

Newsday Piece Sunday, May 20, 12

I'm an actor and a writer, but I've spent a lot of time lately trying to help scientists explain in simple words what it is they do. Why in the world, you might wonder, should any ordinary non-scientific person worry about a thing like that? There are, I think, two pretty good reasons.

For one thing, before a surgeon slices me open, I'd like him or her to do at least two minutes on what this is all about. What's the problem? What are the chances this will work? Will I be able to play the violin when I wake up?

In a way, scientists are operating on us all the time. We're surrounded by science; we're like fish swimming in an ocean of it. It's in the air we breathe, the food we eat. In our privacy, or lack of it. Don't we deserve good, clear explanations of what scientists are doing? How else can we ask the questions that can keep them prudent? But, scientists can't just speak to us in a secret, sacred language. If we can't understand the lingo, we're excommunicated.

Reason number two is just as much in our self interest: When scientists explain their world in words we can understand, listening to them is one of the deepest, most exhilarating kinds of fun a person can have without actually skydiving or discovering America. It can be thrilling.

I have a long history of wanting science to be a little clearer. I was very curious as a boy and when I was eleven years old I got fascinated with the flame at the end of a candle. I couldn't figure out what was happening in there. So, I asked my teacher and she said (a little abruptly, I thought), "It's oxidation." That doesn't quite explain it when you've never heard the word *oxidation* before.

It's been many years since I asked that question, but, a couple of months ago I became intrigued with the idea of asking it again. I started a contest to see if scientists would rise to the challenge of explaining this common thing - a flame - so that an 11-year-old would understand it. The idea was not primarily to teach kids science, but rather to encourage scientists to think about the tough problem of making science clear and vivid, without dumbing it down (and thereby disrespecting both the kids and the science). This is what we teach at The Center for Communicating Science at Stony Brook University. We offer classes and workshops for credit in which young scientists can learn the skills of communication as a fundamental part of their science education.

The Center set up a panel of scientists to check entries for accuracy before they went to the judges. But the best part of the contest was that *the judges would be real 11-year-olds*.

Once it got under way, we were surprised to find that the question I asked was way harder to answer than we had suspected. (It turns out that explaining a flame requires reference to some of the most basic structures in the universe.) Even so, We had over 800 submissions from scientists all around the world. We hadn't realized how this thing would catch on.

We were even more surprised to see how excited the kids were about judging the scientists' entries. They were signed up by their teachers in droves: more than 6,000 students, from Alaska to Australia and from Belgium to **Brentwood, Long Island, (Is that the town, Liz?)**

There was so much excitement, in fact, we'll do it again next year, with a question generated by the students themselves.

For a glimpse of how much fun this year's question was for the kids, take a look at the Worldwide Assembly we had on the web for ten schools in several different countries. [Link]

But it was more than fun. The kids learned something about chemistry and physics – and we learned a lot about communicating science. Much of what we learned was from the kids themselves -- often things we didn't expect: The kids didn't like entries that were too long, but they also didn't like them too short. (A common complaint was that they wanted more *information* -- they clearly wanted to learn.) They appreciated humor, but not at the expense of clarity or insight. (As one student said, "We're eleven, not seven.") And they appreciated the use of metaphor, but they wanted metaphors that opened their eyes to understanding -- not comparisons that simply said something was like something else. In short, they wanted to be engaged, but they wanted the experience to end in the pleasure of new knowledge.

The beauty and dignity of those young people as they discussed the entries will stick with me for a long time. It was very clear that these minds -- like ours as well -- are longing for scientists to share their excitement with us. After all, scientists are on a great adventure.

They're off discovering the universe, and we want them to take us along.