

SCIENCE & TECHNOLOGY

The Mac Is the Message

History of Macintosh, a computer that 'made a dent in the universe'

By **Simson L. Garfinkel**

INSANELY Great: The Life and Times of Macintosh, the Computer That Changed Everything" is Steven Levy's ode to his favorite computer, the Apple Macintosh. It's the computer that changed the lives of millions, brought the power of computers to nonwireheads for the first time, created desktop publishing, and, according to Levy, made a small dent in the fabric of the universe.

Such accomplishments are not minor feats. Fortunately, Levy, an experienced chronicler of hackers and the wonders of computer science, is up to the task.

While "Insanely Great" isn't the first book to charter the tumultuous birth and uncertain childhood of Macintosh, it's one of the fastest and most enjoyable to read. Others in this well-trodden genre include the biography of Steve Jobs by computer journalist Jeffrey Young: "Steve Jobs: The Journey is the Reward" (Scott, Foresman and Company, 1988) and, to a lesser extent, former "evangelist" Guy Kawasaki's two books "The Macintosh Way: The Art of Guerrilla Management" (Scott, Foresman and Company, 1989) and "Selling the Dream" (HarperCollins, 1992).

Unlike these others, Levy's work is the first to place Macintosh in its true historical context: not merely as a successful machine that guaranteed a decade of profits for one of the world's largest computer companies, but as a catalyst for a revolution that changed the way people think about computers, information, and even themselves.

Levy traces the roots of the Macintosh revolution back to Vannevar Bush's 1945 essay in the Atlantic, "As We May Think," in which Bush - decades ahead of his time - envisioned personal computers, hypertext, and a worldwide network of interlinked data banks. Levy then follows Doug Engelbart, an engineer who was inspired by Bush in 1950 to drop his career, return to school to earn a doctorate, and eventually invent the concept of "windows," a technique for using a computer screen to display several programs at the same time.

By the third chapter, Levy is up to PARC - The Palo Alto Research Center (an arm of the Xerox Corporation) - that created the world's first personal computer in 1973, complete with a mouse and its own window sys-

tem. But the PARC system languished while IBM prepared and finally introduced, eight years later, its barbaric, difficult-to-use, and immensely popular PC.

The difference between Macintosh and these other accomplishments from the past was deployment. "Real artists ship," said Steve Jobs, Apple's co-founder and leader of the Macintosh team. No matter how good a computer is, unless it gets out - is shipped - unless it hits the street, it doesn't change any lives. It doesn't make a dent in the universe. In a very real sense, it doesn't really matter at all.

Macintosh mattered.

How many lifetimes does 360 million seconds equal? Fifty? *Would you take three days to save fifty people's lives?* Kenyon eventually shaved three seconds off the Mac's start-up time, writes Levy, "sparing a hundred extra souls from the Reaper."

So far, so good. But then, a few weeks later, Levy writes, Jobs became obsessed with the functional design lines of French food processors, and spent two weeks out of his busy schedule during the height of Macintosh development to look at them in Bay-area show rooms. Just how many souls were lost to that exercise?

The paradox of Macintosh, as "Insanely Great" makes abundantly clear, is that an easy-to-use computer is incredibly difficult to build. In the final analysis, computers don't save time and work; they simply move it around, from the computer's user to the keyboard of the programmer.

The power of modern computers is that they let a single team of programmers solve an entire set of problems once, then simply by copying the software, millions of people can solve those problems again and again without great effort. Nevertheless, Macintosh was nearly a failure, because it was so difficult for people to master the art of writing those easy-to-use programs.

It took a group of programmers working in Seattle, under the name Aldus, to write the application program that would be the machine's salvation. That program was PageMaker, the world's first Desktop Publishing application. Desktop Publishing forever changed the way magazines and newspapers around the world are produced. Even this newspaper was produced on a Macintosh with a desktop-publishing application.

Sadly, one of the problems with "Insanely Great" is technical accuracy. Just as 360 million seconds do not make up 50 lifetimes (they barely account for 11 years), in many places Levy blithely repeats technical details that are simply wrong.

Although these errors won't detract from the book for all but the most nit-picking nerds, their presence is annoying. These mistakes would have been a lot easier to track down and fix if Levy included an index. No book that purports to be a history, let alone a history of "the computer that changed everything," should be without one.

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NASA Aim 'On the

UNCOWED by losing the spacecraft three days before August, the National Aeronautics and Space Administration still hopes to make a dent in the fabric of the universe.

The funding request is in the \$1 billion range, according to NASA Administrator Daniel Claitor, who says NASA's promise to do such a mission "on the cheap." That's an attractive budget era.

But will Congress buy it? The order of \$100 [million] to \$150 [million], according to NASA, means getting the mission on the cheap. That contrasts with the agency's major projects like Mars Global Surveyor.

From a scientific viewpoint, it's an effective way to do space exploration spread over a decade, keep one or even two mission failures in overall program.

The costs of those missions still are high. From a budget viewpoint, there's a billion-dollar set of cheap missions and an egg-in-the-basket Mars Observer.

Either strategy raises the question of whether the United States will spend a billion dollars a year exploring Mars. That's the question that confronts NASA and Congress.

Moreover, the issue is sharpened by the fact that NASA's new Mars Global Surveyor comes on top of another quick-and-cheap Mars mission already authorized.

NASA is proposing what it calls MARS Surveyor program to take advantage of launch opportunities every two years as Mars comes alignment with Earth. It would be launched in 1996 and arrive in 1997.

Two spacecraft - another Mars Global Surveyor and a surface-probing lander - would carry a scientific payload lost Mars Observer.

NASA wants \$77 million for Oct. 1) to start developing the "a cost ceiling of approximately \$1 billion." That's a half-billion-dollar-plus in this decade right there.

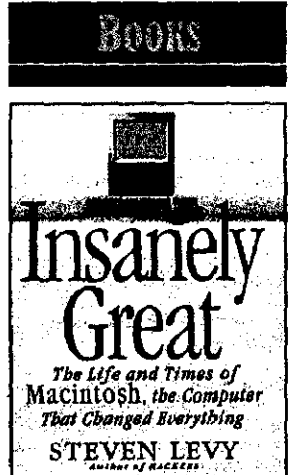
Meanwhile, NASA's MESUR program is trying to win full approval. It would establish a seismic network with the \$175-million Pathfinder program so far authorized.

Scheduled to be launched by Mars Global Surveyor will operate independently that also would arrive in 1997, a cost no more than \$500 million.

There you have it - a billion-dollar for the rest of the 1990s broken into snatches of sloppy planning.

If NASA hopes to sell Mars in 1994, it has to come up with an idea whose true cost under a quick-and-cheap program.

There's more at stake than NASA's programs are part of Europe, Japan, Russia, and some understanding of a planetary magnetic history can give new insight. The United States should hold up



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