FIRE IN THE VALLEY

The Making of the Personal Computer

Paul Freiberger
Michael Swaine

Osborne/McGraw-Hill
Berkeley, California

Contents

Introduction

In the late 1960s a group of Seattle teenagers met each afternoon outside Lakeside High, the private suburban high school they attended, and biked to the offices of a local company. Although the company's employees were going home for the evening and the firm was officially closing, the boys were just getting started. They thought of themselves as an unofficial night shift. Every night they worked till long after dark, pounding the keys of the company's DEC (Digital Equipment Corporation) computer, while dining on carry-out pizza and soft drinks.

The leaders of the group were an unusual pair. More than any of the others, they were fascinated by computers; in fact, this fascination had earned them the label "computer nuts" among their classmates. Paul Allen, a soft-spoken 15-year-old, would have paid for the chance to work on the machines. His friend Bill Gates, 13 years old and looking even younger, was proud of his abilities in mathematics and was hooked on programming.

Gates, Allen, and the others had been hired—"allowed" might be a better word, since they worked for the fun of it, without pay—to find errors in the computer's programming. Computer Center Corporation (the boys called it C Cubed) was happy to have them around. According to the terms of C Cubed's contract with DEC, as long as C Cubed could show DEC that DEC's programs had bugs (errors that caused the programs to malfunction or "crash"), C Cubed didn't have to pay DEC for using the computer. The kids were postponing the day when C Cubed had to pay its bill to DEC.

The DEC programs were new and complex, and there was nothing surprising in the fact that they were not entirely error-free. DEC's arrangement with C Cubed was a common technique for tracking down the subtlest bugs in such complex programs, and the kids found plenty of bugs in the next six months, with young Bill Gates finding more than his share. The *Problem Report Book*, as the boys labeled the journal of their discoveries, grew to 300 pages. Finally DEC called a halt, telling C Cubed, as Gates later recalled it, "Look, these guys are going to find bugs forever."

Allen and Gates stayed on for some months at C Cubed after the other boys left, and eventually drew pay for their work. The computer they worked on was a marvel of modern engineering. DEC had pioneered the concept of the minicomputer, which changed the computer from a wall of circuitry affordable by only the federal government and the largest companies into a box the size of a refrigerator, a machine that medium-sized offices, factories, and academic departments could afford. But the minicomputer was just a step on the path of miniaturization that would lead to the personal computer. Allen and Gates, loving their work at C Cubed, found themselves dreaming of the day when they would own their own computers. "It's going to happen," Paul Allen used to tell his friend

. It happened. Today the personal computer is an established consumer product sold like a stereo system. Its sleek plastic case may be slender enough to slip into a briefcase. Flashy graphics and joysticks make it a programmable personal video game arcade. Its information storage is encyclopedic, its capabilities Protean. The personal computer—or microcomputer—can act as typewriter, calculator, accounting system, financial spreadsheet, telecommunications instrument, library, paint and easel, tutor, and toy. Personal computers, nonexistent as recently as 1974, are now in use in the office, in the home, in the laboratory, in the school, on airplanes, and at the beach. Retail outlets for these universal machines have in a few years become as common as camera shops. Almost overnight, a revolution has taken place: what was once a fearsome "electronic brain" tended by a white-coated computer priesthood is now a consumer product.

The personal computer field is now almost synonymous with "high tech," yet the machines did not develop in the well-equipped, antiseptic labs that phrase calls to mind. The personal computer and the personal computer industry were created by hobbyists such as Gates and Allen, working after hours in garages, warehouses, basements, and bedrooms. These "computer nuts" fired the personal computer revolution out of their own fascination with the technology. Their story is as unusual as any in modern business. It is the story of overnight millionaires bewildered by their success, populist engineers soldering in their garages machines that would change our lives, manufacturers afflicted with a spirit of fierce consumerism, consumers who accepted faulty merchandise for the fun of fixing it themselves, and a spirit of sharing of hard-won technical information—a spirit rare in any industry, but essential for the proliferation of the personal computer.

The fire of the personal computer revolution broke out in many places in the mid-1970s, but nowhere did the fire spread as it did in Silicon Valley, the center of high tech development in California. This is the history of that revolution in the Valley and elsewhere.