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NOTICE

HotWired Presents



The Millennium Clock

By Danny Hillis

Some people say that they feel the future is slipping away from them. To me, the future is a big tractor-trailer slamming on its brakes in front of me just as I pull into its slip stream. I am about to crash into it.



When I was a kid, three decades ago, the future was a long way off - so was the turn of the millennium. Dates like 1984 and 2001 were comfortably remote. But the funny thing is, that in all these years, the future that people think about has not moved past the millennium. It's as if the future has been shrinking one year, per year, for my entire life. 2005 is still too far away to plan for and 2030 is too far away to even think about. Why bother making plans when everything will change?

How we name our years is part of the problem. Those three zeros in the millennium form a convenient barrier, a reassuring boundary by which we can hold on to the present and isolate ourselves from whatever comes next. Still, there is more to this shortening of the future than dates. It feels like something big is about to happen: graphs show us the yearly growth of populations, atmospheric concentrations of carbon dioxide, Net addresses, and Mbytes per dollar. They all soar up to form an asymptote just beyond the turn of the century: The Singularity. The end of everything we know. The beginning of something we may never understand.



I think of the oak beams in the ceiling of College Hall at New College, Oxford. Last century, when the beams needed replacing, carpenters used oak trees that had been planted in 1386 when the dining hall was first built. The 14th-century builder had planted

the trees in anticipation of the time, hundreds of years in the future, when the beams would need replacing. Did the carpenters plant new trees to replace the beams again a few hundred years from now?

**want to build
a clock that ticks
once a year.**

**The century hand
advances once every
100 years, and the
cuckoo comes out
on the millennium.**

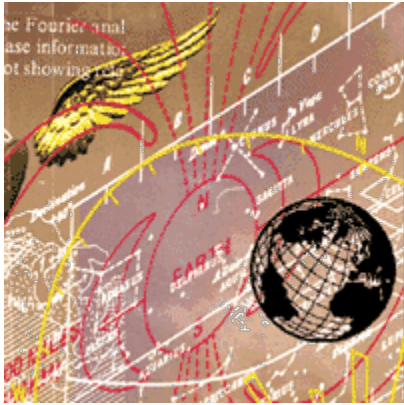
**I want the cuckoo
to come out every
millennium for the
next 10,000 years.**

**If I hurry, I should
finish the clock
in time to see the
cuckoo come out
for the first time.**



When I tell my friends about the millennium clock, either they get it or they don't. Most of them assume I'm not serious, or if I am, I must be having a midlife crisis. (That's nice, Danny, but why can't you just write a computer program to do the same thing? Or, Maybe you should start another company instead.) My friends who get it all have ideas that focus on a particular aspect of the clock. My engineering friends worry about the power source: solar, water, nuclear, geothermal, diffusion, or tidal? My entrepreneurial friends muse about how to make it financially self-sustaining. My writer friend, [Stewart Brand](#), starts thinking about the organization that will take care of the clock. It's a Rorschach test - of time. [Peter Gabriel](#), the musician, thinks the clock should be alive, like a garden, counting the seasons with short-lived flowers, counting the years with sequoias and bristlecone

pires. Artist [Brian Eno](#) felt it should have a name, so he gave it one: The Clock of the Long Now.



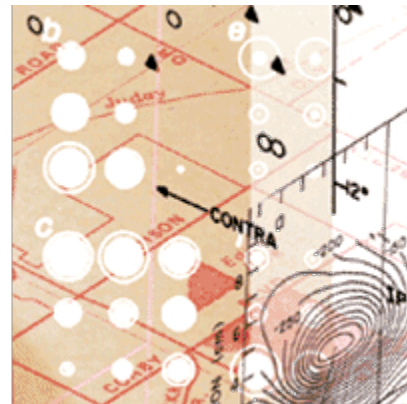
Ten thousand years - the life span I hope for the clock - is about as long as the history of human technology. We have fragments of pots that old. Geologically, it's a blink of an eye. When you start thinking about building something that lasts that long, the real problem is not decay and corrosion, or even the power source. The real problem is people. If something becomes unimportant to people, it gets scrapped for parts; if it becomes important, it turns into a symbol and must eventually be destroyed. The only way to survive over the long run is to be made of materials large and worthless, like Stonehenge and the Pyramids, or to become lost. The [Dead Sea Scrolls](#) managed to survive by remaining lost for a couple millennia. Now that they've been located and preserved in a museum, they're probably doomed. I give them two centuries - tops.

The fate of really old things leads me to think that the clock should be copied and hidden. The idea of hiding the clock to preserve it has a natural corollary, but it takes [Teller](#), the professional magician, to suggest it without shame: "The important thing is to make a very convincing documentary about building the clock and hiding it. Don't actually build one. That would spoil the myth if it was ever found." In a way, Teller is right.

The only clocks that have ever really survived over the long run (like the water clock of Su Sung, or the giant hourglass of Uqbar) have survived in books, drawings, and stories.

In the universe, pure information lives the longest. Bits last. Just before Jonas Salk died, I was lucky enough to sit next to him at a dinner. I didn't know him well, but in past conversations he had always encouraged my more mystical lines of thought. I was sure he would like the millennium clock.

I was disappointed by his response: "Think about what problem you are trying to solve. What question are you really trying to ask?"



I had never thought of the clock as a question. It was more of an answer, although I wasn't sure to what. I talked more, about the shrinking future, about the oak trees. "Oh, I see," Salk said. "You want to preserve something of yourself, just as I am preserving something of myself by having this conversation with you." I remembered this a few weeks later, when he died. "Be sure you think carefully about exactly what you want to preserve," he said.

OK, Jonas, OK, people of the future, here is a part of me that I want to preserve, and maybe the clock is my way of explaining it to you: I cannot imagine the future, but I care

about it. I know I am a part of a story that starts long before I can remember and continues long beyond when anyone will remember me. I sense that I am alive at a time of important change, and I feel a responsibility to make sure that the change comes out well. I plant my acorns knowing that I will never live to harvest the oaks.


I have hope for the future.

Danny Hillis is an inventor, scientist, and computer designer. He pioneered the concept of massively parallel computers that is now the basis of most new supercomputer designs. Hillis is currently researching the creation of software by a process analogous to biological evolution.

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