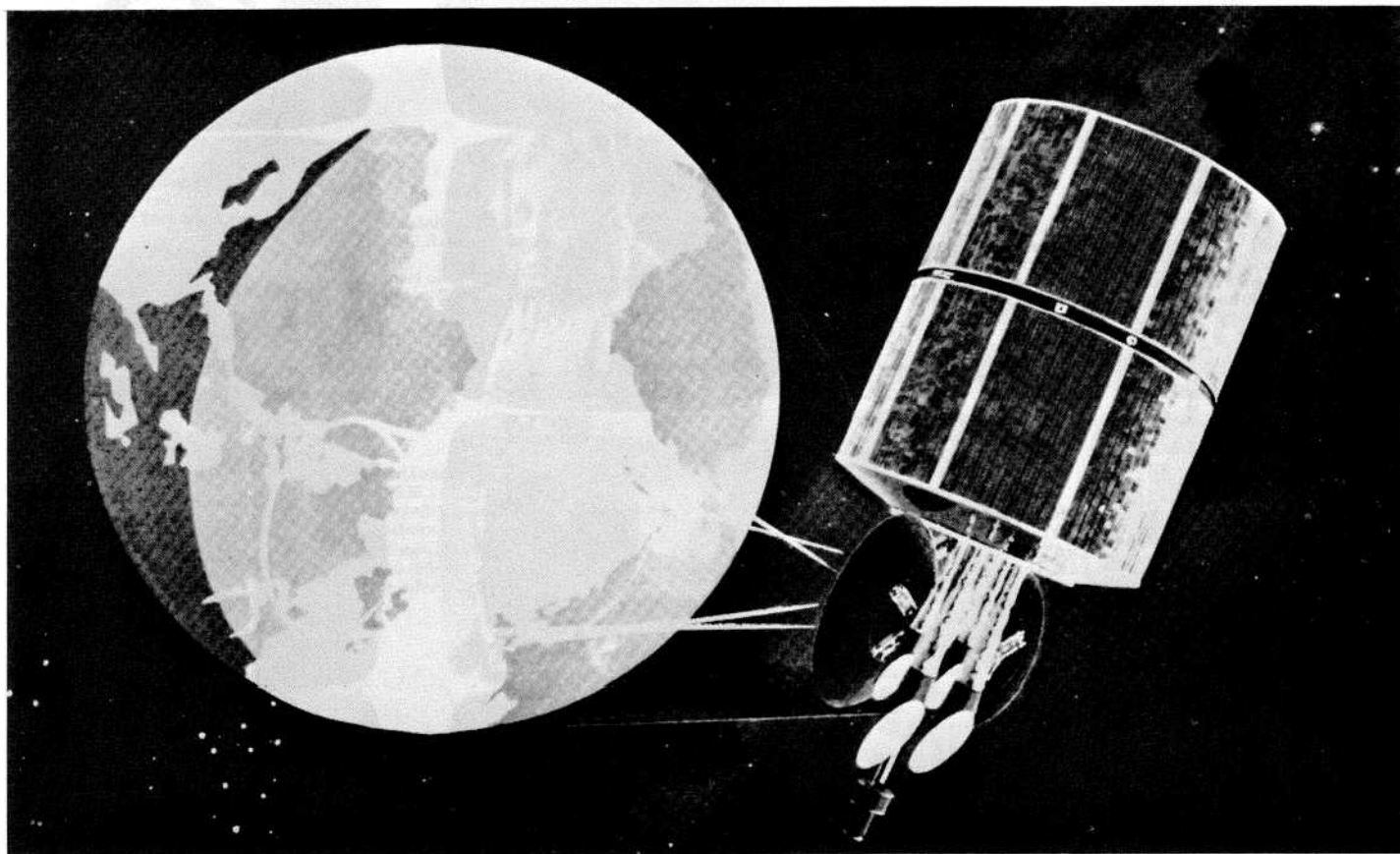


DOMESTIC COMMUNICATIONS SATELLITES



On June 16, 1972 the Federal Communications Commission announced a landmark policy opening the way to the establishment of domestic satellite systems to serve television operators, telephone and telegraph companies, as well as add much to the national capacity for handling and transmitting data. The Commission's plan, which was initiated by the Nixon Administration in 1969 and subsequently the object of vigorous White House lobbying, is referred to unofficially as an "open skies" policy. It calls for almost no government regulation over satellite facilities that will be owned, operated and controlled by the nation's largest communications, aerospace and electronics firms: AT&T, GTE, RCA Globcom, Comsat, Hughes Aircraft, Fairchild Industries, Western Union Telegraph, Western Union International, and Western Tele-Communications. Not only does the policy provide these corporate oligarchs a sizeable public subsidy (communications satellites have been developed with more than \$20 billion in public taxes), but by facilitating the continued concentration of corporate control over the essential means of communications in this country, it effectively denies the public any role in determining the social application of one of the most powerful communications technologies ever manufactured. Further threat to public freedoms and rights is indicated by the fact that satellites are being considered by government and law enforcement agencies and private entrepreneurs to play an important role in carrying out various surveillance activities. The FCC's satellite ruling, as this article documents, must be viewed as a betrayal of public trust certain to have a far ranging impact upon American society and its earlier democratic principles.

by Andrew Horowitz

When the British scientist Arthur Clarke predicted in 1945 that satellites would act as communications relay stations in space, a few took note. The idea that global satellites would interconnect every home and community in the world by telegraph, telephone, television, and data facsimile reproduction seemed a scientific fiction fantasy, as unlikely as radio and television broadcasting appeared to earlier generations of a pre-electronic age. But the Soviet Union's launching of Sputnik, in 1957, directed worldwide attention upon a powerful communications technology and the new frontier of space.

From this beginning it was believed that communications satellites would revolutionize the quality of human life and offer unprecedented opportunities for human improvement. Though this optimism persists, it has been tempered by the awareness that satellites can also be used to do enormous harm. Whether the domestic application of this technology will be used to serve people or concerns for economic and political power depends upon who controls and determines the purposes to which they are put. If the military and economic history of the communications satellite can be used as a measure for predicting future developments, it is less likely that the private control of this technology will be used to solve social problems than exacerbate them.

Mr. Horowitz is affiliated with The Network Project, a New York based non-profit organization which conducts research-and-action on the structure, control and operation of American telecommunications.

A MILITARY AND ECONOMIC HISTORY

The communications satellite is a product of the Cold War, during which 94% of all federal research-and-development funds went to military and aerospace projects. The first worldwide satellite system, consequently, was the Pentagon's Defense Satellite Communications System, composed of 26 satellites in sub-synchronous equatorial orbit and supplemented by mobile transmitters that can be placed in virtually any terrain. This system has been used chiefly for what the Pentagon calls "tactical, or intratheater, communications" (i.e., support for its various counter-insurgency campaigns). The system's application in Vietnam, where satellites direct napalm strikes and artillery barrages, provides one footnote to the human use of modern technology.

A corollary to the military's interest in satellite facilities is its impact on the growth of the communications and aerospace industries. The Department of Defense, together with the National Aeronautics and Space Agency, has subsidized what today is the world's largest and most advanced aerospace, electronics, and communications enterprise by providing these industries with a guaranteed market for their product: in 1971, 32 electronics and communications corporations were among the top 50 industrial contractors. These are the firms now authorized by the FCC to establish domestic satellite facilities.

The firms seeking to establish domestic satellite facilities rank among the nation's leading defense contractors. Below is listed their defense rank and funds received, as well as the total assets of each company:

Company	^a Rank ^a DOD	Contracts	^b Total Assets
Lockheed Aircraft	1	\$1.5 billion	\$1.3 billion
AT&T	3	1.2 billion	55 billion
Hughes Aircraft	12	516 million	N.A.
North American Rockwell	13	478 million	1.5 billion
RCA	21	251 million	3 billion
GTE	42	106 million	8.6 billion
Collins Radio	60	72 million	417 million
Western Union Telegraph	65	66 million	1.1 billion
Fairchild Industries	76	49 million	188 million

a/ Aviation Week and Space Technology, November 22, 1971, p. 16.

b/ Moody's Industrial Manual, 1972.

The dominance of American aerospace and communications corporations has also been felt internationally in the area of commercial satellite communications. Prompted both by the military's achievements with this new space technology and the eagerness of the country's leading telecommunications firms to exploit its economic potential, Congress created the Communications Satellite Corporation (Comsat) in 1962; the Corporation's mandate was to establish a commercial satellite system that would improve international communications.

Comsat's contribution to the improvement of world communications is questionable; its service to the economic interests of its principal owners and users is not. The corporation's

earliest success resulted in the establishment of an international satellite system (Intelsat) made up of foreign telecommunications entities (83 countries are currently represented in Intelsat) that would share in the development of the system. An international partnership was hardly the point, however, with Comsat controlling 61% (now 52%) of the system and assuming its management. It has used its managerial position to divert the major portion of the system's contracts to American firms (98% in 1969)¹ and to expand the Intelsat structure at a rate profitable to the U.S. aerospace and communications firms. Whereas the Hughes Aircraft Company, which developed the first, second, and fourth generations of Intelsat satellites, has been Comsat's largest contractor, other manufacturers, including RCA's Globcom, AT&T's Western Electric, General Electric, ITT, GTE, Fairchild Industries, Lockheed Aircraft, etc. have benefited from Comsat's management of international satellites.

THE CORPORATE INTEREST

It is not surprising, nor was it unexpected, that the communications satellite would become little more than a tool for increasing corporate profits. Those who foresaw this danger inherent in a privately owned global communications satellite system fought to preserve some form of public control over this technology². But these voices were far outnumbered by those of the aerospace and communications equipment manufacturers attracted to a satellite system offering high profits and expanded international services. These interests have once again won a major political victory by obtaining from the FCC the exclusive rights to the ownership and control of domestic satellites.

There is no denying that domestic satellites will make money for their owners. The Stanford Research Institute³, in its detailed market feasibility study, conservatively estimates first-year satellite revenues (for 1975-6) of more than \$250 million, with each satellite entrepreneur anticipating revenues of between \$16 and \$69 million. This initial income is expected to come from the demand for a variety of new and old telecommunications services, including telephone, telegraph, radio, television, cable television, and private-line voice and computer data transmission. The Stanford study calculates that between 7 and 10 satellites (each costing from \$30-\$40 million) in synchronous orbit and about 240 earth stations (at \$1 million per facility) will be required to accommodate this traffic—a projected total investment of \$450 million for the first year of operations. By 1979, the system should be making more than \$800 million a year, with the greatest increase in service and income generated from the rapidly growing computer (annual growth rate of 30%) and private longline (annual growth rate of 13%) markets, as well as AT&T's picturephone service, soon to be introduced on a mass scale.

Footnotes

1. O.W. Riegel, "Communications by Satellite: the Political Barriers," *The Quarterly Review of Economics and Business*, Vol. II, No. 4, Bureau of Economic and Business Research, University of Illinois, Winter, 1971.
2. See *Congressional Record* for 1962 as follows: July 26, pp. 13878-13879; July 22, pp. 13908-13909, 13911-13912; U.S. Congress, Senate Committee on Foreign Relations hearings on the Communications Satellite Act of 1962, Sen. Rep. No. 1973, August 10, 1962, 87th Congress, 2nd sess., Washington, D.C., 1962.
3. Stanford Research Institute, "Economic Viability of the Proposed U.S. Communications Satellite Systems," (contract No. OTP-SE-72-103), Palo Alto, Calif., 1971.

Those to be served by the owners of domestic satellite facilities also anticipate large monetary gains. The television networks, for example, expect to save \$45 million a year by using satellites to replace their reliance upon AT&T's terrestrial cable facilities to transmit programming. Satellites will also facilitate the economic plans of cable television operators to establish a nationwide system of interconnection.

This satellite enthusiasm is not restricted to the communications industry. In a recent *New York Times* advertisement,⁴ the Eastman Kodak Company praises the new business opportunities opened by satellites outfitted with photographic surveillance equipment:

The whole earth from a business viewpoint

Aerial photographic surveillance started as an art of war. Now it has found work in helping mankind make a better peace with his environment. Kodak products, for example, monitor dangerous ice on the sea, as well as the health of lakes and the readiness of hillsides to slide down. Snow fields as fresh water sources are inventoried, as are fishing grounds off continental coasts.

Aerial photography also measures social phe-

nomena. Our color-infrared film has been found capable of providing accurate estimates of the number of families in areas of high population density. Statistics in the public library may lag behind population shifts. Business decisions require fresh, solid facts. We have customers who can pick economic facts out of the air—from an appropriate altitude. Decision-makers who wish to get in touch with such people should write Eastman Kodak Company, Dept. 928, Rochester, N.Y. 14650.

Similar advertisements conveying the many benefits that will result from the remote sensing of the earth by satellites, such as the General Electric ad that appeared in the *New York Times* entitled "Now let's make space technology the starting point for better ecology... better environment... better communications,"⁵ have become commonplace. Such public-service claims by the manufacturers, suppliers, and procurers of the necessary hardware for aerial surveillance* lead a responsible skeptic, aware of the history of satellites, to question whether this space technology will be adapted to an environment of peace or made to conform to a "business viewpoint." One prospective satellite owner, RCA Globcom, has already noted in its satellite plan to the FCC that it intends to make satellite facilities available to the mining and petroleum industries,⁶ a market which that company believes will become a highly lucrative one. Regardless of the desirability of this service, it hardly deserves the industry-sponsored claims for improvements in ecology.

*It is worth noting that the principal contractors for NASA's Earth Resources Technology Satellite, launched last July (1972) to identify sources of environmental pollution and monitor mineral resources, are General Electric and Eastman Kodak.

CITIZEN SURVEILLANCE

The application of satellites for environmental surveillance and land development, though suspect in the minds of environmentalists, may be far less threatening than if they are employed in the future to interconnect a nationwide system of policy and military surveillance. Yet, this Orwellian possibility was outlined in considerable detail in a report prepared by NASA and HEW for President Nixon's Domestic Council, called, *Communications For Social Needs*. This report focused upon how computers, closed-circuit television, and their interconnection via domestic satellites could be used to establish centralized personnel data banks controlled by state agencies and police departments across the country.⁷

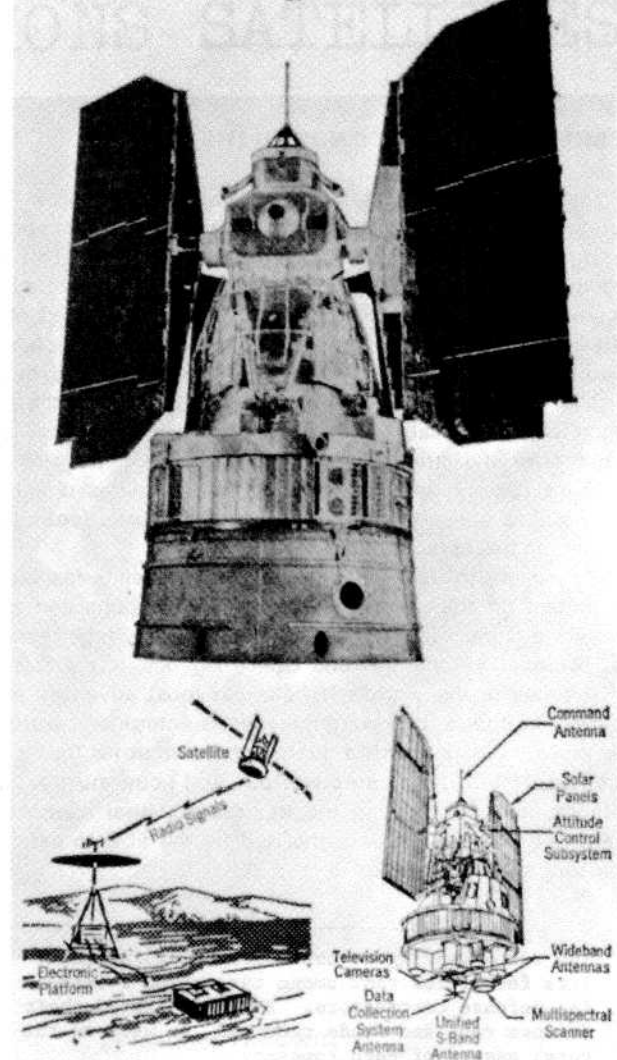
4. *New York Times*, March 25, 1972.

5. *New York Times*, June 11, 1972.

6. FCC, "Domestic Communications—Satellite Facilities," *Federal Register*, Vol. 37, no. 56, Part II, GPO, Washington D.C., 1972, p. 5871.

7. NASA and HEW, *Communications For Social Needs: Educational/Cultural*, Washington, D.C.; The Domestic Council, August, 1971.

New York Times, July 24, 1972
Earth Resources Technology Satellite



The New York Times/July 24, 1972
Earth Resources Technology Satellite, its solar panels spread like butterfly wings to draw energy from the sun, is to scan the earth's surface for new information on the global environment and natural resources. About 150 automatic sensing stations like the one pictured at lower left are to gather and send to the satellite data about such factors as stream flow and soil moisture. Satellite then relays data to earth. Multispectral scanner and television cameras, placed as shown in drawing at lower right, pick up infrared and other electromagnetic waves reflected by earth features. This information is beamed to the ground for conversion into detailed pictures.

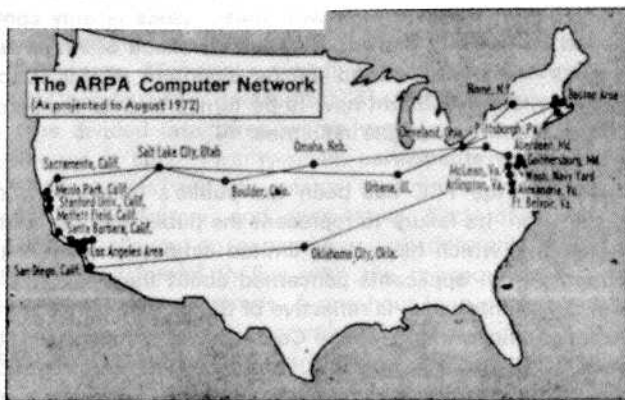
It is not difficult to imagine the creation of this citizen's surveillance system. The Pentagon has successfully used satellite communications along with laser and computer technologies in both foreign and domestic intelligence operations;⁸ and its Advanced Research Projects Agency (ARPA), which coordinates university research, has established a coast-to-coast interconnected computer network giving scientists at MIT instantaneous access to data-banks built at Stanford.⁹ Moreover, the FBI has established its own nationwide computer network containing dossiers on millions of individuals which the Bureau deems suspect. This network, known as the National Crime Information Center, coordinates more than 3000 computers located in police departments and state agencies across the country.¹⁰

Computers are only one of the many sophisticated communications technologies now in use by law enforcement

8. *New York Times*, October 16, 1971.

9. *New York Times*, April 15, 1972.

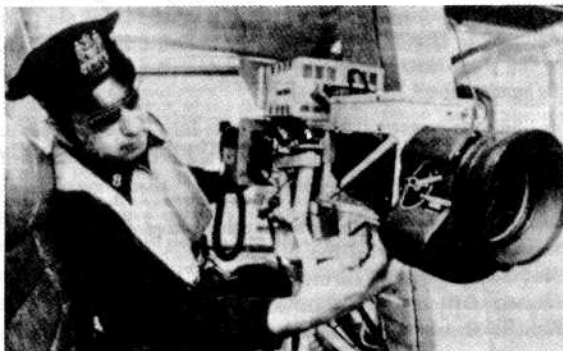
10. Arthur R. Miller, *The Assault On Privacy*, The New American Library, New York City, N.Y., 1972.



The Advanced Research Projects Agency (ARPA), a Defense Department research unit, hopes to have some 30 computer data centers operating in its nationwide network by fall. Usage is limited to university-related projects sponsored by Federal Government.

agencies. In New York City, for instance, television cameras mounted on helicopters relay pictures instantly to Police Headquarters or anywhere else on the department's closed circuit network (Project Sky Knight performs a similar function on the West Coast, where police cars are now being equipped with individual computer programming and read-out terminals). In the event that prospective satellite owners choose to lease their facilities to government and law enforcement agencies for the interconnection of these and other surveillance efforts, they will do so in the absence of public consent. But given the recent Supreme Court decision upholding the constitutionality of domestic surveillance and intelligence gathering the public will have little to say about the introduction of such a communications network. ¹¹

Television Camera Aboard Copter Helps Police Watch Traffic Here



Photographs for The New York Times by NEAL ROENZI

Patrolman Joseph Padrone checking the reception on monitor in Police Department van

MEDIA CONTROL

Whether or not the private ownership of satellites will result in the application of these surveillance techniques is still a matter of some speculation; that it will add to the concentration of corporate control over the essential means of communications in this country is not. A close look at the developments currently taking place among prospective satellite owners reveals a number of new corporate alliances between those firms which control the technology used to manipulate the flow of information in this society and those that manufacture the equipment required to operate that flow.

Consider the recent formation of the American Satellite Corporation, a joint venture of Fairchild Industries and Western Union International. This corporate arrangement will join an established aerospace manufacturer and a long-standing agent of communications into a new communications enterprise. A less formal arrangement has been initiated by Western TeleCommunications, Inc., which intends to use satellites to expand its current 40,000 mile terrestrial cable television system to accommodate a number of new services, including data, computer and television transmission. The company has chosen the North American Rockwell Corporation (recently awarded the contract for NASA's \$2.6 billion space shuttle program) to design its satellites and coordinate their development, and selected the Collins Radio Company to supply the necessary terrestrial interconnections. The WTCI-North American-Collins Radio satellite plan may well become the nexus of a much larger communications corporate structure. If so, it will merely follow the example already set by Microwave Communications, Inc. (a consortium of 18 communications and electronics firms established in 1963 to transmit data and computer signals via a nationwide microwave relay system), Lockheed Aircraft, and Comsat. By mutual agreement these three firms created the CML Satellite Corporation which binds these parties into a tripartite corporate relationship; a team composed of an established satellite manufacturer (Lockheed), the world's most experienced manager of communications satellites (Comsat), and an expanding marketing firm (MCI).

Along with these mergers, the private ownership of domestic satellites will allow certain firms to assume virtual command of a communications process which includes not only the origination and distribution of information services, but also the manufacture of the equipment required to operate and maintain these services. Such will be the case for the Hughes Aircraft Company, which owns a sizeable share of the cable television industry (i.e., 49% of TelePrompster) and operates the Hughes Sports Network. Hughes' ownership of a communications satellite system will integrate its aerospace and communications plant with the production and nationwide distribution of television programs.

The most dramatic case of this phenomenon, however, is represented by RCA's Globcom Division, which operates an international telecommunications system with nearly 1,400 cable, radio, and satellite channels linking United States incorporated headquarters to their associates and subsidiaries in 78 foreign countries. The ownership of domestic satellites will expand this communications empire that currently ranks second in size only to the Pentagon's. Moreover, it will contribute to the economic and social power of its parent corporation, RCA. That conglomerate's subsidiaries already cover a wide expanse of the American economy—including RCA

11. *Laird v. Tatum*, Supreme Court, 1971.

Records, Banquet Foods, Coronet Industries, Cushman and Wakefield (one of the largest realtors in the United States), Random House (includes, in addition to its own imprint, Pantheon, Vintage, Alfred A. Knopf, Singer, and Modern Library), Hertz Rent-A-Car, and, not to be overlooked, the National Broadcasting Company.

The trend toward the centralized control of media, and consequently, the elimination of diverse sources of information, is considered by its benefactors to be the result of natural economic forces. When applied to the conglomerate control of domestic satellites, this development is supported by its owners in terms of improved communications and reduced consumer costs. But in the field which regulates the flow of information within society, economic standards alone are hardly adequate for determining public policy. The communications process extends well beyond economic boundaries; the information this process conveys shapes consumer tastes, molds the social and cultural environment, and directs political awareness.

More importantly, the institutions which operate the interrelated elements of the communications process (i.e., electronics manufacturers, program production companies, and interconnection firms) control what is essential to the citizen in a democracy, the right to be informed and alerted to any potential threat to his liberties. Where the control of this entire communications system is consolidated into those few but exclusive hands that are left unchecked to pursue their specialized interests, the public becomes the vulnerable party. Such is indicated by the failure of the media,* particularly television, to inform the American people with respect to the social and political significance of the introduction of a domestic satellite system; nor has the citizenry been alerted to the varied misuses this technology might be put, including its use for such policing activities described earlier. The networks' direct involvement in the research and development of surveillance technologies, however, makes it unlikely that they would critically examine this important matter: RCA, which sold the United States Government more than \$250 million worth of military supplies in 1971, has perfected such surveillance equipment as the Three-Dimensional Surveillance Laser Technique for the United States Army; CBS has also engaged in similar efforts, including its development of the Laser Image Processing Scanners for the Air Force, as well as its Compass Link System of reconnaissance photography which has been adopted for domestic policing in numerous communities. Television's failure to report these major issues not only leaves in doubt the integrity and independence of this country's most revered medium of information, but more importantly, provides a clue to the limited interests which it serves.

THE FCC?

No less disconcerting than the media's failure to alert the American people to the problems posed by the private control of domestic satellites is the way that the FCC has chosen to disregard its public responsibility. Throughout its satellite proceedings the Commission showed no concern for the effect its decisions would have upon the flow of information in this country, and chose to ignore entirely the question of how sat-

ellites might be used to erode essential public freedoms. The Commission's failure to deal with these issues is only compounded by the fact that more than \$20 billion of American taxpayers' money subsidized the development of this space technology, an investment now to be turned over to the aerospace and communications industries.

All along, the FCC has been the public's only means of representation. Its failure to represent the public in its satellite deliberations, which have been limited almost exclusively to arguments from applicants concerned about their share of a billion dollar enterprise, is reflective of the way powerful communications firms influence the Commission to accommodate private, at the expense of public, interests. One might consider the FCC's failure to regulate AT&T (which the Commission last year conceded that it has not regulated for decades) as symptomatic of its irresponsibility to the public; but its decision not to provide for some form of public control in the area of satellite communications represents a dereliction of duty, perhaps the grandest betrayal of the public interest in the history of American telecommunications.

The Network Project does research in areas of telecommunication. This research is currently being made available through the project's publication of a series of six (bimonthly) *Notebooks*. The *Notebooks* are available by annual subscription (all past issues sent to late subscribers): \$10/individuals, \$25/institutions.

Individual *Notebooks* are also available: \$2/individuals, \$5/institutions.

- No. 1: Domestic Communications Satellites**
- No. 2: Directory of the Networks**
- No. 3: Control of Information**
- No. 4: Office of Telecommunications Policy**
- No. 5: Cable Television**

***The Fourth Network*, a study of public television published in December 1971, is available for \$3.**

Please make checks payable to: The Network Project Notebooks: The Network Project, 104 Earl Hall, Columbia University, New York, N.Y. 10027

**An exception was made by Mr. John O'Connor of the New York Times who in his May 21, 1972 column noted the problems posed by the corporate ownership of domestic satellites.*