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IT vet talks about the most influential computers

Interview: Gordon Bell, a principal researcher at Microsoft, looks back at his nearly 50 years in the IT industry

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Gordon Bell has been working in the IT industry for nearly 50 years. He was a key engineer and vice president of research and development at minicomputer pioneer Digital Equipment Corp. for 23 years and later a founder of the Computer History Museum. Today Bell is a principal researcher at Microsoft. The project most captivating Bell now is his work on finding ways for anyone to capture memories of their lifetime on a computer. The nine-year project, called MyLifeBits, has Bell searching through his own memory to collect as much information -- pictures, phone calls, e-mails, and conversations -- as he can about his life. He's trying to store a lifetime on his laptop.

In an interview with Computerworld, Bell talked about his favorite computer of all time, the state of telepresence and what he wishes people knew about his good friend and Microsoft research colleague Jim Gray who was lost at sea last year.

Computerworld: What has been the most influential change or product that you've seen over the years?

Gordon Bell: Certainly, the big bang was the integrated circuit and the microprocessor. [Since] that hit in 1972 with the first microprocessor, we've been on this long-running exponential, Moore's Law. Everything has been pretty predictable since then. It was really the integrated circuit that allowed the exponential increase in power.

Computerworld: What did you think we'd have by now but don't?

Bell: I started out in speech when I graduated from MIT. I thought we would be a little further ahead in being able to do speech recognition. Speech in particular has been a hard one.

Computerworld: What's the one computer that best illustrates the 20th century?

Bell: When you take it all together, it's either the [IBM 360 mainframe] or the PC. [The mainframe] was the workhorse of computers for such a long time and continues to be. On the other hand, the thing that's had the biggest impact has been the PC. The world population of PCs is in the billions. With the sheer numbers and the number of people's lives it's touched, it's probably got to be the PC.

Computerworld: What has been your favorite computer of all time?

Bell: For one that I was involved with, the VAX was the most successful. It was a joy to be involved with. It was a wonderful team. I'm very proud of what we produced. And for one that I wasn't with, in a funny way it's probably the IBM 360. I love Seymour Cray's computers. I'd say it's the vector processor. The Cray style of vector processor is one of the great inventions. It's certainly underappreciated by most scientists. It just computes very fast. It was the workhorse for computing for, really, two decades. It was the workhorse from '75 to '95. It had a wonderful elegance to it and the way it works. It really was a spectacular piece of engineering.

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Computerworld: What was the best thing about your work on VAX computers?

Bell: To me, the most exciting time was when I was in Tahiti and wrote a paper that turned out to be the VAX strategy. It was a commitment to having a small number of computers that would cover the whole of computing, from personal computing and workstations up through mainframes and central computers. That we did with clusters. It was the idea of using computers in a cluster that really was the big thing about VAX.

Computerworld: What was the most frustrating or disappointing part of it?

Bell: I ended up with a bypass -- a heart attack that I can't blame on VAX or the difficulty. It was certainly a lot of stress to get all of the machines built and get things done. There was a bittersweet joy to it. After you get all of it out there, you kind of forget any of the difficulties that you had in getting it done. I tend to forget those things.

Computerworld: What ever happened to telepresence?

Bell: I think telepresence is happening. It's slowly happening. When I went to Microsoft, we got to a certain point and said, "Gee until the network and the IP stack and all those things get better, it will be hard to do telepresence." Telepresentation is the ability to give a presentation and have it multicast to a number of remote sites. We wanted to attend lectures in Redmond and have them available on the Net. Telepresence is time shifting and space shifting. It's like being here while being there, and potentially at some other time. You're potentially at some other time and space. It's getting more and more common. [With] Messenger and Skype, I make perfectly good video calls from Sydney, and we'll have several of us online, communicating in that form. I think it's kind of here and will get better.

Computerworld: What's your favorite gadget?

Bell: It's the Kindle book reader. I'm an advocate of having books electronically. I just came back from a trip. I had 150 books scanned. The Kindle is Amazon's service but also a wonderful reader. It's a paperback-size screen. I love it. Somebody said they'd never switch from paper, but I said, "If you're lying in bed, the thing rests on your tummy and you don't have the stress on your hands when you're trying to keep it up and open."

Computerworld: What do you wish people knew about your friend and fellow Microsoft researcher Jim Gray?

Bell: He was so outgoing that people working with him all felt he was our personal friend. He's a unique individual. If you asked 100 people who's your best personal friend, they'd all say Jim. And I don't feel bad that all those other people feel that way. He gave me a book called Pasteur's Quadrant, which is about what separated Pasteur from other scientists. It's about a quest for understanding and a quest for use. Is what you're doing going to have any utility and any contributions to science? Jim was all about the use and about the understanding. He wrote great papers. As a researcher, he did his job of making his work understandable and known, and people could build on it.

Computerworld: What upcoming technology are you most excited about?

Bell: There are two that have come out and we're just watching what they will do -- the cell phone and wireless sensor networks, the ability to have radio connections with everything. It's all about where it's going. It's your entertainment center. It could be your books. As you get more and more data, the cell phone increasingly will have more onboard storage.

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