

# For pioneer, it's time to build the world's slowest computer

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Ten thousand years ago, around 8,000 B.C., mankind was just starting to settle into civilization, beginning to farm and create implements, to build villages and permanent structures that still survive today.

Now fast-forward the other direction, to A.D. 12,000. Where will humans be? Will humans be? And what signs of civilization from now, the future's 10,000 years ago, will survive until then?

Take a few minutes to think about it. Go ahead. We'll wait. A little time to think about the Big Time isn't a waste of time.

And that's Danny Hillis' point.

"These are pretty big questions that we don't expect to solve anytime soon," said Hillis, a Disney Fellow at Walt Disney's research and development division in Glendale.

Hillis once built the world's fastest computer, a machine whose novel "massively parallel" architecture sliced time into billions of a second. He called it the "Thinking Machine," and the military and universities bought droves of them to do things like run simulations predicting the future.

Now, Hillis wants to build what he calls the world's slowest computer, so people will start thinking about their own predictions of the future, and to get them to start making them happen.

Hillis wants to build a clock that will run for 10,000 years. And once a year, it will tick forward a click.

"I guess I've changed my mind about what a thinking machine should do," Hillis said. "(The clock project) was a way of getting control of time. People are a little loose and floating right now. People are very confused by the pace of change. When people lose their connection to time, they don't believe in the future. This is my gesture."

Hillis, 40, has been thinking about this idea for a few years now. He's gathered together a group of the technology world's best and brightest to serve on the board of a foundation that will raise money to build and run the clock.

The foundation's name? The Long Now.

Among the others on the foundation's board are such high-tech heavyweights as pundit Esther Dyson, Whole Earth Catalog creator Stewart Brand and musician Brian Eno.

"It's sort of an antidote to the millennium," said Brand, now a partner with the Global Business Network, a sort of futurist think tank. "It's also an antidote to the feeling of things speeding up out of control. It's a time machine, kind of a patience machine. It gives this larger perspective."

Brand is the one behind the other part of the foundation's plan, to create a sort of Library of Alexandria for the DecaMillenia. Among the thoughts being developed for the library:

■ Creating a "manual for civilization," a basic set of guides on everything from tanning leather to splitting atoms, just in case our more destructive impulses get the better of us.

■ Creating a "responsibility record," where those involved in thorny issues can make a pitch that, 50 or 100 or 1,000 years later, their side was right or the other prevailing side blew it.

■ Creating a library of essential literature for the ages.

■ Creating a repository for extremely long-term scientific studies. Such long-form looks at a population or place can be enormously useful, but finding older studies is often extremely difficult or even impossible.

"We can start to develop what are the consequences of long-term decisions," Brand said. "It's just a process of developing a long feedback loop for civilization to manage these increasingly powerful and time-spanning decisions."

The library brings up even more thorny questions than does the clock, such as what kind of medium would be used to store information. Most digital media have life spans of no more than about a decade, not much use when the information is expected to last 1,000 times that long.

"The clock is the icon," said Alexander Rose, the foundation's youthful executive director. "The library is the meat behind it."

At this point, Hillis has built a prototype for the clock, and other simple design work has been done. The foundation is trying to raise \$200,000 to finance a larger working model, and is scouting high-desert locations for a permanent site.

If all goes according to plan, the clock would begin operation in 2001, Hillis said. But if things don't work out that fast, it's all right. He's got nothing but time.