

SCIENCE & TECHNOLOGY

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STREAMS OF COLOR: Children admire a bright Rainbow Bridge windssock display, designed by Bob Anderson of Berkeley, Calif.



High-Tech Kites Are Flying High

Dual controls, composite frames, and laser-cut fabrics revolutionize a popular pastime

By **Simson L. Garfinkel**

Special to The Christian Science Monitor

BERKELEY, CALIF.

HIGH in the air, the blue-and-yellow diamond leisurely glides to the left, then to the right. Suddenly, it spins seemingly out of control and dives towards the ground, turning around at the last moment and racing back towards the sun.

"I've only flown this thing for five minutes," says Mike Iverson, a new kite enthusiast spending the afternoon at the Berkeley Marina Waterfront Park. "It's steerable: You can just drive it around the sky!"

High-tech has come to kiting. Today's kites are more than just steerable; increasingly, they're being assembled from a cornucopia of materials that are lighter, stronger, and more colorful than the kites of yesteryear. These materials are creating kites that are bigger, faster, and flyable in more wind conditions than ever before. Not surprisingly, these high-tech flying machines have matching high price tags.

"Most people's conception of kiting is Chinese paper and balsa wood," says Craig Shrader, who owns Frontier Kites, a kite manufacturer in Houston. These days, most kites are made from ripstop nylon or woven polyester; increasingly they are being designed on computers and cut to shape with lasers. Instead of wooden rods, kites are now stiffened with carbon-fiber composites. Even kite line has changed: Cotton string and nylon fishing line are out, replaced by woven or twisted fibers of Kevlar

and polyethylene.

The kites have not one, but two lines connecting them with the person on the ground. Pull on the left line and the kite turns to the left; pull on the right line and the kite turns to the right. The second control line adds a whole new dimension to kiting.

"You're not just putting it in the air and tying it to the family vehicle," says Mr. Shrader. "It's a kite that you totally control - you manipulate every maneuver that it does." That second line, say kitemakers, is responsible for the upsurge in popularity over the past few years.

The way that a dual-line kite works is a simple matter of applied aerodynamics, explains Joe Hadzicki, a kite designer and president of Revolution Kites in San Diego. When a kite is flying straight, the wind blowing over both sides of the kite generates equal amounts of lift, holding the kite in the air.

"When you pull back on the left side, that wing sees less wind," Mr. Hadzicki says. Less wind means less lift, and the left side of the kite turns down and towards the left. At the same time, "the other side is getting more wind, compared to the first side, so that wing starts to fly better," pushing the kite through the turn.

Hadzicki also sells a series of four-line kites. The second pair of lines gives the kite flyer even more control.

"You can turn left, turn right, stop it, and fly backwards," Hadzicki says. "You could be diving into the ground at 50 or 60 miles an hour and, within a couple inches of the ground, you could stop it instantly and have it hover."

Dual-line kites have been around for decades, says Daniel Prentice, editor of American Kite Magazine. The person normally given credit for their invention is Paul Garber, who worked for the United States Navy during World War II. Dr. Garber designed kites that were flown off the backs of aircraft carriers and used for target practice. Because they could be controlled in air, sailors on deck could make the kites' movements simulate those of Japanese and German fighters.

Nevertheless, kites in the United States changed little until the early 1970s, when a few kite manufacturers began making large kites out of lightweight Mylar and plastic rods instead of



SKY BIRD: Greg Anderson of Berkeley, Calif., sails his strato-4 parafoil, *Son-Shine*. Not a true kite, the parachute-like wing is usually tied to the ground.

wood. "What they had, then, was a tremendously light ephemeral kite," says Mr. Prentice. With the new freedom, kite designers started making large, 45-foot dragon kites.

"Around that time, people started experimenting and making kites for the public with nylon material and eventually rip-stop nylon, which gave a durable kite. It was heavier than the Mylar, but extremely durable, and very colorful. Basic designs like the delta [triangular] kite began to replace traditional designs like the diamond," he adds.

"Once you had those materials and you had crafts people making these colorful, highly-durable flying objects, you began to have kite speciality retail stores popping up around the country. [The kites] were beautiful and they functioned. It's everyone's favorite memory of toys: Everyone remembers flying a kite."

In the late 1970s, there were fewer than 10 speciality kite stores around the country, says Prentice; today there are more than 400.

"Every year the sales are better than the last," says Tom McAlister, who runs Highline Kites

here in Berkeley. "I'm expecting anywhere from 30 to 40 percent growth this year."

The demand has given kitemakers the incentive to explore new - and more expensive - designs and materials.

AS kitemakers searched to make their contraptions lighter and stronger, they discovered carbon-fiber composite materials. The composites are made by treating carbon fiber with a resin and heating the mixture in a mold under pressure. The resulting material looks like plastic but is more than five times stronger than steel, says Ben Cheney, general manager of Allied Fiber Composites in Chatfield, Minn. A 30-inch shaft of the material weighs less than an ounce, yet won't break under even the strongest wind.

Dual-line kites created another demand: the need for better kite line.

When a stunt-kite flyer pulls on one of the kite lines, that tension has to be transferred immediately to the kite itself; if the kite line stretches, the kite responds sluggishly. "It would be very hard to fly a stunt kite on rubber

Beware Scares About Irradiated Food Risks

bands, because the rubber band would give before the kite reacted," explains Prentice, who also owns the Shanti Kite Spool Company, a maker of kite spools and lines.

But many materials are little better than rubber bands for kite flying. A single filament of nylon line - the stuff that fishing line is made out of - can stretch as much as 50 percent, making it totally unacceptable for stunt-kite flying. Instead, kite flyers today use lines made from Kevlar and Spectra, a synthetic material made from polyethylene. The fibers are either twisted or braided to further reduce stretch. A good sport-kite line doesn't stretch more than 3 or 4 percent.

Despite the high-tech materials, most kites sold in the US are made domestically by hand. The worker places a piece of sail cloth on a large glass table, then covers it with a piece of glass or metal in the shape to be cut. The worker then traces around the pattern with a special heated knife that simultaneously cuts and seals the material to prevent fraying, says kitemaker Shrader.

"The kite industry has generally grown out of people who were attracted to kites or crafts, not business people who were attracted to big bucks," says Prentice.

INCREASINGLY, however, kite manufacturers are using computer-controlled lasers to cut and seal the material. Lasers are faster and more accurate than human craftsmen, cutting costs while improving quality control at the same time, says Hadzicki.

There has also been the birth of an American kite circuit. One of six national competitions will be held July 27 and 28 in Berkeley. Finals for the kiting "America's Cup" will be Oct. 2 through 6 in Jacksonville, Fla.

A typical kiting event has a little of everything: dual-line competitions, a pageant for prettiest kite, and even a morning of kitemaking for kids, says Mr. McAlister of Highline Kites, who is organizing the Berkeley event.

But the most colorful part of the competition might well be "sky garbage," like McAlister's 60-foot rotating windsock that he suspends in the air with a parafoil, a rectangular, parachute-like wing that is anchored to the ground by means of a thick cable and kept aloft by the force of the wind. "Sky garbage is where the real fun is," he says.

"I had no idea that kites had gotten so far out," says kite flyer Iverson at the Berkeley Marina. "Ten years ago, kites were little triangle things. You put a tail on them, and they cost [next to nothing]."

Today, kites can cost anywhere from \$30 to \$300, plus another \$50 for a set of strings.

FASTEN your seat belts American food shoppers. You may soon be assaulted by a propaganda blitz designed to scare you into thinking that irradiated food - that is, products preserved by ionizing radiation - may kill you.

Never mind that the Food and Drug Administration (FDA) in the United States and the United Nations World Health Organization find no health risk in foods irradiated by approved commercial procedures. The anti-irradiation pressure group Food and Water Inc., based in New York, reportedly is willing to stretch lingering doubts about irradiation's effects to an unwarranted extreme this summer to stop Vindicator of Florida Inc. from becoming the first United States company to market irradiated fruits and vegetables.

This particular battle has been brewing since the FDA approved irradiation for processing some foods and then added chickens to the list last year. It reflects the larger international fight that irradiation's opponents have been waging for a number of years. Major American food processing com-

panies have shied away from irradiation because of this controversy. Now that Vindicator is ready to break the ice, Food and Water Inc. is so determined to stop it they are trying to frighten away possible customers with needlessly alarming 60-second radio spots.

In fact, propaganda makes it hard for consumers worldwide to know what to think about the safety issue. Irradiation's promoters and detractors both pitch their "information" with self-serving bias.

Several decades of research have shown irradiation to be an effective method for preserving a variety of foods. They have revealed no human health hazards. Indeed, irradiation can replace other preservation methods, known to be risky, such as use of ethylene oxide, now considered carcinogenic, to fumigate herbs and spices. There is enough uncertainty as to how thoroughly possible health hazards have been investigated, however, to raise a small, but legitimate, question mark about unsuspected risks.

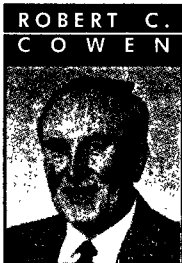
Irradiation's boosters would have you believe that question mark is too insignificant to worry about. Detractors of the process sometimes inflate it into a cloud of doubt that that seems designed to overwhelm rational consideration of irradiation projects whose specific techniques and products can reasonably be considered safe.

This is unfortunate. Irradiation does have a bright promise. It can effectively reduce or prevent sprouting in root crops such as potatoes or onions. It can curb infestation in grain. It can prolong the shelf life of fruits, meats, and vegetables, partly by killing spoilage bacteria.

Like other processing techniques, it can induce some chemical change in foods. Like cooking, it may reduce some of the vitamin content.

But there is no evidence that these changes are any riskier than those produced by standard processing. And, most certainly, irradiation does not make food radioactive.

We should beware of those who would control our thinking through fear. There is room for rational debate about the desirability of irradiation. But there's no reason to believe that FDA-approved irradiated food may kill you.



ROBERT C. COWEN

T'Ain't Funny When Race Is the Joke

By Jeff Danziger

THE underlying question in a discussion of "Amos 'n' Andy," the phenomenally popular situation comedy that ran 30 years and for which, according to my mother, the rides at Coney Island used to stop, is whether or not it was racist.

All the characters were black, but the show was written and produced by whites. Its roots were in the minstrel-show tradition, a stereotype of blacks as an underclass and happy about it.

But the show had perhaps the widest and deepest audience in electronic media - first in radio, where it was acted by whites, then in TV. If that large a percentage of the American population, black and white, were devotees, could they all be racist?

Or was it a cleverly elemental comedy whose appeal was universal, arranged in a theater of familiar types?

Or as Melvin Patrick Ely documents with careful precision in "The Adventures of Amos and Andy," was there a time when the audience went from laughing *with* to laughing *at* the show? Was that why the NAACP was right in forcing the program off the air? The efforts of the NAACP's Roy Wilkins, among others, parallel the civil-rights movement in the '50s, since in the '30s Wilkins discounted black criticism of the early television version.

Ely teaches Afro-American and Southern History at Yale University, and is white. It must be hard to keep classes from laughing. "Amos 'n' Andy" is replete with characters who are conniving (Kingfish), thick-headed (Andy), naive (Amos), overbearing (Mama), and shiftless (Lightning). But at the same

time, they are exceedingly funny and warm-hearted.

But what blacks in the '50s objected to was CBS - who by then owned the show - lading out a stereotype. Ely notes that with the revelations of the Nazi holocaust, America graphically saw the vile-ness of racial hatred.

Other situation comedies that dealt with immigrant life also had difficulty. "Life with Luigi," which lampooned an Italian neighborhood, and "The Goldbergs," which limned an urban Jewish family, were sidelined, despite loyal audiences. "Amos 'n' Andy" dealt with blacks immigrating north.

And racism in the North was a very unpleasant surprise for blacks and whites. It would take another two decades before anyone laughed at Archie Bunker or Fred Sanford.

Ely describes the effect comedy has on the people within the racial group being portrayed. Not trusting the white sense of humor, the assumption was that white laughter was ridicule. What whites were laughing at, Ely writes, was "black striving." That the humor was kindly mitigated not at all. Kindly tolerance was an insult.

The show was also scored, like the Cosby show today, for portraying urban blacks in better surroundings than most faced in reality. Amos had his own cab; Andy and the other characters seemed to live free of crime

or violence. And there was nothing of the economic stagnation of the ghetto. The apartments were uniformly middle class and, if my memory serves, free of white

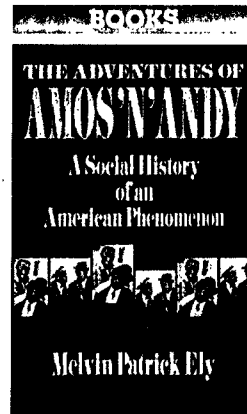
But for those who have never seen the series, little of this makes sense. When "Amos 'n' Andy" disappeared

in 1953, it vanished. Ely (and I) would like someone to bring the shows back on video. One has to remember how the Kingfish and Sapphire, his shrewd wife, bickered, how the Kingfish schemed, how the rotund Andy fancied himself irresistible to women, and how their lawyer, Algonquin J. Calhoun, mangled the law. And from all that one has to remember how funny it was. But was it?

Comedy is nearly always at someone's expense. Americans have usually been willing to laugh at themselves, and for many years blacks were willing to laugh along with the rest of the country. Then something changed. It was World War II, it was Rosa Parks - was something undeniable. The cost was simply too high.

Ely says the comedy became an insufferable charade. He shows understanding for everyone involved, though not always forgiveness, and his skill as a historian and teacher recommends his book highly as part of the American record.

■ Jeff Danziger is the Monitor's cartoonist.



THE ADVENTURES OF AMOS 'N' ANDY: A SOCIAL HISTORY OF AN AMERICAN PHENOMENON
By Melvin Patrick Ely
Free Press
322 pp., \$22.95