

# Microsoft engineer envisions computers that adapt to us

October 20 2011, By Sharon Pian Chan

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For decades, we controlled computers with a mouse and keyboard. The plastic mouse became a prosthetic for our hand, and the keyboard an extension of our fingers.

Microsoft researchers are searching for the next breakthrough that will bring the real and machine worlds even closer together.

Blurring the line between those worlds is a mission for Stevie Bathiche, a [bioengineer](#) who leads the Applied Sciences group at Microsoft. "A lot of what we do now is making the interface between man and machine seamless," Bathiche said he wrote in a personal mission statement 10 years ago. More specifically, he wanted to make the machine feel less like a machine. "Be a part of the person's life instead of the other way around."

For the past few years, Bathiche has been building 3-D screens and cameras that make people on opposite sides of the globe seem as if they're in the same room.

"I view him as one of the major people on a global basis" in 3-D displays and optics, said Jaron Lanier, a Microsoft researcher who pioneered virtual reality and recently wrote the book "You Are Not a Gadget." "He's the most creative and productive engineer in that particular field working in the world today."

Bathiche has been working on blending worlds for a while. In college, he

built a car driven by a cockroach, his first experiment connecting the machine to the living world. He came up with the idea while studying to become an electrical engineer. He didn't know much about bugs, so he knocked on the door of an entomology professor who studied insect nervous systems.

The professor, Jeffrey Bloomquist, told him how much work it would take. Bathiche disappeared.

"I was like, 'Whatever,' " Bloomquist said. "That's often true for undergraduates, because they find out how much work it requires, and they have to stay sober for the weekend."

Six weeks later, knock, knock.

It was Bathiche, with a prototype toy car in his hands. Bathiche and his professor then connected electrodes from a roach's wing plates to the car, put the car on the floor, and blew on the roach. The car took off.

Bathiche came to Microsoft as a college intern in 1995 and built software that ended up in Word's grammar check. His email address during the internship, t-steveb@microsoft.com, was easily mixed up with steveb@microsoft.com, the address for Steve Ballmer - then a vice president, now Microsoft's chief executive. Bathiche decided to go with StevieB, a college nickname.

The next year, NASA offered him an internship working on the robotic arm of a satellite. Bathiche thought the assignment was too constricting. The week he had to give NASA his answer on the offer, he called Microsoft. He was told to come up with something he wanted to work on. He went back to Microsoft for the summer and designed a new kind of gaming joystick. It became the SideWinder Freestyle Pro, a controller that sensed when you tilted it and was the first commercial gaming

device to use accelerometers.

After the second Microsoft internship, Bathiche went to the University of Washington to get a master's degree in bioengineering. He took the roach coach a step further at UW and built the Mothmobile. Then he joined Microsoft full time.

By the age of 28, he and researcher Andy Wilson were pitching Bill Gates on a new interactive computer called the Surface. The coffee-table-size, touch-screen computer has not achieved mass adoption, but it has drawn a lot of attention. People can play with it in the lobby of the Sheraton Seattle Hotel and in the Hard Rock Cafe in downtown Seattle.

Bathiche considers the Surface a breakthrough because of its interaction between the world above the table and the virtual world underneath. The Surface was Bathiche's looking glass.

Bathiche, now 36, is a half-man, half-boy with a shaggy mane, goatee and perpetually untucked button-down shirt - the alt-uniform of Seattle's technorati. He directs 20 researchers in the Applied Sciences group, which helps other Microsoft teams unblock clogged arteries in product development.

"Success for us is when we give businesses something they want that they didn't know they wanted," Bathiche said. "We see the darkness in front of them."

His team, working with various product groups around Microsoft, helps disseminate the results from the \$9 billion Microsoft spends annually on research, most of which goes toward product development. The company has 850 employees whose full-time job is to research and publish papers in academic journals. The National Science Foundation, in comparison, had a budget of \$6.9 billion in 2010.

Bathiche bridges the business product groups with research.

Bill Buxton, a Microsoft design guru, said Bathiche's role is key at a company as large as Microsoft. It's hard for the blue-sky thinkers in research to connect with the number-crunching executives on the business side, Buxton said, but that connection is exactly what Microsoft needs to make big leaps forward in technology.

"You need these key people that help provide the flex" in the organization, Buxton said. "He's a critically important conduit."

Born in Lebanon, Bathiche spent his childhood all over the world. His father, a manager at an airline shipping company, moved his family to Libya, Pakistan, Sweden, Saudi Arabia, Texas and, finally, Arlington, Va.

While in high school there, Bathiche built a robot that sought the brightest light source in the room. He wrote the code for the robot, which looked like a miniature Mars Rover. "That kind of technology was still in its infancy, even in the research labs, at the time," said Deborah Roudebush, his high-school physics and computer-science teacher, who advised him on the project.

Bathiche was a bit of an overachiever. He was a drum major, a clarinet player and a track runner in high school. In college, he needed 120 credits for his degree and graduated with 180.

He's the same way at Microsoft. Bathiche recently persuaded Microsoft to buy a British company, CamFPD, which made a Wedge optic, a kind of flat lens. What's innovative about the Wedge image-capturing technology is its thinness. A camera lens, for instance, needs a certain distance to capture an image. The Wedge can capture the same image with the object virtually touching the lens.

At the Consumer Electronics Show in January, Steve Ballmer showed a prototype Surface 2.0 in his keynote speech. If you hold up a piece of paper to the Surface that says, "Look at me," you will see the same piece of paper with the letters displayed on the screen.

What Ballmer showed represents an evolutionary step beyond what you can do even with an iPad, which can see only the two points where your fingers are touching the screen when you zoom in and out.

While the Surface technology is cool to see, it's unclear why people would shell out the \$8,300 (down from \$12,500) it costs to buy it. "To me it seems to be really cool technology in search of a really good commercial application," said Michael Cherry, an analyst at Directions on Microsoft.

In the nine months since the Consumer Electronics Show, Microsoft has not disclosed a date when Surface 2.0 would start selling.

Meanwhile, Bathiche continues experimenting with [virtual reality](#). Recently, he hashed together the Wedge optic, 3-D video and the Kinect motion sensor from Xbox to create a virtual window.

The prototypes are rough but intriguing. One screen can broadcast different 3-D videos to two people sitting side by side. One person sees a skull, the other sees a teapot. This is not a split screen divided in half; both people see the same full screen with a different 3-D image on it.

Also, unlike most 3-D televisions today, his prototype does not require special glasses; instead, it uses a Kinect motion sensor to track where your eyes are.

One could potentially use the technology to build a television that lets a dad and a kid sit side by side - but the dad would see a 3-D football

game, and the child would see "Sesame Street."

The display technology Bathiche has created may change how people watch television in the future, or it could remain a niche, intriguing research project.

Roudebush, his high-school teacher, believes Bathiche proved early on that he could think big and make it happen.

She said he told her in high school, " 'I want to go work at Microsoft.' I said, 'That's a nice goal, Steve.' "

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#### STEVE BATHICHE:

-Age: 36

-Job: Director of research, Applied Sciences Group at Microsoft

-Residence: Kirkland, Wash.,

-Birthplace: Beirut, Lebanon

-Grew up in: Libya, Pakistan, Sweden, Saudi Arabia, Texas, Virginia

-Education: Bachelor's degree in electrical engineering from Virginia Tech, master's degree in bioengineering from the University of Washington

-Work experience: Applied researcher at [Microsoft](#)

-Family: Wife, Dana Bathiche, is a computer scientist. They have a

3-month-old daughter.

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