

# LETTERS

## **Dismay with Previous Commentary**

I read the article entitled: "The Physics of Religion" with growing dismay. Firstly the author states that: "world peace cannot occur until all major powers have separated Church and State". However, later in the article, he writes: "This can be ended by separation of Church and State in the US, as in other countries (i.e. UK, Germany, etc.)".

Church and State have been separated by federal law since the inception of the United States. Because of this separation, for instance, religion may not be taught in public schools. However, there is no separation of Church and State in the UK. The Queen is the head of the Anglican Church, which is the State Church. The writer seems to be uninformed concerning his subject.

Furthermore, he states earlier in the article: "Most true scientists do not try to assign human intelligence to some supreme being as the creator of the universe." Later he states that: "religion is assertive (i.e., dogmatic and intolerant of questions". In my opinion, by the use of the phrase: "most true scientists ...", he shows himself to be assertive and dogmatic.

I am a scientist (PhD (physics) Johns Hopkins) and a committed Christian. In addition to my scientific degrees, I have BTh(Hons) in theological ethics from the University of South Africa. I am a Canon of the Church of the Province of Southern Africa, which is equivalent to the Episcopal Church in the US.

A friend of mine, also a physicist and a Christian, once said that he found no conflict between science and religion; both books were written by the same author.

I concur that many wars are, sadly, the result of religious differences. But uninformed articles will not further the goal of peace.

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## **Vigorous Exception**

I take vigorous exception to John T.A. Ely's commentary on "The Physics of Religion" in the January 2003 issue of *Physics & Society*. While I can agree with his primary point that separation of church and state is a desirable political construct for all societies as a means of reducing conflict, some of his basic assumptions are very wrong. The one false assumption I wish to address here is implied through several of Ely's statements, and can be summarized as follows: "All religions are lies and fantasies, and no educated person, especially a physicist, could possibly believe any religious tenets."

As a physicist for 38 years, and a Christian for 50 years, I find such an assumption absurd. Most human beings, including physicists, realize that there are at least two aspects of reality: physical and spiritual. Physics (all science) can treat only physical reality, but this does not imply

that spiritual reality does not exist. If Dr. Ely (or anyone else) chooses to believe that a spiritual realm does not exist, and that human beings are nothing more than the sum of their wavefunctions, he is free in our society to make that choice, and this is good. But such a choice, even if it were to lead to a reduction of religious influence in political and international affairs, can hardly lead to "world peace. The vast majority of wars since the Middle Ages have been fought for reasons of greed and "practical national interests," rather than for religious motives. Only today's radical Islamist terrorists (whom, it should be noted, have perverted Islam for their own purposes) are clear exceptions to this rule

No doubt, improved scientific education would benefit all peoples everywhere. But to assert that the goal of such education would be to eradicate all religious belief, and that this would lead somehow to universal peace, completely misses the reality that human beings are more than agglomerations of atoms, and is a form of dogmatism equal to that which Ely detests. Science cannot eradicate selfishness and greed any more than it can prove whether God does or does not exist.

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### **Censor Letters?**

I realize that there is a value in allowing as many people as possible to express their opinions in *Physics & Society*. However, some minimal level of fact-checking and editorial discretion should nevertheless be exercised. The astonishingly ignorant screed by Prof. John Ely in the current issue should not have been published in its current form. Its summary is simply factually wrong: both the UK and Germany have established state religions (the Church of England in the UK, and the Catholic and Protestant churches in Germany), while the US was founded as the first nation without a state religion, regardless of the ill-advised behavior of some current occupants of high office.

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### **You May Not Read Yourself!**

During my professional career I had been working frequently in US National Laboratories. Once, I was preparing a paper for publication in an international journal. For this paper I needed some data I had published previously; I looked for this Journal in the Library of the National Lab., but I did not find it in the shelf.

So, I went to the librarian and asked for this paper. After some minutes she returned blushing and said:

“Sorry, Sir, this material is classified. You may not read it!”

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### **Risk assesment/risk management**

I read the July review of the book "Inviting Disaster" and was wondering if there is a reading list the reviewer could recommend on the topic of risk assessment and management including common concepts and the key steps in failure analysis. Hope you can help.

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*Aviva Brecher responds:*

I am glad that somebody reads the stuff! Here are a few resources, to help you customize to your problem needs. RA/Rm is customized depending on whether a qualitative risk ranking (as DOD uses) suffices, or if enough data exists for a probabilistic risk assessment. OSTP and Congress have tried to standardize procedures across agencies, but failed miserably because the depth of analysis depends on the nature and severity of consequences (equipment or business loss vs human life loss, or disease).

[1] Website of the Society for Risk Analysis at [www.sra.org](http://www.sra.org) <<http://www.sra.org>>

[2] If you go to the Nuclear Regulatory Agency website there are a lot of classic Fault Tree Analysis handbooks, like the oldie but goodie NUREG-0492 at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/sr0492/index.html> and similar at <http://www.nrc.gov/reading-rm/doc-collections/nuregs/staff/index.html>

[3] My favorite is "System safety Engineering and management" by Harold Roland and Brian Moriarty, Wiley and Sons (1983?)

[4] The NRC published several comprehensive reviews of RA/RM techniques and practices, such as the:

- 1983 Risk Assessment in the Federal Government
- 1989 Improving Risk Communication
- 1993 Issues in RiskAssessment
- 1994 Science and Judgment in Risk Assessment
- 1996 Understanding Risk: Informing Decisions in a Democratic Society

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## **Pro Nuclear Power**

In the January 2003 *Physics & Society*, HA Feiveson has an article against nuclear power. The article, in effect, could cause future disasters to our children and grandchildren – and to the world!

In the coming decades it is projected that we will run out of oil and gas; and in the next century, coal. Further, these fossil fuels could cause global warming - additional disasters to the world.

There is only one solution – nuclear power. Solar and wind power can provide some needed energy but they require over 50 square miles to produce a thousand megawatts of electricity, versus a coal or nuclear plant which takes a couple of acres. Further, solar plants can't operate when the sun goes down, or the clouds come out; and wind power dies when the wind goes down. Thus their public energy is limited.

It is projected that the world population will rise from 6 to about 10 billion people in the next 50 years; and if the world energy use reaches a third of the energy per person now used in the US then world energy will triple. The only solution is nuclear energy.

Nuclear plants built to US requirements have not harmed a single person in the public – including Three Mile Island. (Chernobyl would not have been allowed here; and Russia is now accepting our safety requirements.) Further, nuclear power with the breeder reactor can provide world energy for thousands of years; and almost indefinitely with uranium from seawater. And the wastes from breeder reactors will decay in only a few hundred years, as compared to the thousands of years for our present thermal reactor wastes.

In summary, unless fusion turns out successful, the only way to keep our nation and world healthy is to expand our nuclear energy worldwide; and, on a worldwide basis maintain the operating means and world safety requirements that we now meet.

In closing, let us note that every technical item has problems. It is hard to understand why Mr. Feiveson does not oppose the use of automobiles, which now kills 50,000 people per year in the US. It is very unlikely that nuclear power will ever do this.

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## Point/No Counterpoint

*Readers who are interested in seeing two views of the nuclear power generation debate are invited to see two websites as well as a reaction to one of them. The site [www.ieer.org/sdafiles/](http://www.ieer.org/sdafiles/) has an article from the November 2002 issue of "Science for Democratic Action", and it describes the results of a health survey in India near a nuclear power plant. The site [www.ecolo.org/media/articles/articles.in.english/canberraTimes17-10-02.htm](http://www.ecolo.org/media/articles/articles.in.english/canberraTimes17-10-02.htm) is a pro-nuclear article by Bruno Comby. I invited Comby and IEER to provide P&S with a response to the other's article. Comby provided a response to IEER's article, but IEER did not provide a response to Comby's. We publish below the response of Comby, after slight editing. -J.M.*

The article entitled "Health Survey Around an Indian Nuclear Power Plant" ([www.ieer.org/sdafiles/](http://www.ieer.org/sdafiles/)) was published in "Science for Democratic Action" a newsletter of the Institute for Energy and Environmental Research (IEER). The authors of this paper, Doctors Gadekar, are the editors of "Anumukti, A Journal Devoted to Non-Nuclear India," which proclaims itself "South Asia's Only Anti-Nuclear Magazine." They say that they became confirmed anti-nuclear activists after the 1986 Chernobyl accident.

"Health Survey Around an Indian Nuclear Power Plant" is a report of a survey made in 1991 on illnesses including fevers of short and long duration, breathing difficulties and persistent coughs, body aches and pain in joints, digestive problems, skin diseases, weakness and debility, solid tumors, conjunctivitis and cataracts, and acquired deformities and polio, among a sample of about 2500 persons living within 10 km of the Candu nuclear reactors at Rawatbhata, the Rajasthan Atomic Power Station, as compared to a similar number living over 50 km away. The first reactor went critical in August 1972 and commercial in December 1973 while the second became commercial in April 1981.

In EVERY category, they found more disease among the first group than among the second, the differences ranging from barely significant to as much as a factor of six. None of these conditions is known to be connected with chronic exposure to ionizing radiation; but some occur under exposure to extremely high doses, much higher than are ever likely to be encountered in the vicinity of a nuclear power station, except perhaps in the event of a major accident like Chernobyl. The report states: "The most significant differences in health were related to untoward pregnancy outcomes. These miscarriages, still-births, deaths among newborn babies and congenital deformities amongst both the living and those who had died within the last few years." Yet Table 3 (*in the paper*) shows that such differences between nearby and distant villages existed before 1971.

A serious shortcoming in this report is the absence of any measure of the ionizing radiation or radioactivity in the vicinity of the nuclear power plant or in the nearby and distant villages of the study. This omission is surprising since Dr Surenda Gadekar is a nuclear physicist who has held a post-doctoral research position at Iowa State University.

The report was published in *International Perspectives in Public Health*, Volume 10 (1994), and there seems to have been no echo to be easily found on the Internet. The editor of that periodical is Dr Rosalie Bertell, an anti-nuclear activist; her latest cause is based on the notion that depleted uranium ammunition is the origin of the nebulous Gulf War and Balkan War Syndromes. (See [http://www.ccnr.org/bertell\\_bio.html](http://www.ccnr.org/bertell_bio.html) and <http://www.ratical.org/radiation/RBanNun.html>)

The only external reference cited in this paper is a report by WISE, the Worldwide Information Service on Energy, which presents itself as a neutral organization. In fact, WISE is known to be closely related to Greenpeace in its personnel, its locations, and its finances.

Let me note finally that IEER is an organization which usually presents anti-nuclear views. Their views are not neutral. I find their writings often to be pseudo-scientific in an attempt to gain legitimacy. It is their privilege to hold anti-nuclear views, but their readers should be aware of their consistently anti-nuclear bias.

In summary, one is reminded of the caution addressed to a would-be investor, “If it sounds too good to be true, it probably is”. In the case at hand, “If it sounds too terrible to be true, it probably is.”

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