letters

The wizard's legacy

I'm grateful to Frank Wilczek for the enjoyable Reference Frame story about Don "Mr. Wizard" Herbert (PHYSICS TODAY, January 2008, page 8). I was born in 1951, and I remember watching Mr. Wizard from my earliest years. My mother is far from a science person, but she somehow knew that watching his show was a good thing for me.

Don Herbert helped make Wilczek into an acclaimed physicist and physics writer and me into a high-school physics teacher. During 34 years of teaching, I have helped numerous students learn the value and joy of scientific curiosity, thanks in part to Mr. Wizard.

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Thank you for the item on Don Herbert, TV's Mr. Wizard. His science of everyday things never ceased to hold my childhood attention and was a major influence that eventually led me to a career in engineering. When his show was about to be canceled in the late 1950s, I asked my father to help me write a letter of protest to the network. I was elated when we read in the newspaper that the show was to be renewed the following year.

It would be hard to single out my favorite episode, though I do remember the toy steam engine that ran while it was all frosty and obviously quite cold. The challenge, to figure out what was going on, was a simple but very effective lesson in thermodynamics. We learned at the end of the show that the steam engine's boiler had been filled with freon that was boiling off and driving the engine.

Thank you, Mr. Wizard, for many an enjoyable, informative, and challenging program.

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Frank Wilczek's references to greater and lesser wizards are true with respect to the Wizard of Oz, a prototype of tricksters who fits the first definition of a wizard. As a grandmother, retired librarian, and fan of the Harry Potter books, I differ with Wilczek's assessment that fictional conceptions like Harry Potter "tend to legitimize intellectual passivity and wishful thinking."

In the books, J. K. Rowling's protagonists must think how to use their skills—albeit magic ones—to solve a series of problems, some of them life threatening. True, wishful thinking has sometimes helped them, but they are actively seeking answers. They have solved problems with the best available information and sought additional information to help as well.

Potter's being a wizard is different than Don Herbert's; I agree Herbert was a real-world wizard without peers. Herbert's magic was twofold: He was not only a scientist but a skilled instructor. His wizardry opened worlds.

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Credentials and conformity

I applaud and agree with William Aghassi (PHYSICS TODAY, October 2007, page 12) when he writes, "In today's physics community only credentials and conformity count." Actually, credentials also mean little today, unless your research is in a trendy topic like string theory and you write from a famous university like MIT, Cambridge University, Imperial College, or Caltech. Gatekeepers and editors shun originality.

In his book *The Einstein Decade, 1905–1915* (Academic Press, 1974), physicist Cornelius Lanczos commented, "How fortunate that someone of the calibre of [Max] Planck was editor of *Annalen der Physik* [in 1905]. . . . Today none of these papers would see the light of day!"

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Schrödinger solution for the Morse oscillator

In his review of Ilya Kaplan's book, *Intermolecular Interactions: Physical Picture, Computational Methods, and Model Potentials* (PHYSICS TODAY, July 2007, page 64), Lucjan Piela criticizes Kaplan for saying that the well-known solution of the Schrödinger equation for the Morse oscillator is approximate. The reviewer says it is exact. Actually, Kaplan is correct. The solution corresponds to an unphysical boundary condition that the wavefunction vanishes at an internuclear distance of minus infinity. The exact solution for a diatomic molecule would correspond to the wavefunction vanishing at the origin. The difference is large enough that it needs to be considered in practical work, especially for the hydrogen molecule.

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Piela replies: The Morse oscillator is a single point mass subject to the Morse original potential cited in Ilya Kaplan's book, equation 5.22. Contrary to what Donald Truhlar writes, the Morse oscillator does not represent two point masses with a spring, not to mention a diatomic molecule. Therefore, Kaplan's equation 5.23 is an exact solution of the

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