Principled Uncertainty
The Art & Science of Jonathon Keats

By Julie Decker

Global considerations today have a scale to them that makes other eras seem bashful. Climate change, global pandemic, artificial general intelligence, ecological collapse, biotechnology risk, overpopulation, molecular nanotechnology, and the decolonization of Earth and multiplanetary colonization hint at the range of opportunities and challenges. It's a good time for futurists. Jonathon Keats' large-scale thought experiments about our collective society and its future have at last found their era. As a conceptual artist and self-described experimental philosopher, Keats examinations of deep time, economics, identity and nature are ripe.

Keats's projects involve the sciences not because he thinks the sciences are inherently more interesting, but because science pervades everything in the world today; it is our operating system and our underlying way of thinking. Keats sees our underlying ways of thinking as too invisible and too infrequently examined. To him, his projects aren't satirical. Rather, he's simply interested in questioning everything. Ideally, for Keats, each of his experiments leads to further experiments undertaken by others, like a positive feedback loop. The thought experiment becomes a methodology for kickstarting curiosity. Keats' projects are efforts to expose how we think about ourselves and the universe.

Keats' studies of time reconnect us most with Earth. While they may at first seem absurd and absurdly speculative, they offer meaningful consideration of the prospects for humanity.

At the age of six, Keats started selling rocks from a table he set up in his driveway. The price for each rock was different, and all around the table were other rocks on the ground, essentially identical. Keats said it's essentially the basic form of what he still does today – the absurdity of his hypotheticals is a mirror of the things society cares about and the things we care about Keats investigates. "The absurdity is essential to what I do," he said. "I see absurdity as incredibly productive. We enter into an absurd space in which nothing is as it seems, nothing is as we assume. Our assumptions are no longer reliable." So it is that Keats investigates the absurdity and the potential of time.

In 2005, Keats recalibrated time according to heartbeats, mathematically deriving a new length for the meter, liter, kilogram, and calorie and thus customizing the metric system for individual people. Keats points to pre-Classical Greece, when time was kept by cicadas' songs, the flowering of artichokes, the migration of cranes, and the human creation of ballads that recounted these annual events. Celestial authority was contingent; core to life and prosperity was a three-thousand-year-old calendar, with days arbitrarily added as stars fell out of sync with nature. As society gradually made calendars more regular, timing by the moon and the sun (and introducing leap year), we ended up with the 365.2425-day-long Gregorian year and atomic clocks.

Buckminster Fuller thought that nature produced perfect models, perfect geometry, perfect math, perfect coordinates, and perfect systems—the perfectly designed spaceship. For him, all of nature's models were beautiful and knowing the patterns could benefit humankind. Keats, like Fuller, has embarked on a series of both thought experiments and physical experiments. Keats' proposal to construct a 5,000-year calendrical index at a site 11,000 feet in remote eastern Nevada is a calendar of past and future. At the core of his calendrical system will be the Pinus longaeva, or the bristlecone pine tree.

Bristlecone pines have a lifespan that can exceed five thousand years, making the oldest more ancient than Greek civilization. The pines keep natural count of the years via annual ring growth. Natural time is not regimented. Pine time is irregular; the thickness of each ring measures and reflects the environmental conditions of each given year. The growing girth of the tree clocks environmental time cumulatively. Keats' living calendars sit atop the property owned by the Long Now organization on Mount Washington. His calendar will track time and environment for the next five millennia.

For Keats, standard time as measured by atomic clocks provides a technical basis for global transactions independent of the environment in which we live. Nature offers an alternative. Keats reminds us that time is something that we all share; a vernacular common to all of us. It is therefore potentially a very powerful means by which to literally and figuratively to recalibrate us. Keats' Alaska River Time project with the Anchorage Museum suggests that monitoring the natural flow of rivers and melt of glaciers makes us more attentive to ground conditions. Spanning deep time and changing with the seasons, they're a meaningful source of ecological wisdom – today and tomorrow.

Alaska River Time engages a network of glacial and spring rivers to regulate a new kind of clock, which speeds up and slows down with the waters. The clock can be used to recalibrate all aspects of life from work schedules to personal relationships. River Time is applicable locally and globally, a new standard of ground truth that will be increasingly relevant as we reinforce and reimagine our relationships with the natural world. River Time speculates, imagining watches and clocks, appointments and meetings, parking meters and speedometers, bus schedules and

factory time clocks, holidays and sporting events, finance and commodities all run on the flow of rivers rather than Gregorian time.

We've come to understand that people have been altering weather for millennia, not at the convenient scale of cloud seeding, but in terms of global climate change. Meteorological instruments still make the same basic measurements as they did in the 17th century, but the barometer and thermometer are no measuring only external phenomena independent of human action. Keats suggests that by measuring a world of our making, they are also taking our measure. Glaciers are unlikely to replace digital temperature gauges any time soon, but they are significant recorders of climate—a natural thermometer and barometer. Their sensitivity to changes make glaciers optimal observatories from the vantage of public perception. The political feedback mechanism needed to counteract global warming requires such a sensor, one that is capable of switching our collective behavior. If there is a thermostat of the Anthropocene, says Keats, it will be an Arctic glacier.

For humans, time has become abstract. Keats' proposal that the Gregorian calendar might only be useful for doctor's appointments and corporate management, raises questions of why it's more worthy of trust than nature – more worthy than rivers and glaciers, cicadas and flowering artichokes. Keats speaks of this ground truth as a transformative alternative to current time. Nature visibly tracks time as lived on our planet. For his bristlecone pine clock, a spiral of titanium markers will be arranged around the pines, 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 of the markers will be incised with the appropriate year. The steady development of the tree and the increase of the tree's diameter will envelop each successive marker with each time increment, thereby indicating the approximate date. Depending on what transpires in their vicinity, they may envelop markers out of order or trees may die prematurely. As climate change alters the living landscape, the calendar will fall out of step with Gregorian years and the meaning of the living calendar will change with the changes we bring to the environment. The natural calendars are contingent; limited by what we know about the future and the threats of humankind.

These natural time protocols will provide indication of seconds, minutes, hours, days, months and years, but according to the pulse of the rivers or the growth of a tree. These alternatives to the Gregorian date give people a choice of which to follow, a consideration of discrepancies. Each calendar will carry authority, however conflicted, aligning more closely with the stars of pre-Classical Greece.

Atomic time is a vernacular we have constructed. It leads us to act in in certain ways. But, as Keats suggests, when we start to recognize it as a vernacular, and build alternative systems and live them as well, we are no longer trapped in one vernacular or system. Instead, we have a plurality, as well as perspectives that invite acknowledgement of other species and other systems

such that we can reintegrate into them. Keats' clocks are a reminder that there are many ways in which we are at odds with nature, while still being a part of nature. Although there are many ways in which to bring people to recognize this, one of the most effective ways to do so is through something that we depend upon, that we use every day, which is his time itself. When we have another way to tell time, that is calibrated by a bristlecone pine tree for instance, or by a river, then we can more clearly see the decisions that we've made and make alternative decisions – and this, suggests Keats, becomes a pathway into reintegration in nature more broadly. When he introduced his deep-time pinhole cameras, Keats urged us to think about long-term exposure and a new kind of surveillance. He speaks of duration—imagining a series of photographs over one thousand years and a movie filmed over 10,000 years. Keats' cameras operate as a mental prosthesis for each of us individually. Keats reminds us that we evolved with the ability to affect our environment very locally both in place and in time but in the past hundred years, in the past twenty, in the past five, it's become as if we were a geological force, only at a vastly accelerated rate. We can change the world rapidly, with a mindset that does not in any way prepare us or allow us to think of the length of time that our decisions impact. Keats' clocks and cameras become a way for us to see ourselves from the far future, to reflect on the decisions that we make, and to coalesce around deep time.

We are undertaking an experiment as a society that we didn't intend. Keats engages this inadvertent experiment of changing climate through apparatus that might allow us to collect data, and with this data we might change the outcome of the experiment by changing our interaction with the deep causes of it—something very unscientific. Keats poses questions for all of us that can result in real change. We can affect the results of this experiment in the near and far future. Keats' experiments, at their different scales, provide data in the future, but allow us to observe ourselves in the here and now and to see how our behavior is currently affecting our long term. Keats is interfering with the system.

Rivers, bristlecone pine trees – these are sensitive systems. But the questions are not so much about natural systems – Keats questions are sociological. Calibrations for nature's clocks and calendars become a way to direct fluctuations into our lives. Not in some abstract realm being collected and analyzed by the few – but all of us engaged in the reality.

Many others are taking measurements of nature and change, but Keats asks us how we can create an aggerate observatory of our actions. He suggests the collective, the totality of these phenomenon and the actions we need to change that totality. Time is speeding up or slowing down because of our actions in the aggregate. Keats wants people to manipulate the experiment so that they can change the conclusions.