

As the 1990s opened, the workstation technology of the previous decade was beginning to look distinctly threatened by newer, low-cost and high-performance personal computers based on the Intel 386 chip and its descendants. For the first time, individual hackers could afford to have home machines comparable in power and storage capacity to the minicomputers of ten years earlier—Unix engines capable of supporting a full development environment and talking to the Internet.

The MS-DOS world remained blissfully ignorant of all this. Though those early microcomputer enthusiasts quickly expanded to constitute a population of DOS and Mac hackers orders of magnitude larger than that of the network nation culture, they never became a self-aware of their culture. The pace of change was so fast that fifty different technical cultures grew and died as rapidly as mayflies, never achieving quite the stability necessary to develop a common tradition of jargon, folklore, and mythic history. The absence of a really pervasive network comparable to UUCP or Internet prevented them from becoming a network nation themselves.

Widespread access to commercial online services like CompuServe and GENie was beginning to take hold, but the fact that non-Unix operating systems don't come bundled with development tools meant that very little source was passed over them. Thus, no tradition of collaborative hacking developed.

The mainstream of hackerdom, (dis)organized around the Internet and by now largely identified with the Unix technical culture, didn't care about the commercial services. These hackers wanted better tools and more Internet, and cheap 32-bit PCs promised to put both in everyone's reach.

But where was the software? Commercial Unixes remained expensive, in the multiple-kilobuck range. In the early 1990s several companies made a go at selling AT&T or BSD Unix ports for PC-class machines. Success was elusive, prices didn't come down much, and (worst of all) you didn't get modifiable and redistributable sources with your operating system. The traditional software-business model wasn't giving hackers what they wanted.

Neither was the Free Software Foundation. The development of HURD, RMS's long-promised free Unix kernel for hackers, got stalled for years and failed to produce anything like a usable kernel until 1996 (though by 1990 FSF supplied almost all the other difficult parts of a Unix-like operating system).

Worse, by the early 1990s it was becoming clear that ten years of effort to commercialize proprietary Unix was ending in failure. Unix's promise of cross-platform portability got lost in bickering among half a dozen proprietary Unix versions. The proprietary Unix players proved so ponderous, so blind, and so inept at marketing that Microsoft was able to grab away a large part of their market with the shockingly inferior technology of its Windows operating system.

In early 1993, a hostile observer might have had grounds for thinking that the Unix story was almost played out, and with it the fortunes of the hacker tribe. And there was no shortage of hostile observers in the computer trade press, many of whom had been ritually predicting the imminent death of Unix at six-month intervals ever since the late 1970s.

Into the gap left by the Free Software Foundation's uncompleted HURD had stepped a Helsinki University student named Linus Torvalds. In 1991 he began developing a free Unix kernel for 386 machines using the Free Software Foundation's toolkit. His initial, rapid success attracted many Internet hackers to help him develop Linux, a full-featured Unix with entirely free and redistributable sources.

Linux was not without competitors. In 1991, contemporaneously with Linus Torvalds's early experiments, William and Lynne Jolitz were experimentally porting the BSD Unix sources to the 386. Most observers comparing BSD technology with Linus's crude early efforts expected that BSD ports would become the most important free Unixes on the PC.

The most important feature of Linux, however, was not technical but sociological. Until the Linux development, everyone believed that any software as complex as an operating system had to be developed in a carefully coordinated way by a relatively small, tightly-knit group of people. This model was and still is typical of both commercial software and the great freeware cathedrals built by the Free Software Foundation in the 1980s; also of the freeBSD/netBSD/OpenBSD projects that spun off from the Jolitizes' original 386BSD port.

Linux evolved in a completely different way. From nearly the beginning, it was rather casually hacked on by huge numbers of volunteers coordinating only through the Internet. Quality was maintained not by rigid standards or autocracy but by the naively simple strategy of releasing every week and getting feedback from hundreds of users within days, creating a sort of rapid Darwinian selection on the mutations introduced by developers. To the amazement of almost everyone, this worked quite well.

By late 1993 Linux could compete on stability and reliability with many commercial Unixes, and hosted vastly more software. It was even beginning to attract ports of commercial applications software. One indirect effect of this development was to kill off most of the smaller proprietary Unix vendors—without developers and hackers to sell to, they folded. One of the few survivors, BSDI (Berkeley Systems Design, Incorporated), flourished by offering full sources with its BSD-based Unix and cultivating close ties with the hacker community.

These developments were not much remarked on at the time within the hacker culture, and not at all outside it. The hacker culture, defying repeated predictions of its demise, was just beginning to remake the commercial-software world in its own image. It would be five more years, however, before this trend became obvious.

The early growth of Linux synergized with another phenomenon: the public discovery of the Internet. The early 1990s also saw the beginnings of a flourishing Internet-provider industry, selling connectivity to the public for a few dollars a month. Following the invention of the World Wide Web, the Internet's already rapid growth accelerated to a breakneck pace.

By 1994, the year Berkeley's Unix development group formally shut down, several different free Unix versions (Linux and the descendants of 386BSD) served as the major focal points of hacking activity. Linux was being distributed commercially on CD-ROM and selling like hotcakes. By the end of 1995, major computer companies were beginning to take out glossy advertisements celebrating the Internet-friendliness of their software and hardware!