

MARKETPLACE

Health: Kaiser Permanente gets high ratings in survey of HMO members *Page B6.*

Health: Immune Response's stock falls after venture partner withdraws *Page B6.*

Abstractionist Practically Reinvents the Keyboard

By LAURIE HAYS
Staff Reporter of THE WALL STREET JOURNAL

Surrounded by an alarming amount of clutter in his research lab, Ted Selker thrives on juggling ideas in his head. When he talks, he jumps from one notion to another, trading concepts and free-associating. After months and even years of this refining and revisiting, he's ready to prove they can come to life.

This is how the 38-year-old inventor, rock climber, bicyclist, sculptor and scientist at **International Business Machines Corp.**'s research center in San Jose, Calif., came up with a remarkable innovation for the computer keyboard. Dr. Selker created the TrackPoint, a tiny pointing device

IN THE LAB

that looks like a pencil eraser, supplants the computer mouse and became a key selling feature of IBM's ThinkPad line because of its compactness and ease of use.

His invention, a fingertip device in the middle of the keyboard, was inspired after he read that it takes a person almost a full second to move a hand from the keyboard to the mouse, and almost a full second to move it back. He began thinking about dexterity and realized that after the tongue, the forefinger and thumb have the greatest sensory and motor control.

The idea culminated 10 years later at IBM Research when somebody looking for a project asked if he had any ideas. "After the TrackPoint was done, I realized it was the first change to the keyboard layout in 100 years," Dr. Selker says.

"Creativity happens by having this expanding thing and waiting as long as you can," he explains. "Then you have to focus down and amalgamate, accepting trade-offs and negatives. Nothing comes out the way you thought, but anything you do can be improved."

Dr. Selker is a muscular man who almost bounces about his lab, a windowless room deep inside IBM's mountaintop Almaden Research Center. On a recent day, he wore a shimmering purple shirt, black jeans and black sneakers, looking more like the artist he wishes he were



David Smith

head projector. That required slicing off the back of the screen in an experiment, but his bosses balked. So he bought his own ThinkPad and did it himself. A model featuring that capability is expected to hit the market later this year.

Some ideas, of course, are too bizarre, Dr. Selker concedes. He smiles and stabs the air with a plastic device bearing lots of tape and a button. "The airborne TrackPoint," he says, probably doesn't have a future. IBM has shelved his idea for a "power supply" that looks like a cord and has no adapter box; it took up the same amount of space as the reg-

ular one. Tabled, too, is an electrical plug with retractable prongs that can fit into any outlet in any country; only 2% of ThinkPads are taken overseas, he says.

Dr. Selker says it sometimes feels like IBM is telling him something won't work, even when he's showing that it can. But it's his job to contemplate the impossible. That's the only way, he says, to help people regain the control over parts of their lives that technology is starting to take away.

"How do you make the world less confusing?" he asks. The flashing "12:00" on the VCR will be the least of people's worries, he says, unless he makes some progress. "It's really scary if you don't watch out. It's a horrific future if we're surrounded by technology that we don't understand."

So what does he have in mind? "Maybe a keyboard that is malleable, like clay, and you can feel everything you're doing," he says. "Maybe a keyboard that's a million pins sticking out and they're all exchanging their height. Maybe an office that you carry around in your pocket on disks, and when you plug it into the computer, everything's there, including the bookshelves and pictures on the wall."

In the middle of this discourse, a disembodied voice *Please Turn to Page B5, Column 2*

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Can Butterfly Help IBM Fly Higher?

By BART ZIEGLER

Staff Reporter of THE WALL STREET JOURNAL

It's the classic dilemma for the creator of a hot product: How to keep the copycats at bay.

When International Business Machines Corp. unveiled its ThinkPad portable computers in 1992, they were a rare and instant hit for a company in trouble. Users loved their large color screens, full-size keyboards and the TrackPoint, a pencil-eraser-like gadget that replaced the mouse.

IBM went from a sorry also-ran in portables to a sensation. But it badly bungled the logistics of supply and demand. The hottest models were perpetually in short supply, and it had to forgo an estimated \$1 billion in sales. Rivals rushed in, and today computer stores display a sea of lookalikes that mimic the ThinkPad's large screen and pointing device.

Now Big Blue swears it has gotten things right. In the past year, it has moved up to No. 3 from No. 5 in the \$21 billion market for tiny computers. And it vows

to topple Toshiba Corp., the No. 1 player, with a blitz of new products and one-upmanship in features in the coming year.

"There is no such thing as a sustainable lead unless you innovate," says Bruce Clafin, a general manager at IBM Personal Computer Co. "We're going to create demand. We're going to advertise heavily. We're going for growth."

But IBM is already showing signs it hasn't worked out all of its supply kinks. Tomorrow, the Armonk, N.Y., company will start selling a much anticipated "subnotebook" PC called the Model 701 that is known by the code name Butterfly. The computer will boast two firsts: a full-size, pop-out keyboard, and a large screen in an especially tiny case. There's just one snag: IBM has had more advance orders for it than for any other PC ever—and the Butterfly will be in short supply for months.

That could frustrate eager fans, especially given Please Turn to Page B5, Column 4

IBM's ThinkPads Surge

World-wide shipments of portable PCs, in thousands of units

COMPANY	1992	1994
Toshiba	600	1,170
Compaq	448	1,008
IBM	284	746
NEC	457	700
Apple	410	610

Source: International Data Corp.

greatest sensory and motor control. The idea culminated 10 years later at IBM Research when somebody looking for a project asked if he had any ideas.

"After the TrackPoint was done, I realized it was the first change to the keyboard layout in 100 years," Dr. Selker says. "Creativity happens by having this expanding thing and waiting as long as you can," he explains. "Then you have to focus down and amalgamate, accepting trade-offs and negatives. Nothing comes out the way you thought, but anything you do can be improved."

Dr. Selker is a muscular man who almost bounces about his lab, a windowless room deep inside IBM's mountaintop Almaden Research Center. On a recent day, he wore a shimmering purple shirt, black jeans and black sneakers, looking more like the artist he wishes he were than the mathematician he is.

Part of his desire and ability to invent things is in the genes: His grandfather held a patent on the pneumatic shock-absorber, and his father, a materials scientist, helped him create TrackPoint's rubber surface (the father died the week the ThinkPad went into production).

As a two-year-old, Teddy dragged around a lamp that he liked to plug in to various outlets. As a new dad, Dr. Selker designed a new kind of changing table: a sheet of flexible plastic, suspended from the ceiling by rock-climbing ropes and conveniently positioned over the toilet. Ten years ago, he designed a 10-compartment wallet out of roofing paper; he still carries it.

His lab is littered with projects in various stages. A basket of mutant keyboards sits on one table. A herd of disfigured ThinkPads beeps on a large wooden table. Oddly configured plugs and cartons of wires and rubbery doo-dads dot the lab-scape.

Of course, Dr. Selker never really finishes anything. He's working on better TrackPoints: one with a new grip-top and a cursor comet trail that makes it easier to see where a user is going. He experiments with two TrackPoints on the same keyboard, one for each hand. He adapts the device by attaching a sensor to measure earthquakes, wind velocity or weight—to calculate, for example, postage on a letter.

He also thinks about how to put straps on the ThinkPad; he figures the best of his 50 variations is letting the machine dangle from a strap around his neck, letting him work while standing up.

And Dr. Selker is keen on linking a ThinkPad to an over-

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Will Butterfly Help IBM Gain Ground Against Its Competitors?

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IBM's plans for a slick TV ad campaign touting the machine. The shortage also leaves an opening for rivals. **Compaq Computer Corp.** and **Dell Computer Corp.** both plan comeback bids in the segment this year, and also-ran **Digital Equipment Corp.** has a slim new model that may fare well against the Butterfly.

And as IBM manages to meet all demand for older models in the lightweight line, it may face an unkind contradiction: Older ThinkPads could seem less appealing now that they're easier to get. "That's one thing I think about when I consider our ThinkPad inventory," says John McKenna, president of distributor **Entex Information Services Inc.** of Rye Brook, N.Y.

With the supplies of color screens and other key components improving, moreover, the market is ripe for steep price cuts this year, which could damage ThinkPad profits. "The best way to move things out is to slash prices," says Art Merkin, director of PC systems for distributor **Merisel Inc.** of El Segundo, Calif. "It's going to be a fun year, and the consumer will benefit."

What's IBM to do? The computer giant can't risk losing its ThinkPad franchise, one of the few bright lights in its struggling PC division. The unit lost a stunning \$1 billion last year on sales of \$10 billion, but the ThinkPad line fared exceptionally well, posting an estimated \$2 billion in sales and higher profit margins than the rest of IBM's PC business.

IBM says that it realizes the risks and that pushing new features is the only way to stay ahead. People who have seen the Butterfly are enthusiastic. "It's going to create a stir in the market," says analyst Bruce Stephen of International Data Corp. in Framingham, Mass.

The "subnotebook" market has disappointed many users because screens and keyboards have simply been too small. IBM's newest model splits a full-size keyboard in two parts diagonally to let it fit inside a 9.7-inch-wide case, two inches narrower than its larger ThinkPad brethren. When opened, the two halves of the keyboard slide together into one piece, overhanging the case's edges.

Unlike the TrackPoint, which IBM has licensed to competitors, Big Blue plans to keep the Butterfly keyboard to itself. Mr. Claflin says IBM assumed that rivals would copy the TrackPoint, so it wanted to

receive royalties for it. But IBM has applied for a patent on its keyboard, developed by IBM's research labs and tested with 25,000 openings and closings by a robot.

Even IBMers, though, concede the folding keyboard alone won't be enough to keep the ThinkPad humming. Next is a ThinkPad that can be used on an overhead projector to present computer-generated presentations on a wall. Due out by mid-year, it will have a special panel that can be taken off the back of the lid, revealing the slate of glass at the heart of all portable screens. Users will bend down the lid and place it atop an overhead projector, allowing the projector's light to shine through the image on the computer screen.

Also in the works is an improved TrackPoint that would allow users to "feel" the edges of the windows and other graphics on the screen through vibrations in the fingertip device, much the way a car's steering wheel jiggles over different road surfaces.

IBM is also working on advanced modems that would allow one ThinkPad user to talk to another over the phone at the same time they share on-screen data. And it's trying to improve wireless data-transmission technology so that users can send and receive electronic mail without connecting the machine to a phone line.

IBM also plans to address a ThinkPad weakness this year by introducing more low-cost models, including some that use the company's vaunted "active-matrix" color screens. The Butterfly will be relatively costly — about \$3,800 to \$5,650 depending on features.

IBM's Mr. Claflin contends his company has the size and research depth to advance the basics of laptop design, pro-

viding lighter weight, improved battery life, larger screens and slimmer cases. "We have so many dimensions we can innovate on," he says. "I don't see any end to it."

But competitors are right behind IBM. Every major PC maker — and a growing circle of second-tier companies — is pressing hard in the portable market. Dataquest Inc. analyst Michael McGuire warns: "I see some real serious competition coming for IBM."

Jamesway February Sales Slipped

SECAUCUS, N.J. — **Jamesway Corp.** said February sales, excluding a leased department, totaled \$30.8 million, down from \$35.2 million a year earlier. Same-store sales fell 9%.

