By the mid 1980s, as the Cold War was starting to move into its last stage, the West began to get a sense that the Soviet Union might not be quite as strong as it claimed. For nearly 40 years, the Soviet Union had established itself as a technological giant. It had detonated an atomic bomb in 1949, built a working computer in 1950, sent an artificial satellite into space in 1957, and placed a human in orbit in 1961. The Soviet accomplishments frightened US policy makers. By the early 1960s, the US government was encouraging children to study math and science so that our country could stand strong against the Red Menace. I know of no studies that have looked back at this era to ascertain whether the appeals actually increased the number of scientists in the country but, as a child of the age, I was always pleased to know that my success in long division helped protect the US from Communist invaders.

Soviet technology

This issue’s cover shows how far the American opinion of Soviet technology has fallen. It is taken from a political cartoon by Pat Oliphant and purports to show the control room of the Soviet space station, Mir. Far from being a place of totalitarian order, this room is a scientific infrastructure in disarray. Paper litters the floor. Machines are malfunctioning. It is a far cry from the disciplined image we had of Soviet technology in the photographs of the Soviet control rooms, such as the one in Figure 1. In Oliphant’s cartoon, the Mir itself seems lost on its tracking map, which reflects the fact that the Mir suffered from a number of problems in its final years.

In the years that have followed the end of the Cold War, we have learned that the Soviet Union was less of a technological leader than it appeared at the time. The Soviet research and developments were not isolated laboratories, as we believed, but were linked to the Western technological infrastructure. Soviet laboratories had access to many Western ideas through a combination of open and clandestine spying. Soviet scientists used international scientific literature, such as the journals of the IEEE and the public research reports from university, corporate, and government laboratories.

We also learned, after Soviet archives were opened in the 1990s, that the Soviet Union had access to many classified technological reports as well. In particular, an organization that was identified as a “trading company” systematically worked to gather technological reports (see *Annals*, vol. 23, no. 2, pp. 78-79). In the field of computer technology, this organization gathered detailed descriptions of the IBM 360 and Burroughs B-5000. Both machines were reproduced by Soviet engineers and manufactured, for a time, by Soviet plants.

Four years ago, a number of American historians of technology, including several members of the *Annals* editorial board, traveled to Kiev to celebrate the birthday of Serge Lebedev, the pioneering Soviet computer designer. Lebedev established his computer laboratory in a former monastery in the city and built the first Soviet computer, the MESM, at that facility. We were treated to a series of lectures about the development of Soviet computer projects, including the fire control system that had been used to shoot down an American spy plane, the U-2 piloted by American Gary Powers.

Many times, I have sat through lectures by retired engineers who were trying to explain the technical problems that they faced while completing a system. They usually tell a simple narrative that lays out the basic goals, identifies the problems in the work, moves toward a climax in which some issue seems insurmountable, and then resolves in a successful completion of the project. The difference with these lectures was that they told of successes that materially threatened the US. Furthermore, they were successes behind a one-sided mirror. The Soviet engineers had some idea of what the US was doing. We had only a hint of what they had accomplished.

That evening, after the lectures, a group of us sat in a room of the Ukraine Academy of Science for a round of drinks. I nursed a bottle of carbonated water, while the ex-Soviets drowned glass after glass of vodka. Relaxed by the alcohol, they started telling stories of the Cold War; of the security agency, the KGB; and of friends gone and good times past. As the clock neared midnight, they started reciting poetry by Dostoevsky. I added the Shakespeare sonnet that I learned in 9th grade. We cried and hugged as comrades and went off into the cold night.

Throughout this meeting, I had wanted to know if Lebedev and his staff had seen the foundational documents
of computer science: the “Draft Report on the EDVAC” and the “Preliminary Report on the IAS Computer.” Both of these had come from a team of scientists around John von Neumann and both defined the nascent technology of computation. The ex-Soviet engineers were adamant. They had not seen these papers and were certain that Lebedev had not. In their mind, the Soviet computer was an independent invention. I looked at Lebedev’s design documents to see if I could see any structural or thematic relationship and found nothing that tipped the scale either way. The MESM has many similarities to von Neumann’s IAS computer but like many of those pioneering machines, it had unique features that were never replicated.

**In this issue**

In this issue, our authors touch on the subject of technology transfer in several different forums, including transfer across the Iron Curtain and transfer within the Silicon Valley. We have two articles that deal with technology in the former Soviet Union. The first, by Anne Fitzpatrick, Tatiana Kazakova, and Simon Berkovich, grew out of the Ukrainian conference. It started with a desire on the part of the *Annals* editorial board to look at some of the original documents of Serge Lebedev. One of the author’s of this piece, Simon Berkovich, was trained in Lebedev’s laboratory after it was moved to Moscow. The second article on Soviet computation by Hiroshi Ichikawa, looks at a different laboratory within that country and discusses how it developed the Strela-1 computer.

Of course, there are ways beyond espionage to transfer technology from one organization to another. Our next article, “Informatics Acquisition by Sterling Software: Unsolicited Offer, Takeover Attempt, and Merger” by Walter Bauer, gives us a rare look into the mechanics of a corporate takeover. In the technology business, it’s often more expedient to purchase a technology company than to license its ideas or develop competing ideas on your own. Because corporate purchases, especially those that are unwelcome, are emotional affairs, we rarely have a good narrative of the events that led to the acquisition of one company by another. Bauer was one of the participants in the attempted takeover of Informatics by Sterling Software. We are grateful for his willingness to record his perspective on this activity.

In *Annals*, we also like to look at displaced technology, ideas that have been left by the wayside as dead and replaced in the ranks by modern computing. These stories help remind us of the context in which computing developed and help identify social needs that existed prior to specific computing innovations. In this issue’s next article, Christopher Sterling looks at the history of Teletext, an electronic sign technology that has been replaced by computer technology.

Teletext was displaced, in no little part, by the technologies surrounding the Internet and the World Wide Web. Andrew Russell, in his article on the Open Systems Interconnection standards, shows how the various stakeholders within the data communications community built a framework that allowed new technologies to develop.

Finally, our last article deals with that perennial concept within the digital technology industry, Moore’s law. Ethan Mollick looks at how Moore formulated his ideas, how he shaped them into a general statement about the semiconductor industry, and how that statement has shaped the dispersion of such technologies.

This issue also brings a return of Michael Gesselowitz’ column on the geography of computer innovation. This time, he looks at the state of Minnesota, a place that has been vital to the development of computers and one that is nearly as cold as the Soviet Union.

I would like to end this column by noting that we have a new board member, Dave Walden, who edited two well-received special issues on the Bolt Beranek and Newman (BBN) company. His presence on the board underlines the fact that the early days of the Internet are starting to pass into history and that it is time for us to start assessing the history of this technology. Like many aspects of computing technology, it has connections to the Cold War but we suspect that its impact upon humanity will ultimately be much broader.

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