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Letters

Ultimate dilemma

The two informative "Star Wars" articles ("Beam Weapons," SN: 7/14/84, p. 19; "Building the Ultimate Weapons," SN: 7/21/84, p. 35) would have been more helpful to readers trying to gain perspective on this approach, if something more had been said about the faults involved:

Practicality for one. From development to full deployment, the cost of such a system is going to run into trillions of dollars. Yet all it can accomplish is the *partial* inhibition of *one* of the methods of delivering nuclear warheads to a target. Enemies desiring to destroy us with nukes could, and certainly would, switch their carriers from ICBMs to ground-hugging cruise

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Cover: Unlike our own Milky Way, the so-called giant irregular galaxies — such as the pictured Large Magellanic Cloud — do not form spirals or other "regular" shapes thought to be conducive to star formation. Nevertheless, these irregulars are successful at bearing stars. Just how this might happen is currently under study but remains essentially a mystery. (Photo by Kitt Peak National Observatory/Cerro Tololo Inter-American Observatory)



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missiles, to "stealth"-type bombers, and/or to infiltration via innocuous-seeming deliveries of trade goods with the warheads buried inside. The result in terms of devastation would be the same as though we had never spent the first nickel on laser or particle-beam weapons. So *why spend the first nickel?*

Morality for another. It is simply *not right* to spend those trillions of dollars, in fact to *waste* them on something that self-evidently won't accomplish the one thing it's supposed to do. Consider what those funds could accomplish for more humane purposes: ending starvation, improving medical care, lowering third-world countries' tensions by building up other countries' economies and raising their standards of living — and so much more! A Marshall Plan-

type of operation involving the kind of funding planned for "Star Wars" would constitute the greatest humanitarian advance ever made by this or any other country.

We have to face up to the fact that the world can't spend, or invent, its way out of the nuclear dilemma. We have to *negotiate* our way out — and luckily, that's a course which is considerably less expensive as well as infinitely more morally justifiable. The road is: No First Use, mutually verifiable rollback, simultaneous reduction and dismantling, *abolition*. Let's get on with it.

William Hoskins
Jacksonville, Fla.

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I protest the glaring anti-USSR stance represented by the cover of the July 14 edition of SCIENCE NEWS. After all, it is the USA that has refused to take a "no first strike" position. It is our own Department of "Defense" that says it wants to have the USSR (and the world) feel that we could launch a preemptive strike!...

Karl A. Grossenbacher
President, California Gray Panthers
Richmond, Calif.

The conclusion of Janet Raloff's excellent pair of articles on the potential of beam weapons highlighted several objections to their development for ballistic missile defense (BMD). We should also consider the Soviet response to an American BMD system. Any given system can destroy only a limited number of attacking ICBMs. Therefore we must worry that if it will cost the Soviets less to produce additional missiles than what it will cost us to enlarge our BMD system correspondingly, then the Soviets need only build more and more ICBMs to maintain their ability to overwhelm our BMD.

Is it likely that Soviet offense will have such a cost advantage over American defense? Based on the experience of astronomers in designing and building a number of telescopes for use in space, we may estimate that the cost of the still larger optical systems envisioned for the laser BMD stations will be greater at least in proportion to the diameter of their primary mirrors. This estimate provides a lower limit on the cost of a BMD station fully equipped with a high-power laser and a high-speed pointing control system. This limit suggests that it will cost at least 10 times as much to destroy an ICBM as to

add one to an offensive arsenal.

This tentative conclusion demonstrates the need for obtaining more precise estimates of the marginal cost of BMD by means of lasers or particle beams before we head down the road to a BMD system. At this point we should be aware that the development of a BMD capability might create irresistible pressure for accelerating the arms race both in expenditures and in sheer numbers of missiles. This open-ended arms race would place the world in a state that is less stable, less predictable and less secure than ever before.

Michael Ratner
David Spergel
Cambridge, Mass.

Re "Beam Weapons": Maybe I'm missing something in this argument... or maybe the DOD is. Before we spend a quarter of a trillion dollars on satellite defensive weaponry, I would like to know what possible defense there could be against a mass of small metallic bits—essentially a "bucket of nails"—launched in a counter orbit at the same height as our would-be missile-killers. Not only would these collide with the beam weapons at a speed of 35,000 mph, they would do so twice every orbit. The Fletcher panel says that "there appeared to be no Soviet countermeasure for which there wasn't an effective counter-countermeasure." Well, gentlemen? I'm listening...

Russell Madden
Iowa City, Iowa

Before I agree to spend \$500 billion and further increase our unbelievable National

Debt, I want someone in the Defense Department, preferably with a high school course in physics, to answer the following question: If mirrors must be used to focus the lasers, what's to prevent the Russians from having a mirrored surface on their missiles?

Do we have a plan B, where we send in CIA men with spraycans of flat black paint, just before launch?

Mat Boissevain
Los Altos Hills, Calif.

Indeed, there has been concern expressed among weapons analysts and designers about whether a highly polished finish might grant a missile some degree of immunity to damage from lasers by allowing its mirror-like surface to deflect much of a beam's energy instead of absorbing it. There have also been questions raised about the potential risk of attempting to rely on a missile's reflectivity as protection against lasers. Explains Herbert Flicker of Los Alamos National Laboratory, "To have a polished aluminum surface and maintain it polished is difficult because aluminum oxide grows [on it] naturally." Moreover, he says, "If you launch this through the atmosphere, it's likely to get degraded even if it was recently polished," owing to potential abrasion from atmospheric dust and other materials. In any case, the reflectivity issue is among factors pushing laser-weapons designers to focus on development of shorter-wavelength devices. — J. Raloff

Correction: In "Microwaves: Hints of low-dose hazards" (SN: 8/18/84, p. 103), the immune-response data were collected from animals sacrificed 13 months into the 25-month-long study, not after only 3 months, as stated.

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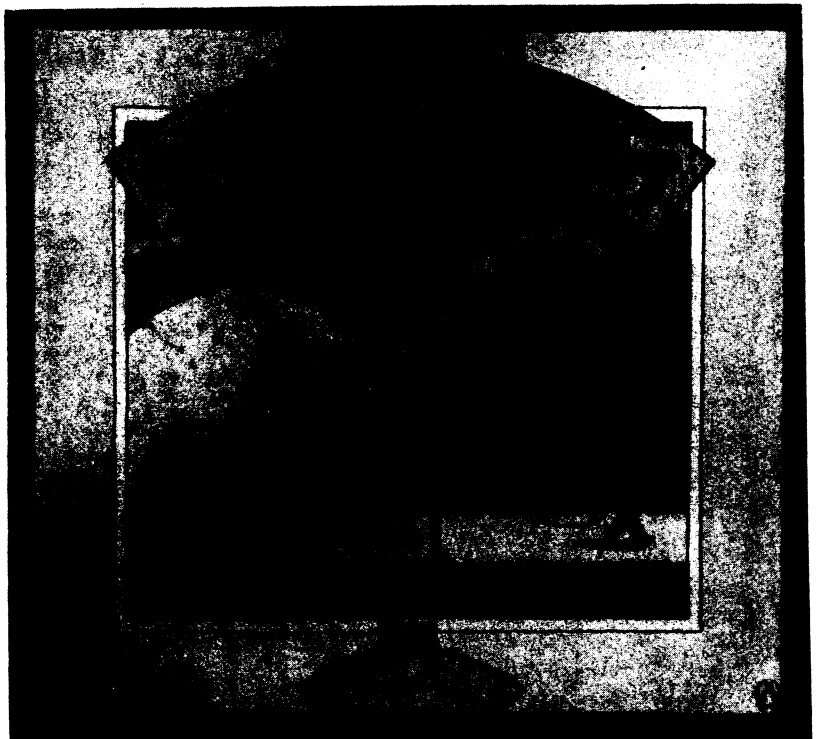
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