

Welcome to Viewpoint, a live discussion forum on *Newsweek.com*. This forum offers *Newsweek.com* sponsors a platform to discuss issues, new products, company information and other topics.

Telepresence

Gordon Bell

Tuesday, May 30, 2000

Telepresence encompasses communication technologies and activities that allow people to communicate, work, be examined by a physician, or learn remotely whether it's at their home, hotel or even in the wilderness. Telepresence is "being there, while being here at possibly some other time." Nearly half of U.S. corporations support people who work at home. New technologies are enabling workers to be located around the globe and yet still collaborate. The challenge for technologists is to enable complete freedom as to where, when and how we work.



Gordon Bell is a senior researcher in Microsoft's Telepresence Research Group, a part of the Bay Area Research Center and a computer-consultant-at-large who devotes time to startup ventures. Gordon is focused on the use of computers and the necessity of telepresence: "being there without really being there, then." "There" can be a different place, right now, or a compressed and different time (a presentation or recording of an earlier event). In 1999 this project was extended to include multimedia in the home.

Moderator: Welcome to this morning's e-Planet discussion with Gordon Bell. Gordon, we're glad to have you with us, and let's get started.

Sarasota, FL: What is telepresence? Are we talking a new plane of reality, "Star Trek" kind of thing?

Gordon Bell: I've always defined telepresence as "being there, while being here at possibly some other time". You also have the ability to speed up time. Thus it is both space and time shifting using a computer as a communication link.

Telepresence is evolving... at some point we all would like to be there on the holodeck.

Arlington, Va.: What do you mean by "complete freedom" relating to how we work? What do you foresee?

Gordon Bell: The Japanese have defined an acronym, COMOHO to describe this: Commercial Office, Mobile Office and Home Office as to where one might work. The implication is that there's this place called an office where you actually sit or stand and work. So the freedom here is being able to be in any of these environments. I go further and include being outdoors or in a campus setting. Clearly getting messages in our cars is pretty near term and some people do that now.

The communications industry is building higher speed wireless networks that are comparable to ADSL or cable high speed lines that some of us have at home. When this happens, you can be truly mobile.

Charlotte, NC: What are some real world applications of telepresence? How could it change life for ordinary Americans?

Gordon Bell: First, the biggest use of telepresence is telework i.e. letting an individual work wherever or whenever they choose. This can be someone who operates his/her own business or is part of some larger organization.

The actual application depends on the kind of teleworker.

It could enable people who might want to work and have more time with their family to do so.

It can also enable more entrepreneurs... just look at how ebay has let people located everywhere to trade with one another. Bartering is also coming into being now.

Personally, I believe tele-education may be the "killer app". With it, anyone can take any course they want or need!

Portland, OR: What exactly are you talking about when you said it was possible to speed up time using a computer?

Gordon Bell: A couple of instances:
email let's you scan more rapidly than real time

one can view a telepresentation (lecture with slides) at speedups of 1.5-2 times normal spoken speech plus you can skip over parts and around them a bit like fast forward with a VCR, but in this case you can understand the speech... the speaker just talks fast.

Arlington: How does telepresence differ from virtual reality?

Gordon Bell: VR and telepresence were initially synonymous. More often though VR is being there with a particular profession-based discipline program or even a game. In essence it provides a way of looking at a molecule, walking through a building or city or airplane, or being in some environment such as the middle of tornado. You may be alone in such an environment or with others. Over time, VR, seems to encompass more "reality" and "real time" aspects.

Telepresence is the overall area, including VR, but is tending to be a bit more mundane... like telework that I've been mostly talking about. With telework, you are not very concerned about anything but the content of the work.

Morgantown, WV: What major technological breakthrough is required to make the telepresence experience closer to real presence? -- Joe Cleetus

Gordon Bell: Just a phone communication link to an information service provider or the corporate network that gets you on the Internet and your computer are the basics. Being "always connected" is essential for teleworkers who are part of a large organization so they can feel ever present.

To move really beyond this is going to mean a bit higher bandwidths that provide lower latency so that voice connections are as interactive as the phone. At the same time, I believe we want stereo phones to get the same feeling as when you might be in a meeting with others.

Then the other thing to get more "presence" is good video-- to make the videophone a reality.

I don't think of it as breakthrough, but an evolution of networking speed and communication technology. So it's about higher bandwidth and lower latency (the time between sender and receiver).

Moderator: What tasks or jobs are most suitable for telepresence?

Gordon Bell: Knowledge workers of most types that can operate effectively as individuals. Like what I'm doing right now. Any of us could be anywhere, just like the participants. Authoring is a natural and is probably best done alone without interruptions.

Certainly as organizations become totally on line, administrative tasks like time cards, expense accounts, ordering things, reports of all kinds are tasks that EVERYONE does that can be done anywhere!

I believe every telemarketer or reservations agent can operate telepresently.

I have even begun to work with one of my lawyers totally by email and a lot of communication with my doctor is this way.

Certainly researchers of all types can do their work totally on line especially since the world's greatest library is the web.

Sometimes it's hard to separate telepresence from the impact brought about by how the web is removing distance.

Nashua, NH: Gordon-

What does Microsoft have to do with this kind of thing ("Telepresence")--does this translate into new software or new technology?

Gordon Bell: I came to Microsoft Research about 5 years ago to do telepresence --- I said I wanted to work at home in Silicon Valley, or go to our San Francisco lab. I couldn't move to Redmond WA to be with the rest of research. So I started to define the area. Now MS has these products... with many more coming

Powerpoint conferencing – ability to display my slides on several screens at once and to capture the presenter's voice. So the audience can be anywhere anytime.

Netshow – a program to capture the slides and video of a presentation and to view it "live" or afterwards, "on demand".

Netmeeting. This one is a product and service where a number of participants congregate and runs some joint app e.g. excel or word or ppt. There's a chat dialog and whiteboard.

Portland, OR: So, is this theory's most likely use in the future going to be about the ability to do work wherever you are?

Gordon Bell: Working anywhere is one aspect. Much of this is communications.

Another aspect is being able to get more people involved as in very large conventions on a worldwide basis.

Also, being able to get a specialist to solve a remote problem (e.g. sick patient).

Am not sure I define this as part of telepresence, but being able to hear any radio station (and maybe someday any TV station) from anywhere in the world is nice. I now listen to classical stations outside of SF area where they have longer pieces and less ads.

Charlotte, NC: Gordon-

You've talked quite a bit about the technology, bandwidth and such--I want to know what the human side of this is. What's the potential impact to quality of life? Seems to me that if you're able to work from anywhere, you will and therefore have less quality time with family, etc...

Gordon Bell: It sure has the potential for lowering QOL if one is an obsessive worker. Cellphones are just another teleworker's tool and we are seeing downsides there.

Like nearly all of our technology, it offers freedom of time and distance... but if you let it, it can be addictive and a forcing function to work.

Boston, MA: What, if any, is the downside of this idea of telepresence? Is there potential for fraudulent electronic identity?

Gordon Bell: The downside is you are always able to work if so inclined and never away from the office.

We saw a downside within our own company when our email was taken by the Dept of Justice. If those had been phone conversations, they wouldn't have been discoverable. On the other hand, the mail system is wonderful and the gain for communication anywhere in the organization has made it worthwhile.

This is a problem that exists in every aspect of the web and not especially different.

Portland, OR: You refer to knowledge workers--what does that mean?

Gordon Bell: Anyone who is simply working with data or knowledge... writers, experts in various fields that are not dealing in aspects of the physical world. So it's really non-physical goods or services workers. Financial analysts, librarians, etc.

Nashua, NH: You've talked about being able to communicate with your doctor and lawyer via email--do you think we'll ever become totally paperless?

Gordon Bell: I'm taking an oath to be paperless in 2 years. I will still print to read stuff and receive paper, but I will not STORE or TRANSMIT

paper.

In 2 years, we'll be printing more than today.

Look at my website for a paper on this, CyberAll, where I'm putting my books, papers, photos, videos, etc. into my machine.

Chicago, IL: Gordon:

What does a researcher do? How do you research a theory as esoteric as "telepresence"?

Gordon Bell: In an industrial research setting, we try to discover knowledge that will be useful to our company to make technology and products.

In this area, we try to build things... look at our paper on Telepresentations, a word we coined, to describe being able to make a presentation at a distance that could be received live or on demand. An experiment here was to capture a conference live where 2,000 attendees and 21 speakers. 30,000 people have attended from cyberspace.

Now we are concerned with increasing "presence"... an even more esoteric problem.

Los Angeles, CA: In what ways would businesses apply the concept of telepresence? How could it help business be more effective, productive or provide better customer service?

Gordon Bell: This depends on biz.

I think it is key to better customer service... again depending on the biz. For starters having email communication and a commitment to get back to answer any question, is important.

As a customer, I would like a company to store all my interactions with them, including being able to retrieve manuals.

For a financial institution, eg bank or broker... just getting rid of every shred of paper (letters, reports, transactions, checks) but yet committing to keep those for us forever would get my banking and broker biz now.

Seattle, WA: Communication seems to be not as effective over a phone conference (for example) as it is in person. What tools or strategies would you use to counteract this?

Gordon Bell: I am optimistic about solving this. Phone conferences are pretty bad because of the audio pickups. For starters, improve the microphones and have one/person.

They fail to have "presence" primarily, I believe, because they lack stereo. In using the web, we are increasing latency, but the bandwidth is there.

When net phones start to become available, things should start to improve.

Bigger screens help if you want to do teleconferences. This is group-group (group=3-6 persons).

Omaha, NE: Gordon-

What's the best use of computers in our world today? What do you envision as the most interesting way that they'll be used in the future?

Gordon Bell: I'm enamoured with them as the web enabler. On one side we can "go anywhere" to view text or tiny video or listen to a remote radio. The other side serves this content to us.

We're building a home server to take care of all the cyberizable content (books, CDs, TV, video, photos, papers, etc.) in the home.

Over time, I see a computer that will be with us that is our memory assistant that's seen and heard everything we have and can recall it for us. This looks doable within a decade.

And of course, there's way out stuff.

Chicago, IL: What do you mean "concerned with increasing presence"? Whose presence? Where?

Gordon Bell: Here's how I'm trying to use it:

Presence is a feeling that differentiates between e.g. the audio you get with face to face and telephonic and computer communications.

Presence is the feeling of being together.

It has to be measured in psychological terms... i.e. do you feel more or less present in a certain situation (e.g. using a particular technology) and how does that compare with being in the room.

Dallas, TX: Do you envision that everyone will experience "telepresence" some day? That we'll all be able to telecommute? (Can you talk to my boss about this? :)

Gordon Bell: Yes. Telepresence exists as in tele-vision, -audio (aka radio), -phones in that it mostly shifts space.

I believe that most everyone will end up doing a lot of telework. I think that everyone brings work home to some degree... you can't help it.