

WHY ARE WE SILENT ABOUT SCIENCE?

The other day I saw the psycho-thriller *The Silence of the Lambs*. The very same day I had read an article about the state of science and engineering in America. At the time the two events seemed unconnected, but somehow that night, while I lay in bed, they came together intimately into a revelation that speaks directly to a major problem affecting Hispanics (and probably the general population, as well): the tabooing of science within our families. The effects of this prohibition are subtle and easy to dismiss but will be far-reaching and determinant as we move into the 21st century. Let me take you back to my childhood, to my roots, so that you may understand what I speak of by sharing where I come from.

Many years ago, as a boy of 8 or so, I spent a summer at my grandfather's ranch, Xaratanga ("Light of the Moon" in the native Indian tongue), in Michoacan, Mexico. Having grown up in East Los Angeles, I initially threw tantrums over having to go to a land I knew little of, but my mother's constant storytelling about her days of youth on the ranch piqued my interest. She told me about how my grandfather, *Papa Chuche*, would ride in gallantly on his horse, bearing gifts for my mother, upon returning from work trips to *El Norte*, where he worked the fields of California. She told me about spending her afternoons caressing the soft fleece on a lamb. She told me about digging for *jicamas*, an edible root, after a strong rain when the soil was soft. These things she told me with such nostalgic enthusiasm that I grew ever more curious about the "good old days" she spoke fondly of. I would go to Xaratanga!

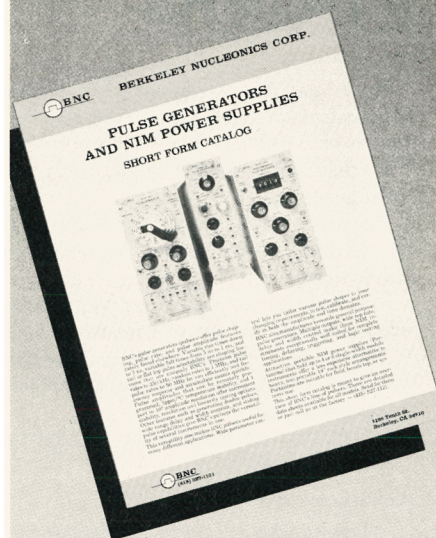
Once there, I could not contain my urgings to explore everything. It was so different in Xaratanga, far from the East Los Angeles I had left behind. There were no Whittier Boulevards to cruise, no Tommy's to eat at and no *cholitos* standing at a corner, drinking *cerveza* and bouncing their *El Dorados*. I missed none of that. I felt free and fresh in Xaratanga. Strange as it may seem, I

felt...like a child! As such, I spent my days roaming the fields with a vengeance, turning over everything from rocks to tortoises. I asked *Papa Chuche*, who was every bit the *caballero* my mother described, about the *jicamas*, and he wasted no time in throwing me onto his horse for a down-to-earth search in the fields.

With nighttime, though, Xaratanga underwent a transformation, growing mysterious, not so welcoming. Looking back, I realize that it all had to do with *La Llorona*, the crying lady. The story went that many years before, a lady had murdered her children in the river, and as punishment her soul was forever damned to roam the fields in search of her lost children, wailing without peace. My grandmother made a strong point of telling me to never go out into the fields at night because *La Llorona* was looking for children to carry away. I was utterly terrified! I wanted to know more about the fate of this poor lady, but my grandmother would say no more—only that it was bad to talk of damned spirits. She told me to be quiet about such matters and to follow the example of the lambs at night—the silence of the lambs. Well, by night I had to content myself with sitting atop the stone fence that surrounded Xaratanga and peering out into the fields lit by the strong moonlight. I would think to myself, "There is no monster there—I see nothing but the fields." Though my little legs wanted to run out into the night, I kept quiet and still beside the lambs.

Back to the future, so to speak, I still grow uneasy whenever I think of *La Llorona*. It's not that I believe in her *per se*. It's what she represents—the unknown, the mysterious, the unspeakable. All these years I have retained essentially the same mentality about her because she has continued to be something to be quiet about, no questions asked, just acceptance. Her "reality" was assured by the silence born of ignorance and fear. She seemed as real as the *jicamas* I gathered in Xaratanga, only their existence was predicated

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LETTERS

on communication, knowledge and encouragement.

What has all this to do with the state of science and engineering within Hispanic culture? We've heard much ado about the crisis we are facing in these disciplines. The picture is truly bleak, though not hopeless. Our children are turning away from and not entering these disciplines, which offer the greatest opportunity for growth in the future. It is a crisis. It is a tragedy. It is a shame. Where is the turnoff occurring?

The problem is complex and will likely require a motley of solutions. However, there is one fundamental aspect of the problem that is intimately connected with our very culture and undermines all other efforts at solution: our silence on science. We do not speak of science in our homes. When our children ask about our world, they are misled, ignored or told to be silent. Why so much fear? Is it based on reality, or are we hiding from spirits? Science has got to come out into the open in our homes if our children are to partake of its opportunities for happiness and success. There is little, if any, tradition of science in our culture (not any that has survived, anyway), and so we fear it, perhaps naturally. That is one legacy we do not want to pass on to our children!

Let's be strong and face up to our fears of the unknown. Let's talk. The night is not so forbidden. Any child will tell you that there are things to see in the dark, for children have curiosity and imagination that light their way like the moonbeams of Xarantanga. We can all learn from them. The cover-up must end—else our children will remain like the lamb, quiet and still.

C. J. SALGADO

7/91

Los Alamos, New Mexico

Why Is a Physics PhD Like a Juggler?

I would like to offer some comments on the exchange of letters in the May issue (pages 96 and 99) on the current shortage of jobs for young physicists in the US.

When I received my PhD in physics in 1966 from a state university, I made ten job applications, which resulted in nine offers—perhaps a normal percentage in those “golden days.” The first offer was a postdoctoral position with Carl Sagan, then at Harvard; his letter neglected to mention what the salary was or the duration of the appointment, so I

went to Bell Labs (Murray Hill) instead. Despite our good fortune in graduating at the right time, neither I nor my graduate school colleagues ever assumed that we would be employed as research scientists or professors. We often discussed explicitly the fact that a PhD in physics no more guaranteed a career as a physicist than a PhD in philosophy guaranteed a career as a philosopher! But it seemed so intensely interesting an academic path that we could not reject it and its risk.

In the intervening 25 years I have lived for more than 5 years out of the US, including several years in countries (such as the USSR) where a PhD or the equivalent legally *does* guarantee a career in physics. I do not find such a system preferable to that in the US; it simply means the people who will work in physics research are chosen at age 18 or 22 instead of 27 or 30. These decisions, based as they are on less information, are not likely to be wiser.

It is not clear to me what the problem is that Kevin Aylesworth addresses in his letter. If it is that there are too few research jobs in physics for the number of PhDs we produce, we could improve the ratio in several specific ways: We could greatly restrict the immigration of foreign students and scientists, or we could flunk the lower half of each year's graduating crop of PhDs (every group must have, by definition, a lower half). The general public does not seem interested in doing the former, and our physics departments seem unwilling to do the latter.

Alternatively, we must hope that PhD students in our physics departments become more realistic about the country's economy. A fair comparison to the physics PhD is the juggler. Juggling takes considerable natural ability and years of training. Unfortunately for jugglers, vaudeville is dead; no one will pay to watch people juggle—or to diagonalize Hamiltonians! I know several jugglers and many more PhDs in English literature who would love to receive the \$22 000 salary Aylesworth reports one physicist's rejecting, just for doing what they were trained to do. Why should physicists be treated better than jugglers?

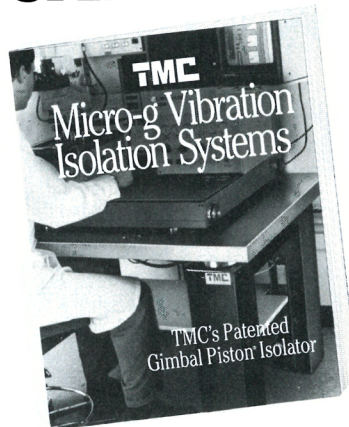
JAMES SCOTT

5/91

University of Colorado, Boulder

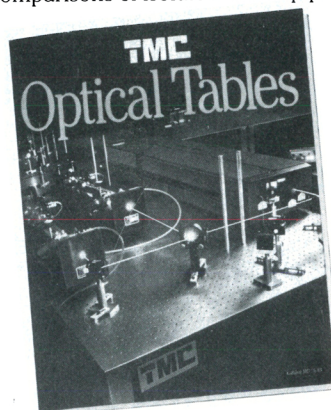
AYLESWORTH REPLIES: I agree with James Scott that a PhD in physics should not be a job guarantee, and that physics students should understand that the job market in physics is tight. The problem I have been con-

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