

Roboreporter

By Michel Bajuk,
a Swedish
freelancer
working
in the US

A skyscraper was bombed in Oklahoma City an hour ago. Thirty minutes later I am assigned to cover the story. I board the flight as I watch the breaking news from CNN in a little square in the upper right of my sight.

I try to catch my breath before I command: "Call home!" I don't know how long I'm going to be away. The computer dials my number while I'm looking for my seat. A little symbol appears with a "pling!" that only I can hear.

The search I ordered while I was checking in is done. The search engine has already downloaded the information I requested to the memory unit in my belt.

No answer. "Hang up," I say, and switch to e-mail mode when I have fastened my seatbelt.

Crowded and tight as usual. I don't wish to bother my fellow passengers, so I use the small, wireless keyboard. I manage to send a brief note home before I have to turn off the equipment for take off. In the air I browse through the articles and newscasts on my hard drive. Four hours after the bombing I'm well-informed.

I approach the area of catastrophe. I turn on the hands-free, small 360° camera. I brief my editor back home, speaking through a discrete microphone while I park the rental car. I exchange a couple of words with our online editor. In a matter of minutes we will have a detailed story, straightening up some of the initial confusion.

In the air, above the smouldering chaos, I see the name of, what until just

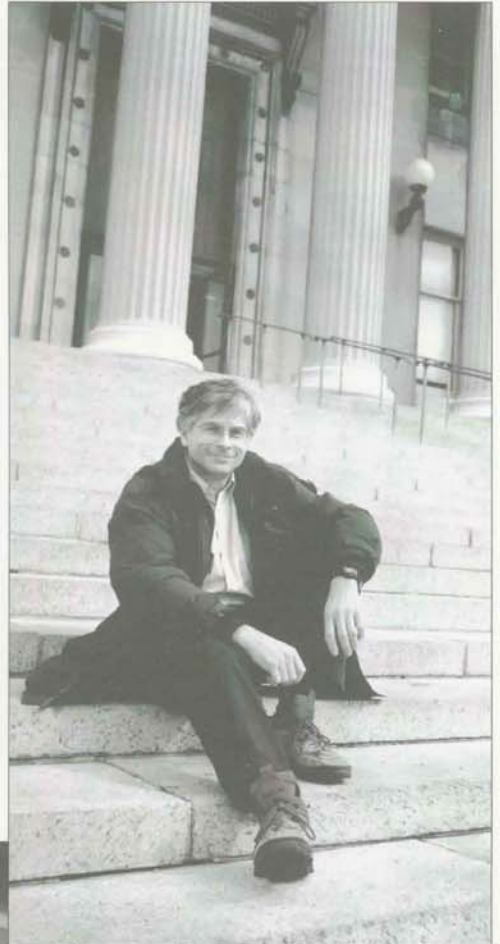
recently, was a tall office building: "Alfred P Murrah". My eyes focus on the text an extra second. A menu appears. I strap the keyboard around my arm. A couple of voice commands and a couple of key-strokes later I can see a three-dimensional CAD-model of the building on top of the sirens and smoke.

I tell the terminal to list all companies leasing office space. In the list I immediately recognise a daycare centre on the second floor. I command the computer to perform a cross-referenced search using an online database provider. A couple of minutes later I have a list with names, social security numbers, addresses and phone numbers to all legal full- or part-time employees working in the building.

I start my voice-controlled word processor, make a couple of phone calls, and on-the-scene interviews. Transcriptions are produced as I speak. Five minutes later I send my first piece. The subscribers to our "breaking news service" are notified via e-mail. My story is published directly on the website together with the statistics and the already published wire reports. There is also live footage broadcast in all directions through my camera.

Science fiction? No. The scenario described above seems to be inspired by a William Gibson novel and the cult series Max Headroom. But the first model may become your preferable field tool in a not too distant future.

A wearable computer with wireless access to computer and telephone networks. A screen built into a couple of ordinary looking glasses. Journalists and



Above: Professor Steven Feiner

Left: Michel Bajuk wearing the full equipment.



other consumers demanding information will soon have cyberservision. Maybe the first models will not carry all the features mentioned above. But soon enough they will.

It's called "Augmented Reality". Information from the virtual world is used on top of the real world.

"Our goal is to create a new generation of portable computers: machines with applications making it possible to perform advanced research on the run; to do fact checking while we do an interview, for instance," says Professor John Pavlik, the director of the Centre for New Media at Columbia University in New York.

Joseph Pulitzer's respected institution is taking a giant leap into the digital millennium.

The Mobile Journalist's Terminal (MJT) is an interdisciplinary project managed by Pavlik and Steven Feiner, professor of computer science and manager of the Graphics and Users

Interfaces Laboratory.

On the edge technology in the information and communication fields developed on campus is implemented in the MJT by the two professors. Architects develop systems to visualise hidden structures in buildings. Linguists train advanced text recognition software. Programmers, mathematicians and masters in applied physics are creating search engines with the ability to search visual content in pictures. Media experts research future information and news strategies. The engineers care about the high tech, the journalists about the content. Together they are creating the dream machine.

It's raining when I'm scheduled to try it on. "What you see here is a rather ridiculous collection of stuff," smiles Feiner. He gives me a quick run through. The equipment really seems to be quite a mix of ad hoc instruments.

The team has traded the latest, lightest and most powerful technology for greater flexibility. They have used only commercially available products, thus avoiding time – and the resource – consuming development of hardware.

"We could probably manage to stuff the functionality we have today into a packet of cigarettes. But that would painfully restrict our work. Our task is to develop a high-tech, user-friendly interface. The hardware is being developed elsewhere."

The MJT is obviously not compatible with the weather. "No problem," says Feiner.

"We can show you how it works in the lab. To create the illusion of being outside we will project a picture into the headworn display shot with an Omnicamera."

Having tried a couple of virtual reality simulated games over the past ten years I think I'm prepared, though 18 kg of equipment in the back pack is rather heavy. I must confess I feel rather silly. But when Feiner's colleagues Tobias Höllerer and Blair McIntyre turn the switch on I instantly forget about worldly problems.

All of a sudden I'm standing on campus. The picture is swiftly scrolled as I move my head. The movement tracker is smooth. The projection on my semi-transparent head-worn display is impressive. It's shot with an Omnicamera, a 360° camera developed at the university.

In my left hand I'm holding a personal digital assistant (PDA). I control the LCD display with a special pen. The fingers of my right hand control the cursor in the head-worn display using a mouse pad mounted under the PDA.

The names of the buildings are projected on top of the houses. Digits in the lower right corner show the co-ordinates of the satellites currently in use to calculate my exact position.

On top there is a menu with the following choices: Columbia, Where am I?, departments and buildings. When I click on one of the options a command is sent to the web browser in my left hand. Via a high-speed radio modem a set of web pages is rapidly downloaded to the PDA.

What I am looking at is a draft version of Columbia's future information system. If I wish to perform separate searches I only have to type in the desired address. I have instant access to the Internet.

A symbol on the lower mid-section of my sight shows a flag pointing in the direction where the selected object – a building – is.

I'm looking at Low Library. I choose "Riot '68". New options spread over the screen.

I watch several newscasts on the PDA. The video clips are streamed at high speed, wireless, via the Internet. I listen to sound bites and voice-overs. I watch archive pictures and read stories directly in my headset. I'm inside an interactive documentary about the 1968 campus riot.

Journalism and computer science students



Michel Bajuk with the head-worn display.

Pictures by Anna Persson

at Columbia University have worked hard to make it work.

I'm impressed, though the prototype I'm wearing is extremely limited. But it doesn't only work – it works very well indeed.

Not only journalists will be able to use these miniature super terminals.

An Augmented Reality display can become a new interactive medium providing news, Internet access, mapping and address guide, for instance.

"I think you will be able to access all kinds of databases. Maybe you will have to pay fees for different services. Maybe some of the information can be sponsored with commercials," says John Pavlik. In two, maximum four years, he believes the first terminal will be available. After a couple of years and after a couple of refining generations he envisions the price to be somewhere around \$1 000.

The size of the equipment will be approximately the same as for an ordinary CD-player. The head-worn display will be replaced by something similar to a couple of ordinary glasses.

"One of the problems today is the limited possibility to communicate wireless. But already in 1999 there will be new cellular phone networks operated by new low altitude satellites. We will be able to access good bandwidth from anywhere in the world. We're in no hurry. We want to create a useful terminal that people really WANT to wear," Pavlik says.

The Omnicam was used by a team of Columbia graduate journalism students on St Patrick's Day parade last year when Irish gay and lesbian activists clashed with conservative paraders.

The newscasts and interviews can be downloaded from <http://www.cs.columbia.edu/CAVE/omnicam/>. The required software can be downloaded from the same page.



Professor John Pavlik