

Jonathon Keats: Centuries of the Bristlecone Collection CAE2215

Introduction/Abstract

Centuries of the Bristlecone is monumental calendar that is based upon growing girth of five Bristlecone trees sited on Mount Washington in eastern Nevada. The discrepancy between bristlecone time and Gregorian time will be visible at the Museum in Reno as a mismatch between where the calendar indicators point on the two faces of a dual pendulum clock.

Biographical Note: Jonathon Keats

Jonathon Keats is an American award-winning writer, conceptual artist, and experimental philosopher known for his large-scale thought experiments. He was born in New York City and studied philosophy at Amherst College. Keats is a research associate at the University of Arizona's College of Fine Arts, a fellow at the Berggruen Institute, a research fellow at the Highland Institute and the Long Now Foundation, principal philosopher at Earth Law Center, and an artist-in-residence at the SETI Institute and Biosphere 2.

Keats is also an art critic for San Francisco magazine, and writes about art for *Art in America*, *Art + Auction*, *ArtNews*, and *Artweek*. He is the Jargon Watch columnist for *Wired Magazine*, and author of a book of essays, "Virtual Words: Language on the Edge of Science and Technology", which Oxford University Press published in October 2010. Keats is a fiction writer as well, the author of two novels, *The Pathology of Lies*, published in English by Warner Books, and *Lighter Than Vanity*, published exclusively in Russian by Eksmo. The *Book of the Unknown*, a collection of fables loosely based on Talmudic legend, was published by Random House in February 2009. His most recent nonfiction books are *Forged: Why Fakes are the Great Art of our Age* (2013) and *You Belong to the Universe: Buckminster Fuller and the Future* (2016).

His conceptual art has been exhibited at museums and galleries worldwide and is the subject of "Thought Experiments", a monograph published by Hirmer Verlag. He now lives in San Francisco.

Scope and Content

Centuries of the Bristlecone is monumental calendar that will deviate from the regular progression of years with changes to the environment. At the core of the calendrical system will be the most long-lived of timekeepers: *Pinus longaeva*, commonly known as the bristlecone pine tree. Bristlecone pines have a lifespan that can exceed five thousand years, making the oldest more ancient than Greek civilization. They keep count of the years with annual ring growth, a natural calendar prized by dendroclimatologists because it's irregular. The thickness of each ring is a measure of environmental conditions in any given year. The growing girth of the tree thus clocks environmental time cumulatively. Sited on Mount Washington in eastern Nevada, Keats' living calendars will do so for the next five millennia, visibly tracking time as lived on our planet.

The general principle: Around each bristlecone pine will be arranged a double spiral of markers, indicating the girth the bristlecone can be expected to have in 500 years, 1,000 years and more, as extrapolated from the current average annual ring growth for Mount Washington bristlecones. Each marker will be incised with the appropriate year. The steady development of the tree – and concomitant increase of the tree's diameter – will turn over each successive marker with the completion of each consecutive time increment, thereby indicating the approximate date.

However, as climate change alters the living landscape, the calendar will fall out of step with Gregorian years. Through time, each bristlecone will bear witness to human industry. The meaning of the living calendar will change with the changes we bring to the environment.

Under the stewardship of the Long Now Foundation, Mount Washington will host five spirals around five trees of different ages at different altitudes. Voyagers to the mountain will visit each calendar in turn, discovering the date by reading the markers.

The five trees will be selected for their age and calibrated according to calculations of past ring growth. At the lowest elevation will be a 4,000-year-old tree. Ten stone cylinders will be arranged in a double spiral, making a full 360-degree circle around the trunk. The stones will be set in 100-year intervals. Given the exceedingly slow growth of these trees – which reach approximately 12 feet in diameter over 5,000 years – the stones will be set very close to each other.

The second tree will be 3,000 years old, with a spiral of ten stones set at 200-year intervals. (In other words, they will be spaced farther apart than those around the first tree.) The third tree will be 2,000 years old, with a spiral of ten stones set at 300-year intervals. The fourth tree will be 1,000 years old, with a spiral of ten stones set at 400-year intervals. The fifth tree will be a sapling, with a spiral of ten stones set at 500-year intervals. In each case, the stones will all be inlaid with the predicted year that tree growth will turn it over, and the outermost stone will also show a pictographic diagram of the calendar's double spiral.

Few people will ever venture up Mount Washington to see the bristlecone calendars in person. The challenge of getting to eastern Nevada and the difficulty of the trek will ensure that *Centuries of the Bristlecone* is experienced primarily by word of mouth, a living myth. However, there will be a dimension of the project directly accessible to everyone: A sixth bristlecone pine will be configured with an electronic dendrometer, an instrument that wraps around the tree trunk, precisely measuring diameter. Data from the dendrometer will be relayed by satellite, via the Long Now Foundation's Mount Washington weather station, to a computer that will calculate an exact date based on the tree's daily increase in girth. The computer will control a monumental mechanical calendar situated at the Nevada Museum of Art.

From 2015 through 2021 Keats and the Museum worked with designers and engineers to refine ideas about how the monumental calendar or clock might look. The first design drawings were done by Paolo Salvagione, an artist/engineer who had helped design the Long Now Foundation's 10,000-year clock in a West Texas mountain property owned by Jeff Bezos. Two science visualization specialists at NASA's Jet Propulsion Laboratory, Dan Goods and David Delgado, were brought in next to conceptualize how Keat's Centuries of the Bristlecone could be displayed in the context of the Museum's new expansion project being designed by architect Will Bruder. In 2021 Keats brought on board the well-known monumental clock designer Philip Abernethy and his colleague Brittany Cox to design the clock.

From the beginning of the project, Keats had insisted that the clock also be a public educational device, one that would be a source of wonder, a teaching aid around which STEAM (Science, Technology, Engineering, Art, Mathematics) curricula could be written for use by educators, and a spectacular design element celebrating the Museum's expansion and the work of the Center.

When done with the mechanical drawings, Abernethy, Cox, and Keats had designed an eighteen-foot-tall dual pendulum clock that could display the progress of the two chronologies and be adjusted annually for the rate of the Bristlecone growth averaged among multiple trees on Mt. Washington. Architect Will Bruder's expansion plans for the Museum included a new research library for the Center on the first floor. When he saw the

drawings, he immediately suggested installing the clock in a floor-to-ceiling glass vitrine just inside the front door of the library.

Materials include printed ephemera, presentations, technical drawings, objects, digital images, essays, posters, research reference materials, correspondence, budgets, and press materials.

This archive is currently in process.