Shaping the Future for Women in Science

Bright and early one morning in the mid-1960s, the telephone rang in my laboratory; it was the executive secretary (as Scientific Review Administrators were then known) of an NIH study section. Would I become a member of a biochemistry study section? I chuckled, and said, "no thank you, you haven't wanted me or thought me qualified before," and as far as I knew nothing much had changed since the previous afternoon except that President Lyndon Johnson had decreed that all Federal Government advisory committees would, henceforth, have a substantial number of female members. I'd been getting along quite well without all that additional work and might just as well stick to the laboratory. But in the end, my ego or the promise of influence or the argument that my service would be good for female scientists got to me. I succumbed and did agree to be the token on various committees, though not a study section. I accomplished some interesting and important work for science — but also wasted many hours.

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Many female colleagues from my generation can tell similar stories. Often, we served on even more committees and boards than our male colleagues because, given our small numbers and the mandated requirements for representation by women, we were needed, or so it was said. Some of us served on too many such bodies, giving up a great deal of time that could have been spent in the laboratory, the clinic, with our families, or walking on a beach.

In 1990, 25 years after President Johnson's directive, I was completing a term on an influential interdisciplinary committee of the National Academy of Sciences. Members were discussing possible replacements for those about to rotate off the group. Physicists suggested physicists, biochemists suggested biochemists, and so forth. They turned to me and said that, with my departure, the committee would be without a female member and would I please offer some ideas for women who might be appointed? I pointed out that people carrying two X chromosomes did not constitute a particular branch of science, and I thought that they would know the women in their own fields better than I would, so why didn't they come up with the names. It was, I said, their responsibility, not mine, to be sure that women were part of the committee.

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Since then, a great deal of progress has been made and the opportunities for women in research are substantially improved. When the *New York Times* Science Times[1] featured a story about telomeres, all the major contributors credited were women, starting with Barbara McClintock's studies on chromosome stability right through to the work of Elizabeth Blackburn and Carol Greider.

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Yet, we have to face up to the fact that affirmative action, no matter how laudable it is, has worked at a snail's pace. Many superb, accomplished female scientists have been trained in the last 25 years, but so few have reached the professorial ranks, and so

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many are still being discouraged. A 1992 *Science*[2] magazine issue on women in science described the situation as so dismal that even chemistry was characterized as a field that was middling on opportunities for women, somewhere between neurobiology, seen as pretty good, and mathematics, which was the pits. Yet, at how many chemistry departments do women abound and feel as though they belong?

We can wait around for a while longer in the hope that progress will slowly continue. In the meanwhile, a lot of money that could be used for good science will be spent on studies that try to determine why affirmative action has not worked more rapidly, and why young female scientists disappear somewhere between their Ph.D. or M.D. degrees and the assistant professor positions. Ultimately, all the "old school" men who still call us "honey" will age sufficiently to retire and maybe, just maybe, the younger men will be different.

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But it seems to me that waiting around is insufficient. Current strategies have an important flaw. No matter how hard we may work to have them succeed, they depend ultimately on other people, mainly men, changing their attitudes and expectations. At a Gordon Conference organized by Princeton biochemist Shirley Tilghman in 1988, fully 33% of speakers were women; two years later, at another conference on the same subject organized by men, there were two female speakers. The contrast is powerful. Yet, when we speak of recruitment, retention, and reentry, we mean getting the current research institution hierarchies to be responsible for the advancement of women; the workplace climate is set by the current faculties, overwhelmingly men.

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We need a strategy that depends on women. One that assumes we will expend our energies on improving the opportunity for women to succeed in biomedical careers, not on complaining about the failure of others to do so. At their best, our networks help all of us cope with problems and disappointments. But how will effective connections be made between the best of networks and the places where decisions are being made? Networks can provide sympathetic ears, but they cannot easily provide a laboratory of one's own. And who really wants to be part of the "old boys' network"?

We have to stop expecting that our male colleagues will change. The fact is, many of them are, understandably and appropriately, much more concerned about their own research than about the status of women. We need to face the reality of our colleagues' ambitions, recognize our own, and acknowledge that ours will not change theirs. Indeed, ambition and competition are mostly constructive contributors to good science. As Wallace Stegner puts it in his novel *Crossing to Safety*,[3] "unconsidered, merely indulged, ambition becomes a vice; it can turn a man into a machine that knows nothing but how to run. Considered, it can be something else — pathway to the stars, maybe." We cannot expect that our male colleagues will become more collegial, less ambitious, or less competitive to meet our needs, and it is probably not desirable from the point of view of science.

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is, not as it will be. Our energies should go into making sure that the future gets shaped to foster women's contributions to science. A new strategy, therefore, must have three essential elements. First, we must strive to do the best science that we can: the most original, the most rigorous, the most interesting. Second, we must depend on ourselves and not on others to enable us to contribute to science and, thus, to human welfare. Third, we must make certain that we have a substantial say in the shape of the future. To achieve this, we can gather some clues from our male colleagues who have, in the past 40 years, built an extraordinarily successful research enterprise in our country. They, like the scientists concerned with telomeres, have chosen avenues of inquiry that opened new fields and expanded our very sense of what the questions are. We should emulate that but with our own agenda. In so doing we will move from the periphery, from being supplicants for fair treatment, to being the shapers of the future.

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Consider the phenomenon of menopause. What fundamental aspects of living things will be revealed when we understand this profound change? What will the implications be for understanding aging in general? Consider contraception. Adolescents in the United States become sexually active at about the same age and rate as teens in Canada and Sweden, but the U.S. leads the industrialized world in teen pregnancy. Clearly, more choices among effective contraceptives are desperately needed. Work in this area is likely to produce a substantial, fundamental understanding of the processes of ovulation, oocyte and sperm maturation, and fertilization. A successful effort might also yield innovative routes out of a political issue that is tearing our country apart: access to abortion. Our male colleagues have not insisted that contraception be on the active research agenda, but we should be strongly motivated to guarantee that it is.

This area of research is important for yet another reason: the increasing world-wide concern for the environment. We all decry the extinction of uncounted, even unknown species. We need to face the fact that the unchecked expansion of our own species is a root cause of the loss of biological diversity.

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The agenda I am proposing will not be easy to achieve. In our country, there are powerful political forces that would prefer to forget that the ramifications of sex are central to all our lives. At least in part, such views reflect a deep denial of women and women's legitimate rights and interests. Menopause embarrasses people; contraception not only embarrasses but also gravely troubles many. Indeed, there are indications that if the antiabortion forces succeed in turning back the clock by overturning Roe v. Wade, they will then actively pursue an anticontraception agenda. But solid biomedical research in these areas will increasingly legitimize these fields and will make it more and more difficult to ignore the associated societal and cultural realities.

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A sound scientific agenda, based on vital issues of concern to women, is one way to promote the role and status of female scientists. We must also ensure a healthy presence of women in Congress. Just as our male leaders have cultivated the interest of senators and representatives in biomedical research to extraordinarily good effect, female scientists, too, can cultivate the interest of women in Congress to assure the promotion of a women's health agenda. The availability of grants

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in research of interest to women and the excellent science they can support will not only contribute to the ability of women to capture faculty positions, but they also will strengthen bargaining positions during recruitment negotiations. Carl Djerassi suggested in a letter to *Science*[4] that extra help for child care should be considered comparable to the mortgage support that is used as a recruitment device in academic institutions. In families where one spouse's

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benefits provide for a family's health insurance, the other spouse could be offered child-care support as an employment benefit. There are many possibilities to think about. The important thing is to seize the opportunities that are being offered and to use them to define new scientific agendas that have the potential for major contributions to knowledge and alleviate societal problems. From this can come a vitality that cannot be ignored and that will place women at the center of the research enterprise.

—Maxine Singer for the Women in Cell Biology Committee

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