A Spy Satellite for the Press?

The U.S.-Soviet domination of space surveillance comes to an end as French, Chinese, and U.S. news organizations consider new satellites

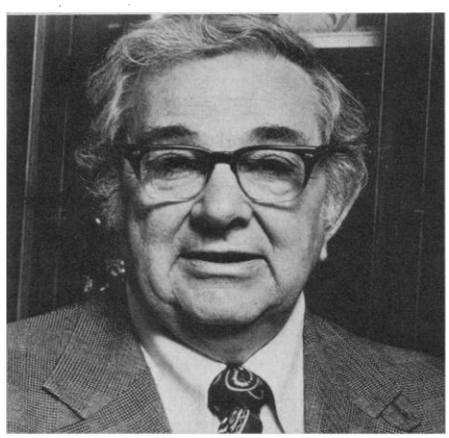
THE satellite spy club has not yet recovered from the moment in February 1986 when France barged in the door and jostled the club's founding members—the United States and the Soviet Union. With its own technology, France launched a high-resolution Earth-scanning device called SPOT (Satellite Pour l'Observation de la Terre) and began selling photos to all takers. In releasing these new, more precise views of Earth, France whetted the news media's appetite for imagery of this kind and also poached on the surveillance turf of the great powers.

In the United States, SPOT's success has provoked an obscure but heated debate about the media's right to gather news from space and the military's right to protect secrets. A law passed by Congress in 1984 requires U.S. companies that want to launch an observation satellite to get a license from the government, stipulating that the operator must agree to "promote the national security of the United States." Foreign systems like SPOT are not bound by these rules. News media critics of the law argue that it imposes excessively restrictive terms on U.S. companies. They think the government will stifle U.S. investment in space cameras just at a time when the business is about to blossom.

The photos from SPOT are sharp. At times they reveal new strategic information, such as the recently published views of a Soviet laser base in the Tadzhik Republic, scenes of a Soviet launch complex at Tyuratam, and the outlines of Iran's Silkworm missile sites in the Persian Gulf.

SPOT has at least twice the resolution of Landsat 5, the highest resolution U.S. instrument available to the public. In SPOT photos, objects as small as 10 meters wide can be identified (in black-and-white), while in Landsat images, the smallest objects are 30 meters wide (but they are recorded in seven bands of light). SPOT photos have sex appeal because they disclose things that interest the casual observer: factories, houses, boats, sometimes even airplanes and trucks. The most famous SPOT photos published so far were those of the Chernobyl reactor after the accident in the spring of 1986. Through them, millions of people had an independent view of the scene before the Soviets were ready to let visitors in. The Chernobyl story got some people in the media talking about building a high-resolution satellite expressly for news gathering.

This talk has unsettled the spy fraternity. In responding to questions about future policy, American officials turn a cold shoulder, in effect leaving the room if anyone asks about buying or selling satellite photos with finer than 10-meter resolution.



George Brown: *The United States is imitating "the worst in past Soviet practices" by trying to control access to information.*

The Soviets have taken a different tack. They are trying to outdo the French, at least in public relations. Soyuz Karta, a Soviet agency, is now offering to sell photos from a military space camera called the KFA-1000. It captures an image on film rather than on light-sensitive digital electronics, meaning that its technology is older than SPOT's or Landsat's. The incoming data cannot be manipulated by computer, but the lens is sharp, resolving objects as small as 5 meters wide.

Soyuz Karta's first U.S. customers were James Harford and John McLucas, officials of the American Institute of Aeronautics and Astronautics. When they were in Moscow in October, they paid $1147 for a photo of Portland, Oregon, from Soyuz Karta's archives and had it printed in the November issue of *Aerospace America*. Soyuz Karta told them that "for a good customer we can even arrange a satellite launch." But the agency will not sell pictures of the Soviet Union or "other socialist countries."

One avid buyer of space photography, assignment editor Mark Brender at ABC News in Washington, says he finds the Soviet offer intriguing, but not very useful. He says, "The Soviets are not known for their business flair; they are like reluctant vendors with their hands tied by political and institutional restraints." He dreams instead of convincing some American company to jump into the business and drive prices down, shorten delivery times, and improve image quality. No such company exists at present. However, there are signs that an industry may be developing. In May, Kodak gave birth to a $3.5-million subsidiary—Kodak Remote Sensing in Landover, Maryland—to process satellite images. At Brender's urging, ABC has already made use of its services, and it has bought many Landsat and SPOT images for newscasts. (Other networks are interested, but not as keenly.)

ABC's Jennings-Koppel Report on the Persian Gulf war on 7 July spent more than $20,000 on computerized Landsat and SPOT images of the Strait of Hormuz. The network recently signed a $40,000 contract with The Analytic Sciences Corporation in Reading, Massachusetts, to make three-dimensional images of the area around Calgary, Canada, for use during its coverage of the Olympic games. The images will be created by mixing elevation data from the Canadian government with some computerized models of buildings in Calgary and two-dimensional images from SPOT. Similar techniques have been used by computer imaging experts at the Jet Propulsion Laboratory in Pasadena, California, the U.S. Geological Survey in Flagstaff, Arizona, and a private company called PIXAR in San Rafael, California, to create three-dimensional images of Los Angeles and of objects in the solar system.

Brender and other fans of space photography think the United States should be leading the campaign to depoliticize the technology. A Navy public relations officer until he joined ABC News in 1981, Brender has campaigned on several fronts to push back security restrictions. He served as chairman of a task force of the Radio-Television News Directors Association that denounced government standards as unconstitutional and as having a "chilling effect" on investors. Yet Brender concedes that news executives lost a chance to shape the law 3 years ago when it went through Congress. They failed to ob-

ject to language in the Land Remote Sensing Commercialization Act (1984) that essentially gives the Department of Defense (DOD) power to censor photographs taken by satellites. Gesturing toward the window, Brender says, "The high-priced media attorneys up and down K Street never raised a question." But when the regulations went into effect in August 1987, they found them restrictive.

The law requires the owner of a space-based surveillance device to seek a license from the Department of Commerce before launch. The owner must agree to "operate the system in such a manner as to preserve and promote the national security of the United States" and must submit detailed information for a "review to ensure compliance with national security and international requirements." The license must be okayed by the secretary of state and the secretary of defense. Nowhere do the regulations say what it means to "promote national security," but they threaten $10,000-a-day fines for anyone who disagrees with DOD's interpretation. The government also claims the right to seize offending data and equipment without a search warrant.

The Commerce Department insists that "nothing in these regulations is intended to place any limits on access to images that would not be placed on such access here on Earth," and pledges to remain sensitive to the constitutional rights of news organizations. But many observers think assurances of this kind do not reduce the chilling effect on investments.

Investors may be made nervous by the uncertainty surrounding a secret limit on satellite photo quality signed by President Jimmy Carter in 1978. It says that the public may not have access to surveillance systems with a resolution of less than 10 meters. According to Neil Hosenball, former general counsel of the National Aeronautics and Space Administration, the government may find it necessary to reject license applications that violate this rule. Foreign satellites, like SPOT, would not be affected. The mere existence of this memo creates a classic Washington conundrum: no one with authority can discuss its meaning, because to do so would be to acknowledge that it exists—a violation of national security.

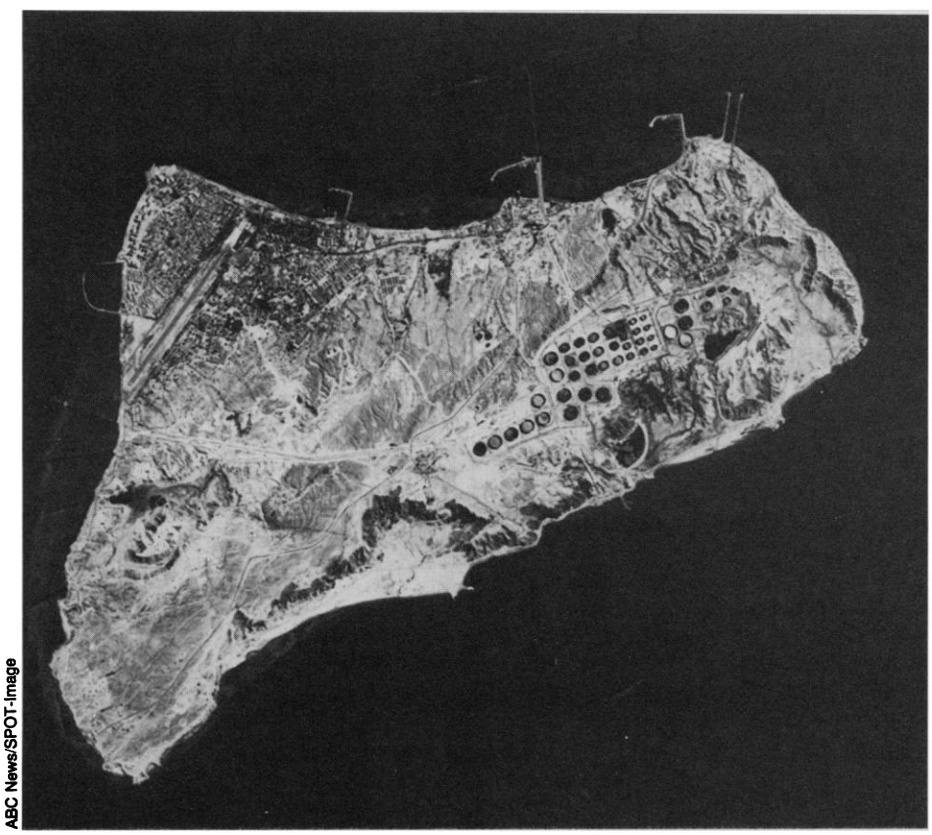
Nevertheless, the secret policy is widely discussed and widely regarded as obsolete because several companies—including the makers of SPOT, the Canadian, Chinese, and Japanese governments—are working on satellites that will soon go beyond the present limits of resolution. In addition, the American company that was selected to "privatize" Landsat, the Earth Observation Satellite Company (EOSAT) of Lanham, Maryland, announced recently that it, too, wants to launch a high-resolution device called STAR. It would provide 5-meter images, primarily to the news media, financed by subscription rather than by fees for individual photos.

Richard Mroczynski, a company spokesman, concedes that EOSAT at this point is merely testing the waters. "Less than two dozen" responses to a market survey have been received, and it will be more than a year before EOSAT has a clear idea of what it would like to build. It is interesting, however, that this government-backed company is ready to challenge the government's policy.

Peter Zimmerman, a physicist at the Carnegie Endowment for International Peace in Washington, D.C., argues that the superpowers lost their dominance of spy satellite technology when SPOT went up in 1986. "It is too late to worry about it now," he told an audience on 4 November at the Space Policy Institute of George Washington University. Zimmerman says, "I am unable to find any good national security reason why [any Earth-observing satellite] would be detrimental to U.S. interests."

At the same meeting, Representative George Brown (D–CA) said U.S. officials are trying to prop up "an illusion" in treating satellite reconnaissance as a secret. In his office he has a map sold to tourists by the National Air and Space Museum giving the name, orbit, and launch date of all the satellites in space, information that is considered "higher than top secret." Today, Brown said, the United States is imitating "the worst in past Soviet practices" by playing the "controller" rather than the "crusader" for free access to information. He recently quit his seat on the Permanent Select Committee on Intelligence in order to speak freely without being accused of leaking secrets. Brown gave his own recommendations, as follows: (i) lift the restrictions designed to keep the media out of the space surveillance business, (ii) increase public support for Landsat, (iii) permit a more rapid transfer of U.S. technology from the secret to the public realm, and (iv) call an international conference to promote an "open skies" policy. The effect, Brown predicted, would be to increase the stability of international relations; even powerful governments hesitate when they know the world is watching.

A quasi-official spokesman for DOD and a consultant to the secretary of defense, retired Air Force General Jack Thomas, told the gathering at George Washington University that he sees nothing urgent in this debate. No one has asked the Commerce Department to license a problematic device,



ABC News/SPOT-Image

Kharg Island, *as seen by SPOT's 10-meter resolution lens in February. ABC News obtained this photo showing many details of Iran's oil transfer terminal.*

he said, so why all the fuss? He thinks that neither the French nor the Soviet system "offers the resolution or timeliness that would pose a national security problem." However, if a company such as EOSAT does apply for a high-resolution (5-meter) device with "near real-time" image delivery capability, "then I see a potential national security problem." (At present it takes at least 3 to 7 days to obtain an image after placing a request with Landsat or SPOT, unless the scene has already been processed.)

It is difficult to define in advance a situation the government would consider risky, Thomas said. He suggested that a hostage rescue mission or an action like the invasion of Grenada might fit the bill, but he declined to speculate further. Recommending that everyone calm down and wait for a real test of the law, Thomas said he thought a "responsible applicant" would have no trouble getting a license.

One reason no one has invested in a "mediasat" is that it would be very expensive to do so, particularly if a legal challenge is part of the deal, and most news executives see no great need for the images it would produce. In a report last May ("Commercial Newsgathering from Space"), the Office of Technology Assessment cited an estimate by Hughes Aircraft that it would cost at least $215 million to set up an independent, high-resolution system for the media. Hughes also guessed it could cost as little as $20 million to piggyback a sensor on someone else's spacecraft, although this would mean some loss of autonomy. The author of those figures, Stillman Chase of Hughes' Santa Barbara office, now agrees that the job "probably can be done for less," and that this first look was "pretty superficial." But there still is no consensus on what it would cost. Some estimates hover around $50 million; others, from the builders of lightweight systems called "cheapsats" or "lightsats," are lower. One builder whose main customer is the military (and who wanted to remain anonymous) said it is "realistic" to think a high-resolution media satellite could be built for $5 million to $10 million. This could be done by using less exact geocoordinating equipment, since TV viewers do not require the same precision researchers do. Great uncertainty about the cost remains, however, because no one has commissioned a thorough study.

Meanwhile, as the United States mulls the alternatives, government agencies in other parts of the world are moving ahead with new Earth-observing satellites. Among those that seem definitely heading toward a launch, according to one international expert, are Canada, China, France, India, Japan, and the European Space Agency. Less firm or more secret plans are being discussed in Brazil, Indonesia, Italy, Sweden, and the United Kingdom. Many observers confirm that the old order dominated by the United States and the Soviet Union is about to disintegrate. For example, G. Lynwood May, former president of the American Astronautical Society and a visitor to China's satellite research center in June, expects China to launch a device with 5-meter resolution next year and market it aggressively. He says the Chinese already have 1-meter technology "in the lab" and may be prepared to launch it in the 1990s, if they find a demand for it.

One skeptic in government says, "I can't imagine any kind of mediasat that would be cost effective" with today's technology. But that does not mean that there won't be "lots of data floating around out there." On the contrary, there will probably be more than anyone will care to use. ■

ELIOT MARSHALL

British Government Rekindles Debate on Embryo Research

In a move that seems destined to reignite bitter controversy between Britain's biomedical research community and representatives of its "right-to-life" movements, the British government has announced that it will allow members of Parliament to decide whether or not research on human embryos should be allowed to continue.

The government's decision to allow a "free vote" on the question of embryo research, a relatively unusual procedure in British politics, is contained in a White Paper published in London last week. This sets out the details of legislation it intends to introduce covering all aspects of in vitro fertilization (IVF).

The main proposal in the White Paper is the creation of a a Statutory Licensing Authority, which would issue licenses to medical institutions and practitioners researching into and carrying out IVF treatment. The government also says it plans to make it a criminal offense for either clinicians or research workers to manipulate the genes of a human embryo, to clone such an embryo, or to create hybrid embryos.

Such moves have been welcomed by the Medical Research Council (MRC) and the Royal College of Obstetricians and Gynaecologists. For the past 2 years, the two bodies have jointly sponsored a Voluntary Licensing Authority, established after the report of a government-commissioned inquiry into IVF prepared by a committee chaired by Mary Warnock of Cambridge University.

The licensing authority has already drawn up guidelines that all MRC-sponsored research workers are required to follow on the use of human embryos, and procedures to be followed by all IVF clinicians operating under a voluntary license. The government is now proposing to turn these guidelines, and the licensing procedure, into legal obligations.

However, it has refused to take sides—as the MRC and much of the biomedical research community had been urging it to do—on the question of whether embryo research should be outlawed. Its White Paper merely suggests two alternative courses of action, one banning all such research and the other allowing it under circumstances approved by the licensing authority. It asks Parliament to decide which of the two should be adopted.

Two years ago, a private members bill sponsored by the right-wing member of Parliament Enoch Powell, which would have banned all research using human embryos, gave rise to a stormy debate in the House of Commons, in the course of which one MP broke an arm off the chair used by the speaker of the House. Eventually, the Powell bill was squeezed off the agenda by a series of Parliamentary maneuvers.

Feelings on the issue, however, continue to run high among groups that claim that even an embryo less than 14 days old—the legal limit recommended by the majority of members of the Warnock committee and since endorsed by the licensing authority—should be considered a full human being. The new bill, which will now be submitted to both the House of Commons and the House of Lords, therefore promises to result in an equally charged debate at some point next year.

A total ban on all research using embryos could have a significant impact on a range of topics, from inherited disease to infertility treatments such as IVF, since a substantial amount of such research is currently being funded by the MRC. "Although [such a ban] would mean that clinical IVF could continue, without the research to back it up the use of IVF is not going to progress very well," Jennifer Gumming, the secretary of the Voluntary Licensing Authority, said last week. ■ DAVID DICKSON