

# Technology's thinkers get daring at intellectual circus

A VIDEO camera, tethered to a computer, focuses on your eyeball. It's watching where your eye lingers on the World Wide Web page you're viewing, and when it decides what interests you it'll look for related information.

They're working on such a device at IBM's Almaden Research Center in San Jose. And the researchers showed a prototype Thursday at the center's annual "New Paradigms for Using Computers" workshop, where some of technology's top thinkers and doers considered the state of the art and imagined where it's heading.



DAN GILLMOR

It's one of my favorite events of the heat-wave season, a chance to uncouple from the routine craziness of the technology world and hang out for a day with people who look at everything from a different angle than the rest of us. It's also a humility-booster; I'd fall far to the left on an intelligence bell curve at this gathering.

Ted Selker, the ringmaster of this intel-

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lectual circus, is an IBM Fellow — a job that allows him to do pretty much anything he pleases — and part-time professor at Stanford University. At Almaden (<http://www.almaden.ibm.com>) he heads the User System Ergonomics Research unit; the eraser-like TrackPoint pointing device on IBM's ThinkPad notebook computer line is just one of his credits.

Selker talked about the inevitable social use of the information technology that today appeals mostly to the technically minded. Computers will be everywhere, in everything, and they'll be vastly more powerful. Users will choose the computer for the occasion at least as much for its size and convenience as its power.

One direction, he suggested, might be  
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**GILLMOR**

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furniture that "has a relationship to you." He sat on the on-stage couch, which recognized him, checked with his hand-held computer and reminded him that he had 30 minutes left to speak. He envisioned the time when "your feelings about what you see on the screen changes it" — an early version of which was embodied in the demonstration computer that kept track of eye movements.

Barbara Hayes-Roth, founder of San Jose-based Extempo Systems Inc. (<http://www.extempo.com>) and director of Stanford's virtual theater project, finds the Web "a cold and lonely place." Extempo is creating virtual characters, ranging from human-looking to cartoonish, that hold conversations with computer users and act as guides to Web sites, online car dealerships and other cyber-places.

Hayes-Roth finds the entire notion of a "user interface" anachronistic. She distinguishes between computer users and customers, the latter in the broadest sense of the

word, where many human interactions create customer-like relationships.

She was peppered with properly skeptical questions, such as how these virtual beings would learn the computer user's quirks well enough to know when to leave someone alone — something any good sales clerk learns to judge quickly. It'll take time for real people to learn how these characters work, too.

Gordon Bell, a Microsoft Corp. researcher (<http://research.microsoft.com>) and one of modern computing's pioneers, looked at upcoming challenges. Like other speakers, he assumed that computing capabilities would keep accelerating at an exponential pace, changing much of our world in ways we're only beginning to grasp.

One of his more entertaining slides showed the evolution of computers: By the year 2000, we'll have fingertop computers, with contactless computers in 2010 and "microchip inhalants" by 2020 — amusing, but more than possible. And everything that logically could move to cyberspace will move there, including meetings as we opt for "telepre-

sence" to replace physical presence.

In Bell's vision, we (or our descendants) will have "Guardian Angels" to help keep us healthy — miniature gear that monitors vital signs and holds humanity's collected medical wisdom. We'll also have cyber-assistants that record everything we see, hear, say and do during our lifetimes. How we'll catalog and handle all that information — allowing us to, say, quickly recall a specific conversation — will be a challenge.

All of that data will fit into a storage device so small "you'll have to squint to see it," said K. Eric Drexler, a research fellow with the Institute for Molecular Manufacturing and chairman of the Foresight Institute (<http://www.foresight.org>).

Drexler's field is nanotechnology — tiny machines, some just the size of molecules, that perform an array of tasks. IBM researchers showed the world that humans could manipulate individual atoms, he noted, and that ability will change the way we manufacture things — from computers to jet planes.

Molecular manufacturing will

lead to massive change in products, he said; nanotechnology will be used to restore and maintain our health. Drexler asked if anyone in the audience had plans to be frozen after death for potential revival. No one raised a hand. Then he suggested that nanotechnology would someday repair frostbite — "maybe even long-term, whole-body frostbite."

"We're a few years away from such heaven, or hell, depending on one's view of everlasting corporeal life. In the meantime, technology still has a few bugs.

One of the Almaden research exhibits Thursday included a computer and sensors attached to a multi-function bodybuilding machine. If you wore the right kind of badge and sat on one of the machine's benches, it would recognize you and coach you — with a voice alarmingly like Arnold Schwarzenegger's — through an exercise. If

you completed several exercises, a nearby soda machine would award you a free Coke.

A problem cropped up with the soda unit. Rajat Paharia, a Stanford student working with Selker this summer, changed a line in a program running the exercise routine.

"I had to debug the Coke machine," he said.



DAN GILLMOR

*Dan Gillmor's column appears each Sunday, Tuesday and Friday. Visit Dan's Web page (<http://www.mercurycenter.com/columnists/gillmor>). Or write him (and please include a daytime phone number — for verification, not publication) at the Mercury News, 750 Ridder Park Dr., San Jose, Calif. 95190; e-mail: [dgillmor@sjmercury.com](mailto:dgillmor@sjmercury.com); phone (408) 920-5016; fax (408) 920-5917.*