



JONATHAN WIGGS/GLOBE STAFF

Alice Luu sat on Andrew Sempere's growling "Sod Off!" interactive art display at Maker Revolution in Cambridge.

Software programmers get physical

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keyboard and mouse," he added, pointing to the large work table, littered with alligator clips, capacitors, rolls of soldering wire, plastic boxes of parts, and batteries. "This is more physical, more real."

The soldering sessions at Microsoft were part of a two-day Maker Revolution workshop held last month that also included sessions on hacking electronic toys, robot prototyping, and displays of interactive art.

A few blocks away on that same weekend, there was a Boston BarCamp "unconference" at MIT's Stata Center, where a hands-on, do-it-yourself aesthetic was also noticeable among the mostly software sessions. A week earlier, a SkillShare weekend workshop, also hosted at MIT, included a session on "DIY electronics with microcontrollers."

And Boston-area "physical computing" is not limited to event-style workshops. The Boston chapter of the national group Dorkbot, which meets every month to do "strange things with electricity," has more than 300 members. Eight more specialized "hardware hacking" groups, with names like Noise Night, meet at various venues in the Boston area. A network of "hacker spaces" and "maker spaces" has also grown up in Eastern Massachusetts.

Meredith Garniss, founder of the largest of these spaces, Willoughby & Baltic in Somerville, has watched the growth of this movement firsthand.

"For many software programmers it's liberating," she said. "Instead of just moving pixels around, you are creating tangible objects that interact in the real world."

Garniss, who worked at a variety of high-tech firms before founding Willoughby & Baltic, thinks that many software and Web programmers are embracing hands-on tinkering because their jobs are becoming more narrow and specialized.

"We're seeing a lot of people at our workshops who got into computing because it was the cutting edge of creativity. But they've since found themselves working

Getting away from the computer screen

The Boston area hosts a variety of meetings, collectives, and conferences. A sampling:

Willoughby & Baltic

Three Somerville locations: a community space at 195g Elm St., Davis Square; a "hacker space" with a small model shop and darkroom next door; a 9,000-square-foot fabrication space at 13 Joy St., near Union Square. On June 1, all three will be consolidated at the Joy Street location.

<http://willoughbybaltic.com/labs/>

Dorkbot-Boston

A monthly meeting of artists, designers, engineers, students, and scientists doing "strange things with electricity." Free and open to the public.

<http://dorkbotboston.com/>

Collision Collective

Promotes artists, creates events, and fosters the exchange of ideas, techniques, and enthusiasm from and for making art. Members also meet roughly every other week in meetings, dubbed

COLLISIONcollusion, with different artists sharing their work and techniques each session.

<http://people.csail.mit.edu/jrb/cc/>

Upgrade! Boston

A monthly gathering of artists, curators, and the public that fosters dialogue and creates opportunities for collaboration within the new media community. Hosted by Studio for Interrelated Media at Massachusetts College of Art and Design. Each meeting consists of one or two hourlong presentations, plus questions and comments from the audience.

<http://turbulence.org/upgrade/>

Noise Night

An open electronic music event on the second and fourth Thursdays of each month at Willoughby & Baltic's Joy Street location. Participants share projects, learn to build electronic instruments, and occasionally perform.

<http://www.noisenight.com/>

within a very small slice at a large computer company," she said. "Now they want to get outside that. They want to do something more creative."

Quirky creativity is not in short supply at these hardware-hacking get-togethers. Andrew Sempere, by day a design researcher at IBM Watson Research Center in Cambridge, had two interactive art pieces on display during the Maker Revolution weekend. One, entitled "Sod Off!," consisted of a stretch of artificial grass that growled and rumbled at anyone who stepped or sat on it. Sempere had wired the grass with sound chips, microcontrollers, and sensors he made from modified Dance Dance Revolution mats.

"It's a way to get away from the screen and keyboard thing," he explained, adding that his interactive art projects now take up two bedrooms in his three-bedroom house, "plus the basement and the garage."

Similar motives brought Gilad Lotan, a technologist at Microsoft Startup Labs, back to the office to attend workshops Saturday and Sunday.

"I enjoy coding, but you are contained within the screen," he said. "When you are working

with devices you can see them and touch them. And they can react to you, and to each other."

One of Lotan's recent projects is a device that senses a person's pulse and wirelessly sends that person's heartbeats to anyone holding a companion unit. "It creates intimacy across distance," Lotan explained.

Sharing these fanciful inventions is a major component of hardware hacking get-togethers.

"This is a very social group," said Emily Daniels, who spoke at last weekend's Boston BarCamp on "Hacker and Maker Spaces."

"First of all, it's very difficult to learn to do something like solder on your own, by yourself," she said. "Also, it's just a lot of fun to share this stuff with other people, to bounce ideas around and learn from each other."

The sharing extends far beyond Boston-area hacker spaces. In February 2005, publisher O'Reilly Media launched Make, a quarterly "mook" (a book/magazine hybrid) that celebrates "the right to tweak, hack, and bend any technology to your will." The first issue contained detailed instructions on how to take aerial photographs using a kite and a disposable camera. Make, based in Northern California, has since

spun off a constellation of do-it-yourself publications and events, including a line of books, a blog, a public television series, kits, and festive Maker Faires in California; Austin, Texas; and recently Newcastle, Britain.

"Make's influence on this movement has been major," said Jimmie Rodgers. "And the Internet has also played a big role. You can find and share information on whatever project you are pursuing."

Open-source software ideas are also now moving into hardware, said Rodgers, who cited the Arduino, an open-source electronics prototyping platform, as an example of hardware that appeals to software-oriented tinkers. Projects like Arduino will make it easier, he said, for programmers to break down the wall between software and circuit boards.

David Nunez, who curates the Boston chapter of Dorkbot (his day job: developing iPhone applications) also expects to see more software developers tinkering with real-world objects.

"A hacker is a hacker," he said with a shrug.

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PHOTOS BY JONATHAN WIGGS/GLOBE STAFF

Mary Murry used the Brain Machine — billed as a device that lets you slip into deep thought by syncing brain waves with pulsing lights — at the Maker Revolution gathering in Cambridge.

Software programmers get physical

Many actively seeking out old-fashioned electronic tinkering, calling it 'more real'

By D.C. Denison
GLOBE STAFF

Soldering guns were holstered in their tabletop stands, ready for action, as Jimmie Rodgers demonstrated how to cut a resistor off a small circuit board.

"Now we've got something to work with," he told a recent Saturday afternoon soldering workshop at Microsoft's sleek Startup Labs, 11 stories above the Cambridge bank of the Charles River.

Before long, thin wisps of gray smoke were rising from the workshop table as an intent group of students started connecting circuits with dabs of molten solder.

Workshop student Len Taing, who earns his living as a Web

programmer, was smiling as he wrangled some errant red and yellow wires with a pair of needle-nose pliers.

"My normal job is way up in the clouds," he said. "This is so much more down to earth; this is really a great change."

It's a change that many programmers and software developers are actively seeking out, on their own time, as they flock to relatively old-fashioned electronic tinkering as an escape from jobs and careers that are predominantly virtual, binary, and online.

Workshop leader Rodgers, who works as a senior desktop administrator during the week, is not surprised.

"It's a way to get off the screen," he said, making a frame with his hands.

"You can do much more with this stuff than you can with a



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