Skepticism About SDI

I share the skepticism about the Strategic Defense Initiative (SDI) program expressed by many critics, but for reasons that differ somewhat from those generally presented. They are as follows.

Basically I mistrust complicated apparatus controlled by human beings, especially when it cannot be tested beforehand and when it requires continuous, intelligent vigilance. My picture of the first day of World War III is of buttons being pressed and two-thirds of the apparatus malfunctioning—bombs aimed at Moscow falling on Philadelphia and Soviet missiles aimed at New York either falling back and exploding in their silos or ending up in Australia. The other part of the picture relates to the complex defensive apparatus devised by both sides. This, I predict will never be turned on because those in charge will be out to lunch, going to the bathroom, or simply not aware that the war has started. Such defensive gear as does get used probably will not be applicable to the particular type of attack in progress.

There are innumerable bits of history to support my view—the *Titanic*, the Maginot Line, the Japanese attack on Pearl Harbor, Three Mile Island and Chernobyl, the Challenger disaster, the recent attack on the *Stark*, and many, many others.

So, believing as I do, it seems to me that for us to promise the public that SDI will somehow make it safer verges on perpetration of a fraud. I would much prefer that we promote public awareness of the horrors of another war and encourage the kind of international understanding that can prevent it.

John P. Blewett
310 West 106 Street,
New York, NY 10025

Ecology of Marine Communities

In his 22 May article "Complex dynamics link islands' predators" (Research News, p. 917) Roger Lewin suggests that the lizard removal experiments of Thomas W. Schoener and David A. Spiller (Reports, 22 May, p. 949) "point up an important difference between marine ecosystems and this particular terrestrial ecosystem." Citing Robert Paine's work in the rocky intertidal, Lewin argues that predator removal in "marine systems" yields a reduction in species number (due to competitive exclusion), whereas Schoener and Spiller found enhanced diversity of prey (spiders) in the absence of predators (lizards). Lewin's sweeping generalization of rocky-intertidal results to all marine ecosystems is unjustified. It has been appreciated for some time that predator removal in marine soft bottoms often leads to an enhancement of prey-species diversity (*1, 2*). Explanation of this pattern is often sought in the "intermediate disturbance hypothesis"; natural rates of predation or disturbance are thought to be so high relative to colonization rates and competitive-exclusion times that "weedy" species dominate the system (*3*). Predator removal allows species with less opportunistic population dynamics to enter the system, enhancing species richness. Because competitive exclusion can be quite slow in soft bottoms (*1, 4*), the state of enhanced diversity can persist beyond the duration (12 to 14 months) of most field experiments. Relatively slow exclusion rates may result from fundamental differences in competitive interactions [limited space in hard bottoms often being controlled through interference interactions, with exploitative competition for limited food perhaps being more common in soft bottoms (*1, 5*)] or because remaining predators continue to keep populations below carrying capacity (*6*).

The above discussion illustrates the dangers of overgeneralizing results from a single, potentially unusual habitat such as the exposed rocky intertidal (*7*). It is time to acknowledge more openly that holistic models in community ecology may not be very useful predictively (*8*) and that the practice of making broad generalizations from experiments in a small and heavily biased suite of communities is grinding to a halt (*9*). We are confident that a focus on mechanistic, hypothetical-deductive approaches (for example, *10*) will lead ecologists more surely, although perhaps with smaller steps, toward an understanding of community-level processes.

Craig Smith
Peter Jumars
School of Oceanography,
University of Washington,
Seattle, WA 98195

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Infrared Astronomy

As the builder of the first infrared imaging camera, I would like to comment on, and even correct a few points in M. Mitchell Waldrop's lucid article, "Imagery comes to infrared astronomy" (Research News, 19 June, p. 1525). This camera used a doped silicon detector that is sensitive in the 10- to 20-micrometer wavelength region and produced astronomical images beginning with a run on the 90-inch University of Arizona telescope in 1981. I came to Berkeley to build up an infrared capability and have built more instrumentation of various kinds here. Our astronomical infrared instruments have sensitivities limited by photon counting statistics and can only be substantially improved by increasing the number of pixels in the arrays.

Work on indium antimonide detectors was initiated by Judith Pipher at the University of Rochester, and astronomical observations began about 2 or 3 years ago. The staff of United Kingdom Infrared Telescope has built an indium antimonide 58 by 62 pixel camera and presented beautiful pictures at the Conference on Infrared Detectors for Ground Based Astronomy at Hilo, Hawaii, in March 1987.

This conference, chaired by Eric Becklin of the University of Hawaii at Manoa, was attended by about 200 people from universities, industry, and government labs. Astronomical observing with infrared arrays is now a field of endeavor, a far cry from the days in 1978 when I investigated the possibility of using Department of Defense infrared technology for astronomy under the support of Robert Cooper, then the director of the Goddard Space Flight Center.

John F. Arens
Space Sciences Laboratory,
University of California,
Berkeley, CA 94720

Erratum: In the report "Variable occurrence of the *nrd*B intron in the T-even phages suggests intron mobility" by J. Pedersen-Lane and M. Belfort (10 July, p. 182), two sentences were incorrectly printed. On page 182, the sentence beginning at the bottom of the second column should have read, "The *td* intron is indeed homologous throughout the T-even phages, as demonstrated by hybridization and dideoxy primer-extension analysis of pre-messenger RNA (pre-mRNA) and splice site products (*11*)." On page 183, in the legend to figure 2, the next-to-last sentence should have read, "Oligonucleotide probes (1 to 4) indicated by arrows are as described (*21*)."