Interpersonal Interactions among Materials Scientists

or

"You Can't Fight in Here…This is the War Room!!"

(from *Dr. Strangelove*, a Stanley Kubrick film)

Near the end of the POSTERMINARIES that appeared in the March 2002 issue of *MRS Bulletin*, the following line appeared: "….in the face of vicious colleagues who live every day just to try to expose you in a mistake so they can build their own egos and prove how much smarter they are than you…." Well naturally, subsequent to the appearance of these lines, some of my colleagues criticized me for writing them and told me that they thought I had made a mistake in doing so. Encouraged and motivated by such a response, I felt that this was clearly a worthy topic on which one could and should expand.

First, we all know who these vicious, mean-spirited colleagues are—you know, the ones who love to expose another colleague in a mistake, and to do it in an obvious and preferably public way! They are, in fact, a significant fraction of those of us (yep, I've done it too) who are engaged in the business of materials science and engineering research. Who among us hasn't felt the warm glow of self-satisfaction when sitting down at a conference after pointing out that the speaker hadn't thought of some really important point, or had made some fundamental error, or had perhaps not measured some obvious thing that should have been measured—and that, if measured, might have clarified the whole thing? Exposing the errors of nervous beginning graduate students who are giving their first oral conference paper obviously scores extra points. If their advisor has the courage (and not all do!) to rise in their defense, then one can show that not only did the advisor do something stupid as well, but that they also should have known better—Wow, it's like triple-coupon day at the supermarket.

As someone who has been in the research "business" quite a while now and who has known a large number of very smart (plus a couple of even brilliant) people, I have to say that I have never known anyone who was right all of the time and who didn't make mistakes and errors at one point or another. We all do, with varying frequency, some really "not smart" things in this business—and we do them in spite of our best efforts not to! From my personal observations, it seems to me that the only people in research (at least in the physical sciences) who don't make mistakes and errors and who aren't wrong occasionally are the

people who, in fact, actually just don't do any research. In our trying to understand or discover something new, or solve a difficult problem for the first time, or create something original, it is effectively just impossible to be right all of the time. It is a tough business. If it were easy, then a lot more people would be doing it (for the huge salaries if nothing else, right?), and the ones who are doing it would be doing a better job.

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Science and technology frequently advance by a process in which, at some point, only a few people (or maybe even only one person) are right and everyone else is wrong. New concepts and ideas and results are questioned and challenged and held up to intense scrutiny—and they have to be. This is the way it works, and the way it should work. If they are correct, new things have to stand up to logical and reasonable challenges regarding their validity. If there are new important experimental results or discoveries, then somebody else needs to be able to reproduce them. Only after standing the test of critical evaluation and close examination can research findings be accepted—no question about that—but shouldn't this critical evaluation process take place for the purpose of finally getting at the truth—and not for the purpose of personal ego-building and puffing up one's self-esteem? Since we know that we are all going to make errors and mistakes, perhaps we should be a little more careful and thoughtful in how we treat such situations and in how we interact with our colleagues when we think they are wrong.

This is, after all, a profession, and professional courtesy is important. One of the reasons that it is important is that how we treat and interact with each other also affects the public perception of who

we are professionally and the public concept of the value and importance of what we do. Since the public, in one way or another, funds the lion's share of scientific research these days, how it values our activities and us is important. When we are trying to generate a billion dollars of government funding for a new superconducting turboencabulator so that we can probe the intriguing mysteries and beauties of giantmagnanopersistence, public support and confidence in science and scientists are mandatory (particularly in today's economic and cultural climate.) Maybe the public doesn't always understand the important process of attacking new ideas and results (and our colleagues in the process). This critical testing and examination that is so valuable to scientific research, if it takes place in the wrong way, well, perhaps there is a danger of giving the impression that "these guys can't even agree among themselves; I'm not sure that any of them know what they are doing." This would be an outcome that certainly would be counterproductive and one that I think we should try to avoid. Let's face it, the gulf of misunderstanding that exists between scientists and engineers and the public at large is great enough as it is. We need to try to close this gulf, not make it wider.

This is a competitive business that is full of highly educated, talented, and just plain smart people. We have to retain the nature of the critical scientific evaluation process that is absolutely vital to research progress, without making it look like we are engaged in petty bickering, arguments, and general puffery that are pursued with the wrong motivation. Probably this isn't an easy thing to do—but we are smart enough to do it—right?

In any event, and in spite of the admonitions of this POSTERMINARIES, the next time you (or I) rise and stride to the podium with our viewgraphs or PowerPoint presentation (backed up by viewgraphs, of course!), let's remember the instructions given before every boxing match: "Protect yourself at all times." In the ring, when the bell sounds, if you can't stand up and hold your gloves up in front of your face, they mercifully stop the match. In our arena, we can only hope for a sensitive and understanding session chair—and preferably one whose session is running long!

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