

## WHAT'S NEXT

# Memories as Heirlooms Logged Into a Database

By ANNE EISENBERG

**S**AMUEL PEPYS, the great English diarist, might have appreciated this invention.

A small team of Microsoft researchers is devising software for an electronic diary that can keep track of a multitude of everyday details in a person's life — the e-mail sent, the family photographs taken, the phone calls made, the Web pages visited — in a single database.

This personal database could then be searched to find out, say, exactly who was at the wedding 10 years ago, or just where that camping trip was eight summers back.

The software is bound to be superior to standard ways of holding on to memories — photographs in a shoebox, for instance — said Gordon Bell, a senior researcher at Microsoft's Bay Area Research Center in San Francisco, who originated the project.

Dr. Bell hopes that archiving programs like his may one day serve as surrogates for human memory, providing details of the past with a speed and accuracy that biological brains cannot match.

He volunteered his own life history as raw material for the multimedia database, called MyLifeBits. He said he was ready to consign as many of his records and keepsakes as possible to a hard drive. "I want my life to be in bits, not boxes," he said.

He started by scanning into the database many objects from his past, among them

the sepia-toned photographs that he inherited from his father and mother. Dr. Bell, a pioneer in computing architecture and parallel processing, had many honors to record, including the National Medal of Technology. As a vice president for research and development at the Digital Equipment Corporation from 1960 to 1983, he led the development of the company's Vax computing environment.

Documents from this distinguished career went into the archive, as did more ephemeral material like canceled checks, airline tickets and even the inscriptions on

## Who caught the bouquet that time? A searchable diary settles the argument.

coffee mugs. Recently he started recording all his telephone conversations, too. They are to join the database along with every piece of e-mail he receives and every Web page he visits, all automatically logged into storage by date of entry.

So far, Dr. Bell has filled about 30 gigabytes with digitized segments of his past, and he has begun to notice that his life is less cluttered. "I've kept my passport, money and stock certificates," he said. "But most of the paper now gets chucked once it is digitized."

Dr. Bell's only disappointment with the



Mary Ann Smith

process lies in the long-ago habits of his youth. "He's sorry now that he threw so much stuff away before he started archiving," said Jim Gemmell, a computer scientist who is the architect of the software for MyLifeBits.

Dr. Gemmell is working closely with Dr. Bell in devising the software for MyLifeBits. "Dr. Bell is our leader and guinea pig," he said. "He's living the program. We are building it."

He says that MyLifeBits must be so accessible that even the least disciplined of diarists can begin archiving their lives. "The system has to be convenient," he said, or people will not use it.

MyLifeBits has several features that may

be ideal for people who never get around to identifying dates and locations in their photographs, much less putting them in an album. One feature is a tool that lets a viewer annotate photographs either verbally or by typing. "You can comment on photographs — who's in them and what they are doing," Dr. Gemmell said. "Then the voice or text annotation gets attached to whatever you are looking at."

To take advantage of this feature, Dr. Bell's sister, Sharon Smith of Bethany, Mo., came to the Microsoft lab and talked about some of the photos in the family collection as they were displayed, identifying, for instance, people and objects in the pictures. Generations from now, descendants of the Bell family may find such information very useful, Dr. Gemmell said. "You have a family heirloom, just by using this easy annotation tool."

Other tools like timelines and graphs were developed to handle screen displays so that people need not scroll through thousands of items as they begin a search. "We are big believers in data visualization," Dr. Gemmell said, to provide an overview of what has been stored and where to find it.

If Dr. Bell wants to search for a particular photograph of his son, for instance, he can rely on tools that can help him quickly narrow his search. There is a timeline with thumbnail photos of his son, for example, at different ages from birth to adulthood. Below is a graph showing a distribution of the number of photos taken at a particular time.

"So it's pretty easy to see a big cluster of

photos at the birth of the child," Dr. Gemmell said. "And then later there's a big bump for the grandchildren." Such displays make it easier for a viewer to guess where in the huge collection the one photo of interest might be.

Roger Lueder, who has been working on the project for the past year, has begun building a personal database of his own. "I'm not scanning every document I've ever seen," he said. "I tried scanning photos, but I don't have the patience." But he is storing digital photographs along with other information that does not require scanning, like the Web pages that he visits.

Mr. Lueder realized how valuable the tokens of his past were when a fire broke out in his apartment building. "I had to think," he said. "Should I take the hard drive or the shoe box full of photos?" As the fire came closer, he ended up taking neither photos nor hard drive. "I ran for my life," he said. But now that he is building a personal archive into his computer, his choice will be easier next time, especially if he has remembered to do a remote backup.

Dr. Bell is not worried about the obvious security risks posed by MyLifeBits. "We are looking not at the dark side," he said, "but at all the potential it has as a surrogate memory." He is not sure when the program will be ready for sale, but in the meantime he has some advice for people who might be interested in using it.

"You should be capturing everything digitally," he said.