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Oct. 2

From Summers to Sommers

Lest anyone think the academic world has settled into a consensus on the status of women in the sciences during the two years since a very public controversy thrust the issue onto the national stage, Christina Hoff Sommers all but ensured vigorous debate on Monday.

In picking the lineup for a conference called, appropriately enough, "Women and Science," the philosophy professor, ethicist and critic of modern feminism managed to highlight just what differences persist among mainstream, respected researchers — and expose complex (and occasionally contentious) debates over nature versus nurture, the role of culture versus biology, the persistence of stereotypes and whether innate differences between the sexes really matter.

The panelists' work spans the disciplines, from social psychology to women's studies, law to developmental psychopathology, evolutionary approaches to neurology. Their presentations, divided between two panels hosted by the American Enterprise Institute, where Sommers is a resident scholar, summarized the current state of research for the audience of scientists and writers (a majority of whom were women) whose sometimes pointed questions also provoked discussion from a number of different angles.

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Organizers made several references to a 2006 National Academy of Sciences report, *Beyond Bias and Barriers: Fulfilling the Potential of Women in Academic Science and Engineering*, which concluded that "[i]t is not lack of talent, but unintentional biases and outmoded institutional structures that are hindering the access and advancement of women. Neither our academic institutions nor our nation can afford such underuse of precious human capital in science and engineering." Its authors urged immediate action, including Title IX compliance reviews and federal initiatives to combat unconscious gender bias.

Partially in response to that report, Sommers told the conference, the professor at Clark University decided to convene the "best researchers" to approach the questions it raised. Most, but not all, ultimately shared her skepticism of the report's unequivocal presentation of bias as a predominant factor affecting women's success as academics and researchers in highly quantitative sciences. Joshua Aronson, a professor of applied psychology at New York University, said from the audience that he felt uncomfortable about the way his own research had been used in the academy's report: "It's too confident."

"It just seems it's way ahead of the science," Sommers concluded.

AEI, a Washington think tank associated with the neoconservative movement, is no stranger to debates over innate ability. Charles Murray, who spoke in the afternoon and helped plan the conference, became the target of intense controversy in 1994 after co-authoring *The Bell Curve*, which argued that innate intelligence is correlated with socioeconomic class. The chapter receiving the most attention suggested that persistent racial gaps in IQ tests could partially be explained by genetic differences.

When a speech by Lawrence Summers in 2005 about the role of women in science ignited a firestorm, Murray staked out his position in a *Commentary* article that drew parallels between the two controversies. While Summers had suggested that innate

gender differences in quantitative aptitude at the far extreme might be one of several factors explaining women's underrepresentation in the sciences, Murray drew on research to assert the claim unequivocally.

During the first panel session Monday, two (female) researchers emphasized the role of institutions and bias in hindering women's progress in the sciences and showcased studies that did not find overall cognitive gaps between men and women; the other two (male) panelists summarized neurological and evolutionary evidence for differences in male and female brain structures. If some of the studies seemed to contradict each other, perhaps that, too, represented the current state of knowledge.

"We know almost nothing about how the brain works. We know almost nothing about sex differences in cognition ... even though there are some," said Richard Haier, a professor in residence at the University of California at Irvine's School of Medicine who specializes in pediatric neurology.

Elizabeth Spelke, the Marshall L. Berkman Professor of Psychology at Harvard University and co-director of the Mind, Brain and Behavior Initiative there, defended the National Academies report and delivered a broad overview of the "three fundamental systems at the core of human math and science reasoning" — comprehending objects, counting numbers and understanding geometry — that "evolved to serve other functions and we harness them for new purposes."

"Do boys outperform girls at tasks tapping any of the core systems?" she posited, and after a review of the research, she concluded that both men and women are equally endowed with cognitive abilities. In tests of rotation tasks, men did perform better on average — a finding cited by many scholars who emphasize cognitive differences between the sexes — but Spelke noted that the gap disappears when taken in the context of 40 geometric tests.

She didn't deny the existence of sex differences per se but questioned whether they had any bearing on math and science aptitude. David Geary, a cognitive developmental psychologist at the University of Missouri at Columbia, presented evidence that performance in the rotation task can actually predict SAT math scores, reinforcing theories that innate ability could be a factor in quantitative aptitude. Spelke challenged some of his assertions, noting that people can improve their performance at rotation and other mental tasks through practice and that success in the sciences requires many different mental capacities.

Haier, meanwhile, whimsically predicted the eventual creation of an automated "MRI test" in which high school students would enter a scanning machine, listen to their iPods and emerge with detailed predictions on how well they'd do in every subject. "Is this far-fetched? No," he said — although winning grant money would presumably be a separate question.

Pointed Questions

It wasn't until after the keynote address, delivered by the autism expert Simon Baron-Cohen of the University of Cambridge, that members of the audience on all sides of the debate began to draw lines that separated them. Baron-Cohen surveyed evidence that autism actually represents, in extreme form, the patterns of male intelligence, drawing on studies of amniotic fluid and infant attention spans that suggest a correlation between testosterone levels during pregnancy and certain patterns of brain development. The findings, while esoteric at first glance, point to connections between gender (male hormones) and mental capacities (in empathy and types of intelligence) that persist over time.

Then, during the second panel, Aronson was paired with Amy Wax, an M.D. and law professor at the University of Pennsylvania who was openly skeptical about his research on the effects of "stereotype threat" on student achievement.

"What you came in here thinking is probably what you still think," Aronson told the audience, citing the "mixed bag" of evidence that served as a kind of "Rorschach test" for everyone present. But beyond the evidence for and against possible biological factors in cognitive differences, he offered a potential explanation for group gaps in intelligence tests. Aronson and Claude Steele first discovered evidence for stereotype threat in a much-cited experiment in the mid-1990s, suggesting that for some students, awareness of negative stereotypes (such as assumptions about women's aptitude in math or black students' intelligence) can affect their performance on cognitive tasks.

But Wax pointedly described Aronson's research as "vastly exaggerated," a victim of "overclaim syndrome." She wondered aloud whether the effects of stereotype threat could be shown to outweigh the gender gap in performance.

The theory is "appealing because it doesn't posit any ... differences between the sexes", she said, and "it also promises something of a quick fix": measures as simple as moving the "race" or "gender" checkboxes to the end of an exam rather than the beginning, to avoid priming students with unconscious awareness of negative stereotypes.

Wax also said that many of the experiments cited as proof of stereotype threat were flawed because they were conducted on elite college campuses that used affirmative action to recruit minority students. As a result, she said, some students could have

lower SAT scores than others, a potential additional source of text anxiety. When Wax asserted that a study by Aronson was not controlled for SAT score, Aronson interrupted and said it was, setting the stage for more disputes in the question-and-answer round.

While gender and intelligence are not Wax's specialty, she conceded at the outset, she is a "consumer of social science," and an "educated customer is your most important customer."

Judging from the questions, that was also true of most of the audience.

— Andy Guess

Comments

Summers are always hot

What the academic community can't seem to accept is that there is a lot of mythology in this discussion. The measurements available and the potential for measurement ignore so many variables that it is unlikely that their will ever be a definitive test of gender differences. Historical performance of men will support one myth and minority and women assumptions will support another. Until we all develop an acceptable paradigm for accepting each others myths I doubt there will ever be reconciliation.

Randy, at 4:15 am EDT on October 3, 2007

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The Chronicle of Higher Education
Chronicle Careers

Tuesday, July 24, 2007

On the Origin of Academic Species

By TESS ISAAC

CATALYST
Career advice for scientists

Over the past academic year, we have been reporting from the trenches, sharing our experiences, frustrations, and joys as women early on in our careers in the life sciences.

"We" are the X-Gals, a group of nine women who met regularly in graduate school to shepherd one another through writing and defending our dissertations and who continue to provide mutual support via e-mail messages and intermittent reunions.

This article is the last in our series. Sharing our stories has been both enlightening and cathartic. We hope that our experiences have proved helpful to others on similar career paths as well as to those with the administrative power to remove the obstacles limiting women in the sciences.

In the course of receiving many responses from readers, we were amused to find that our critics could be lumped into distinct groups -- species, if you will. We find those same species well represented in our departments and would like to use this column to describe those archetypes, since they can potentially derail the lives and careers of female scientists. First let us tackle the potentially dangerous ones.

The Dismissive Male

Members of this species read carelessly and misunderstand points, yet are convinced of their positions and eager to point out where we are wrong. The most abundant of this type are a subspecies known as The Clueless. They show no outward bias toward their female colleagues, but refuse to acknowledge the difficulties that women in the academic sciences must overcome.

A case in point: When several of the X-Gals described the collective challenges they faced in academe as mothers of young children, a member of this species wrote in. To Lucille, who described commuting home during her lunch hour to nurse her infant, he wrote, "Why didn't you use a breast pump? Commuting home [to nurse] at lunch was a choice, not a necessity." When we discussed serious problems finding quality day care, he wrote that our experience "with day-care providers that were boozing and beating kids is not the norm."

And when Jana described an adviser who told her to choose between work and family while her newborn struggled with a life-threatening condition, he wrote, "I don't think many male scientists who had an advisee whose child was dying would ask them to choose between that and their research. Again, that is not representative. (Why would you select that person as your adviser?)"

To him we respond:

- The nutritional and emotional benefits of breast-feeding are well known. On a physiological level, using a breast pump is less efficient than nursing and reduces the milk supply. In Lucille's case, she was ultimately forced to supplement with formula.

- Three of the six X-Gals who are mothers have had child-care experiences horrible enough to cause us to question our career paths. In Lucille's case, she discovered the problems by spending time at the child-care center . . . nursing.

- We acknowledge that Jana's experience with her adviser is atypical, but here is the crucial point: His colleagues knew about his actions yet he still went on to get tenure. At that point, the problem ceased to be between adviser and student, and became institutional. When Jana went looking for an adviser, should she have first asked him, "Oh, by the way, are you Voldemort?"

Perhaps that reader meant well, but he exemplifies a type of condescension that can prove fatally discouraging to a nascent career. Ladies, you will face people like him; do not let their criticism sway you.

If you have children, you will undoubtedly question whether you want to pursue the tenure track, with all its demands, while your children are young. That is OK. Several of us have chosen not to apply for, or accept, tenure-track positions. Just be clear that the decision is your own and not induced by naysayers.

The Condemning Wo/man

Members of this species like the status quo. They are incensed that we find "their" system inadequate, and certain that our suggestions are "outrageous." While rarer than the Dismissive Males, their overweening bitterness outweighs their low population density in potential career damage.

A prime example is a correspondent who urged us to "stop publishing articles that highlight the 'unique' problems of women in the academic workplace where they are clearly just poor individual choices, because they only hurt the chances of women who are serious about their career." Her remarks illustrate a pervasive attitude among this species that deviating from the one true path in academic science -- graduate school to postdoc to tenure-track appointment at a major research university -- is tantamount to failure.

This correspondent was writing in response to Meg Murray's column, in which she explained why she had turned down a tenure-track offer for family reasons to continue working as a lecturer and researcher in her adviser's laboratory. The letter writer wrote that her adviser's investment "was wasted on Mrs. Murray, who will never be a useful contact, research partner, or grant collaborator of any importance for him in the future."

The letter writer went on to accuse all of us X-Gals of helping Meg "frame her decision to abort her career as a positive achievement. Sure, you can 'redefine success' to feel better about your choices, but not even daily 'feel-good' messages from your friends will make your failure a 'success' in the sense that most people in her situation would consider it to be: an academic research career in your chosen field of expertise."

Combating that type of bias is one of the main reasons we created the X-Gals, and why we encourage other women to form similar support groups. Academic science needs to re-evaluate nontraditional career paths, to raise the compensation and prestige of those positions. (By the way, since earning her Ph.D., Meg has co-authored several papers with her adviser and brought a significant amount of grant money into his lab.)

Those are the dangerous species. We've encountered others that fall under the category of "generally harmless."

The Me, Too

Members of this group like to say that they have it just as hard as we do, even though they are in the humanities, they are fathers, or whatever. One mother wrote, "We all face the same issues as mothers in academe. Please do not assume other disciplines are any easier."

We agree that it's difficult to be a parent and an academic, no matter the field, but the hard evidence belies the writer's argument: Women have achieved academic parity on the tenure track in the humanities but still lag woefully behind in the sciences. Unless you subscribe to the (unsupported) notion that women are less apt than men, then there must be *something* about the sciences that transforms the obstacles from "challenging" to "insurmountable" for the vast majority of women.

We are not sure which aspects of the scientific culture derail the most women. But we've attempted in our series to present our experiences and a few suggestions for improving the lot of women scientists.

The Generally Disgruntled

Our correspondents in this group have no real comment on our articles but want to gripe about something. We're right there with ya!

We were amazed at the outpouring of emotion we received from people in two other categories:

- **The Desperately Coping:** These folks are struggling to keep their heads (and hearts) above water and want to thank us for opening their eyes to alternative options.

- **The Amen Sisters:** They have had similar experiences to our own.

We heard from women who were afraid to start a family due to career demands in the sciences. (By the way, there will *never* be a perfect time to have a baby.) Other women were struggling with family compromises, finances, and how to solve the two-body problem.

Still others were dealing with political treachery within their departments and the constant exhaustion that stems from being a wife and primary caregiver, while advancing through the academic ranks. Commenting on the personal choices she had made throughout her career, one reader poignantly stated, "I just didn't realize how big the consequences would be."

We X-Gals *are* scientists, regardless of our official titles or the opinions of our critics. Based on current statistics, only three of the nine of us will end up with tenure.

That's not what we planned, but it's OK. We are each navigating a unique path that fulfills us intellectually and emotionally, and we are happy. Sure, we wish academe would acknowledge that brilliant scientists lurk in those nontraditional byways. We wish departments wouldn't immediately dismiss us as viable candidates when hiring, but we're convinced that that attitude hurts academe more than us.

We are the teachers, grant writers, and role models of the next generation of increasingly diverse scientists. Holding us back holds everyone back.

Women pursuing scientific careers must understand the challenges they may face. They must have peers who can provide advice, constructive criticism, encouragement, and sympathy. Academe can be a lonely, hostile territory, but with the right friends, it doesn't need to be.

We strongly encourage women in any stage of their academic careers to form a support group similar to our own. A wonderful aspect of the X-Gals is that we can share our triumphs and fears with colleagues and friends in a noncompetitive environment. We benefit from nine different viewpoints offering advice, congratulations, comfort, and, when necessary, brutal honesty.

We all face different circumstances and choices, and having a sounding board to assess life-changing decisions is both reassuring and empowering.

Forming a support group is as easy as inviting a few friends to lunch or happy hour. The format doesn't have to be formal or structured, but it should suit your needs and those of your peers. Once the dynamic is established, you can open the doors to the next generation. Read and comment on one another's work. Learn to trust one another. And have fun. After all, you chose science because you loved it.

Tess Isaac is the pseudonym of a lecturer in the sciences at a university in the South.

The wisdom of two men

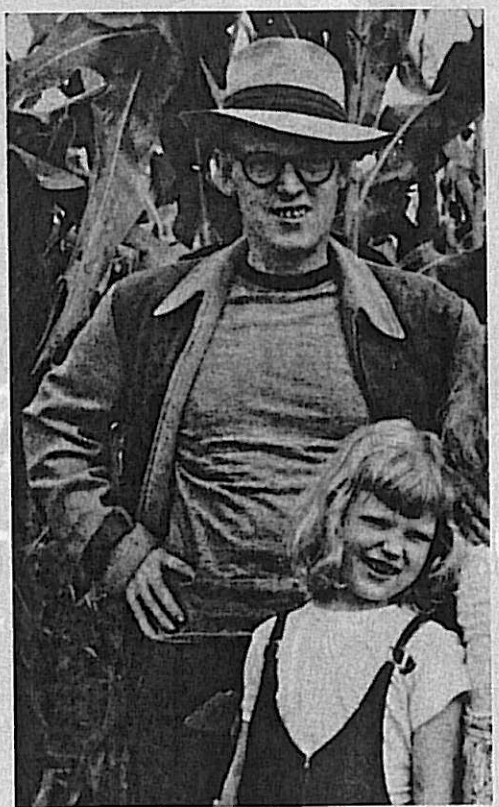
ALL MY LIFE I'VE BELIEVED THAT girls were smarter than boys. I'm glad I was listening to my dad, a man who had to drop out of ninth grade to work in a pencil factory—rather than the Ph.D.-packing president of Harvard. Dad would tell me I could even go to Harvard someday, if, that is, I worked hard and got a scholarship. He preached that I should study math and science and prepare for a career that would let me use my noggin, give back to the world, and support my family. Suppose I lost my husband and had to be the sole breadwinner, he would say, reminding me of his widowed mother. Life was great but tough, too.

Times are now tough for Harvard, caught up in a maelstrom over the musings of its accomplished president, Lawrence Summers. It is hard to imagine the wunderkind he must have been, becoming a full professor there at age 28. But from his rambling words on the matter of women in science released last week, his ascent was surely not for his judgment or verbal skills. He hypothesized that women were not making it in the hard sciences mainly because they didn't measure up: They lacked the fire in the belly to work 80-hour weeks because of distractions of hearth and home. What's more, he feared, women were less endowed with the "intrinsic aptitude" to survive in the rigorous quantitative fields of men. His data were based on standardized tests given to young people.

My father, rest his soul, would have happily engaged Summers, crimson robes and all. Women in his world worked their fingers to the bone in 80-hour weeks and watched the hearth, too. My dad's reverence for educational attainment was practical: Brainpower, not brawn, would be the equalizer for women in the 20th century. Sure, let's have a constructive discussion about small differences that show men score a bit higher in spatial reasoning but without forgetting that women excel with words—and in overall school performance. Evolutionary biologists tell us that's a throwback to our cave-dwelling ancestors: Man as hunter-gatherer had to find his way back home, while woman as hearth keeper was multitasking, balancing home and family. That's intriguing stuff (and cute fodder for jokes about women reading maps and men not asking for directions). But does it *really* tell us why girls don't grow up to be scientists?

Men as norm. Men set the standards of the marketplace, be it the rarefied earth of Harvard or the world of science, government, and industry. Even in my field of medicine, men call the shots. That's one reason women's health research was neglected for years. Men were taken as the normative standard for good or bad health, often leading to wrong answers for the so-called better half—be it cholesterol levels, chest pain, or calcium intake. Similarly, we should be careful about overinterpreting women's slightly lower scores on spatial-reasoning tests. Let's ask whether it's relevant to intellectual performance in or out of the sciences. If so, teach more spatial, just as we drum in verbal, and to the boys as well as girls who could use a spatial-score boost. Some studies suggest, however, that girls' lower scores reflect a spatial thought process with a different pattern that merely takes a few seconds longer in a time-limited exam. If these variations are not material, then *vive la différence.*

My father preached math and science and a career that would use my noggin.



LEGACY. The author and her father, Michael Healy, on a family outing in the early 1950s

Whether my dad was right that girls are smarter than boys, I dare not say. But what's for sure is that women are still struggling on male turf to prove that they are just as good. As a medical student at Harvard, out of an all-female Vassar, I wondered whether I would be dazzled by male genius. What struck me was that men, who made up most of the student and faculty bodies, were pretty smart but had no special edge. However, men were the anointed normative standard as both doctors and patients, and women had little choice but to buy in. Not unlike what the suffragist Elizabeth Cady Stanton bemoaned in the 19th century: "To keep a foothold in society, woman must be as near like man as possible, reflect his ideas, opinions, virtues, motives, prejudices, and vices."

But it's the 21st century. We've come far as women and professors, moms and scientists, and need not make that bargain or swallow crimson folly. Again, in Dad's wisdom: If you try to be like him, who will be like you? ●

the rule of the market, the importance of the quantifiable and the profitable, the ascendancy of science and technology."

Larry Summers can hardly be blamed for the contemporary crisis in liberal arts education, particularly the disarray into which the humanities have largely fallen during the past 40 years. In fact, the fury that he provokes from many of his faculty whenever he even approaches the normative inquiries that lie at the heart of the humanities—those damnably difficult questions of *should* and *ought*—shows just how hard it would be to take on that disarray. But that is one of the greatest challenges facing university presidents today. And unless Summers is willing to engage in yet another controversial debate, slings and arrows notwithstanding, his critics might be proved right in saying that his bold agenda merely sidesteps one of the deeper problems facing any university that aspires to remain true to its founding mission. ●

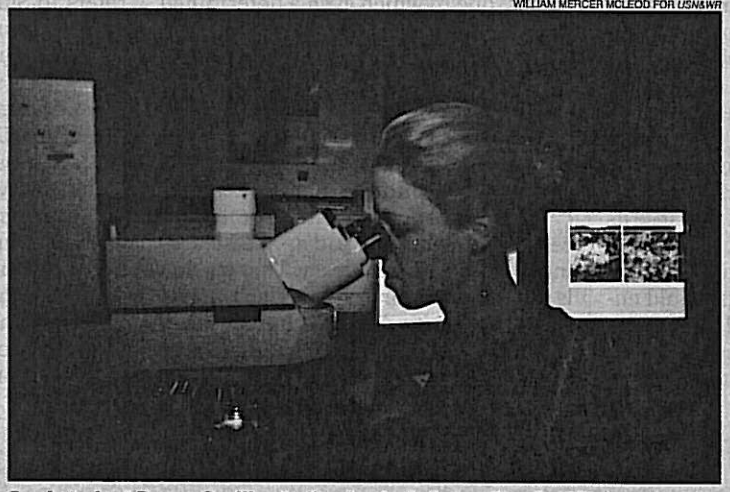
With Vicky Hallett in Cambridge, Mass., and Alex Kingsbury

HIS BRAIN, HER BRAIN

Anyone who's heard a group of men discuss the virtues of high-end stereo equipment will have little trouble believing that men's and women's brains work differently. That's also no surprise to scientists, who have spent the past two decades trying to figure out which aspects of cognition and behavior are determined by nature and which by nurture. The verdict: Female and male brains differ in both structure and function, and many of those variations start in the womb. It's no longer: "Is there a difference?" It's: "What do these differences mean?"

Male and female brains differ in how they're built, with some parts larger in men, others larger in women. The variation is most striking in overall size. Women's brains are about 10 percent smaller than men's, a fact that in centuries past provided ammunition for the argument that women were by nature mentally deficient. Yet, despite this difference, women do just as well as men on intelligence tests. Researchers at the University of California–Irvine say they have figured out one possible explanation: In January, they reported that men have more gray matter in the brain, and women have more white matter. Gray matter forms the brain's information-processing centers, and white matter serves as wiring to connect the processing centers. "Female brains might be more efficient," says Richard Haier, the psychologist who led the study. Women also tend to use their frontal lobes for intellectual performance, while the gray matter used by men is distributed throughout the brain. That has implications for treating diseases like stroke and Alzheimer's, Haier says; treatments could be targeted to protect or restore those critical regions.

WILLIAM MERCER MCLEOD FOR *USN&WR*



Grad student Renee Saville studies bacteria in her Stanford University lab.

DIVERGENCE. When it comes to putting brains to work, women and men have their own areas of expertise. Men do better than women at spatial tasks such as thinking about rotating or manipulating an object. They're also better at navigating along a route and at high-end mathematical reasoning; men have scored more perfect 800 scores on the math portion of the SAT than women have every year since 1964. Women excel at tests that measure word recall and at other tests of verbal memory. They're also better at remembering landmarks and where objects are located. It used to be thought that these differences in cognitive skills didn't emerge until puberty, but researchers have found the same differences in very young children.

The big question, of course, is whether the differences in his and her brains cause the variation in cognitive skills or whether society pushes women toward verbal, people-oriented tasks, and men toward quantitative fields like engineering. Few women in science have forgotten the infamous Teen Talk Barbie of 1992, which chirped, "Math is hard!" And although the number of women in the sciences has increased steadily over the past 30 years—women now compose the majority in medical schools and graduate programs in biology—they are still underrepresented in math, engineering, and physics.

In 1980, psychologists Julian Stanley and Camilla Benbow ignited a firestorm when they proposed that gifted boys did better at math than gifted girls because of a "math gene." The nature vs. nurture debate continues 25 years later, but it is becoming more pragmatic as researchers use MRIs and other brain-imaging tools that show differences in male and female brains even when performance is identical. "In the early '80s, we were worried that sex differences in the brain would be used against us as women," says Jill Becker, a psychologist at the University of Michigan. "We're all more comfortable with diversity these days, and we've come to accept that there are many different ways of solving a problem. No two brains are the same." *–Nancy Shute*

JOHN HENNESSEY, SUSAN HOCKFIELD AND SHIRLEY TILGHMAN

Women and science: the real issue

Feb. 12, 2005 Boston Globe

HARVARD PRESIDENT Lawrence Summers's recent comments about possible causes of the under-representation of women in science and engineering have generated extensive debate and discussion – much of which has had the untoward effect of shifting the focus of the debate to history rather than to the future

The question we must ask as a society is not "can women excel in math, science, and engineering?" – Marie Curie exploded that myth a century ago – but "how can we encourage more women with exceptional abilities to pursue careers in these fields?" Extensive research on the abilities and representation of males and females in science and mathematics has identified the need to address important cultural and societal factors. Speculation that "innate differences" may be a significant cause for the under-representation of women in science and engineering may rejuvenate old myths and reinforce negative stereotypes and biases.

Why is this so important? Our nation faces increasing competition from abroad in technological innovation, the most powerful driver of our economy, while the academic performance of our school-age students in math and science lags behind many countries. Against this backdrop, it is imperative that we tap the talent and perspectives of both males and females. Until women can feel as much at home in math, science, and engineering as men, our nation will be considerably less than the sum of its parts. If we do not draw on the entire talent pool that is capable of making a contribution to science, the enterprise will inevitably be underperforming its potential.

As the representation of women increases in every other profession in this country, if their representation in science and engineering does not change, these fields will look increasingly anachronistic, less attractive, and will be less strong. The nation cannot afford to lose ground in these areas, which not only fuel the economy, but also play a key role in solving critical societal problems in human health and the environment.

Much has already been learned from research in the classroom and from recent experience on our campuses about how we can encourage top performance from our students. For example, recent research shows that different teaching methods can lead to comparable performance for males and females in high school mathematics. One of the most important and effective actions we can take is to ensure that women have teachers who believe in them and strong, positive mentors, male and female, at every stage of their educational journey – both to affirm and to develop their talents. Low expectations of women can be as destructive as overt discrimination and may help to explain the disproportionate rate of attrition that occurs among females as they proceed through the academic pipeline.

Colleges and universities must develop a culture, as well as specific policies, that enables women with children to strike a sustainable balance between workplace and home. Of course, achieving such a balance is a challenge in many highly demanding careers. As a society we must develop methods for assessing present and future productivity that take into account the long-term potential of an individual and encourage greater harmony between the cycles of work and life – so that both women and men may better excel in the careers of their choice.

Although we have a long way to travel in terms of recruiting, retaining, and promoting women faculty in scientific and engineering fields, we can also point to significant progress. According to the National Science Foundation, almost no doctoral degrees in engineering were awarded to women in 1966 (0.3 percent), in contrast to 16.9 percent in 2001. And in the biological and agricultural sciences, the number of doctorates earned by women rose from 12 percent to 43.5 percent between 1966 and 2001.

Our three campuses, and many others, are home to growing numbers of women who have demonstrated not only extraordinary innate ability, but the kinds of creativity, determination, perceptiveness, and hard work that are prerequisites for success in science and engineering.

These figures demonstrate the expanding presence of women in disciplines that have not, historically, been friendly to them. It is a matter of vital concern that the future holds even greater opportunities.

John Hennessey *is a computer scientist and president of Stanford University.* **Susan Hockfield** *is a neuroscientist and president of the Massachusetts Institute of Technology.* **Shirley Tilghman** *is a molecular geneticist and president of Princeton University.*