

E I G H T E E N

A Television Window on the Soviet Union

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The idea of pulling domestic Soviet television from the northern sky came to me through a series of powerful serendipities and by no deliberate design that I am aware of. The achievement—adapting and refining the several diverse technologies that, together, make this access possible—is no doubt significant. It has opened to American students and scholars a window on the very different world that is the Soviet Union.

The first such system (“Orbita Terminal”), installed by Orbita atop Columbia University’s School of International Affairs in September 1984, has been host to processions of educators, government officials, and journalists who have visited and realized that, for the first time people of one Superpower could peer through the window into the living space of the other.

HOW SOVIET TV CAME TO COLUMBIA UNIVERSITY

I stumbled onto this. In June 1981, I was tired of cable and HBO. Living in an apartment on the northern edge of Rockefeller Center, I was a satellite systems designer who could not gain access to any geosynchronous satellites. All American U.S. domestic com-

munications satellites are along the geostationary Clarke belt to the south. I searched for a satellite—any satellite—that I could monitor on my spectrum analyzer, but offices and apartments ten deep obscured my patio's access to U.S. domestic birds. References in the writings of two technology writers, Robert Cooper of the United States and Stephen Birkill of the United Kingdom, pointed me to the notion that there were, in fact, four satellites I could "see." They were, however, obscure satellites—and they were Russian!

Over the next year, my avocation became the development of the unique processors and components necessary to process and reconstruct video and audio from the Soviet Molniya satellites. Molnias are the only communications satellites that are not in stationary equatorial orbits. Nearly a quarter of the Soviet Union is north of 60 degrees latitude which is the cutoff point of visibility for geosynchronous satellites. Therefore, to get continuous coverage throughout the day, the Soviets must use four successive Molnias moving in highly inclined polar orbits throughout a twenty-four-hour period, each carrying Moscow's TV for six hours before "handing off" to the next one.

Perhaps the most interesting challenge in creating the system to receive television from the Russian satellites was to retrieve the program audio. It is not carried via sub-carrier, as is the audio on every other of the world's communications satellites, but by pulse-width-modulated lines inside the horizontal blanking interval of the video picture itself. The reason for this is that in 1963, when Molniya was first activated, the most powerful satellites the Soviets could build and launch could not afford to sacrifice the 1 dB (signal strength measurement) that an audio sub-carrier would drain from the picture. Soviet engineers devised a means, modulating a vertical line of the video signal (similar to an old film track), to convey the program audio with no power loss. With this technique, they were able to launch Molniya, which was the world's first domestic television relay satellite and meet Moscow's priority of constructing a means of national television distribution to unite its score of republics and 125 nationalities spread over 11,000 kilometers and eleven time zones.

As I continued to improve the picture from Molniya,

I found myself starting to make sense of the repeating themes and patterns, the body-language, that was program content. I do not speak the Russian language. For the first time, I found the video medium to be so powerful a context that much of the meaning came through without my knowing the verbal language. What medium could be more perfect than television to get a sense of another people? Not just for language studies—not even for Kremlinological tea leaf reading and political meteorology—but to gain a sense of the people, to listen in on their internal dialogue.

I began seeking an educational institution to sponsor me in developing a refined version of my invention. It was clear to me that this yet crude technology could bring about a major breakthrough in education. Unfortunately, the world did not beat a path to my door. Professors in five states would listen to my proposal and react: “Why, we don’t even watch American television, why would we want to watch that?!”

I sensed that many of America’s scholars were older (print-oriented) folks: it is one thing to watch television, another to have been brought up and nurtured by it. It is difficult to overcome cultural boundaries, whether they be between nations or between generations. My search for an educator who agreed on the value international television might have for students was to be a solitary trek for some time to come.

Three years into my searching for a sponsor, in late 1983, Jonathan Sanders contacted me after reading an article in a media magazine about an “inventor who lives in Manhattan and watches Soviet television in his living room.”

Professor Sanders was the assistant director of Columbia University’s heralded W. Averell Harriman Institute for the Advanced Study of the Soviet Union. In a hotel room in Moscow three years earlier, he had had his own vision: how wonderful it would be for his students to be able to watch Soviet TV and learn not only the real spoken language, but about the people, the culture, and the internal priorities and complexities of this enigmatic country.

While doors slammed on my idea across the rest of the Ivy League, Professor Sanders was, unknown to me, a mile uptown from my office, meeting with satellite companies in an

effort to realize his plan. The satellite companies with whom Sanders met raised technical objections, claiming it was impossible to access domestic Soviet television from the western hemisphere. On top of that, he was told more than once, it was impossible to get HBO from Columbia because of the university's location in Manhattan's dreaded terrestrial interference "Combat Zone."

It had to be a courageous act that, in defiance of expert opinion, Sanders proceeded to seek outside sponsorship to realize his vision. His project had already become known among institute students as "Jonathan's Folly."

One hot summer afternoon in 1984 a large group of Harriman students gathered to witness our first programming for the Molnias. But at the start, the attempt proved futile.

We began looking through the sky, north over the George Washington Bridge, for that first Molniya at 3 P.M., under my false recollection that the Soviets kept their video transponder powered twenty-four-hours a day. My recollection turned hazy when we couldn't find it. As we shortly were to learn, the Soviets only that week had switched to a new procedure of powering up a few minutes before the 4 P.M. (E.S.T.) start of their Siberian programming day. Just as much of our audience was about to go home . . . There It Was! The Molniya picture was clearer than the picture any U.S. network gets from its own local cameras, thanks to the more up-to-date French SEACAM video system used by the Soviets.

On-screen were the Kremlin towers, the sign-on logowork and music for "Vremya," the main Soviet news program, which Professor Sanders had been seeking access to for three years. Virtually every one of the hundreds of visitors who have subsequently lined up before that prototype Orbita Terminal at Columbia, including educators, journalists, and diplomats, has walked away, hours later, with his or her imagination ignited. One can see how the younger generation, who will take over the reins of our planet, might, through such technologies come to see that, balanced on a precarious hair trigger, we all share a common fate.

It is hard to hate a country when you get to know its weatherlady. I have learned this merely by watching, most frequently out of the corner of my eye, as I worked. This satellite

window endows us with broader perspectives. It breaks down ethnocentric views which are now anachronisms. The view through this window goes right to the spine. The medium's most vivid "message" bypasses reason and cognition: it is that people are people.

We can have in our hands technologies that allow us to bypass our own ingrained prejudice in a way even Einstein, a poet who understood relativity in many things, would have adored. The wealth of information we should share, and mutual visibility and vulnerability we must share, make it a survival imperative that we try to understand distant worlds and ourselves better. The implications of this new technology are implicit. This powerful tool is galvanizing, and its most likely result, encouraging.

At the present time, more than sixty universities have visited Columbia and have begun to consider how this unanticipated new access can be used educationally. An encouraging number of those schools are well along on fund-raising programs to retain Orbita to implement for them its now expanded version of the terminal. While emphasis is immediately being placed on language studies, the programs will be watched by students and scholars in political science, linguistics, science, and sociology.

The University of Virginia will be the first school to have a terminal that will access not only domestic Soviet television via Molniya, but the television of half a dozen South American and European countries, too. At first, as at Columbia, programs will be available only in common areas, but soon after installation in the summer of 1986, the signal will be converted and inserted into the university's cable system in order to make the programming available, random-access mode, in the students' living environment. Such a modality promises to make the difference between traditional language "instruction" and broad language/cultural "acquisition."

What's it like to be the "inventor" of this East-West transmitter? Watching as much Soviet television as I have this year has made me a better person—and, paradoxically, more grateful than ever to be an American.

It has made me more tolerant of Russians being Rus-

sians. It has given me not only a better understanding of the Soviet Union, but has helped me realize as much about ourselves. Watching Soviet television has suggested to me that "it's all done with mirrors." We perceive through the filters we bring to view. I credit exposure to this strange window on the Soviet Union with the fact that, in the last year, many of my long-standing generic attitudes, prejudices, and preconscious aggressions have, through this sharing, begun to strip away.

Satellite-borne global data systems have, laudably, become a prerequisite for the operation of the banks and major institutions of our world. I urge using these same technologies to ensure the fact that we will continue to have a world to be home to those banks: making available off-peak transponder time to build, carry, and encourage a few merely personal, people-to-people events and exchanges that speak to the heart, bypassing the cognitive center (that Einstein warned would never get us anywhere in these growingly important matters) would be an extraordinarily rewarding "returning on investment." If we don't encourage such windows, we may never make it to 12 GHz.

WHAT'S NEXT?

Space scientists are now developing what are called Spacebridges. An interactive satellite teleconference, a Spacebridge is a two-way window in which people can look at each other while asking simple questions about one another's lives. This may include students in the Soviet Union and here in the United States; scientists there and here; physicians and physicians. Most recently, on May 7, 1985, there was a reunion of U.S. W.W. II veterans at the University of California, San Diego. The U.S. veterans spoke to their Moscow counterparts in Moscow during a satellite video teleconference moderated by Oberlin president Frederick Starr.

Several pioneering groups and individuals have quietly implemented these extraordinary uses of our hardware: what Wall Street calls teleconferences, these folks aptly call "Spacebridges." Seven such events have been produced to date, most frequently

in conjunction with a small company called Internews, in New York.

The "US" Festival, held in California in 1983 and 1984, started it all by connecting 200,000 young Americans to counterparts in Moscow. A Spacebridge was used to demonstrate how new communications technologies can be used to bring the world closer.

Groups such as Unison (producers of the "US" Festivals), the Roosevelt Foundation, the Esalan Institute, and Internews along with Gosteleradio in Moscow have been slowly and delicately cooperating in exploration of the possibilities inherent in satellites. These are exciting challenges ahead that transcend national boundaries and provide tools that mankind, so long as it survives, can use to better understand the world.