The FCC's Computer Inquiry – Bernard Strassburg

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In 1965, I received a call from Washington, D.C. Dr. Harry Trebing, on leave from Indiana University, had spent a year at the Federal Communication Commission and had formed an economics study group. He asked if I was willing to join the new section. Having served as a Senate staff member in the summer of 1961, I had a touch of Potomac fever. I moved the family to Annandale, Virginia and commuted by bus to the District of Columbia.

The Common Carrier Bureau (telephone and telegraph) was winding up its investigation of AT&T and Western Union. Both carriers competed in a non-telephone market commonly known as record services. Western Union offered Telex services, AT&T a TWX service. AT&T dropped its TWX rates

prompting Western Union to match its Telex tariff. The telegraph company alleged that AT&T's voice monopoly subsidized earning's TWX's lower rate, compromising Western Union's economic viability as a company.

Among other studies, the FCC requested AT&T to undertake a seven-way cost study of its voice and record services. The study confirmed Western Union's allegation. Bell's telephone services generated high earnings; its record services, a low return. My first assignment at the Commission was to proofread the Commission's Telegraph Report.

In a matter of days, John Lambert, overall head of the Economic group, handed me an assignment. The chief of the Commission's Common Carrier Bureau, Bernard Strassburg, had agreed to present a paper at American University. The subject was computers. I was instructed to write a draft.

As a computer illiterate. I viewed computers as exotic machines operating in an air-conditioned room, attended by individuals who wore white uniforms and spoke gibberish. In an act of desperation, I took a cab to the Library of Congress, walked into Congressional Reference and asked if the staff had any information on computers. A specialist brought out a file consisting of newspaper articles, speeches, hearings, and reports. The file was arranged in chronological order. Glancing through the file a pattern emerged. At the time users, waiting their turn to access data processing, essentially stood in line. Several articles revealed that a computer was connected to the telephone network. The customer happened to be the Department of Defense (DOD).

DOD was concerned that Soviet bombers, flying over the Artic, could penetrate the U.S. continental defense. Accordingly,

the DOD set up a series at radar stations to monitor any possible air intrusion. As Artic stations scanned signals, an on-site minicomputer processed the signal, then transmitted the data via telephone line to a central military location in the US. Here staff officers determined whether the signal was benign or aggressive. One problem emerged, the radar signal was digital, the telephone line, voice, was analog – a technical mismatch.

To solve the problem a government research agency created an electronic box that converted the digital signal to an analog tone routed over a phone line. At the U.S. receiving end, the analog signal, reconverted into digital form, was displayed on CRT terminal. The converting device was called a modulator – demodulator – or modem for short. I had an occasion later to interview the individual who came up with the modem concept. His colleagues informed me that he had neglected to take out a

patent. He himself acknowledged that he thought it was best to make the device available to the public.

In the meantime, another national security issue came to the fore. If a Soviet bomber or missile penetrated the U.S., would the hit knock out the nation's telephone infrastructure? In search for an answer, DOD let a contract to the Rand Corporation. Paul Baran, a Rand researcher, proposed to concentrate data bits into small packets and route them over geographic diverse telephone lines across the country. The packets would be reassemble at the receiving end. Baran's concept became known as a distributed digital network, later called packet switching. Put differently, computers exchanged information with computers.

After glancing at the computer clippings, I asked Congressional Reference if the library had a file on the telephone industry. Out came a collection of newspaper

clippings, speeches, reports, hearings – again arranged in chronological order. In surveying the file's content, it was clear that the Bell System, AT&T, employed computers for payroll, accounts receivable and related corporate financial requirements. In fact, AT&T was one of IBM's major computer customers.

The telephone company did more. Through the research effort of Bell Telephone Laboratory, AT&T began developing computerized switching machines for its major metropolitan toll offices. That effort posed a question; would AT&T, in the future, seek to offer data processing to the public at large?

In the meantime, the FCC's economic studies division learned that a computer terminal could access stocks listed on the New York stock exchange, obtaining P/E ratios, corporate earnings, capital investment, debt ratio and the like. Then came

the sleeper. A user at one terminal could route a message to a user at another terminal. That capability posed an intriguing question. Was the company, Bunker-Ramo, moving into the communications business? Was store and forward capability reserved only for licensed carriers under the Communication Act of 1934?

I collected these random items and outlined the convergence of computers and communication. I then posed a few policy questions. Could, for example, conventional telephone tariffs, practices, technology and investment accommodate the needs of potential digital users? Specifically, I referred to the telephone company's ban on customer ownership of the basic telephone set. Station ownership resided with the company, not the subscriber. Did that policy apply to computer

terminals as well? I also speculated whether new firms should be encouraged to offer pure digital transmission capability.

I finished the draft, delivered it to Strassburg's office, returned to economic studies and the FCC Telegraph report. Several days later, Bernard Strassburg called me to his office. We had met before but we didn't know each other. He held the draft in his hand, then slid it across the table and remarked "Irwin, don't be cute." I thought that was the end of the meeting and was prepared to leave. But then he began asking questions. He asked if a computer, telephone convergence was taking place. I said I thought so. We changed views and ideas. He then reached into his desk drawer and pulled out a draft submitted by the commission's engineering department. Strassburg said he would read my draft.

Around the same time period, I learned that MIT had programmed a General Electric computer to serve several users at the same time. The commission gave me permission to visit MIT and to learn more about their on-going computer research. Instead of individuals queuing up to access a computer, the computer's memory was sufficient to permit multiple user access. MIT called the program project MAC. In my interview, they employed the analogy of the nation's electric power grid. They referred to project MAC as a "computer utility."

A few weeks later in the summer of 1965, Bernard Strassburg informed me that the U.S. computer software industry was scheduled to hold a convention in New York City. They asked him to give a speech on computers and communications. Strassburg asked me to draft the speech. The New York conference was serious business and the audience

was sophisticated. This was no academic seminar. I decided to go back to the Library of Congress, recheck the files, to see if the coalescent pattern still held. Sure enough, the pattern popped up again. I finished the draft, threw in some random policy questions and handed it to Strassburg. We flew to New York and he read the paper. After his talk Strassburg was surrounded by attendees, each posing a number of issues. IBM was particularly struck by Strassburg's observation. In fact, the company offered to fly him and his staff to Armonk, New York for a computer tutorial. The Justice Department found out about the invitation and cancelled the trip. In the interim, BEMA, a computer association, moved its headquarters from New York to Washington, D.C.

It was now August, and I now prepared to return to the University of New Hampshire. Strassburg called and said he was

under pressure to initiate a computer inquiry. He asked me to write a Notice of Inquiry – in FCC parlance, a docket.

The Notice set the theme of computer, communications intersection, laying out issues of telephone tariffs, data processing versus message switching, the notion of a separate digital network. Strassburg asked if I could think of a third policy issue. I drew a blank. He suggested privacy. The notice was now complete. In the fall of 1966, the FCC released its computer Notice of Inquiry. The response produced a Tsunami – so voluminous that the Commission farmed out the responses to Stanford Research Institute to classify and clarity the submissions to the FCC.

In 1966, President Lyndon Johnson awarded Bernard Strassburg as an outstanding civil servant of the year. He had anticipated an issue rather wait until it happened. By this time, I

had returned to the University and the classroom. My touch of Potomac fever, however, had not been in vain. I was now asked to be a consultant to the Federal Communication Commission, and the Executive Office of the President. The Office of Naval Research awarded me a contract to write about the implications of a new concept - a “computer utility.”