Are You the Scanner or the Barcode?

On a recent trip to Walt Disney World, I played the excellent new *Kim Possible* mobile game in Epcot where players are loaned a special cellular phone with various sensors and emitters in it. The phone plays videos about mysteries taking place in Epcot, which players solve by visiting sites and waving their phones at props that animate when they sense the proximity of the device, using the phones' geolocation and readings from the phones' RFIDs.

It's a very clever game: not only does it bring some much-needed tween entertainment to Epcot's World Showcase, but it also does some insanely clever networking stuff, spreading players out by sending them after clues in less-crowded parks based on up-to-the-second information about loading.

But it got me thinking: why is the phone emitting and the world sensing? Why not build the sensors into the phone and the emitters into the world?

This question is at the center of any number of thorny policy questions about privacy, surveillance, freedom, and open systems. The last decade has seen an enormous growth of sensors and readers, from the RFID toll-payment system glued to your windshield to the two or even three cameras in your mobile phone to the CCTV your nosy neighbor is using to spy on your backyard pool. The possibilities for emitting and sensing data are genuinely revolutionary, and many of us in the computers, freedom, and privacy crowd have been worrying that privacy's headed for the guillotine.

The problem is that this stuff is both cheap and cool, and there are a million things you can do with it that make the world seem like magic — the contactless cards that let you gas up, get on the bus, or get into your building by waving your wallet at some reader, for example.

Since sensors are more expensive than emitters, all the early effort was on developing applications that assumed emitters would be stuck all over you so that the relatively sparse sensors in the world around you could figure out where you were and adjust accordingly. You're the barcode, and you wave yourself at various checkout points to activate them.

But sensor prices are crashing. My latest phone, a Google/HTC Nexus One, has an extra mic solely for

> ## Why is the phone emitting and the world sensing? Why not build the sensors into the phone and the emitters into the world?

noise cancellation; last year I was carrying around a Nokia phone with two cameras, one outside for snapping the world and one inside for video-conferencing. Magstripe cards can increasingly be swiped in any direction — the readers have two, or even four, reading heads. This year's CES coverage suggests that 2010 might well be The Year They Put a CCD on Everything (including my dentist's new X-ray machine, which no longer uses film).

Which presents the potential for a very disruptive future: one in which you are the register and the world is barcoded. That's what the Semacode people have been working on forever; it's what drives mobile apps that scan UPCs on store shelves and tell you where to go for cheaper stuff, but that's just the start of things.

Thus far, RFIDs in products have been designed with stores, not customers, in mind. It needn't be so. And even where there's no UPC or RFID or other identifier, devices with high-resolution cameras and geolocative sensors have lots of options for figuring out more information about their environments: reading and parsing model numbers, part numbers, and street signs with optical character recognition and database lookups.

It all depends on how the system is designed, and why. A networked society that treats people as scanners and keeps their data on their devices or in their encrypted private networked storage is one in which we can navigate the world better. One that treats humans as objects to be scanned, managed, and regimented is one that realizes the worst technophobic nightmares.

The choice is ours.

Cory Doctorow's latest novel is *Makers* (Tor Books U.S., HarperVoyager U.K.). He lives in London and co-edits the website Boing Boing.

Make a Connection and Share Your Story Online

This year at Make: Online we're focusing on connecting the amazing people who make up the growing community of MAKE readers and visitors to our websites. We're revamping community-related services on the sites, adding more participatory features, and generally making a more inviting place to not only read about making, but also share your own projects, connect with fellow makers, and feel good about "learning out loud."

Here's a little checklist of things you can do to get more involved with the maker community online.

☑ **Register on the site.** To encourage thoughtful, open sharing of ideas and questions, and create a more welcoming environment for exploration and learning, we've written new Community Guidelines and instituted a "be nice" commenting policy, on both Make: Online and CRAFT. View our guidelines and register for your user account at makezine. com/comments and craftzine.com/comments.

☑ **Join the MAKE Forums.** Our new community manager, Matt Mets, is moderating our MAKE Forums area. The forums are a great place to discuss projects you're working on, ask technical questions, share your expertise, and discuss any and all aspects of making. Join in at forums.makezine.com. CRAFT has active forums, too, at forums.craftzine.com.

☑ **Post to the Maker Events Calendar.** We're spending more time marking up our events calendars with awesome DIY happenings around the country and the world. We do weekly calendar roundups on both the MAKE and CRAFT sites. If you know of any events, post them to makezine.com/events and craftzine.com/events.

☑ **Subscribe to the Make: Newsletter.** We publish monthly newsletters of all-original info and insider news about Maker Media and what trouble we're currently trying to get ourselves into. You can subscribe, for free, at makezine.com/newsletter and craftzine.com/newsletter.

☑ **Submit your projects.** We're always on the lookout for great content, to post to the websites and to run in the magazine. If you have a project we

should take a look at, just use our Suggest a Site forms at makezine.com/go/suggestmake and craftzine.com/go/suggestcraft.

☑ **Get your group in our Community Directory.** Want to connect with makers near you? We're building an astonishing directory of Make: City groups, hackerspaces, Dorkbots, TechShops, and other making/DIY groups — makers really are everywhere! Check it out at makezine.com/groups, and to submit your group, email mattm@makezine.com.

☑ **Run a Mini Maker Faire or start a Make: City group.** Imagine how cool it would be to run a Mini Maker Faire in your town. To learn how, check out diy. makerfaire.com. And if you're interested in starting a local MAKE group, email mattm@makezine.com for more details.

☑ **Join the conversation on your favorite social media:**
» Twitter: twitter.com/make and twitter.com/craft
» Flickr: flickr.com/groups/make and flickr.com/groups/craft
» Facebook: facebook.com/makemagazine and facebook.com/craftzine

Celebrate the Machinery

At the moment, the thing that's exciting me more than anything else is a tricycle. I know that probably doesn't sound like a big idea, or even cool in any way. Tricycles are for kids at best, right? Well, makers get involved in all sorts of projects and follies for reasons we probably can't explain to our spouses, and sometimes can't even explain to ourselves.

But this time it's a little different; I can explain exactly why I'm building this thing and why I'm passionate about it. I'm trying to live an experiment right now, an experiment in living a climate-friendly life.

I know there are MAKE readers who don't believe in the science of climate change (some wrote me nasty emails last time I mentioned it), but I do believe in it, and I'm trying to do something about it.

I'm trying to go through the things in my life one by one and improve them or remove them, until I have a high-quality life that 7 billion other people could also live while avoiding the worst of climate change.

In order to accomplish that, one thing on my list is to build a cargo tricycle to get myself to work. But it needs to tilt around corners for stability, and it needs to go fast, faster than a normal bicycle. Faster even than those unfortunate souls who must battle city traffic in their cars? You bet — with an electric motor, this trike can do 20mph all the time, up any hill, anywhere.

But that's not why I'm writing this article. That was just my wordy preamble. You see, I like to imagine that really good design still has a place in the world. And if you want to make your projects beautiful to people other than yourself, you need good design. So I started thinking about how to make a new kind of electric hybrid tricycle with a lasting, attractive design.

I spend a lot of time in bike shops, to my wife's chagrin. (Though, to her credit, when we tried to think of fun things to do for my birthday recently, her first suggestion was, "Let's go to every bicycle store in the city, in one day.")

But bike stores aren't where the great design inspiration I wanted was to be found. Modern bikes are all kind of same-same, generic, the way modern cars all seem to be the same. Design is not dead, but sometimes it seems we're hell-bent on killing it — or

at least burying it alive beneath a sleek, shiny surface.

So I was delighted to stumble across a funny little bar in the middle of San Francisco. I always like stumbling across little bars, but this one, Eddie Rickenbacker's, actually houses a collection of 20 or 30 early motorcycles.

What we might forget when we look at a modern Harley-Davidson is that motorcycles actually came from a heritage of motorized *bicycles*. I've often quipped to friends that the bicycle was to the 1890s what the internet was to the 1990s. There was huge design innovation and experimentation in all things bicycle, and then this weird thing called the internal combustion engine came along and the possibilities seemed boundless.

I found all the inspiration I needed at the intersection of the eras of the bicycle and the motorcycle. People didn't even know what to call these things yet! The 1911 Excelsior Auto-Cycle was one attempt to name the genre. The 1902 Peugeot Motobicyclette, the 1907 Indian Racer, the 1912 New Imperial Light Tourist, the 1915 Cleveland, the 1922 Motosacoche: these bikes hang from the walls and ceilings of Eddie Rickenbacker's, dripping with inspiration, gleaming with brass and chrome, all of them proudly showing off the new technology.

Every cam, every lever, every carburetor and belt drive was worn on the outside. These machines had nothing to hide; they celebrated new technology. There were no perfectly bland plastic housings, there was just sheet metal and castings and rivets. Why is it that on the cusp of the electric vehicle revolution, we feel the need to hide the interesting stuff? Why not show it off? I guess it's hard to make batteries beautiful and electric motors sexy, but that's the challenge I now have.

How do you capture the spirit and promise of a new technology and express it with delight in a new design? How do you exaggerate the coolness, not bury it in plastic? That's what I need to do with my tricycle. I've got to make you want and love the quirks, the oddness, to express the trike's freedoms visibly. In this case, freedom from carbon and foreign oil.

Saul Griffith is a new father and entrepreneur. otherlab.com

Let your geek shine.

Meet Jamie Robertson, SparkFun customer and 30-year embedded design veteran. When Jamie needed a small MP3 player that could respond smoothly to volume commands for his latest interactive art collaboration, he didn't head to the local electronics store. Rather, Jamie turned to SparkFun and custom built his own media device. After a few enhancements, his prototype became the MP3 Trigger – now available at **SparkFun.com**.

Whether you're looking for new ways to explore interactive art, or want a tutorial on physical computing, the resources are out there. Find out how electronics fit with your passions, and let your geek shine too.

sparkfun™
ELECTRONICS

Sharing Ingenuity
WWW.SPARKFUN.COM

A Cabin from Scratch

In the spring of 1983, I was finishing up my second year at Virginia Tech. I still hadn't found a major that was right for me; I felt lost and frustrated.

While I was deciding what to do, I met a local guy named Eddie who must have sensed I was ready for a challenge because he asked if I wanted to build a cabin on his property. His offer caught me off guard since I had zero experience building. I thought about it for one night and decided this was exactly what I needed.

Eddie agreed to guide me in the building process. I started clearing the land about a month before exams started. After classes ended, I set up camp next to the building site and began to work from sunup to sundown. I moved in just three days before the fall semester. I lived in the cabin from summer 1983 to fall 1985. No rent. No utilities.

I built the cabin for $1,100 and the investment paid off in more ways than I could ever have imagined. The last time I visited the cabin was in 2000, and it was in good shape. I have no idea if it's still standing.

Some lessons I learned, in no particular order:
1. It's not critical to have electricity, running water, and a phone to be comfortable.

2. With no phone, it was hard for friends to contact me at the spur of the moment. With no phone, I learned how to plan better.

3. I learned how to conserve water. I learned the value of a clean and abundant water supply.

4. I learned to use a chainsaw without hurting myself.

5. I learned how to be quiet and enjoy it.

6. I learned that building a home is relatively easy — it's not rocket science. This knowledge has provided me with a great sense of security over the years.

7. I wished I had built a cabin with half the footprint and a second story. Building the foundation took an enormous amount of time compared to the rest of the building process.

8. As soon as I was done building the cabin, I found out about yurts. Had I known about yurts, I would have built one of those instead.

9. I learned how to become more self-sufficient.

10. I learned how to ask for help after I injured my back and needed help stacking firewood.

11. I learned how valuable electricity is.

12. I learned how to navigate a dirt road under all types of conditions (deep mud, ice, snow) and learned when to park and walk.

13. I learned how to stay warm in the winter. I learned how to cut wood and prepare kindling. I learned how to quickly start a fire in a woodstove and keep it going. I learned the value of a well-built woodstove.

14. I learned how to be super safe with fire. If my cabin had ever caught on fire, the whole thing would have burned down in minutes.

15. I learned how to play the banjo. My solitude and lack of distractions (like TV) afforded me lots of free time to explore and create. Even now, when I play the banjo, I'm reminded of all the hours I spent playing in the cabin.

Tom Heck is a daddy, banjoist, team builder, and maker. See photos of his cabin build at tomheck.com.

Illustration by Drew Morrison