

TINA BAINE/SPECIAL TO THE SENTINEL

MakersFactory founders Dave Britton, left, and Chris Yonge plan to introduce Santa Cruz to the affordability and accessibility of open source hardware like the MakerBot 3D printer. Yonge built this desktop 3D printer at home from a kit.

Turning consumers into creators

MAKERSFACTORY SOON TO OPEN IN SANTA CRUZ



TINA

Do It Yourself

Let's say you have an idea for a product, maybe even one that will enhance or improve people's lives: a remote-controlled lawn mower for the elderly, a combo light show/breathalyzer your party guests can consult before driving home, or a stylish laser-cut table that breaks down

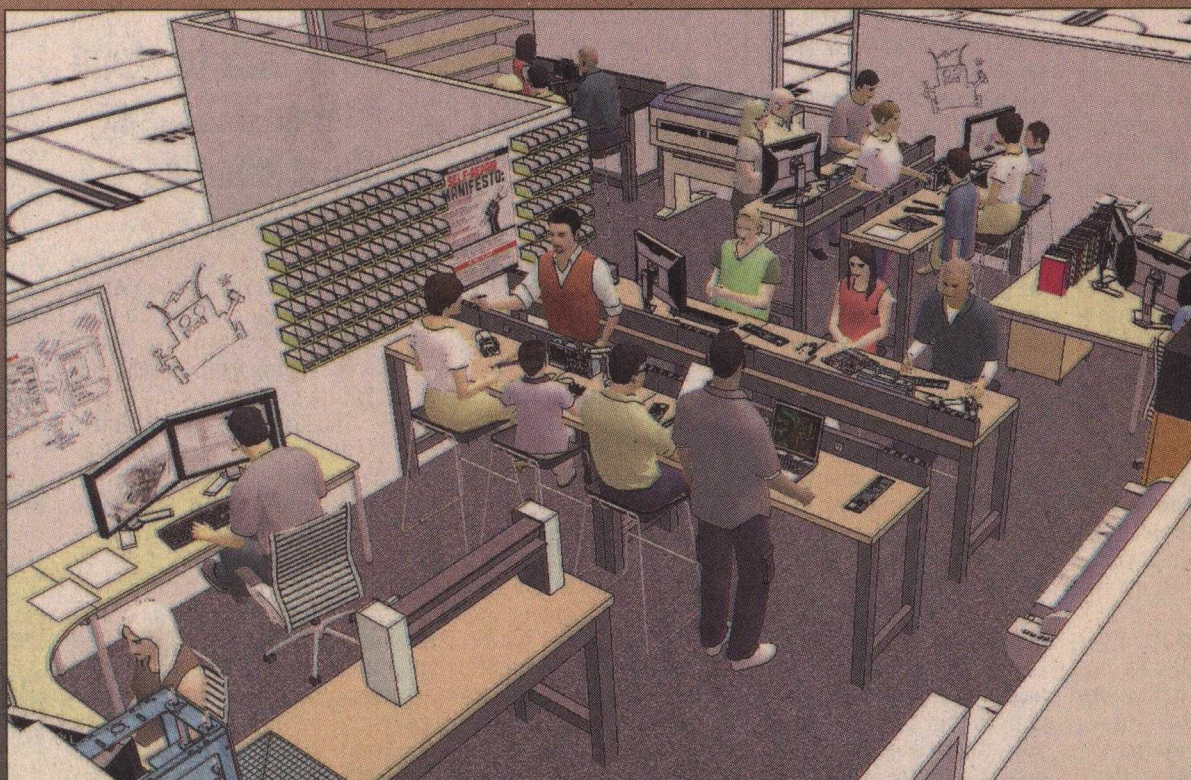
quickly and packs flat for storage or easy transportation.

What if you could design your idea using free software? What if you could produce parts for your product using machinery you build from free blueprints or a kit, and could actually manufacture that product on your own desktop or in your office, without a

factory? What if you could easily customize your product — making each one slightly different — at almost no extra cost?

The founders of MakersFactory want to show you how to do all this and more.

SEE FACTORY ON B8



CHRIS YONGE/CONTRIBUTED IMAGE

MakersFactory will initially concentrate on learning in the Cedar Street location. Their shop design includes two windows with interactive displays so that pedestrians walking by get a taste of what goes on inside.

FACTORY

Continued from B6

Chris Yonge and Dave Britton will be leading the way to the maker revolution in Santa Cruz. They hope to open the doors to the first phase of their MakersFactory — an 800-square-foot space in the Cruzio building in downtown Santa Cruz — in October. The emphasis will be on learning the basics of DIY fabrication, by providing classes, software, hardware and workspace for members and the community.

"We'll concentrate on classes immediately," said Yonge, who teaches 3D computer modeling and animation at UC Santa Cruz, "and hardware will gradually build up as we get it."

Dual monitor workstations and computer-controlled machines like a 3D laser scanner, 3D printers, a vinyl cutter and a laser cutter and engraver will be available from the start. MakersFactory will offer several levels of monthly membership, plus community classes, for users at all levels.

By creating MakersFactory, Yonge and Britton have embraced the new maker movement catchphrase, "If you think it, you can make it." Yes, people have always made things. The difference is, with today's simpler, more accessible technology, we can all become makers.

"The maker movement has exploded," said Yonge. "Several waves have crested at the same moment pretty much."

The typical commercial manufacturing model has been to make products that are sleek on the outside with invisible components inside. There was no way to tinker — no way to see or understand or repair the inner workings of a product — and if you tried, you inevitably broke the product altogether. But the new "open source" maker model is to share not only your product, but your process in a collaborative environment.

The sharing of process will be championed at MakersFactory. Instead of commercial programs such as PhotoShop and 3D Studio Max, they will teach from open source and/or free software such as Gimp, Blender, SketchUp and OpenOffice, which Yonge says are just as good as their commercial counterparts.

"In the past, open source software had a rather bad reputation. It's been difficult to use, it's been buggy. That's not the case anymore," Yonge said. "If you use Gimp, which is a photo-editing program, it's very much like Photoshop was maybe three, four years ago, with the added advantage obviously that it's free and also that it keeps getting better."

Open source software allows users to access the code so they can actually change or customize the program.

MakersFactory will also embrace the open source hardware movement, which Wired Magazine recently predicted, "may soon join open source software as a world-changing phenomenon that reinvents everything from business models to invention itself." "People don't realize it, but blueprints for open source hardware are available on the Web," Yonge said.

Yonge built a desktop 3D printer from a \$600 kit to demonstrate the availability of open source hardware to his New Tech Meetup group, of which Yonge and Britton are organizers. The MakerBot Cupcake, shipped as what Yonge calls "a box of bits," took him a few weekends to build, but will turn a virtual 3D concept into real world reality. Once the object is designed using 3D software, you press print, and the Cupcake builds up the object gradually, in layers, by depositing plastic from a nozzle. So print has a whole new connotation.

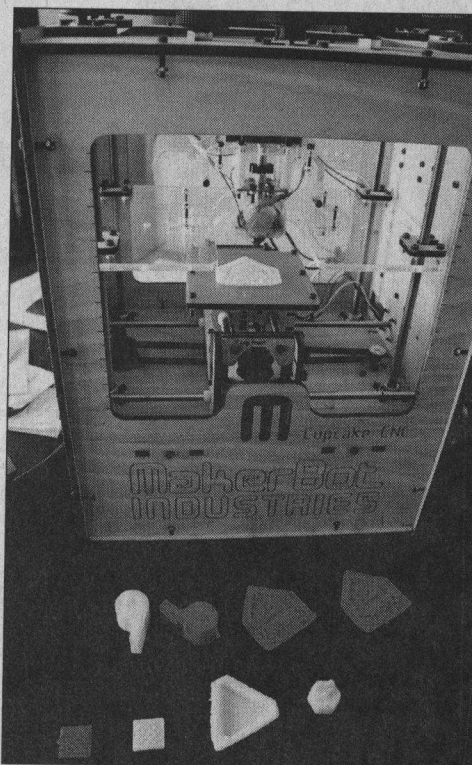
"It's not [about] a piece of paper any more, it's [about] a real substantive object," said Britton, a former Silicon Valley CEO.

Britton and Yonge believe that no-waste additive production machines like the MakerBot Cupcake and learning centers like MakersFactory will help bring high-tech manufacturing back to the U.S. from China.

"What we're doing is teaching people how to use these machines and we're also enabling them to produce working prototypes of physical products," said Yonge. "If you go to NextSpace or Cruzio, you'll see people working independently, making a living as consultants, writing software, doing all kinds of things, but they're not producing anything physical. Everything has to be virtual, everything has to be emailed. We're now giving people the capability of starting a business as a designer and a manufacturer and making the articles locally — making articles that can be sold over the Web, which can be sold locally, and they don't need to go to China for supplies."

The second phase of MakersFactory, which, according to Yonge, "may be happening sooner than we thought," will include a larger building with noisier machines in a more industrial location.

"We don't want to be a clone of TechShop [in San Jose] because that wouldn't be suitable for Santa Cruz," said Yonge. The



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The MakerBot Cupcake can make small plastic items such as whistles and logos from a thermo-plastic filament. An early 3D desktop printer, the Cupcake has now been replaced by the Thing-O-Matic, available from MakerBot Industries in two sizes starting at \$1,299.

IF YOU GO

INTRO TO MAKERSFACTORY

WHAT: The Santa Cruz New Tech Meetup will host a special introduction to MakersFactory, with expert speakers and demonstrations.

WHEN: 6:30 p.m. Friday, Aug. 12.

WHERE: Cruzio & Ecology Action Green Building, 877 Cedar Street, Santa Cruz.

DETAILS: For event information, visit www.meetup.com/santacruznewtech. For MakersFactory information, visit www.makersfactory.com.

smaller Santa Cruz demographic won't support the equipment-rich TechShop model.

However, "Santa Cruz has got an unusually high proportion of creative professionals," said Yonge. "[So] MakersFactory is going to be more geared toward a) education and b) creative professionals."

Yonge says that phase two will feature larger computer controlled machines, such as a computer-controlled router. "That would be a machine that can take an 8-by-4 foot sheet of plywood and cut it up into parts that can be used for a boat, or a piece of furniture, or a sculpture or whatever you want," Yonge said. "There would also probably be metal-working equipment, welding equipment, metal-cutting equipment, everything you'd need really to go to the next level with an interactive product that includes electronics or a product for the home."

Yonge and Britton envision a diverse group of users: inventors, designers, artists, parents, students, hobbyists, innovators and career changers.

"[It won't just be about making] physical items either, because much of MakersFactory is also going to be a robotics and electronics teaching space," said Yonge. "If you know how something works, then you can understand when you buy your next one, 'Oh, this one is better because,' or you can think, 'Oh, there's no product that does exactly what I want. Maybe I can change the code of this, or maybe I can find somebody to help me modify it.' And then, who knows, suddenly you've got a new product on your hands, and somebody offers you a million dollars for the idea. You just never know."

They also want to collaborate with local groups, such as UCSC, Cabrillo College, Tannery Arts Center, Santa Cruz Geeks and the Museum of Art and History, to help fill the tech gap in Santa Cruz and make their classes relevant and useful. They hope to recruit a younger demographic by demonstrating the MakerBot Cupcake — along with robotics — at local elementary schools.

"This is not geeky stuff," Yonge said. "It's not that complicated and the basic principles aren't that difficult."

Is this new way of making revolutionary? "I think people will see it as revolutionary, but, if you've been following the technology as we have, it's evolutionary," said Yonge. "This has been coming for a long time. People want to be in control of what they use and what they're surrounded by. I would like MakersFactory to be a factory of makers ... turning consumers into creators."

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