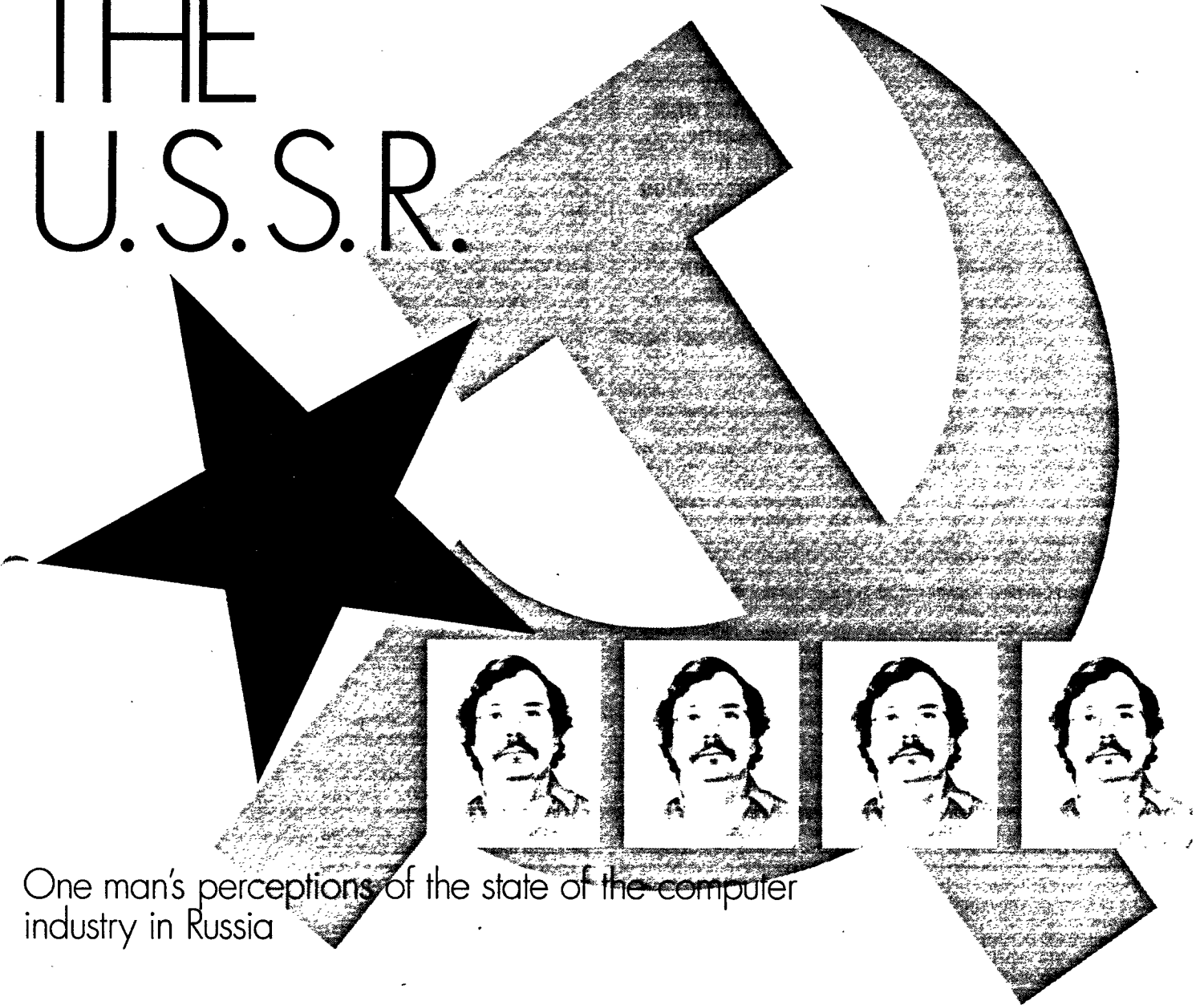


# BACK FROM THE U.S.S.R.



One man's perceptions of the state of the computer industry in Russia

Dr. William K. McHenry, assistant professor at Georgetown University's School of Business Administration, made three trips to different parts of the Soviet Union last year to learn about the state of the computer industry in that country. He was interviewed by BCS Update contributing editor Simson L. Garfinkel.

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*What were some of the highlights of your trips?*

We were in Alma-Ata, capital of one of the republics in the south, for a conference on software engineering. In Novosibirsk we were hosted by the computer center of the Academy of Sciences. Then we went back to Moscow and visited a number of different places.

*What sort of computers is the U.S.S.R. using?*

They have the full range of computers, going from microcomputers up to high-speed computers.

*What is a common scientific or engineering computer?*

One of the most widespread ones is the BESM-6. In the business computer range, they have a whole series of machines that are copies of IBM 360s and IBM 370s, used for data processing and some scientific computing.

*What kind of Western machine is a BESM-6 equivalent to?*

It doesn't have a Western equivalent. It was designed in 1964. It is a second-generation transistor machine, nominal speed of 1 MIP.

They use it for computer-aided design, high-speed scientific research, and geophysical research—typically

the kinds of applications that we might think would fall into the high-end workstation range, mini-supercomputer, or even into the supercomputer range in the West, although this machine is clearly not in the supercomputer class.

*Is it a single-user machine?*

No, it's a multi-user machine. [Perhaps four or eight.]

*How much memory?*

That's one of its biggest problems. It is very constrained: 256K max.



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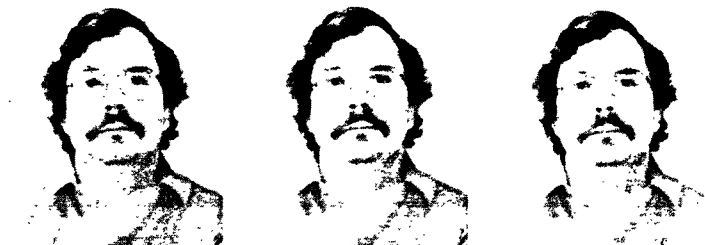
*What about software?*

There are a number of different parts. One part of the software industry is to maintain and develop the operating systems for all these machines. That is left as an exercise in continuing to reverse-engineer or modify stolen code, and write drivers. I don't think that part of their software industry is all that advanced.

Then there is a large group of programmers who are out there programming things like accounting systems or process control systems. I think that the bulk of those programmers are poorly trained, don't use things like software tools, don't produce good documentation—and the level of their work shows it.

Within the Academy institutes and within some of the cooperative enterprises, there are groups of top-notch programmers. World-class programmers. I don't know how to characterize their work. One example is at the Interbranch Scientific Center for Software Engineering in Kiev. They've done a set of software tools, which are CASE tools that give a visual representation of programs. The name of the product is called R-Technology.

*Are they going to sell that over here?*  
They are working on that. They have approached Microsoft and Borland. I've served as the middleman. . . . A paper is about to be published in the journal of visual languages and programming.



Another thing the programmers are doing is taking Western software and making small add-ons to it. Someone gets their hands on dBASE 3 and makes an extra package that somehow enhances it.

*Do they program in Western programming languages?*

Sometimes. Their most commonly used programming languages are PL/1, FORTRAN, assembly language, and COBOL. Over the last couple of years, there has grown a large group of people who use C.

Of course, they've created many indigenous languages as well, but because they were using all these copies of Western hardware, and Western systems software, it became inevitable that they would use Western languages.

One of the problems that the software people face is the preponderance of copies of Western software. [Soviet programmers are essentially competing against Western ones.] It's as if you had to compete against a powerful competitor who had a great product and was giving it away for free.

*How did things get so bad?*

The Soviet tradition of computers goes back to the 1950s. They were third in the world with the stored-program computer. But because the commercial industry in the 1950s did not take off the way it did in the United States, their industry did not develop very well. By the time we got to the 1960s, the United States was way ahead of the Soviet Union. At the end of the 1960s, their leaders recognized that the Soviet computing industry was lagging and decided to copy IBM. It put in a built-in lag. It took the Soviets as long to copy the IBM as it took IBM to design the IBM 360 initially.

I don't want you to walk away with the impression that they have no high-speed machines. A lot of work has been done in recent years, especially in parallel processing. They were supposed to have a one-GIPS [1000 MIPS] machine by 1990.

*What's going to happen?*

I think that depends on what export controls do. The reason that the workstation market has been a category of machine that has been controlled is CAD—traditionally, it has been a weak spot for the Soviets, and the U.S. military does not want the Soviets to be able to use this workstation-class machine for weapon design.

*You don't think they can do it by themselves?*

No. I think that the Soviet microelectronics industry is in very bad

shape, and they are going to have trouble producing the components needed. This isn't to say that their theoretical research or laboratory samples haven't reached the sub-micron level, but they have definite problems with the mass production.

I think that we may open up the 386, possibly the 486 chip, although I'm sure that there are a lot of people who would not want the 486 decontrolled.

*Is it really that bad?*

It is very difficult to think of any area of computing where they have truly had a triumph, where you can look at that area and say, "Everything else is pretty bad, but in this area they are doing great." There just isn't an area where you can say that. ☐

*Simson L. Garfinkel is a freelance journalist living in Cambridge, Mass. Copyright 1990 by Simson L. Garfinkel.*