



Shocking Menace of Satellite Surveillance (Part I)

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By John Fleming

Unknown to most of the world, satellites can perform astonishing and often menacing feats. This should come as no surprise when one reflects on the massive effort poured into satellite technology since the Soviet satellite Sputnik, launched in 1957, caused panic in the U.S. A spy satellite can monitor a person's every movement, even when the "target" is indoors or deep in the interior of a building or traveling rapidly down the highway in a car, in any kind of weather (cloudy, rainy, stormy). There is no place to hide on the face of the earth. It takes just three satellites to blanket the world with detection capacity. Besides tracking a person's every action and relaying the data to a computer screen on earth, amazing powers of satellites include reading a person's mind, monitoring conversations, manipulating electronic instruments and physically assaulting someone with a laser beam. Remote reading of someone's mind through satellite technology is quite bizarre, yet it is being done; it is a reality at present, not a chimera from a futuristic dystopia! To those who might disbelieve my description of satellite surveillance, I'd simply cite a tried-and-true Roman proverb: Time reveals all things (*tempus omnia revelat*).

As extraordinary as clandestine satellite powers are, nevertheless prosaic satellite technology is much evident in daily life. Satellite businesses reportedly earned \$26 billion in 1998. We can watch transcontinental television broadcasts "via satellite," make long-distance phone calls relayed by satellite, be informed of cloud cover and weather conditions through satellite images shown on television, and find our geographical bearings with the aid of satellites in the GPS (Global Positioning System). But behind the facade of useful satellite technology is a Pandora's box of surreptitious technology. Spy satellites--as opposed to satellites for broadcasting and exploration of space--have little or no civilian use--except, perhaps, to subject one's enemy or favorite malefactor to surveillance. With reference to detecting things from space, Ford Rowan, author of *Techno Spies*, wrote "some U.S. military satellites are equipped with infra-red sensors that can pick up the heat generated on earth by trucks, airplanes, missiles, and cars, so that even on cloudy days the sensors can penetrate beneath the clouds and reproduce the patterns of heat emission on a TV-type screen. During the Vietnam War sky high infra-red sensors were tested which detect individual enemy soldiers walking around on the ground." Using this reference, we can establish 1970 as the approximate date of the beginning of satellite surveillance--and the end of the possibility of privacy for several people.

The government agency most heavily involved in satellite surveillance technology is the Advanced Research Projects Agency (ARPA), an arm of the Pentagon. NASA is concerned with civilian satellites, but there is no hard and fast line between civilian and military satellites. NASA launches all satellites, from either Cape Kennedy in Florida or Vandenberg Air Force Base in California, whether they are military-operated, CIA-operated, corporate-operated or NASA's own. Blasting satellites into orbit is a major expense. It is also difficult to make a quick distinction between government and private satellites; research by NASA is often applicable to all types of satellites. Neither the ARPA nor NASA makes satellites; instead, they underwrite the technology while various corporations produce the hardware. Corporations involved in the satellite business include Lockheed, General Dynamics, RCA, General Electric, Westinghouse, Comsat, Boeing, Hughes Aircraft, Rockwell International, Grumman Corp., CAE Electronics, Trimble Navigation and TRW.

The World Satellite Directory, 14th edition (1992), lists about a thousand companies concerned with satellites in one way or another. Many are merely in the broadcasting business, but there are also product headings like "remote sensing imagery," which includes Earth Observation Satellite Co. of Lanham, Maryland, Downl Inc. of Denver, and Spot Image Corp. of Reston, Virginia. There are five product categories referring to transponders. Other product categories include earth stations (14 types), "military products and systems," "microwave equipment," "video processors," "spectrum analyzers." The category "remote sensors" lists eight companies, including ITM Systems Inc., in Grants Pass, Oregon, and Satellite Technology Management of Costa Mesa, California. Sixty-five satellite associations are listed from all around the world, such as Aerospace Industries Association,



American Astronautical Society, Amsat and several others in the U.S.

Spy satellites were already functioning and violating people's right to privacy when President Reagan proposed his "Strategic Defense Initiative," or Star Wars, in the early 80s, long after the Cuban Missile Crisis of 1962 had demonstrated the military usefulness of satellites. Star Wars was supposed to shield the U.S. from nuclear missiles, but shooting down missiles with satellite lasers proved infeasible, and many scientists and politicians criticized the massive program. Nevertheless, Star Wars gave an enormous boost to surveillance technology and to what may be called "black bag" technology, such as mind reading and lasers that can assault someone, even someone indoors. Aviation Week & Space Technology mentioned in 1984 that "facets of the project [in the Star Wars program] that are being hurried along include the awarding of contracts to study...a surveillance satellite network." It was bound to be abused, yet no group is fighting to cut back or subject to democratic control this terrifying new technology. As one diplomat to the U.N. remarked, "Star Wars" was not a means of creating heaven on earth, but it could result in hell on earth."

The typical American actually may have little to fear, since the chances of being subjected to satellite surveillance are rather remote. Why someone would want to subject someone else to satellite surveillance might seem unclear at first, but to answer the question you must realize that only the elite have access to such satellite resources. Only the rich and powerful could even begin to contemplate putting someone under satellite surveillance, whereas a middle- or working-class person would not even know where to begin. Although access to surveillance capability is thus largely a function of the willfulness of the powerful, nevertheless we should not conclude that only the powerless are subjected to it. Perhaps those under satellite surveillance are mainly the powerless, but wealthy and famous people make more interesting targets, as it were, so despite their power to resist an outrageous violation of their privacy, a few of them may be victims of satellite surveillance. No claim of being subject to satellite surveillance can be dismissed a priori.

It is difficult to estimate just how many Americans are being watched by satellites, but if there are 200 working surveillance satellites (a common number in the literature), and if each satellite can monitor 20 human targets, then as many as 4000 Americans may be under satellite surveillance. However, the capability of a satellite for multiple-target monitoring is even harder to estimate than the number of satellites; it may be connected to the number of transponders on each satellite, the transponder being a key device for both receiving and transmitting information. A society in the grips of the National Security State is necessarily kept in the dark about such things. Obviously, though, if one satellite can monitor simultaneously 40 or 80 human targets, then the number of possible victims of satellite surveillance would be doubled or quadrupled.

A sampling of the literature provides insight into this fiendish space-age technology. One satellite firm reports that "one of the original concepts for the Brilliant Eyes surveillance satellite system involved a long-wavelength infrared detector focal plane that requires periodic operation near 10 Kelvin." A surveillance satellite exploits the fact that the human body emits infra-red radiation, or radiant heat; according to William E. Burrows, author of *Deep Black*, "the infrared imagery would pass through the scanner and register on the [charged-couple device] array to form a moving infrared picture, which would then be amplified, digitalized, encrypted and transmitted up to one of the [satellite data system] spacecraft...for downlink [to earth]." But opinion differs as to whether infrared radiation can be detected in cloudy conditions. According to one investigator, there is a way around this potential obstacle: "Unlike sensors that passively observe visible-light and infra-red radiation, which are blocked by cloud cover and largely unavailable at night, radar sensors actively emit microwave pulses that can penetrate clouds and work at any hour." This same person reported in 1988 that "the practical limit on achievable resolution for a satellite-based sensor is a matter of some dispute, but is probably roughly ten to thirty centimeters. After that point, atmospheric irregularities become a problem." But even at the time she wrote that, satellite resolution, down to each subpixel, on the contrary, was much more precise, a matter of millimeters--a fact which is more comprehensible when we consider the enormous sophistication of satellites, as reflected in such tools as multi-spectral scanners, interferometers, visible infrared spin scan radiometers, cryocoolers and hydride sorption beds.

Probably the most sinister aspect of satellite surveillance, certainly its most stunning, is mind-reading. As early as 1981, G. Harry Stine (in his book *Confrontation in Space*), could write that Computers have "read" human minds by means of deciphering the outputs of electroencephalographs (EEGs). Early work in this area was reported by the Defense Advanced Research Projects Agency (DARPA) in 1978. EEG's are now known to be crude sensors of neural activity in the human brain, depending

as they do upon induced electrical currents in the skin. Magnetoencephalographs (MEGs) have since been developed using highly sensitive electromagnetic sensors that can directly map brain neural activity even through the bones of the skull. The responses of the visual areas of the brain have now been mapped by Kaufman and others at Vanderbilt University. Work may already be under way in mapping the neural activity of other portions of the human brain using the new MEG techniques. It does not require a great deal of prognostication to forecast that the neural electromagnetic activity of the human brain will be totally mapped within a decade or so and that crystalline computers can be programmed to decipher the electromagnetic neural signals.

In 1992, Newsweek reported that "with powerful new devices that peer through the skull and see the brain at work, neuroscientists seek the wellsprings of thoughts and emotions, the genesis of intelligence and language. They hope, in short, to read your mind." In 1994, a scientist noted that "current imaging techniques can depict physiological events in the brain which accompany sensory perception and motor activity, as well as cognition and speech." I believe that surveillance satellites began reading minds--or rather, began allowing the minds of targets to be read--sometime in the early 1990s. Some satellites in fact can read a person's mind from space. The means is a little sketchy, like much of this technology in general, but the basic procedure is to bounce channels of energy from the scalp, into space to be downlinked by giant mirrors or prisms to a ground station on earth, at which point the data is fed into a computer that has been programmed with information from the science of brain mapping.

Also part of satellite technology is the notorious, patented "Neurophone," the ability of which to manipulate behavior defies description. In *Brave New World*, Huxley anticipated the Neurophone. In that novel, people hold onto a metal knob to get "feely effects" in a simulated orgy where "the facial errogenous zones of the six thousand spectators in the Alhambra tingled with almost intolerable galvanic pleasure." Though not yet applied to sex, the Neurophone--or more precisely, a Neurophone-like-instrument--has been adapted for use by satellites and can alter behavior in the manner of subliminal audio "broadcasting," but works on a different principle. After converting sound into electrical impulses, the Neurophone transmits radio waves into the skin, where they proceed to the brain, bypassing the ears and the usual cranial auditory nerve and causing the brain to recognize a neurological pattern as though it were an audible communication, though often on a subconscious level. A person stimulated with this device "hears" by a very different route. The Neurophone can cause the deaf to "hear" again. Ominously, when its inventor applied for a second patent on an improved Neurophone, the National Security Agency tried unsuccessfully to appropriate the device.

A surveillance satellite, in addition, can detect human speech. Burrows observed that satellites can "even eavesdrop on conversations taking place deep within the walls of the Kremlin." Walls, ceilings, and floors are no barrier to the monitoring of conversation from space. Even if you were in a highrise building with ten stories above you and ten stories below, a satellite's audio surveillance of your speech would still be unhampered. Inside or outside, in any weather, anyplace on earth, at any time of day, a satellite "parked" in space in a geosynchronous orbit (whereby the satellite, because it moves in tandem with the rotation of the earth, seems to stand still) can detect the speech of a human target. Apparently, as with reconnaissance in general, only by taking cover deep within the bowels of a lead-shielding-fortified building could you escape audio monitoring by a satellite.

To be continued...

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