

born woman particle theorist in Helen Quinn, until I learned that she was Australian.

Why is the ratio of women to men in physics much higher in France, Italy, and Poland than in the US? Do European women do better in primarily Roman Catholic countries than in Protestant ones? Is the greater success of European women because they had Marie Curie as a role model, or because the Virgin Mary is so important in Roman Catholic culture?

Why is there apparently such a large number of women mathematicians and engineers among the Soviet Jewish immigrants to Israel and the US? Why was one of those the only woman with a tenure position in a large leading American university mathematics department?

Perhaps one must look back much earlier than university or graduate school to understand the problem. Are subtle prejudices and sociological factors in American culture crucial at high-school and perhaps even at elementary school levels?

These are the questions to ask; they will lead us to serious thinking and perhaps to finding some answers. It is a copout and a deflection to say, "Just show me a well qualified

XXX and I will hire him or her on the spot." Bias is not the problem.

Some of my women physicist friends who were born outside the US confirm that the problem begins quite early. One who immigrated from Europe to America when she was in high school said that she was considered peculiar in the US, because "girls were not supposed to be smart." Another said that the best road to success for a woman physicist would be to start her education in Europe and move to the US at a later point in her career. Girls who wanted to be physicists had a much easier time in Europe until they hit a point on the academic ladder where there was real discrimination. At that point, they could do much better in the US.

The moral: Be arrogant. But ask the right questions. If you are sure you know the right answer, you are probably stupid, not arrogant.

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Gibson replies: I appreciate the healthy response to my Opinion piece. The writers added

many valuable insights, and several echo my sentiments. My original piece was intended as a condemnation of the behavior that most of us would identify as arrogant. Most of the disagreement is due to semantics concerning the meaning of the word *arrogance*. I came not to praise arrogance, but to bury it.

Admittedly, the word arrogance is technically inaccurate to describe the positive behavior that I defended. My poetic license may have confused some readers. The dictionary definition of arrogance suggests overbearing behavior based on inappropriate views. "High degree of self-confidence"—Richard Noer's phrase—or even *assertive* may well be more accurate to describe the positive side of arrogance. Because arrogance and self-confidence seem intimately related even though one is bad and the other is good, I chose to blur the distinction.

Physicists are, as Leonard Finegold observes, more open than other professions to admitting uncertainties. We physicists have much to be proud of, but for our own sake, we need to admit our weaknesses.

I disagree with Robert Adair's comment that the varying represen-

tation of different races and genders in physics follows entirely from causes outside the field. If that were true, wouldn't all professions experience the same degree of representation?

Harry Lipkin makes the valid argument that stupidity may be mistaken for arrogance. He correctly notes that gender representation is slightly better in some other countries and that we can learn from that. We Americans are known around the world for our hubris, and this may explain some of the differences.

The combination of brilliance and humility that Leonard Weisberg mentions is the ideal paradigm for a physicist; I intended in my piece not to argue against that combination of traits but instead to discuss why it is uncommon.

T. N. Narasimhan makes a profound point when he observes that man's arrogance toward nature is dangerous. I also like James Kellinger's apt metaphor for the misguided teacher as a forester waiting for seedlings to spring up from the soil so that he can then hit them with a hammer.

Fortunately, very few writers disagree with my concern about the

downside of arrogance, and most object only to my apology for it. I stand corrected on the technical usage of the word. However, knowing that the boundary between bad arrogance and good self-confidence is blurred helps us fulfill our aim to stamp out one and not the other. Frankly, I anticipated more radical disagreement than is reflected in this set of letters; instead, almost all the writers view arrogance as a real problem for the profession. I hope that view is representative of the community.

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Cloaks and Kudos for PHYSICS TODAY's Portrayal of Women

In the delightful Harry Potter book and motion picture series, one of Harry's cherished possessions is an invisibility cloak, which enables him and his friends to carry out many explorations and pranks. Women in

physics achieve invisibility without such whimsy, and PHYSICS TODAY continues to be a prime contributor to that invisibility. Perhaps, like Harry and his friends, women's invisibility in the physical sciences contributes to their strength. However, Harry and friends are only occasionally invisible. In the pages of PHYSICS TODAY, women in the physical sciences are only occasionally visible.

The January 2003 issue is typical. In all of its articles and departments combined, the only woman appears on page 37, in a photo showing that "informal gatherings were a part of the charm of the 1954 Varenna Summer School." From the picture and caption, I see that the school was so informal that men could take off their shirts and have first names; the one woman has no first name and is completely covered (she even wears sunglasses—perhaps to maintain her relative invisibility). Maybe she is just there to contribute "charm."

The three invited articles are, as usual, all by men (five of them). The obituaries are all by men. The book reviews are all written by men about books by men. The "We Hear That"
