

## Mixed Reactions to 'No New Einstein'

I enjoy looking through my husband's PHYSICS TODAY. Yes, MBAs and PhD physicists can coexist, though I've never caught him reading my *Forbes*. Lee Smolin's "Why No 'New Einstein'?" (PHYSICS TODAY, June 2005, page 56) presented compelling ideas about fostering creativity at the graduate level and beyond. However, I believe the problem starts far earlier than Smolin would believe. Our oldest daughter is finishing a double major in computer and software engineering. It's taken a lot of energy and focus to keep her creativity alive. When she was in first grade, her teacher handed out a rectangular sheet of paper and told the kids to "cut it in half the long way." My daughter cut it diagonally, from corner to corner. The teacher told her that was wrong. I don't doubt that it wasn't what the teacher intended, but it was clearly the more correct interpretation.

Can you imagine what a bright, creative teacher could have done with that situation? But that would mean a first-grade teacher with more than minimal math skills. It would mean throwing out the morning's lesson plan, "No Child Left Behind" tests be hanged. It would mean making education an adventure instead of a sentence.

Our daughters have also had some superlative teachers—one gave extra credit if you could solve the math problem another way and explain why. Talk about throwing down the gauntlet! And there was the teacher of advanced-placement history, who asked random extra-credit questions that had us reviewing each morning's newspaper, trying to second-guess what would catch his fancy that day. We guessed right only about half the time, but we had some interesting discussions about the morning's headlines.

I truly believe it is not nature versus nurture, but nature amplified by nurture, that fosters creative genius. Western culture has come to equate creativity with thinking of a new place to put a body piercing. Until we begin to value and nurture true creativity from infancy on, I fear the next Einstein will remain dormant.

Readers of PHYSICS TODAY are in a unique position to provide some of that nurturing. Certainly encourage creativity in your own home, but be willing to step outside those walls. My husband and I do liquid-nitrogen demonstrations for schools and scout troops. (A downside is that we are now personae non grata at a local school that received calls about gunfire after we blew up a 2-liter soda bottle.) And, with heavy consulting from the actual scientist in the family, I teach after-school science classes.

The benefits of nurturing creativity go far beyond a single Einstein. What about the next Bill Gates, or the next Sergey Brin? Okay, I admit to having a business bias, but can you imagine life without Microsoft Windows? or without Google?? Right now, the US is living off the creative capital of its past. If this country does not rededicate itself to investing in creativity, the future will be greatly diminished, intellectually and materially.

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While reading the June 2005 issue of PHYSICS TODAY, I was struck by Lee Smolin's comments, and by a brief news item on page 27, "Scientists Boycott Kansas Anti-evolution Hearings." I recalled that about 35 years ago, when I was young and idealistic, I applied to several universities for a junior faculty position, going out of my way to point out that I planned to spend a lot of time developing my courses, and that I felt quality teaching needed increased emphasis. I quickly discovered that virtually all science department heads viewed teaching as a necessary encumbrance, and wanted someone who would focus almost solely on research with quick and sure payoffs in terms of funding.

I eventually ended up as a researcher at Oak Ridge National Laboratory because I reasoned that if I was going to spend my life doing research, I should not plan to make a living at a university where the necessary encumbrance of teaching would detract from department goals. What struck me was that the reasons Smolin gave for no new Einstein were related to the anti-intellectual attitudes these days, especially toward the applied sciences. Those attitudes lead to a public that is unwilling and intellectually unprepared to accept the overwhelming evidence in favor of evolution. Basically, the quick dollar-payoff is what has been motivating science departments, to the exclusion of anything "risky" such as hiring the "independent and creative thinkers" Smolin mentions, or such long-term and vague payoffs as educating the next generation. Higher education in the US has "sown the wind" and it may be reaping the whirlwind.

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To the Opinion piece by Lee Smolin I would add a note on a related problem with the present system: Editors of the principal journals reject manuscripts that challenge prevailing theories or fall outside mainstream research. This practice eliminates new ideas in fundamental physics and encourages routine articles in established fields. The editors protect themselves from many crackpot submissions, but also from the few potentially great concepts. An organization or journal that screens original articles specifically to identify great ideas would be a valuable asset.

Another part of the equation is that original ideas can come from physicists who, like me, are retired. We no longer have a career to worry about, and may have received graduate training in broader, more fundamental physics. We do not have the pressure of publishing papers. The search for new Einsteins should not be limited, as Smolin suggests, to a few young scientists who are set aside to develop creativity. There are greater numbers of retired scientists,

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