

letters

drive the arms race:

► The Warsaw Pact has a "three-to-one advantage... in conventional weaponry and men" in Central Europe
► US "bomber- and submarine-launched missiles are accurate enough to be used only against population centers..."

► The only appropriate response to a Soviet first strike against US missile silos would be a "counterattack against Soviet missile sites"
(Other such myths are discussed in reference 1.)

With respect to the conventional balance in Central Europe, while it is true, as frequently cited, that the Warsaw Pact has a two-to-one advantage in number of divisions located in Central Europe, it also appears to be true (although hardly ever mentioned) that these divisions on average have only slightly over one half the manpower and firepower of the average NATO division.² The net result is that the Warsaw Pact has an advantage of approximately 1.2 to 1, not of 3 to 1 as Sutton claims, in conventional weaponry and men in Central Europe. This approximate balance (which could be maintained if NATO made the decision to mobilize its reserves within about a week after the Warsaw Pact) in combination with the potential advantages of the defense, the doubtful reliability of some of the non-Soviet units which comprise approximately one half of the Warsaw Pact's divisions in Central Europe, and the natural and man-made barriers to mechanized armies in West Germany, make a conventional defense of Western Europe feasible.²

Sutton is also mistaken when he asserts that the nuclear weapons carried by US bombers and submarines are too inaccurate to be used for any other purpose than "city-busting." The bombs and cruise missiles on US bombers are sufficiently accurate to destroy even hardened missile silos. Furthermore, US submarine-launched missiles, with median miss distances less than 500 meters, are accurate enough to destroy virtually any of the thousands of military facilities that US strategic planners have thought worth targeting. A list of examples of such targets was given by the Defense Department to the Senate Armed Services Committee in 1980. It includes nuclear-weapons storage sites, nuclear submarine bases, airfields, caserns, supply depots, marshalling points, ammunition storage facilities, tank and vehicle storage yards, and key communication facilities.³

As we pointed out in our article, a counterattack on Soviet missile silos after a Soviet first strike is an extremely implausible justification for the US

acquisition of a new generation of more accurate silo-killing ballistic missile warheads. If the leadership of the Soviet Union were deranged enough to undertake such a first strike, they would almost assuredly put their remaining land-based missiles in a launch-on-warning posture with the result that any counterattack against these missiles would result in the destruction of empty holes.

Sutton argues for strategic counterforce capabilities because he believes that they would give the US more freedom to use tactical nuclear weapons. This illustrates one of the major theses of our article: that many want counterforce capabilities in order to lower the nuclear threshold. More important, however, it illustrates a too-widespread inability to understand the implications of the levels of overkill possessed by both "superpowers."

As pointed out in our article, a large-scale attack against strategic weapons of either the US or the USSR would cause tens of millions of deaths. How can anyone assume no response from a nation that had suffered such an attack and still had thousands of surviving deliverable nuclear weapons at its disposal? Yet this is the key assumption implicit in such concerns as that about the "window of vulnerability" which continue to drive the nuclear arms race.

References

1. Frank von Hippel, "The Myths of Edward Teller," *Bulletin of the Atomic Scientists*, March 1983, page 6.
2. John Mearsheimer, "Why the Soviets Can't Win Quickly in Central Europe," *International Security*, Summer 1982.
3. Desmond Ball, "US Strategic Forces: How Would They Be Used?," *International Security*, Winter 1982/1983, page 31.

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2/83

Physics and love

I've noticed a lot of interest among physicists in spiritual matters lately. It's no wonder; the world faces a momentous choice: annihilation or transformation.

Everything happening in the world now represents a cry from humanity for a transformation. We are engaged in a planetary struggle with fear—the fear of each other and to some extent the fear of ourselves and of spirit. Fear will eventually lead to annihilation.

On the other hand, love will lead to transformation. Love is the opposite of fear; the two cannot exist simultaneously. If we conquer fear through

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understanding and love, then this love will manifest itself in actions done for the good of all. When a "critical mass of people" become committed enough to love in its purest form (the unconditional love of God), then our society will become transformed.

Physicists have an important contribution to make to the transformation of society. Fritjof Capra, physicist and author, had made this plain in his recent book, *The Turning Point* (Simon and Schuster, 1982). It is a synthesizing work which begins with the paradigms of modern physics and connects them with the best that is being accomplished in biology, medicine, psychology and economics. The result is a vision of our Western society being transformed by the energy of love—in practical ways, by practical people.

If we acknowledge that our main purpose here on Earth is to love ourselves and each other and each moment and if we recognize that love encompasses and includes understanding, then our task becomes clear: to choose love rather than fear in every thought, every endeavor, every moment. Think about it, and apply it—now, before it's too late!

JANE JACKSON

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1/83

Restrictions on religion

I read with great interest the letter by Mujaddid Ijaz on the subject of physics in Saudi Arabia in May (page 9), and I was pleased with the progress that is being made towards bringing a quality physics program to that country. However, I must relate a tale to you that might put some of the peripheral problems of that society into perspective.

A former student of mine, Khaja Subhani, has been assistant professor of electrical engineering at the University of Petroleum and Minerals (UPM) in Dhahran since 1977. We met at a conference in Berlin during the summer of 1981, where he informally invited me to visit UPM some time during the past academic year to present three lectures on selected topics in solid-state electronics. We corresponded further on this, and during the winter I received a formal invitation by telex from the chairman of his department. My plans were to visit in May 1982, and the UPM office in Houston sent me visa forms. I was advised both on separate sheet and by two of my Arab colleagues that, although I maintain no formal religious affiliation, I must complete the part asking for my religion in an acceptable manner. Not knowing what was "acceptable," I

phoned the Houston office and told them that both my parents were Jewish. The Houston office apparently viewed this as a dilemma and wired UPM asking for advice. Within a week I received a telex from Subhani stating simply "my contract has been terminated." He wrote me a letter, which arrived the following week, stating that the "rules of the Kingdom are strict."

It may be that my invitation to speak in Saudi Arabia and the sudden termination of Subhani's contract are disconnected events, in which case my wait to receive a re-invitation from UPM should be rather short. However, the close proximity in time of the two events surely casts some doubt on the rosy picture of burgeoning scholarly activities presented by Ijaz.

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1/83

THE AUTHOR COMMENTS: The tale narrated in Melvin Shaw's letter does not surprise me. There have been restrictions on the entry of Jewish visitors to the kingdom for many years. People with other religious faiths have been given appointments in the kingdom and most of them have been made aware of the rules and regulations of the kingdom at the time of signing job contracts. Saudi Arabian jobs are by no means governed by equal opportunity laws.

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2/83

Require renewal of PhDs

For many years it has been tacitly understood that in physics the PhD is a research degree. What I propose here is a mechanism by which this understanding is made formal.

The PhD would be reviewed and renewed at five-year intervals by the graduate department that granted it. The degree recipient would be required to submit reprints of at least three research papers published in the preceding five-year period. (The requirement would be prorated for those receiving degrees between evaluations.) Failure of a PhD recipient to submit the required number of reprints would result in the graduate department replacing the PhD with a Doctor of Arts—a non-research degree. To regain the PhD, the graduate would have to meet the requirements at the next evaluation.

In this way graduate departments would be required to maintain responsibility for their graduates, and the PhD will be recognized for what it really is.

continued on page 102

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