

LETTERS

Forum "Hijacked" by Moralists?

After reading the "commentaries" ... by Fay Dowker and Daniel Amit in the July, 2003 newsletter, I must express my concern about the potential for our Forum to be hijacked by fringe elements more interested in polemics than physics. These writers, and others of their ilk delight in expressing their personal outrage at the "bad" properties they perceive in fundamentally good countries and organizations. Dowker's righteous indignation is provoked by unintended civilian deaths (in the range of a few thousand according to best current estimates) in the recent war in Iraq. I searched in vain for any similar outcry from her about Saddam's intentional slaughter of many times this number. Likewise for the new low he established in human conduct and child abuse in the outright purchasing Arab youths to strap bombs to their bodies to go blow themselves up together with civilians riding buses. She is hardly alone; very few of those currently venting over American behavior have spoken out about the behavior of Saddam. The same can be said for Daniel Amit -- now happily residing in the country most responsible (together with Germany) for bequeathing to the world modern fascist ideology.

I am unconcerned about whether or not these ... moralists find an outlet in Physics and Society. We do, however, have a obligation to our Forum not to allow it to become an uncritical pulpit for a ,, Dowker to attack a well-regarded physicist like Garwin; or for a ... Amit to attack the foreign policy of the nation which (in our own generation) liberated with its blood the country in which he now resides.

Bernard H. White, Ph.D.
Dallas, Texas
bernie.h.white@exxonmobil.com

Threats to Scientific Collaboration Questionable?

I thank you for sharing with members of the Forum the views of two colleagues from Europe (Physics and Society, newsletter July 2003, vol32, No. 3) In the Commentary section it is expressed and I quote "Now, it seems we have the possibility of threats to scientific collaboration and trust among scientists from presumably friendly nations".

Do I have to interpret that Fay Dowker's criticism of the Forum is a "threat to scientific collaboration"? I profoundly differ with that implication; one of the tenets of democracy, we value so much, is the right to dissent. In fact, as put by L. Krauss (APS News, June 2003, vol12, No.6, pag.4) "[we] scientists have a special ethical responsibility at this particular time to QUESTION (my editorializing) our government's action" and so much so our own organizations.

Fay Dowker, in my view, does not "threats ... trust among scientists from presumably friendly nations"; on the contrary, she is embracing the highest values of freedom and democracy. In any case, I do not know what to do with the "presumably friendly nations" paragraph; are we "friend" only with others if they adopt a supine position and assent to our views? I do not think so!

Juan C. Gallardo
Physics Department
Brookhaven National Laboratory
gallardo@bnl.gov

Foreign Opinions Not Unique

There is no reason to think that the regrettable opinions reported in the July "Commentary" from two foreign physicists are unique to, much less typical of, foreigners. I have no doubt that there are many US readers of the newsletter who tend to agree with an anti-war, anti-Bush position, albeit with (I hope!) less emotion and more substance. Still, it is a rare observer who can so easily damn (my old friend) Dick Garwin as a war-monger or worse. In spite of his long record of patriotic service to the country, many right-wing hawks have long ago consigned him to the lowest levels of anti-American behavior.

Robert Myers
60 East End Avenue
New York, NY 10028
212-861-2374
ramyers@nyc.rr.com

A Reply

I reply to the Commentary by Fay Dowker, published in P&S of July 2003. She characterizes my talk at the Forum session on "Nuclear Weapons and Missile Defenses" in April 2003 as "the most shocking ... outrageous."

In general she criticizes all five talks for two shared assumptions,

1. "The U.S. government is sincere when it claims to want to safeguard the security of the U.S. population.
2. "What critical scientists can contribute is an assessment of whether or not particular technologies can achieve specific objectives demanded by government. The objectives themselves, and wider government aims served by those objectives, are not to be subject to scrutiny and criticism."

I have often written about insincerity on the part of government officials (and supporters) and continue to do so. But I do believe that most people in the government are sincere in wanting to safeguard the security of the U.S. population. Some of them believe that to do so requires limiting individual freedom, denying information, and in other ways going against the judgments expressed by the majority of the population or which would be assessed by the majority of the population. But a scientist, as scientist, gets nowhere by a blanket accusation of insincerity. Anyone can read my papers at www.fas.org/rlg, where I often criticize individuals and programs.

As for (2), I quite agree with that assumption. I think that this is the proper goal for a scientist, as scientist. Physicists are entitled and encouraged, as citizens, to differ with specific objectives and wider government aims. But I do not believe that is a matter for the American Physical Society or American Physical Society meetings.

I did not say that I had "worked enthusiastically on many types of nuclear weapons." I worked willingly, but I doubt that I used "enthusiastic." I still work on nuclear weapons.

But what I can add to the public debate is my considered judgment (backed up by unclassified analysis, and by experiences which I cannot fully disclose) summarized (for the United States) as "Who Needs Nukes?" I also went on to say that we still need nuclear weapons for strategic deterrence, but that an immediate decrease to 1000 total nuclear warheads (including weapon usable material) would more than satisfy U.S. strategic needs.

On the nuclear weapons front, my continuing assessment of the U.S. nuclear weapons Stockpile Stewardship Program persuades me that we do not need nuclear explosion testing to maintain a stockpile of safe and reliable nuclear weapons, and that there is little to be gained by nuclear weapons of new design which would require nuclear explosion testing. For some other people, there are benefits to resuming testing-- the general freeing of the United States

from external constraints; the training of new weapons designers; the exercising of manufacturing capability. To me, as a physicist and a worker in international affairs, the peril this poses to the Non-Proliferation Treaty far exceeds in damage to the United States the modest benefits that would be achieved.

I don't celebrate the destructive capability of weaponry. I have had a lot to do with bringing conventional weapons and systems for using them to the level at which only one percent as many bombs are required to achieve a given objective, and that even concrete-filled bombs, guided to their target by laser or GPS, will demolish a building without much damage to its neighbors.

War is physically destructive and kills people. I don't join in "radical opposition" but I am opposed to programs and actions which are not justifiable for the net good which they accomplish. There are "good"s in addition to the national security of the United States.

We should have intervened in Cambodia to stop the killing. Also in Rwanda.

My opposition to the war in Iraq at the time arose from clearly inadequate planning for the aftermath of the war and security in Iraq (which was evident last Fall), and also that Iraq posed no threat to the United States with its WMD (nuclear programs and biological weapons).

To a large extent, this was because even if Iraq possessed some capability in BW, it was deterrable. As stated by CIA, Saddam Hussein would be likely to use WMD if his regime and his life were in danger, but not until that point.

So my own feeling was that the United States should work more effectively with the United Nations in order to pursue U.N. inspections programs, with the commitment to mount military operations in the Fall of 2003 if the inspections and other activities did not provide assurance that there were no significant WMD or programs to produce them.

I did not credit the claim that Iraq was a threat in potential sharing of its BW with terrorists. Unfortunately, as proved by the anthrax letters in the United States, a little bit of BW is well within the capability of terrorists groups, or of individuals involved with pathogenic organisms in non-terrorist states.

I encourage Dr. Dowker to pursue her political goals, but unless they involve her special knowledge as a physicist, to leave the physics profession out of it.

*Richard L. Garwin
IBM Fellow Emeritus
Thomas J. Watson Research Center
P.O. Box 218, Yorktown Heights, NY 10598-0218
(914) 945-2555, FAX: (914) 945-4419
INTERNET: RLG2 at watson.ibm.com*

How much Should be Covered Inquiry-based Physics Teaching?

Two cheers for Daphne Bursleson's article in support of inquiry-based teaching of physics. I've been involved with this kind of teaching for quite a few years now, mostly in college courses for non-scientists, and I agree that it's the right thing to do. Alfred North Whitehead coined the term "inert knowledge" for what you get when you're not active in learning something.

But how much can you cover? Advocates of inquiry-based teaching, including those who prepared national standards for secondary schools, recognize that it takes more time to treat a given subject in an inquiry-based manner, and so some coverage of material has to be sacrificed. But how much? Physicists often say, following Kelvin, “If you don’t understand something quantitatively, you don’t understand it at all.” Why abandon this principle when it comes to education? We also know that order-of-magnitude estimates are better than no estimates at all.

Let R be the ratio of the amount of subject matter students can learn in an inquiry-based program (per unit time) to the amount of subject matter present in a typical course (per unit time). What is R , and how does it vary with the level and grade of the course? In my experience in courses for the non-scientist major, I estimate $R = 0.2$. How much coverage are we prepared to give up? At meetings, when the question of “coverage” is raised, I have heard the response, “Less is more!” As if argument by slogan is appropriate for a scientist.

It’s not that I oppose inquiry-based teaching. In fact I support it vigorously, and practice it (sometimes). But it demands that we face up to the question, What do we really need to cover in, say, a calculus-based introductory course, a middle school physical science course, a college course for the non-scientist.

One more point: Inquiry-based teaching doesn’t only mean labs. Complex mathematical analysis, of the kind that’s traditional in good introductory college courses for science majors, is inquiry, in that students are asked to solve problems that are not rehashes of the problems in the textbook. It’s something that has been part of physics, and typically not part of teaching in other sciences. It’s the reason physics is seen as “hard”. But we’ve given it up in physics at lower levels, and we might want to find appropriate ways to put it back.

Michael I. Sobel

Prof. of Physics

Brooklyn College

msobel@brooklyn.cuny.edu