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Amazon billionaire funds world's most extraordinary clock inside Texas mountain

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Construction has only just begun but when it's ready the Clock of the Long Now should last for 10,000 years.

by James Buttery

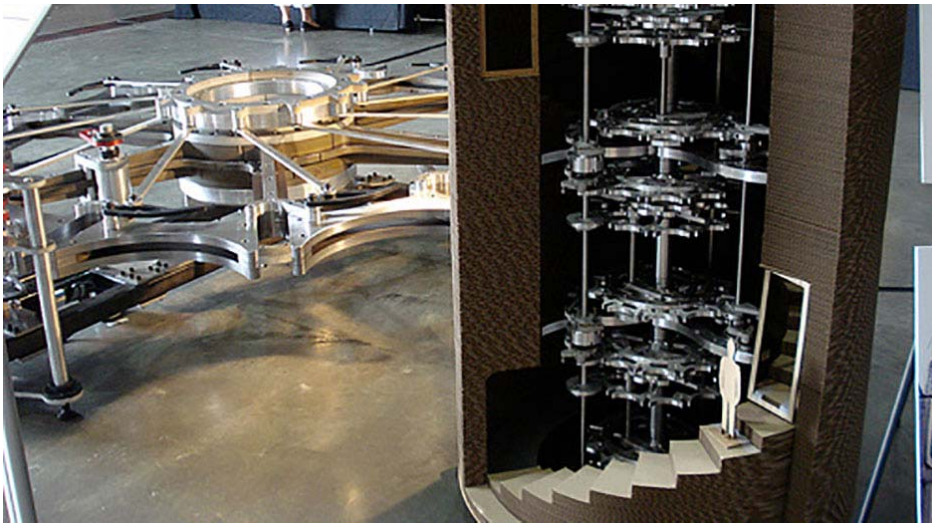
It's got all the ingredients of a Connery-era Bond film. A billionaire industrialist hollowing out a privately-owned mountain and building a mysterious device at its centre.

The truth (although writing this piece has felt like being caught up in some epic April Fool's joke) is somewhat less nefarious, although still completely unexpected.

The billionaire in question is the world's richest person, Amazon-founder Jeff Bezos, and the device in question is a high concept, mechanical clock.

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Bezos is spending around £30m (or 0.033% of his colossal \$126 billion fortune) making the dreams of Danny Hillis come true. Hillis co-founded The Long Now Foundation (christened by none other than Brian Eno) in 1996 after an email to colleagues setting out his thoughts on the benefits of responsible long-term societal thinking, an arc spanning ten millennia rather than the kind of five or ten year projects he was accustomed to seeing.

Hillis has been working on a clock to illustrate this vastly expanded timeframe since then, having completed a prototype on New Year's Eve 1999, which struck twice at midnight and now sits in London's Science Museum.



One clear and obvious caveat to mention before you read on is that the Clock of the Long Now is still very much a work in progress, work has only recently begun in western Texas and no completion date has been set.

To think of the Clock of the Long Now or the 10,000 Year Clock as simply a monumental clock would be missing the point to a large degree. The 200ft tall horizontal installation within a 500ft chamber with a spiral staircase cut directly into the rock surrounding it will be an interactive visitor experience as well as an ongoing engineering project open to future generations to complete.



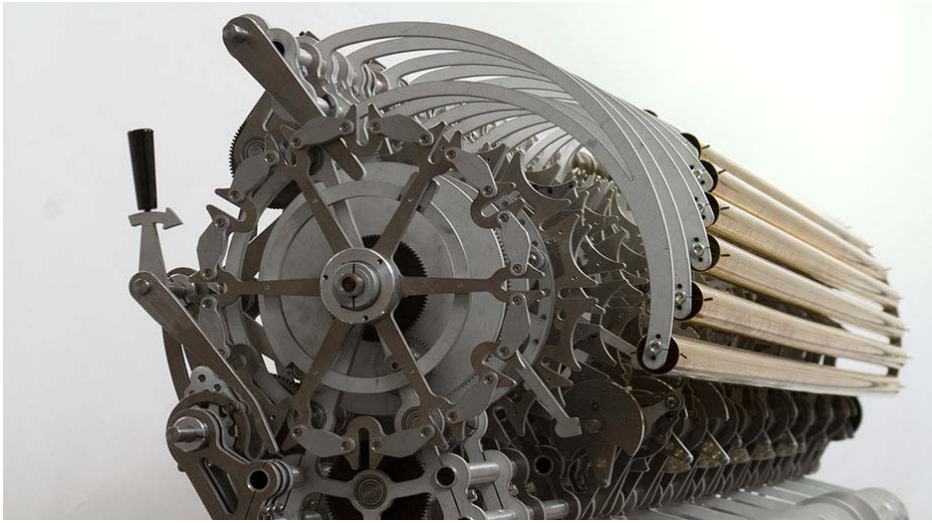
The plan is to let visitors make their own way to a hidden entrance and admit themselves (although not explicitly stated, it very much sounds as though the clock will not be manned, allowing visitors to discover its workings themselves) through two airlock style doors before being guided through the darkness by a single shaft of light. Visitors then make their way up the spiral staircase discovering different elements of the clock as they ascend, although a torch or lantern will be vital as part of the archival conditions include near complete darkness in the clock chamber.

In a short introduction on the project's website Bezos explains that even visiting the clock will take serious commitment as the site is several hours' drive from the nearest airport and can only be reached by a steep footpath rising 2,000ft above the valley floor.



Its siting deep within a mountain is not accidental either. The constant temperature and low humidity will preserve the marine-grade 316 steel and titanium components of the clock to give it a lifespan of 10,000 years.

A chime generator and series of 10 chimes, tuned to the acoustics of the shaft in which they hang, will play a unique sequence each time they are activated, either automatically each day at noon or when activated by a visitor, although 2-3 visitors are needed to wind the capstan that moves the 4.5 metric ton counterweight. The chime generator will ensure that the same tune is never played twice and is capable of calculating 3.5 million random sequences.



The Chime Generator

Further up, an eight-foot dial displays the time, at least in the astronomical sense. While the time of day is not purpose of this clock, it can be determined deep within the clock's movement. This display only reveals the correct time when activated by a visitor to save power, although the movement runs continually thanks to the vast changes in temperature experienced on the mountain top above which is then transmitted to the clock below using vast metal rods, which essentially makes the Clock of the Long Now the world's biggest Atmos. Any excess power is used to wind the counterweights for the chime generator.



The regulating organ, a six-foot long titanium pendulum with titanium weight and ten-second period will be encased, along with the escapement, in 'quartz glass' to protect both from 'dust, air movements and critters'. The use of titanium for a pendulum and weight is interesting given its low density. It is almost certainly to reduce running power consumption.

Such low frequency and such an ambitious feat of engineering will inevitably see the clock deviate from the correct time. To compensate, the clock features an ingenious solar synchroniser, that is heated by the rays of light coming in from the mountain top above at noon each day and locking in true solar noon.



Even once visitors have explored the entire mechanism of the clock, 'anniversary' chambers will be excavated off of the central core marking one/10/100/1,000 and 10,000 year anniversaries. The One Year Chamber will contain an orrery that not only maps the planetary bodies of our solar system, but also each of the interplanetary probes launched during the 20th Century. The founders will only complete this and the 10 Year Chamber, leaving the decision regarding the contents of the final three rooms to future generations.



One of the many problems that the engineers working on the project have had to address is the incredibly slow movement of some the components, such as the clock's millennial dial which will move so slowly that change within a single lifetime might not be perceptible. To avoid metal components fusing together over long periods in contact such components will be machined from stone and ceramics, while all the bearings will be ceramic.



Completing such an epic project will almost certainly require many more of Bezos' millions as well as overcoming challenges that have probably not even revealed themselves yet. That said, the enterprise is incredibly exciting and the prospect of 'stumbling' upon that hidden entrance and exploring the beating clock by yourself like an archaeologist discovering some impossible artefact is thrilling. As soon as the clock is completed we'll be on a plane to Texas.

For further information visit the Long Now Foundation's site [here](#) or Jeff Bezos' own page on the project [here](#).



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