Computing Company in Dallas, the three television networks, and cable television interests.

Time may have intensified, not simplified, these rivalries, but the FCC is not to blame for all, perhaps not even for most, of the delay. Twice—once in August 1967, when the FCC reportedly was preparing to approve plans for a pilot system, and again in early 1969—the White House intervened and ordered separate "studies."

The first reexamination (part of a bigger look at communications by a commission chaired by Eugene V. Rostow, then Under Secretary of State for Political Affairs) took 17 months, continuing until December 1968. By then, a new President had been elected, and a new White House staff felt obliged to look at the domestic satellite issue; their report appeared only last January.

Now, however, the initiative rests with the FCC, and the agency's intentions remain uncertain.

The last White House report recommended a policy of *laissez faire*. Under the proposal, the FCC would permit anyone to put up a satellite system as long as the sponsor had adequate financial and technical capabilities. If the satellite system flopped financially, so be it.

The virtue of this policy, according to the White House, is flexibility: it encourages maximum experimentation with satellite communications and doesn't inhibit innovation by creating a perpetual monopoly.

So far the FCC has not embraced this doctrine. Instead, it has asked (again) for formal proposals from industry and has postponed final decision. The first such proposal—from Comsat—is likely to reach the FCC in the near future.

What makes the satellite question so difficult to resolve?

Like most American communications controversies, the issue involves the mammoth American Telephone and Telegraph Company, which has monopolized domestic communications. A number of recent FCC decisions have chipped away at that monopoly; for example, the FCC has decided to permit private microwave companies to establish services that compete directly with AT & T and its Bell System for the business of large commercial and industrial customers who need "private lines" for their voice, computer, and telegraph communications.

Satellites are viewed as another way to give AT & T competition.

Some communications specialists shy away from ostracizing Bell altogether, for fear that satellites will lose their biggest and most imaginative user.

"AT & T has made major contributions to the development of our communications system," says FCC Commissioner Kenneth Cox. "I do not think it would be fair, or in the public interest, to exclude Bell from full participation in the satellite technology, to the extent that it can be applied to serve telephone customers."

If Bell puts up a satellite, however, no one else may have the courage to do so. Bell, after all, can instantaneously tap enough traffic (from long distance telephone calls) to make the system a success.

For the moment, there won't be too much other traffic. In fact, the only other possible major source of business appears to be the three major television networks, which, having recently experienced a rate increase from AT & T, would like to free themselves from Bell's terrestrial network. The networks could decide to construct their own system or to rely on someone else to make the required investment of about $100 million.

Time—with the advent of a cable television network (which would need to be "interconnected" by satellite), the growth of computer communications, and the rise of new services—could turn this trickle of business into a fast-flowing stream or a giant river. Whatever decision the FCC makes now could determine who commands these rich waterways. That was the problem in 1966; it still remains the problem today.

Meanwhile, some of the more imaginative proposed uses for satellites appear to have disappeared from the realm of the possible—at least for the near future. The uncertain economics of the satellite system has eliminated satellites as a source of revenue for educational television, though noncommercial programs apparently will be transmitted free of charge. A more exotic idea—transmitting television programs directly to homes via satellite—also has floundered, on the shoals of high costs and possible interference problems.

—ROBERT J. SAMUELSON

A former Science *news intern, Robert J. Samuelson is now a* Washington Post *reporter.*

APPOINTMENTS

Mahlon B. Hoagland, chairman, biochemistry department, Dartmouth College, to director, the Worcester Foundation for Experimental Biology. . . . **Frank J. Dixon**, chairman, experimental pathology department, Scripps Clinic and Research Foundation, named chairman, biomedical research departments at the foundation. . . . **Ronald W. Stark**, acting chairman, entomology department, University of California, Berkeley, to dean, Graduate School, University of Idaho. . . . **J. L. McHugh**, former acting director, office of marine resources, Department of the Interior, to head, new office for the international decade of ocean exploration, National Science Foundation. . . . **Alexander L. Clark**, acting executive secretary, behavioral sciences division, National Academy of Sciences–National Research Council, to associate dean, Lyndon B. Johnson School of Public Affairs, University of Texas. . . . **Jacob Bigeleisen**, professor of chemistry, University of Rochester, to chairman, chemistry department at the university. . . . **Robert A. Marshak**, professor of physics, University of Rochester, to president, City College, City University of New York. . . . **Stephen Horn**, dean, graduate studies and research, American University, to president, California State College, Long Beach. . . . **Garven Hudgins**, education writer for the Associated Press, to director, office of institutional research, National Association of State Universities and Land-Grant Colleges. . . . **Floyd L. Culler**, assistant laboratory director, Oak Ridge National Laboratory, to deputy director of ORNL. . . . **Z. A. Kaprielian**, director, graduate center for engineering sciences, University of Southern California, to dean, School of Engineering at the university. . . . **Nathan S. Washton**, professor and coordinator of science education, Queens College, City University of New York, to director of the new American Environmental Science Academy at the college.

Erratum. In the Appointments section (1 May, p. 561), Seymour S. West was reported as chairman of the engineering department, University of Alabama, Birmingham. Dr. West was appointed chairman of the engineering biophysics department.

Erratum: In the report "Brain norepinephrine: Enhanced turnover after rubidium treatment" by J. M. Stolk *et al.* (24 April, p. 501), the second sentence of paragraph 1, column 1, page 501, should read "The effectiveness of another alkali ion, lithium, in the treatment. . . ."