

Tools Are the Revolution

Kevin Kelly, Guest Editor

Tools make revolutions. "When we make a new tool, we see a new cosmos," says physicist Freeman Dyson. He was probably thinking of microscopes, telescopes, and atomic particle accelerators.

But even the workaday tools reviewed in this issue can alter our perspective. A tool—any tool—is possibility at one end and a handle at the other. Because tools open up options, they remake us. A really fantastic atlas of the world (page 18) is literally a new world. A whisper-quiet ultra-efficient electricity generator (page 33) and a wireless Internet (page 56) let us see ourselves as more nomadic than perhaps we have seen ourselves lately. There are many ways to change the world, but I think the most direct way, the way being pioneered by artists, hackers, and scientists—third-culture citizens—is to adopt new tools.

This issue of *Whole Earth* is chock full of tools. Tools are meant broadly, as they should be: a piece of hardware, a video, a chart, a magazine, a gizmo, anything that opens up new paths. As usual, a tool is included here if it is a) the best, or the best bargain, b) easily available, and c) useful for self-education.

Presenting access to tools was the job of the original *Whole Earth Catalog*, a job that few other agencies were interested in at the time. A contemporary browser in a bookstore today would be astounded at how bare the shelves were thirty years ago. There was not a shelfful of books on, say, how to give a talk in public, as there is now; there was usually none. Thus the pointing, selecting, and reviewing the *Catalog* did was a vital, singular service.

It seems less so now. What happened? Among other things the Web happened. Today the world is awash in self-help, self-education, self-everything information. You can find any book in print online, and it's in your mailbox in days. Better still, you can find hard-won information on the most obscure passion just by clicking a little. Opening worlds is much easier. What this means is that the next edition of *Whole Earth Catalog* is here: it's the World Wide Web.

But still, something is missing. Something the *Catalogs* did, and this magazine still does, that is not found on the Web at large. It was in search of that missing component that I began this special issue. I suspected that one function the *Catalogs* offered that is not being provided by the Web is to highlight the best.

As the Web expands in scope to include everything, the best gets overwhelmed. Even great search engines and great recommendation software can't provide what I really want. I use the best recommendation sites, and decent though they are, they don't give me what I really want. I want someone I trust to say to me: "I've seen all the stuff, and I've used most of it, and this is the one you want." I don't usually find that on the Web. First, trust is in short supply, and second, comparative evaluation is in short supply. As working on this issue reminded me (it's been ten years since I edited the magazine), making confident claims like this is hard, time-consuming, and expensive. It's not done

casually, although we try hard to make it appear so.

I have no idea whether this kind of handcrafted evaluation service can scale up to cover the Web as a whole. Far less labor-intensive services are failing as commercial Web sites; what hope would there be for a time-intensive process that tried to keep up with everything? I have no idea what the future of *Whole Earth* is, whether it can keep going in the midst of the Web. (Luckily, I'm just a *guest editor*.) I do know there is an urgent need for directing people to the best and most appropriate in tools, a need that does not diminish as more tools are created, but rather expands as more ho-hum tools are available.

It was a blast putting together this issue. In the spirit of the first *Catalogs*, this is a home-brew self-published deal. To keep things simple and maximize learning I was the major reviewer, fact-checker, typist, scanner, designer, and layout person. I had no staff. If you notice an unusual level of funkiness in this issue (like jaggedy pictures swiped off the Net) that's all due to my amateur skill level. Not that I didn't have professional help. Paul Donald, Deborah Tibbetts, Stephanie Johnston and Van Burnham provided production advice and the crew at *Whole Earth* proofed and saved me from embarrassment.

I learned a lot. One thing sticks out: the tools of self-empowerment that were yearned for decades ago have been instituted on a mass scale. Those tools—based on digital power and the web—are now widely available to almost anyone in the developed world. We can do many of the things we once dreamed of doing. The revolution is new tools.

But tools (technologies) create their own new problems (too many possibilities, too many passions, too much demand for knowledge). I view the problems created by technology as simply opportunities for new tool making. That's the Great Circle that keeps going round: new tool, new problems, new tools. That circle would be mere running in place if it were not for one fact: each round of the circle expands with more options. Technology and tools create as many problems as they solve. What's good about that, you say, even if it is expanding? That's the usual critique of tools, but I think there is an answer. Tools and technology create only one purely positive thing: their expanding circle creates ever more possibilities and choices. That's pure good. More choices are always good. I'm pro-choice.

The most revolutionary tools are those that expand the choices inherent in other tools. To the three criteria for evaluating tools in *Whole Earth*, I'd like to add a fourth: a good tool is one that launches a cascade of new opportunities. I hope there are some of those in this issue.

Thanks, Peter, for the opportunity to try something different here. Readers can direct personal feedback to me (kk@well.com); news of benefit to all readers—updates, corrections, new suggestions—should be sent to editor@wholeearthmag.com.

A Tool For Tomorrow

It was Danny Hillis's idea to build a clock that would tick once a year, tock once a century and gong every millennium. By slowing down the usual speedy movements of a clock, he hoped to slow us down and have us think about the long term.

"Long term" to Danny meant about 10,000 years, which, it happens, is about the same length of time as human culture has been ascendant. He wanted to look ahead into civilization about as far as we can look back.

The purpose of a clock that runs for 10,000 years is to encourage us to create things that require 10,000 years to measure. A great civilization, for instance. Or anything we hope to last three generations and beyond.

Just the idea of such a clock can liberate our notions of time and purpose; perhaps we would not have to actually build one. It could be a thought experiment, a specimen of conceptual art.

But the difference between the thought of a 10,000-year clock and really building one is the same difference between the idea of a solid 500-foot pyramid and actually hauling stones to erect one. A society that built a clock running for a century of centuries would have to really believe in the power of the future.

Part of the purpose of building a millennial clock is to move our society into this position, so that it can confront its future while keeping in mind its past.

Stewart Brand took up Danny's fantasy, and tried to make it real. The best way to move society into the position of seeing the value of the clock, and thus the value of the long-term responsibility, would be to start building the clock now. Tomorrow if possible. As the clock became real, so would the perspective.

With Stewart's encouragement, Danny began to design the clock. I joined them to tip the critical mass of believers to a safe three, since if three people back an incredible idea it begins to seem credible. Stewart roped other remarkable people into the conspiracy and then hired the brilliant and refreshingly young Alexander Rose, who, more than anyone else, made the thought experiment real.

More of the impetus for building the clock is described at length by Stewart in his book, *Clock of the Long Now* (see *Whole Earth*, Winter 1999). In the spirit of delving into how tools enable a revolution, Danny describes his design process on the following pages.

Adding further reality to experiment, the Long Now Foundation (the nonprofit set up to run the mission) has bought a mountaintop in Nevada completely enclosed by a national park as a home for the clock—far from the turbulent effects of a city. The plan as of now is to put the great clock inside the mountain, to be the unforgettable destination of a pilgrimage up the mountain. For more information, contact www.longnow.org. —KK



Danny Hillis, far right, oversees the final tuning of the prototype clock on New Year's Eve, 1999. Alexander Rose adjusts the mechanism so that in a few hours it will trigger a gong—twice—to ring in the new millennium. It worked.