Edge

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CONVERSATION : CULTURE

How to Create an Institution That Lasts 10,000 Years

A CONVERSATION WITH Alexander Rose [4.24.19]

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What's interesting is that humanity figured out how to ferment things about 10,000 years ago, which is exactly the time frame where people started creating cities and agriculture. It's unclear if civilization started because we could ferment things, or we started fermenting things and therefore civilization started, but there's clearly this intertwined link with fermenting beer, wine, and then much later spirits, and how that fits in with hospitality and places that people gather.

All of these things are right now just nascent bits and pieces of trying to figure out some of the ways in which organizations live for a very long time. While some of them, like being a family-run hotel, may not be very portable as an idea, some of them, like some of the natural strategies, we're just starting to understand how they can be of service to humanity. If we broaden the idea of service industry to our customer civilization, how can you make an institution whose customer is civilization and can last for a very long time?

ALEXANDER ROSE is the executive director of The Long Now Foundation, manager of the 10,000 Year Clock Project, and curator of the speaking series' at The Interval and The Battery SF. **Alexander Rose's *Edge* Bio Page**

EdgeCast

HOW TO CREATE AN INSTITUTION THAT LASTS 10,000 YEARS

I'd say the biggest question that I'm asking myself right now is how long-term organizations operate. I've spent the last twenty-two years building the largest iconic long-term thinking project—the 10,000 Year Clock—with the Long Now Foundation. We've known from the beginning that, in a way, the easy project was engineering a machine to last for 10,000 years; the difficult project is figuring out how you make an institution that lasts for 10,000 years. We have 10,000-year objects and artifacts that have lasted this long, but we know that there are no institutions or organizations that have lasted on this timescale.

I've been doing some survey work and figuring out what the oldest living organizations in the world are. You have things like universities that were invented 1,000 years ago, and some extant religions like the Catholic Church that started almost 2,000 years ago. The university is possibly a good model to be looking at, but I'm also looking for portable knowledge that could be used in other businesses, non-profits, and cultural organizations. We're looking at anything from communities of practice, like martial arts, that have handed things down through centuries, or even getting inspired by natural systems.

For example, when a Manzanita bush dies, the root system then grows out and you have a ring of Manzanitas. They've now measured these to be 40,000 or 50,000 years old. It's the same kind of DNA, but it's been reincarnated. Then you look at other strategies in nature like the Bristlecone pine, which is the oldest continuously living single organism. Instead of a clonal system, the wood is almost rock-like, and rock erodes faster around its roots than the wood does over 5,000 years. My favorite quote about the Bristlecone is that it's not that it lives for a long time; it just takes a very long time to die. You'll see these very old Bristlecones and it will just be this one strip of bark and a few sprigs of needles at the end. So, there are all of these strategies coming from nature.

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If we look at civilization as our primary customer in terms of how to create long-term organizations and how we create service to civilization, it's worth stepping back and looking at what we're now calling "civilization." Right now, we're at a time where identity, personhood, and all parts of public and private life are in high flux. Particularly with things like social media, which we're now struggling with how it changes our agency in the world, and things like mobile technologies—these are things that we have overused in a certain way that we're going to pull back from a fair amount. We already see it with

younger generations not using the social media tools anywhere near as extensively as the people who are in their teens, 20s, and 30s when they were invented and came on the scene. Almost no very young people I know use Facebook, for instance. We're going to see that there's this funny group of people that bought into a lot of these new things because we have always been bought into the new thing. This is the first time it's really bit us back.

Things like agency and identity are going to come back to a certain extent as we pick and choose from the tools, whether social media tools or mobile communication tools, that are empowering rather than dangerous and insecure. It's highly likely. We're already seeing so much backlash from it. We're also about to start seeing the first generation of people going into public life who grew up with these tools, grew up with digital pictures and videos of themselves doing stupid things their entire lives. The other side of this may just be that since that happens to everybody, we're just going to be less concerned with a lot of these types of things. We already see this now, given that what used to be scandals are no longer considered scandals in public life anymore. So, we may get our agency back through picking and choosing among the tools, or just becoming so jaded to what used to be scandals that that will just be all life at some point.

When you're working on something this long and expensive, and bringing in as many resources as the 10,000 Year Clock project, it's especially worth it to understand *why* you're doing it, and also understand what you could be doing with that time, energy, and money in another way. It is expensive in one sense, and people are always going to question why, for example, we aren't feeding the hungry children with the money that we're spending on the clock project. Fundamentally, what we're spending is around what it would cost to produce a Hollywood movie. I would like to think that if we do succeed in making the clock into an amazing experience that people can hold in their minds as an example of long-term thinking, and that they want to visit, too, that they create stories about it and it becomes in some way mythic.

Telescopes are similar both in cost and in type of project, where you're building some strange one-off object on top of a remote mountain. While we're not going to get pictures of the cosmos, this is more of a mirror back onto people who visit it or think about it. It can be a thought experiment for some people, it can be a visiting experience for some people, or it can be a literary experience for some people. But if we do our job right, if we inspire even a small number of people to take on projects and lengthen the attention span of civilization so that we can look beyond the short-term thinking, it's going to be worth *at least* the cost of one Hollywood movie. There are certainly enough of those that are made and thrown away.

We're living in a unique moment where we have wealth concentrated in ways that people can make a choice to fund something like the clock. We've also seen disadvantages to that because it means they can direct philanthropic dollars in ways that used to be the purview of the government. The government, for instance, would never fund the clock project. We can decide if that's good or bad, but some of the quixotic things that have a chance at a much higher value than a government-funded project that would only be funded through lengthy committees and peer review, that has to give lots of value back—unless you were just funding it as art, I don't think they would fund it on that scale.

There is a place for this type of philanthropic strangeness, and we want that in the world. It's a separate argument if we're talking about how we educate the country or the world, or how we feed the world, or solve climate change. To me, those seem like integral governmental problems, but not how we provoke the world. When a government provokes the world, it's usually through acts of military. What we want is to provoke the world through some future artifact that lives on through time.

There are almost no artifacts that have been built for very long periods of time. With things like the pyramids or Stonehenge—we knew the pyramids were for tombs, and we don't know what Stonehenge was for, but we don't feel as though we're looking back in time and thinking that those generations cared about us. That's the fundamental message we're trying to achieve with the clock. It's meant to be a message of hope about the present that we are going to continue to solve problems and have a good way of life as we move forward. Also, if we were to have burrowed into this mountain and found the clock already ticking, what clock do we wish we had found and what intent do we wish that those people had for us? To me, I wish that I would find something that made me feel as though past generations cared about me.

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I got involved in the Long Now Foundation originally through Stewart Brand. I grew up on the Sausalito waterfront in a junkyard that we moved into when I was seven. It was all artists, and vaguely legal and illegal activities, and boat builders. It was often called the "last free ride" in this part of California, a place where people could live rent-free if they were willing to live funky enough.

Through my family trying to save that waterfront area, I met Stewart when I was eight or nine years old, probably falling asleep under tables while meetings were going on through a lot of my childhood. I kept in touch with him throughout my education and when I was starting a career here in San Francisco doing mostly virtual world design in the first wave of VR in the mid-'90s.

Stewart had told me about this project, which at the time was just a conversation, an email Listserv, which included Danny Hillis, Brian Eno, Kevin Kelly, Esther Dyson, Paul Saffo, Peter Schwartz, and a number of others. It was all brought about by this moment where Danny had mentioned this idea after building the fastest computers in the world throughout the '80s with this company, Thinking Machines. Danny Hillis had become a bit obsessed with this idea of building the slowest computer in the world, effectively a clock that would tick once a year and bong once a century and the cuckoo would come out once a millennium. Danny has a lot of amazing ideas, but as he talked about this one over several conversations, Stewart latched onto it. As somebody who has been at the forefront of several movements, he realized that this was an important one. He was the one who incorporated a nonprofit around it, originally called Clock Library. Stewart thought that it was going to be the Clock Project and then once it got people's attention, there would be a library that serves civilization on the same multimillennial timescale as the clock.

Stewart told me about this idea and he also got me a bunch of interviews with what would eventually become dot-com companies. I went on those and they were very promising, but I couldn't get this idea of the clock out of my head. It just was this brain bug that worked for me, as somebody who was trained in industrial design and had railed against the idea of designing more plastic toasters as the thing I was going to go into for my living. When you're designing one-off objects, you only get to design and engineer it until it's good enough and then you put it out there. In the case of this clock project, it was clear that we weren't trying to design something good enough, we were trying to design something that was an absolute masterpiece in engineering, in the way it looked, and felt, and changed the way people thought about time. So, it was an art piece as well as an engineering piece. We were going to use the best materials in the world and do peer research into an area that no one has ever done research into, in terms of making something last on this timescale.

I came back to Stewart and told him I didn't want to work on any of these other digital projects; I wanted to work on the clock. We were lucky that there was already a board retreat planned in Aspen at Doug Carlston's house, who is one of the other board

members and the founder of Broderbund Software. That was coming up in a couple of weeks and he asked the board if I could come basically to just provide drawing and modeling support as this design charrette was going on at Carlston's house in Aspen. So, we flew in Doug's plane at the time and spent four days in Aspen designing parts of a clock. That's where I met Danny Hillis for the first time. He had a prototype of this thing called the serial-bit adder, which was a way of doing binary calculation in an analog manner, with levers for ones and zeroes that he wanted to use on the clock. He and I hit it off.

One of the things that came up in that meeting was this idea of using a spiral structure, because spirals are great for depicting time. The nice thing about them, especially if you are depicting time a long time ago where you know less, is you can use that as the center of the spiral. You always know more about the present, so you can make a spiral timeline as a way of depicting time. They got intrigued by that. They started talking about building a building that used spirals and counter rotated. No one knew how to draw that. I couldn't draw it. So, I modeled this counter rotating spiral building physically with just some foam board. It coalesced the conversation for that weekend. We never ended up building this, but we did go further with the design. It helped that weekend get through part of the discussion that they were getting through. So, I got hired and they just said they would cover my salary so I could quit what I was doing to start working on the clock project.

 At the time, the only thing I thought we were going to do was basically build the first prototype of the clock. Danny said he had a friend who could help fund it. So, I spent the next two years working with Danny Hillis.

Danny had been building the fastest super computers in the world. He also had done his educational projects with some of the other early computer pioneers, like the Logo program for Apple—what you would think of as very disparate projects. The amazing thing about working with Danny is his ability to zoom from the absolute micro scale to the macro scale, from the social to the scientific. He's just as comfortable talking to a trucker in the middle of Nevada as he is some of the greatest mathematicians in the world. I almost never use the term "genius," but I would say he certainly qualifies. He doesn't seem to have any of the bad attitude or savant-like qualities that make a lot of smart people very difficult to live in the world. He's a highly socialized person, so it was amazing to get to know him both as a friend and learning from him in the way that he thinks and operates for building this clock. He also has a great sense of aesthetics, and mechanics, and engineering, which is also very rare.

These two years were me getting to know Danny and Danny getting to know me to a certain extent. We realized that the Long Now Foundation had to use five-digit dates going forward. We had to add the extra zero in the front of any year date because the clock itself had to read out to the year 12,000 at least, if we were going to start it in this current century.

We were also moving up to the year 2000, and the goal for the first prototype was to have it ring twice because the cuckoo effectively had to come out twice for the second millennium. So, it was this strange thing where we were building a very slow object that was meant to get people to think longer term, but we were up against the same millennium deadline that so much of our collective, temporal intelligence has also been up against.

Danny's point of this project from the beginning was that, as he grew up, the future had been shrinking one year per year for his entire life, that no one was thinking past the year 2000. It was stunning how few people were thinking past the year 2000, literally within days before the millennium turnover happened. In fact, when we tried to have an event at some public venues in San Francisco, they wouldn't rent it to us because of the calamity

that they thought was going to happen that night, which was just bizarre. So, we worked hard and we got the clock working at about 8 PM on New Year's Eve, 1999, and then one of the dials went the wrong way. We realized that we had left the ability to switch the dials until the end, and now it was 8 PM on New Year's Eve and the dials were going to index the wrong direction for the year. So, we raced across the Golden Gate Bridge to the machine shop and made a new shaft and raced back across. Luckily, it was the Y2K New Year's Eve and nobody was out. People were terrified to be out that night, so there was no traffic. We tested the switchover of the millennium, which included all of the exceptions in the calendar mechanism and all of the most difficult parts of the clock in front of everything at midnight. It worked great.

From there, it was almost immediately after that that Danny was talking with Nathan Myhrvold, an early CTO at Microsoft. So, we seamlessly went into the next prototype project, and that ended up being a planetary display that used Danny Hillis's binary mechanical adder that was basically a way to show the human eye visible planets for the 10,000 Year Clock. We spent probably from about 2001 or '02 to 2005 building that. One of them went to Nathan Myhrvold's house and one of them is in our collection. We have it here on display in San Francisco.

Around that same time, we met Jeff Bezos and he funded the Long Bets project for Long Now very early on—2001 and 2002. The core of the Amazon business was about long-term thinking to him. He published his quarterly letter for stockholders titled "It's all about the long-term," and he has reattached that to every single quarterly statement since then.

So, this message of long-term thinking resonated with Jeff. He came to visit the property we originally purchased in Nevada to take a look at that, and then when he was buying land for Blue Origin, he also had land that could work for us. In 2005, Danny and he agreed to start working on this project together.

There were several sites on the property that looked like we could just start building on them. They had underground facilities already and there were caves already, but those didn't work out for various access reasons, so we decided to build our own underground site for the clock, which drastically increased its scale from our original supposition of tens of feet and all of a sudden it was 500 feet of vertical space that we were building the clock in. That changed the design considerably, so we've spent the last fourteen years working on that project.

We're now at that phase of installing the clock. More importantly than the clock project in a way, is the cultural institution part also built out over time. Originally, this was just going to be a project in which we built a clock to store information over 10,000 years. We have done some interventions in information storage, as well. We spent about a decade collecting language information we could micro etch into a metal disc that could last for thousands of years using a technology originally developed by Los Alamos Labs, effectively repurposing the types of machines that write micro-circuitry, gallium ion beam machines that etch into silicon and then you can plate metal on top of that and make a very long-lasting archive.

If you're going to try and save information over a very long period of time, you have to solve all of the platform dependence issues: You can't make it a computer disc—it should be something that you can read—but you want it to have the density of digital data, so it would be small, but not so small that you can't read it without optics. You don't want to have a scanning electron microscope be the only way you can read something that's going to last for a long time. So, we had to balance all of those things. We ended up building this thing called the "Rosetta Disc." The final platform dependence that we had to solve in the first piece of information that was going to go into our library was language

dependence. So, that's why we collected parallel information and thousands of languages from around the world and micro etched it onto this disc to effectively be a language key for any information that happens to survive into the future.

One of those was launched on the European Space Agency's Rosetta Mission. It's now on a comet. Then another one was launched about three days ago to land on the moon with the Genesis Mission. That was launched, a private effort, from Israel. These kinds of information storage interventions have become another way to provoke people to think about much longer timespans and strangely have now interacted with a bunch of space projects.

A good way to think about the Long Now Foundation is it was born out of a bit of a lineage of the Whole Earth Catalog group that was this loose knit group of people who came in and out as the catalog reemerged and reemerged over the years. Then Global Business Network was started by a lot of those same people who worked on the catalog— Peter Schwartz, Stewart Brand, Lawrence Wilkinson, and others—and wanted to build a new organization to help companies and other organizations think about the future.

When Long Now started, it was the same cohort of people, with a lot of the traditions of how they do things being highly collaborative and highly trusting. I grew up around nonprofits, and I think they often suffer from the fact that there is an idea person who gathers a very rich and powerful board around themselves, and that board never gets along well because the only thing they have in common is this person. In this case, it was a board that was created. They hired me originally as the first employee and then we've now grown to a staff of over a hundred people. The trust that that board has is this amazing thing.

For example, one of the projects that we wanted to do is called Long Bets, which is a way of betting on things of social and scientific consequence over the long term. Pretty much everybody on the board, besides Kevin Kelly—the founding editor at *Wired*—and Stewart Brand, who wanted to do this project, thought it was a horrible idea. We were going to get in tons of trouble with everything from the Gaming Commission, to the IRS for our tax-exempt status. In the end, they let them do it because they trusted them to do it. There are very few nonprofits that would have that level of trust among their board to take a risk like that.

That project just paid out $2.2 million to a charity through a bet that Warren Buffett placed for a decade through the system. It's done some interesting good in the world and it was a very risky endeavor for most normal nonprofits to have done.

I signed onto this project to build a clock almost twenty-two years ago this month. The question for the organization of Long Now is what we do after that point. We're also getting to the point where our founders are getting older and there is going to be a generational shift. This clock will then be out in the world and it will no longer be a perfect idea; it will be an imperfect object and it can be criticized. People can say it's not going to work, and people can say it didn't change the way they thought about time.

Long Now is going to be coming into a much different phase in its next twenty-five years than it did in its first twenty-five years. It's going to be a very tough time. The most dangerous time for an organization is one generation after they're founded. The second generation has the most difficult time. It's no longer the new, shiny object, but they're not quite old enough to be an antique and be valuable for being so old.

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It's a difficult thing to know how to measure the impact of Long Now and if we're moving the needle on long-term thinking at all at this point. But the goal from the beginning was to create new myths, to create something that was worthy of a story that would stick in culture.

In that sense one of the biggest successes you can point to is when Neil Stephenson wrote a *New York Times* bestselling science fiction book that featured the idea of the 10,000 Year Clock as part of the world building that he did, and we haven't even finished the clock yet. So, hopefully that kind of world building, and myth building, and story building is what we can keep inspiring. I'm hoping that once the clock is out there, that takes place some more. But we're already seeing policymakers reference either talks from us, or diagrams that we have put out there. Stewart's pace layer diagram that starts with fashion on the outside and goes down through governance, and commerce, and culture, and nature at the bottom moving the slowest, that came out of a conversation with him and Brian Eno. The very first thing I worked on this project was making a nice version of that diagram that came out of their conversation about how to tease apart the layers of human time. That I've now seen used literally by British parliamentarians and US government workers and various levels of government.

What's interesting with the clock project is that at every stage it was funded by a single person. Every other part of Long Now and its other projects were almost always funded by groups of people gathering donations around an idea, and that included things like the Rosetta project, and conferences, and our seminar series, and The Interval, which is our space here in San Francisco. The clock project was always done more like the Medici model of a single wealthy benefactor just because it is so quixotic and weird that you can't get groups to do it. We have gathered a lot of people around Long Now that the clock project is, in a way, the most important thing to them about Long Now.

So, when Jeff came on to fund the full-scale clock project, we started at the beginning. There are very few projects that people get to work on in their lives that can be done at this scale and with this level of high finish and high engineering with amazing people coming together.

My favorite thing about the clock project is the people that it gathers, the engineering talent. One of the more amazing engineers that we have on the project was this guy who was retiring after building rock-cutting machines his whole life. He took one look at the project and realized it was the way he could do his magnum opus and helped by designing this 30,000-pound diamond chainsaw robot that could carve through the mountain for two years straight, creating a spiral staircase where every single stair was cut uniquely. These kinds of people just don't exist in the free market. They have to come to you.

We've encountered people throughout the project who've come on and donated their time, or come out of retirement, or not retired for several years because they want to keep working on it. That level of goodwill and amazing talent just doesn't come to projects just because you have the money for it. It has to be the right idea and the right environment for it, as well.

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