BOOKS

Beam Us Out, Scottie!

Beam Weapons: The Next Arms Race

Written by Jeff Hecht

Lately "Star Wars" means not Darth Vader and intergalactic derring-do, but President Reagan's proposed new defense against nuclear missiles. Reagan himself has never clarified precisely what he means, but Jeff Hecht's *Beam Weapons* gives the clearest, most objective analysis of the Star Wars defense I've seen. Cofounder of *Lasers and Applications* magazine, Hecht explains the exotic new technology of military lasers, particle beams, and x-rays, and translates the "Pentagonese" descriptions of their use into English.

While Hecht argues that Star Wars technology is not nearly advanced enough to predict the final product—or even if the final product is possible at all—he sees the apparent front running candidate as a series of "battle satellites" armed with beam weapons. Set in orbit high enough to look into Russia, the satellites would—in theory—"see" any incoming Russian missiles and zap them out of the sky with some sort of energy beam, probably a laser.

Technically, Star Wars has split scientific experts into warring camps. The Union of Concerned Scientists, mostly academic liberals, call it impossible. Equally prominent experts, mostly those on the military payroll, are selling Star Wars as a way to "make nuclear weapons obsolete." The shortage of crystal balls being what it is, no one can say which side is correct. The only thing a non-expert can be sure of is that Star Wars will appear in the tax bills long before it does in the sky. Hecht presents the Law of Technology Marketing as "Any sales projection is an overestimate, and any marketing timetable is overoptimistic." Over two billion has already been spent; one "sales projection" for Star Wars is $40 billion over ten years. Considering the *average* cost overruns for military high tech runs around 350 percent, Star Wars costs will be more astronomical than the technology.

The technology is forbidding enough. First, a laser capable of handling at least 5 million watts must be created. No current laser approaches this power. Second, the laser must be "weaponized"—made small, dependable and operable without busloads of Ph.D.'s hovering over every shot. Frequently, weaponization takes longer, costs more, and succeeds less often than the original creation. Third—here's the hard part—a laser radar (current radars are not accurate enough) must be created with a computer capable of identifying the target, discriminating genuine targets from "spoof" targets, tracking, and aiming the laser accurately enough to hit a dime from 3,000 miles. This must be done automatically. Humans are not nearly fast enough. Neither are today's computers. Fourth, all this incredibly complex gear must be robust enough, and light enough, to be blasted into space, then reliable enough to work even without maintenance and without realistic testing. And, of course, it must be defended against surprise attack.

Obviously, Star Wars, if it can work at all, is many years and many, many billions in the future. Were it to go into battle today, it might well make ballistic missiles obsolete. (Because air, fog, and rain can dissipate energy beams, low flying missiles and bombers would be immune. Some, at least, would be bound to get through.) Since in fact Star Wars will not be around for 10 or 15 years (and that, remember, is only the "sales projection"), there is plenty of time to think of defenses. These range from polishing the missiles to reflect the beams to blinding the battle satellites electronic "eyes" with counter lasers. Of course, there are counter-counter measures and counter-counter-counter measures and so on ad infinitum.

Judging the future workability of Star Wars technology may be beyond human ability. But, sorry to say, the hype surrounding it as the "ultimate weapon" which will make peace, not war, sounds distressingly familiar. Hecht reminds us that technological revolutions often give us less than expected. The supersonic airliner, the "white hope" of the 70's, is the "white elephant" of the 80's. Oldtimers may remember the atomic-powered airplane which cost $1 billion in the pre-inflation 50's, and never flew. (Thank heaven!) Then there is the famous "soviet submarine" effect. The U.S. Navy finds lots of Russian submarines prowling our coasts exactly at the time the Navy budget is being debated in Congress. Anyone attempting even to question an item of military spending will face dire warnings that the Russians are building a bigger one. Hecht could have mentioned the scandal ridden C-5A superplane. During development, it cost more than all Federal aid to education, and promised to make it possible to bring all our overseas soldiers home. Years late, and billions over estimates, the C-5A flies at last, but now we are told we need more soldiers overseas. And then there was the Sergeant York antiaircraft system, its granddaddy, the Skywatch, and dozens of other "ultimate weapons" which only led to weapons even more ultimate, deadly, and expensive.

If history teaches anything, it teaches us that, unfortunately, making today's weapons obsolete simply means paying for tomorrow's.

—Kent Patterson

Safe Skiing

by Michael Fuchs

When heading into the backcountry this winter season, don't forget to pack along a good dose of common sense.

A pleasant outing can turn into a miserable ordeal in a matter of minutes. So like a good Boy Scout, be prepared. Stay alert to changing weather conditions and to your surroundings. Know your limits. In your search for silence and solitude, remember you are distancing yourself from possible assistance. Winter rescues in the Cascades are difficult at best, and help rarely can arrive within 12 hours of notification. No one is immune to adversity, so be responsible for your self. Enter the wilderness with the knowledge that an overnight bivouac is a distinct, if slight, possibility.

The following are winter recreation guidelines suggested by the US Forest Service and the University of Oregon Outdoor Program.

What to Wear

To maintain a comfortable body temperature, use the layering method. Wear clothes of varying warmth rather than one large parka or a single thick sweater. Add layers as your body cools; remove layers as you warm up. Remember, you can lose 30 percent of your body heat by leaving your head exposed. Avoid hypothermia: Wear a cap!

Essentials for Winter Travel

- Wool pants or knickers (no blue jeans or cotton pants)
- Heavy wool socks, inner socks, extra wool socks
- Wool hat or balaklava
- Long underwear (polypropylene works well)
- Wool shirt
- Wool sweater, fiber pile coat
- Warm jacket
- Waterproof raingear
- Windshirt or shell
- Wool or leather gloves, extra pair
- Gaiters
- Sunglasses

What to Carry:

- Trail map and compass
- Flashlight and batteries
- Matches, candle, firestarter
- Emergency food supply
- Ground insulation (ensolite pad to sit on)
- First aid kit
- Sunscreen
- Whistle
- Signal mirror
- Waterbottle
- Watch
- Emergency shelter
- Nylon rope
- Ski repair kit (basket, screwdriver, binding parts, screws, roll of tape, ski tip)

Before You Go

Check weather conditions: National Weather Service, 689-1321. Let friends know of you plans. Mark your route on a map for them and indicate when you plan to return and make sure you notify them when you get back.

If You Are Lost or Injured

Stay calm—decide on a course of action. Trust your compass. Backtrack, if possible. If not, send two people for help. Don't abandon your skis. Build a fire and shelter (a snow cave is deal). Stay out of the wind. Keep an ensolite pad or tree branches and your skis between you and the snow. Mark your camp so it is visible from the air. Distress signals: three smokes, three shouts, three whistle blasts or three of anything that will attract attention. Do not travel at night.

Lake Ice

Do not venture onto the inviting expanse of a frozen lake. Thick snow can blanket and insulate a lake, keeping the ice from developing a thick crust. Do not try to determine if the ice is safe. Assume that it is not.

Avalanche

Again, be aware of your surroundings. A slope need not be steep for an avalanche to occur. Many avalanches happen on slopes of less than 30 degrees, and relatively small avalanches kill 42 percent of their unwary victims.

The best protection against getting caught in an avalanche is to avoid areas where they might occur. Narrow clearings running down slopes and wide open steep slopes are likely avalanche paths. To get around these areas, stick to higher ground or the windy side of the ridgetop, away from cornices. If this is not practical, travel in the valley, away from the bottom of the slopes. Take the time to plan your route carefully.

A Few Last Words

It is essential that you make thorough preparation and take precaution on every outing to the backcountry. A healthy respect for yourself and for Mother Earth will ensure peace of mind for you and safety for your party.

These organizations offer free or low-cost instruction on all aspects of winter backcountry travel. Check them out.

- U of O Outdoor Program, 686-4365
- Eugene Parks and Recreation Department, 687-5333

In the event of any outdoor emergency, contact: Lane County Sheriff's Office, 687-4160.

Sno Park Permits

Under state legislation, Sno Park permits are required in designated winter recreation parking locations throughout Oregon. Permits are available at any Oregon Department of Motor Vehicles office.

Trail Etiquette

- Avoid snowshoeing or walking on cross-country tracks.
- When taking a break, step out of the ski track to avoid damage to the track.
- When skiing in a track, give the downhill skier the right of way.
- When being overtaken by another skier, step out of the track and let him or her pass.
- Leave pets at home.

Weekly Eye Opener

by Larry Deckman

(Taken from *Felton and Fowler's Best, Worst, and Most Unusual):* Louis XI of France commanded the Abbot of Baigne to invent a preposterous musical instrument to entertain His Majesty's friends. The Abbot good-naturedly agreed to undertake the assignment, and after a few hours at the drawing board, he gathered together a herd of hogs—ranging from nursing piglets to full-fledged swine. Under a velvet tent, he lined them up with the low-voiced porkers on the left, the middle-range sows in the middle, and the soprano piglets on the right. Then the Abbot modified an organ keyboard, attaching the keys to a complex apparatus terminating in a series of small spikes, one poised over the rump of each pig. The courtiers were gathered together and the Abbot played his keyboard, causing the spikes to prick the pigs, who naturally let out a piercing squeal, each in its particular voice range. The tunes were actually recognizable, and the concert was adjudged a success by all.

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