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USENIX news

The Decline of Research: Commentary and Book Review

by Peter H. Salus

USENIX Historian

peter@usenix.org

In March 1978, Bill Joy offered the first “BSD” tape; in September 1983, BSD 4.3 was (finally) released; in June 1993, it was BSD 4.4’s “turn.” The “B” tells it all: They all emanated from Berkeley. But UNIX came out of Murray Hill, New Jersey.

Let me start with the tale of several research labs whose results have had a profound effect on the world as we know it.

In 1925, AT&T and Western Electric set up a separate company called Bell Labs. Later in the 1920s, T.J. Watson Sr. set up a “Research Lab” in a brownstone near Columbia University. (In case you don’t know, T.J. Watson was the founder of IBM.)

Both Bell Labs and Watson’s Lab flourished for 60 years. The divesture of 1984 made Bell Labs a part of AT&T, and the breakup of 1996 caused a major fissure, with the Labs becoming a part of Lucent, but several groups are now part of the “new” AT&T.

During this same period, IBM Research first moved to Yorktown Heights, New York, expanded to the nearby town of Hawthorne, and then shrank dramatically (with falling share prices) in the 1990s.

DEC’s labs grew, blossomed, and then nearly died between 1960 and 1995. The devastation wrought first by the Com-

paq merger and by the subsequent HP merger has been catastrophic.

The Stanford Research Lab, now transmogrified into SRI International, is still functioning, though it is very different from what it was in the 1960s; BBN is, effectively, no more. Xerox PARC has become an independent corporation, and it has shifted its focus from technology to content.

In effect, IBM’s facilities currently constitute the sole functioning corporate research lab in North America (NEC Research Institute seems to be confined to computing and communications systems).

These thoughts were initiated by the arrival of two books, one by Narain Gehani, who was at Bell Labs from 1978 to 2001, the other by Severo Ornstein, one of the first engineers to work on the ARPANET at BBN.

Reading them is an exciting experience: Gehani started in the group producing Programmer’s Workbench – PWB UNIX – and went on to become a “distinguished member of staff”; head of the Database Systems Department; vice president; and research vice president of Communications Software Research.

Ornstein, the son of a virtuoso pianist and major composer, had a checkered career but went to BBN in the late 1960s, where he was Frank Heart’s hardware ace. He went from BBN to the West Coast, was fundamental in the formation of CPSR, and has remained active on “social issues.” He still fears the control of technology by a small political and military cadre.

With this overlong prelude, let me turn to the actual books.

Gehani tells a good tale and makes a number of very important points, but I think the crux of the entire book comes at the point where Shamim Naqvi is

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appointed research vice president of center 1138 and compensation in research is reoriented to reward those whose work is “useful for the Lucent business,” as opposed to focusing on science and the publication of papers.

Remember, this is the place that gave us both the transistor and the radio telescope, just to name two of its thousands of inventions and patents. It’s the place where George Stibitz built his calculator. And it’s the place that created UNIX, C, C++, troff, awk, Plan9, Inferno, etc., etc. Gehani recounts the efforts of Penzias as gradually moving the Labs “away from science.”

It’s sad, but it’s true.

I happen to believe very strongly that real research is vital. It doesn’t matter what it is. We hardly ever know what’s important and what isn’t. Who would have dreamt that 40 years on that piece of putty with some wires sticking out of it would have been transmogrified into the board with tens of thousands of circuits on it?

If you want to understand how crass mercantilism has changed true research for the worse, you must read Gehani. Modern mercantilism corresponds precisely with a reshaping of almost all of US industry in a manner that MBAs would heartily approve of. The old “seed corn” argument comes to mind.

Ornstein’s book reminds me of just where that seed corn came from. BBN was founded over half a century ago. Starting in about 1994–95, it began to wane. The magic of Ornstein and his piano, of juggling in the hallways, of “doing” acoustics and computer science and inventing the ARPANET gave way to a far more businesslike culture. After nearly a decade in decline, the morale of BBN may be improving: Someone at Verizon seems to have learned just what

a gem it had, and what had happened to it.

A culture does not spring up overnight, but it can be destroyed rather quickly.

BELL LABS:

LIFE IN THE CROWN JEWEL

NARAIN GEHANI

Summit, NJ: Silicon Press, 2002. Pp. 258.
ISBN 0-929-30627-9.

COMPUTING IN THE MIDDLE AGES:

A VIEW FROM THE TRENCHES

SEVERO ORNSTEIN

N.p.: 1st Books, 2002. Pp. 275.
ISBN 1-403-31517-5.

USENIX Pledges \$35,000 Matching Fund for Advanc- ing OpenAFS

by **Ellie Young**

Executive Director

ellie@usenix.org

USENIX has pledged a \$35,000 matching fund donation to the OpenAFS project, an ongoing collaborative effort chartered with enhancing AFS, a widely used distributed file system.

The USENIX donation, matched evenly by Intel and Morgan Stanley, will be distributed to the OpenAFS Advisory Council, which is responsible for the overall direction of the OpenAFS project. The OpenAFS Advisory Council is comprised of representatives from Carnegie Mellon University, MIT, the University of Michigan, Intel Corporation, Morgan Stanley, and IBM Corporation.

“The support from USENIX will enable the Advisory Council to devote the

required time to push forward the research boundaries of AFS,” said Peter Honeyman, Scientific Director of CITI, University of Michigan. “The Council will initially concentrate on bringing AFS up to date with modern transport and security, the first steps in fulfilling the promise of AFS as a high-quality, open source, wide-area distributed file system.”

Pioneered at Carnegie Mellon University and supported and developed as a product by IBM Corporation, AFS offers mid-sized businesses, large enterprises, and universities a scalable, high-performance, reliable, and secure file-sharing system.

“USENIX has a long and proud history of supporting technical development,” said Ellie Young, Executive Director of the USENIX Association. “Our donation to the OpenAFS project expresses our commitment to supporting important technologies that offer potential benefits to the entire computing community.”