity with their work (which we naturally admire) substitute for a rigorous evaluation. Keep in mind that these postdocs are not typically themselves applicants for the position (they might be in a completely different field), so we are only

imagining what sort of letters that they might get. Furthermore, in some cases we are comparing people with rather different levels of experience. In a big research institute, if you identify someone with two years of experience who looks excellent, you can always find someone with four who looks even better, and a person with six who looks even better than the person with four. And so forth. Unless you consciously make the choice not to allow this sort of escalation of expectations, you will wind up hiring Assistant Professors who are twenty years post-PhD! (And given the anxiety cause by falling grant proposal funding rates, you'd probably have takers).

Women also encounter problems at the Full Professor level. As I think that all of you who have served on search committees know, senior men and women rarely apply for senior faculty positions on their own. Instead, they must be enticed to apply. One enticement is for the Department Chair to call them and say, "You are our top choice. Apply and we will almost certainly offer you the job". Another enticement is access to equipment, which is particularly important among laboratory scientists. The Department Chair call them and says, "We are hoping that you would come here and set up a big, new mass spectrometry lab, and are willing to put up the million dollars that you will need to outfit it". The problem is that building a consensus in a department that justifies saying this is much more difficult for women than for men. We want to interview the candidate and see glowing letters of evaluation, first, before committing ourselves. Thus, there is a chicken and egg problem. If we got the woman to apply, we could go through a process that might lead to our department developing full confidence that she was a great candidate. But we need to have the confidence before we can get her to apply. Fellowship opportunities that bring senior women to a department for research collaboration, such as the one sponsored by Columbia's Advance Program, can work to build up confidence that can later be used during a recruitment.

I would mention that my experience is that women candidates are scrutinized much more thoroughly than men. I'm just amazed by the number of people who come out of the woodwork with something critical to say about a woman candidate for an Assistant Professorship (or whatever). Some of these people would take absolutely no notice of our hiring a man. The specific nature of the criticism that I've encountered varies wildly. I have seen women criticized, like Carol above, for having research programs that are too risky; or for publishing too few papers; or too few long-format papers (even when their short-format papers were in prestigious journals like

Nature and Science); or publishing too many papers that have their advisors as second-authors (and who then can tell whether the woman really deserved the credit); or for decade-ago sexual indiscretions; or for being too assertive; or for not being a natural leader; or for having written a poorly thought-out grant proposal (even though it was funded); etc. A key characteristic of this criticism is that it has some legitimacy; the candidate can plausibly be criticized on these grounds. Advocates for these women must focus on the whole picture, the overall excellence of the candidate, and refuse to be drawn into a dialog that is limited only to perceived flaws. Advocates need to make the case that the candidate has no more flaws, and as many or more strengths, than strong and successful hires of the past.

Finally, I would note that that there are many times during the career of a scientist where he or she is asked by a colleague to list up-and-coming junior scientists or especially-worthy senior scientists who might be recruited to a job at Columbia or some other prestigious institution. Very often these questions are asked off-the-cuff, giving very little time for deliberation. I have noticed that very commonly men scientists will rattle off a list that contains no women. I think that the lack of deliberation is the problem. We men tend to first think of people who are most like ourselves. Each of us A-types is, of course, our own archetype of what successful scientists are like. It's the schema thing, again. I would therefore urge you all to prepare in advance for such questions, to go so far as to research and memorize such a list, and to include on the list women whose work you admire. You should even consider putting them at the head of the list.

It has been an honor for me to here today. I thank you all for your attention.