

## THE CLOCK OF THE LONG NOW

### A Conversation with Stewart Brand

[November 1998]

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#### Introduction

When Danny Hillis first started talking about his 10,000-year clock, many of his friends worried that he was going through some kind of mid-life crisis. I was one of them. But eventually we all started listening. A group of Danny's friends, led by Stewart Brand, got together and created "The Long Now Foundation" to build the clock, and also to begin to address the bigger issue involved: how to get people to think in a longer term, how to stretch out their sense of time.

It's fitting that Stewart Brand got behind Danny's project. When I met him in 1965, he was sporting a button on which was printed: "America Needs Indians." His next conceptual piece was his 1968 campaign for a picture of "The Whole Earth," which led, in no small part, to the creation of the ecology movement. In 1983 he urged me to get involved with something called "online conferencing." This led to "The WELL," (the Whole Earth "Lectronic Link"), a precursor of the radical changes that our use of the Internet is bringing to human communications. Stewart is the king of initially obscure, ultimately compelling conceptual art. Call it reality.

A couple of years ago he was featured on the cover of *The Los Angeles Times Magazine*: "Always two steps ahead of others....[he] is the least recognized, most influential thinker in America." No question about it.

—JB

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STEWART BRAND is co-founder and president of The Long Now Foundation and co-founder of Global Business Network, The WELL, and Revive & Restore. He created and edited the *Whole Earth Catalog* (National Book Award), and is the author of *The Clock of the Long Now*, *How Buildings Learn*, *The Media Lab*, and the *Whole Earth Discipline*.

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## THE CLOCK OF THE LONG NOW

JB: What's happening with the clock?

STEWART BRAND: For three years we've been working on building a 10,000-year clock. As of this year, 1998, we're building a prototype eight feet tall, probably about the size of two refrigerators back to back, and we've got an invitation to debut it at the World Economic Forum in Davos next January 1999—the perfect place to get world leaders and corporate leaders thinking in 10,000-year terms. Danny's clock is, I believe, the world's first year 10000-compliant computer.

There's all this ruckus—correct ruckus—about the year 2000 problem in computers—that they can't handle four-digit year dates. Well, four-digit year dates also become a problem after the year 10000—five digits in your year dates. In the Long Now Foundation we refer to this year as 01998, and 01999, and 02000, and

so on. So the clock is ready for the year 10000 and carries on in a completely accurate time-telling fashion until the year 12000.

Danny's invented what's call a serial-bit-adder. We're getting a patent for it. It's basically mechanical digital binary works, and what it does is it replaces gear ratios, which is what all clocks and watches up to now employ. The problem with gears is they wear down over centuries and their ratios change, and there's possible other problems and there's friction problems, so Danny just invented a different way.

In a sense, it's a computer calculator clock, but there's no electricity in it. There's nothing electronic about it, so it could be done with Bronze Age technology, or repaired with Bronze Age technology. It's a very intelligent binary digital physical mechanical device. What it measures is things like the 26,000-year cycle of the procession of the equinoxes. It also tells you what day it is, and it can do all the calculations on leap years, including the esoteric ones like in the year 2000. It corrects for equation of time, so that the noon on it approximates what the sun's noon is going to be. It's also corrected by the sun. When the noon sun shines on it—even as infrequently as every 200 years or so, it corrects any migration the clock might have made—not only bringing it to the right time, but also correcting whatever is causing the problem. Very ingenious clock. Also very beautiful.

In the 16th, 17th, 18th centuries, clocks had a lot more of this quality. They were mostly astronomical. In many cases they had dozens of faces showing lots of different things. Ours has basically one face with about five different things on the read-out, but they're very subtle and interesting things. I suppose in that sense we're going back to the early excitement about clocks—they were big, they were monumental, they were something that a city would organize itself around—the clock in Prague, the clock in Venice, and so on. This is that kind of big clock.

JB: When you promoted the famous picture of whole Earth in 1969, showing night and day at the same time, I thought you were talking about space. Thirty years later, I realized that all along you were thinking about time. That image of the Earth on my television set—night and day at the same time, all the time—and the hands on the clock on the wall showing a local time of 3pm—that turned my head around and influenced the way I think about things.

BRAND: Yeah, it's a big jump for a lot of people. We know the image of Earth in space set in motion the ecology movement. It was a year later, in 1970, whereas before that there was not really an ecology movement. What you say about time suggests that some of the globalization of the economy may have also gotten going increasingly when you look at an image that has night and day in it. You

think, well, the market never closes. In a sense what we're doing with the clock is even more for time than what the photograph of the Earth did for space. Like understanding of the earthly environment as one whole thing—we're trying to understand a period of time reaching 10,000 years into the past and 10,000 years into the future as one containable thought.

Brian Eno, one of our board members, calls it the long now. The idea that you move in the now and feel a responsibility for what happens in the now; if you can push the now out past your own lifetime in a couple of directions, that's good. If you can push it way out, that's better. Peter Schwartz, another board member, suggested 10,000 years, because that's a rough history of what you might call civilization. Ten thousand years ago the ice recedes (Jared Diamond territory). This is when Mid-Easterners do serious agriculture and domestication of animals (not Europeans until way later), and that spreads, that permits towns, towns lead very quickly to cities, and cities is where civilization happens. So 10,000 years is a—backwards is sort of the human now, and because we're looking at arithmetic time instead of exponential time, an equal 10,000 years into the future seems like what should be the symmetrical perspective.

JB: What happens 10,000 years from now, when people come across this clock?

BRAND: That will depend a lot on whether there's enough warning to set the clock on automatic. The Long Now Foundation—the non-profit entity that's doing all of this—sees as its primary job fostering responsibility, so Danny's feeling is that the clock should ask to be wound maybe annually in a festive event, or maybe every visitor to it—just as my motion makes my watch stay wound, visits of people may make the clock stay wound. It's reflective of their life, and that has a nice quality to it.

The other thing is, if people go away for a time—leave Earth or die off or whatever—then you'd want a clock that winds itself, and this is actually pretty easy to do. So if you had any warning at all you could put in motion a large desert version of this clock—a bi-metallic lever that goes up and down with a day and night sequence, when it gets hot and then it gets cold. That would be plenty of energy to wind a very large clock, so people could come along in 10,000 years, be wandering along, find artifacts, and find a clock that's working.

Next, when the aliens come along looking for a sign of anything, they find a clock and it's ticking. Suppose we have robots on Mars and they're wandering around, and they're trying to find signs of civilization, and they find something that's ticking—that would be pretty cool.

Now the point is not so much them looking back, as now looking to them looking back. Once people are comfortable thinking about what do we want to do for the aliens in 10,000 years, or ourselves in 10,000 years—probably we'll do some other things like—put more money into the schools, or whatever it may be.

The real conceiver of the project, and the builder of the clock, the designer of the clock, is Danny Hillis. And Danny's story is that he was noticing that the year 2000 was acting like a wall for people, that the future was always the year 2000. And when he was a young man and then older, the future was getting shorter, shorter by a year every year of his life, which is probably a bad sign. So he wanted something that would pop through the millennium, and also would pop through—also because he's in the high-tech world, and most of Long Now's board members are on the edge of the high-tech world, technology's acceleration is making a lot of kinds of future forecasting just impossible.

Like what's the future of the Web in ten years? The future of the Web in ten months is a challenge. What's the future of the Web in a hundred years? You can say more about the future of agriculture in a hundred years than you can about these high-tech things. The sense of fast human change making the future unpredictable and therefore unreachable in a fundamental way—you're not really responsible because it's such a black hole. Danny wanted to make an instrument that was not participating in those rapid exponential curves of population and technology growth and megabytes per dollar and so on, but something that just plugs along at the same pace as seasons—spring, summer, fall, winter. It's the same 10,000 years from now probably as 10,000 years ago, and this clock is an experiential device. As Danny went off to work at Disney, I think the sense of it being an experience as well as a device got to be more and more the case because he's been working with obviously theme parks and rides and so on at Disney.

JB: Has Disney made an offer for it?

BRAND: Yeah. They've actually been paying for his time just as Global Business Network has been paying for my time on this. Disney figures it's good for them to have a clock design that they might want to bear a relation to, and indeed we can put a big clock at Epcot if a corporate sponsor turned up. Disney's enough interested to do that. And Global Business Network figures that this helps get our company out of the notion that 20 years is the deep future, which is what most of our members do. If you're a business 20 years is the future. For civilization 20 years is tomorrow afternoon. We'd like to be useful for civilization as well as for corporations and government agencies.

JB: Where are we in terms of implementation?

BRAND: There's another domain here which emerges—the idea of a library. The clock provides context, but the idea of content rather than context has been more appealing to some people than the clock—the idea of what you do with information, knowledge, and data over long periods of time. What kinds of things are not being well done by the archives and libraries that we have now that might be served with an institution that has the ambition to be useful for centuries? Some of the ideas that have come up there is being able to help maintain and fund very long-term scientific studies—longitudinal studies that go for centuries. If you want a stop-motion film of glaciers moving up and down a mountain range, we might be able to help you—things like that. The library has been coming along more slowly than the clock—partly because the clock is such a specific designable thing, and the library is more of an idea that's still collecting ideas. In any case they're both proceeding—library slowly, clock quickly. We'll have an extremely amazing prototype clock starting to perform next year—the pieces are coming together now. We're building in California—parts are being made in Los Angeles, parts in the San Francisco area; a lot of them are coming from hither and yon. The materials are high-tech, the very physical Monel Steel, Invar steel, tungsten carbide, synthetic sapphire, things like that. This prototype is going to be a prototype that not only shows that the works work, that it's actually capable of lasting and running for 10,000 years.

JB: Who's the architect?

BRAND: Danny Hillis is designing it; a lot of us are participating. Alexander Rose has been project manager, putting a lot of the things together on it. We've hired another engineer named Kiersten Muenchinger. Danny has been working with some people at Disney—and very serious engineering and design is going into this thing.

The prototype will be beautiful, but will be nothing more than itself. I think when we start doing monumental clocks in the cities and in the desert somewhere, those will have a more architectural scale and architectural experience to them—this design over here this part of that approach is actually Alexander's design from a charrette we did in Aspen—the spiral which feeds into itself—and there's one form of the clock that might live very well in a design like that.

JB: Why desert?

BRAND: The problem with cities—and forests, rivers, and ocean edges—is that they're all so volatile. Cities especially have such a high metabolism of stuff going

through them and they're the targets for wars and so on. You can't really count on many centuries in the cities. You get in a sufficiently barren desert, it's not going to turn into agriculture, probably is not going to turn into a bunch of things; it's more stable. Mainly the experience, the present experience in a place like that is that it feels timeless. The place we'd most love to go is the Grand Canyon.

JB: Once you build your clock it will become the next Las Vegas.

BRAND: We'll set it up as a national park from the start and make sure that the view shed is protected, as they say at Mt. Vernon. We've looked at a number of sites.

JB: Are local people against this?

BRAND: No—haven't run into that—although we haven't settled on enough of a local site anywhere for them to get alarmed.

JB: Most likely area?

BRAND: In the U.S., probably high desert in the West somewhere—that's a lot of terrain, and we haven't got anything more specific than that yet. The sites we've looked at, and the way we keep saying we want to do this, somebody will say, funnily enough I have a canyon edge, or a butte, or a mountain or whatever it might be, that I'd love to have this clock be at for 1,000 years, let's do it.

JB: Government?

BRAND: Well, we're working to some extent with the National Park Service in the Presidio, in San Francisco, where we already have an office and we're going to be expanding into a larger space there. We'd love to build a clock in the Presidio on a monumental scale, and so far people we've talked to in the Park Service and the Presidio Trust are not averse to the idea—obviously it'll take time for them to decide if they want to do it, and for us to respond. I'd love to have a clock in the Presidio. I'd love to have one in Los Angeles, at the Getty Center—There are other cities that have said they'd like to have one.

JB: Organization put together to run this?

BRAND: The organization is called the Long Now Foundation. It's non-profit, it was founded in June '96, the board members are an extraordinary bunch—looking at the photograph here, Doug Carlston, Paul Saffo, Peter Schwartz, me,

Danny Hillis, Kevin Kelly, Brian Eno, Esther Dyson, and one of the founding board members, who is Mitchell Kapor. He's now emeritus. We've been talking on-line weekly for three years together. We've got funding for the prototype clock, and an additional hundred thousand dollars from various donors to build the organization, get the office, hire people, and so on. So it's a happening small foundation. Doug Carlston points out that designing a clock will be hard, designing a library will be hard, but designing an institution to keep good care of them for 10000 years will possibly be the hardest of all.

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