

The President of the American Physical Society Leo Kadanoff posed a very controversial question to the society membership: "Should APS expand its role in physics education." Donald Langenberg, Chair of the CGS PSM Advisory Committee and Chancellor Emeritus of the University System of Maryland, responded to this question. We reproduce part of his remarks as published in the October issue of *APS News* in *Feedback: Members Respond to Kadanoff*, An analysis of responses to APS President Leo Kadanoff's request for feedback on the responsibilities of APS.

"When we talk about STEM education we're not just talking about high school and early college students. You and I are both aware that post-baccalaureate education in physics is an example of Darwinism in its purest form. It has one and only one purpose, the propagation of the physics faculty's own specialized subspecies, research physicists. We're here solely to make more just like ourselves. Recently, though, there has arisen the radical idea that there is a role in the workforce for individuals educated to the master's level in physics (or other sciences) and also equipped with skills useful in non-research careers, like operating large genomic data bases, running high-tech start-up companies, leading venture capital operations in new fields, etc. These are called Professional Science Master's degrees, and might be thought of as the scientific equivalent of the MBA or the MPH. There are now over a hundred such programs across the country in about fifty universities, and their number is growing. I've joined the PSM crusade.

I am of course aware that many of our colleagues see teaching and learning as the province of lesser beings. I can't count the times I have heard "But obviously you don't understand. This is a research university, not an educational institution!" I would argue that teaching and learning are worthy subjects of scholarly research in themselves. Happily, some of our colleagues have embraced that idea. There are perhaps fifteen or twenty significant physics education research programs across the country, and I have been told by scientists in other disciplines that physics is leading the way in this. Some quite respectable physicists are leading such programs, including several Nobel Laureates. So there's hope. (I've found the following quotation from Albert Einstein inspiring: "I never teach my students; I only attempt to provide the conditions in which they can learn.")

All that leads me to recommend in the strongest possible terms that APS **enhance** its emphasis on education and make it one of the Society's primary functions! It should do so in partnership with AAPT, which has the very positive feature of engaging both college and pre-college teachers. APS should be -- and be seen to be -- the organization representing the whole sector of science called physics in all of its aspects. It should not be a narrowly-purposed organization of researchers in physics. I empathize with the argument that education is a huge issue in which APS cannot expect to play a dominant role. True. But it can play an important leadership role, as some of its members already are. That

argument has never stopped physicists from weighing in on national security, energy policy, environmental policy, climate change, and many other huge national issues. If we crawl into our shell and say we'll focus entirely on our noble (and Nobel) searches for the Higgs boson and the nature of dark energy, eschewing any involvement with the pressing problems of our nation in education, I don't see any reason why our nation should continue to support us as generously as it has."