LILIANE LIJN

CONVERSATIONS BETWEEN LIGHT AND GRAVITY

Light salutes Gravity: Sunstar shines on Virgo

David Bohm, physicist (1917-1992) described matter as ‘frozen or condensed light and wrote that ‘Light, simply defined as anything traveling at the speed of light, contained all information.’

I am interested in Language and the language of light is Spectroscopy.

It is also the way in which we understand matter.

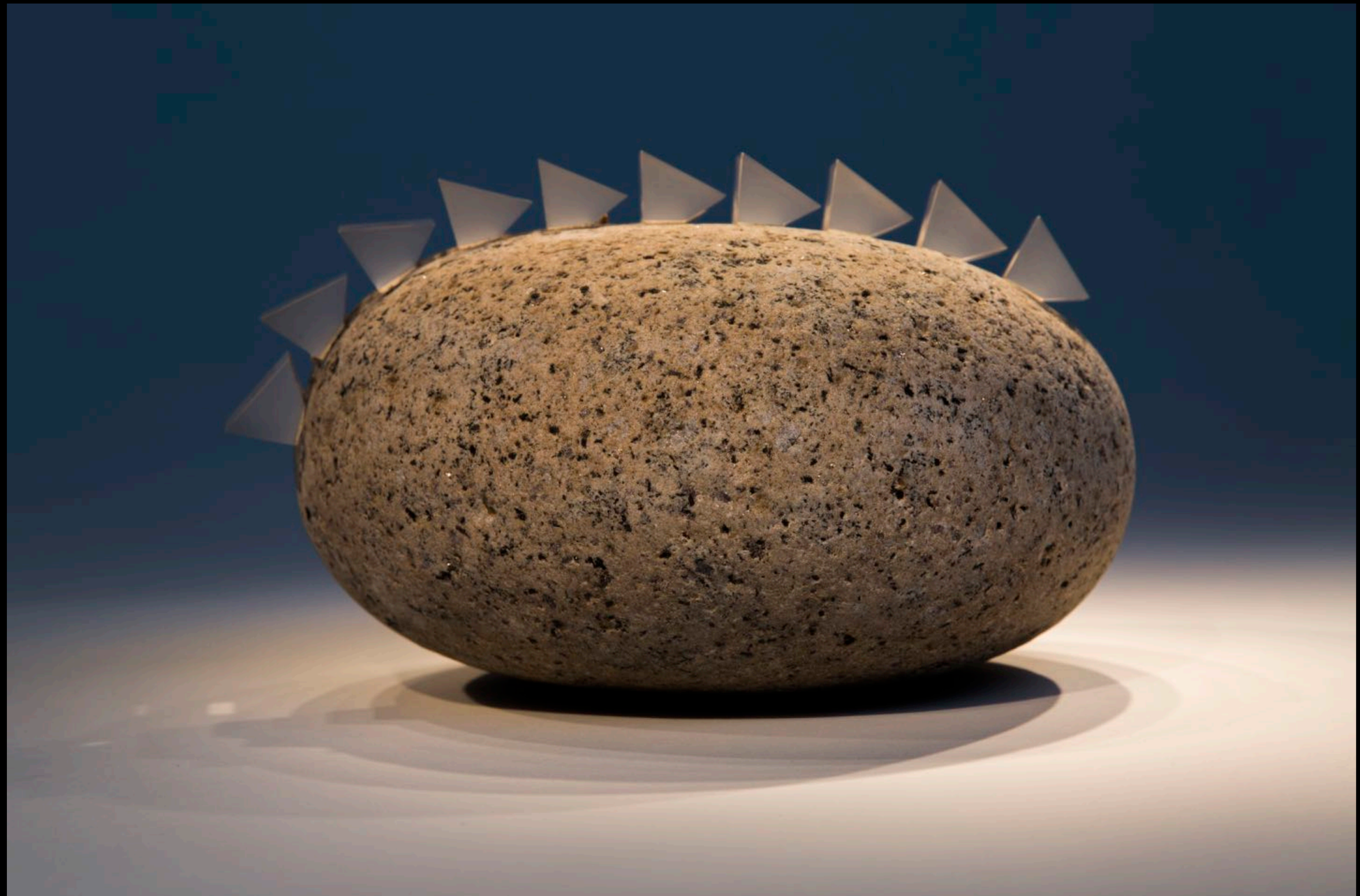
As an artist, I realised that reflected light enabled me to see the surface of the world but refracted light could allow me to understand what composed the world I saw around me.

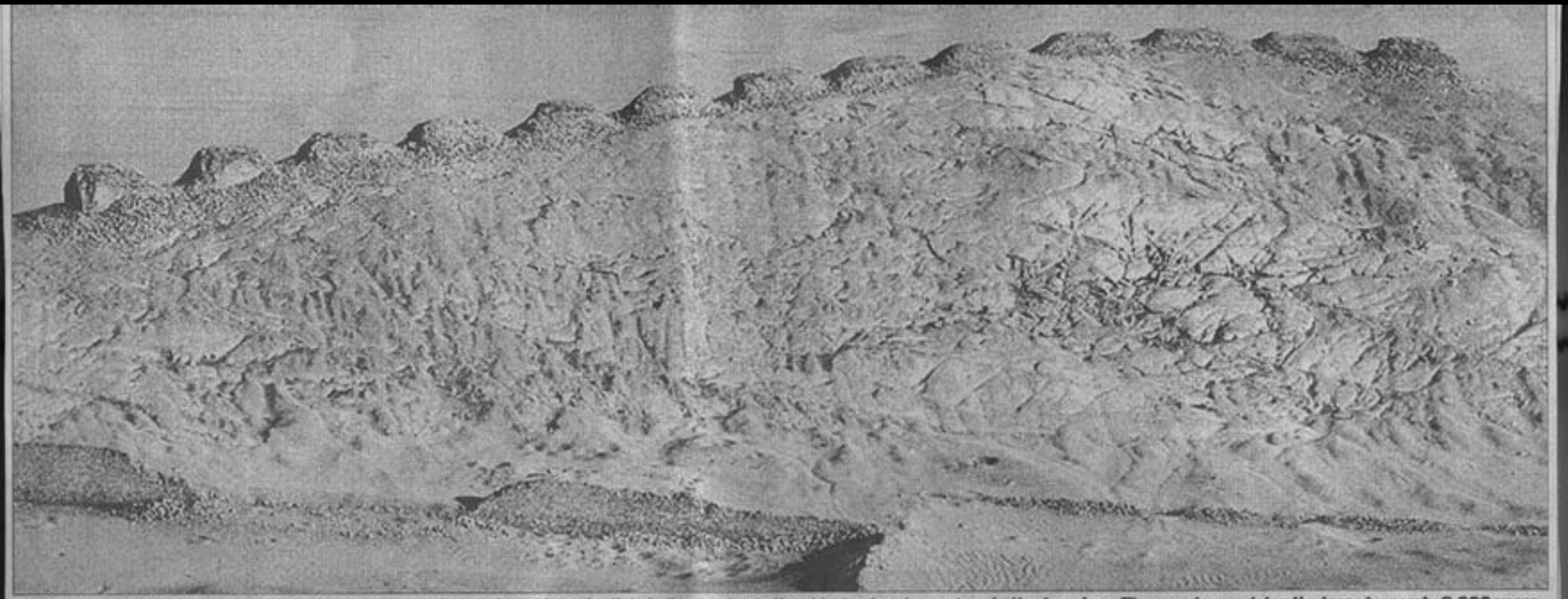
NO PIGMENTS WANTED.
COLOUR MUST BE THE RAY SPLIT.
(Echo-Lights1964)

A brief history of Sunstar

In 2005 Liliane Lijn was awarded Artist in Residence by ACE at Space Sciences Laboratory in partnership with Leonardo Network and NASA and presented her work with prisms and light in her first lecture.

Prism Stones from 1970’s are as models for Solar Hills and Sunstar





The 'toothed' hilltop in Peru created by the 13 Towers of Chankillo which scientists believe make up the oldest solar observatory in the Americas. The complex predates the Incas by nearly 2,000 years

Ancient observatory lights up history of solar worship

Daily Telegraph 2/03/07

By Roger Highfield

THE 13 Towers of Chankillo are part of a 2,300-year-old ceremonial complex in Peru that suggests sun worship dates back thousands of years earlier in that region than thought.

Solar calendars and sun cults were an important part of indigenous American culture, from the Hopi to the Inca sun temple in Cusco, Peru. Now the journal *Science* features a discovery at Chankillo, in the Casma Valley of Peru's coastal desert, pushing sun cults back nearly 2,000 years.

A line of structures known as the 13 towers runs north-south along the ridge of a low hill at Chankillo, a ceremonial centre dating back to the fourth century BC. From evident observation points on either side, the towers form a "toothed" horizon that spans the annual rising and setting arcs of the sun, indicating their use in solar observations.

"Chankillo is arguably the oldest solar calendar that can be identified as such with confidence within the Americas," said Ivan Ghezzi, of the Pontificia Universidad Catolica del Peru, who co-wrote the *Science* paper published today with Prof Clive Ruggles of the University of Leicester.

"I am used to being disappointed when visiting places people claim to be ancient astronomical observatories." said Prof Ruggles. "Since everything must point somewhere and there are a great many promising astronomical targets, the evidence – when you look at it objectively – turns out all too often to be completely unconvincing.

"Chankillo, on the other hand, provided a complete set of horizon markers – the 13 towers – and two unique and indisputable observation points.

"The fact that, as seen from these two points, the towers just span the solar rising and setting arcs provides the clearest possible indication that they were built specifically to facilitate sunrise and sunset observations throughout the seasonal year."

Excavation by Earthwatch volunteers of ancient buildings to the west of the towers revealed one corridor that was clearly an observation point for watching the sun rise over the toothed horizon. The end of the corridor was littered with offerings of pottery, shell, and stone artifacts indicating rituals associated with sun worship.

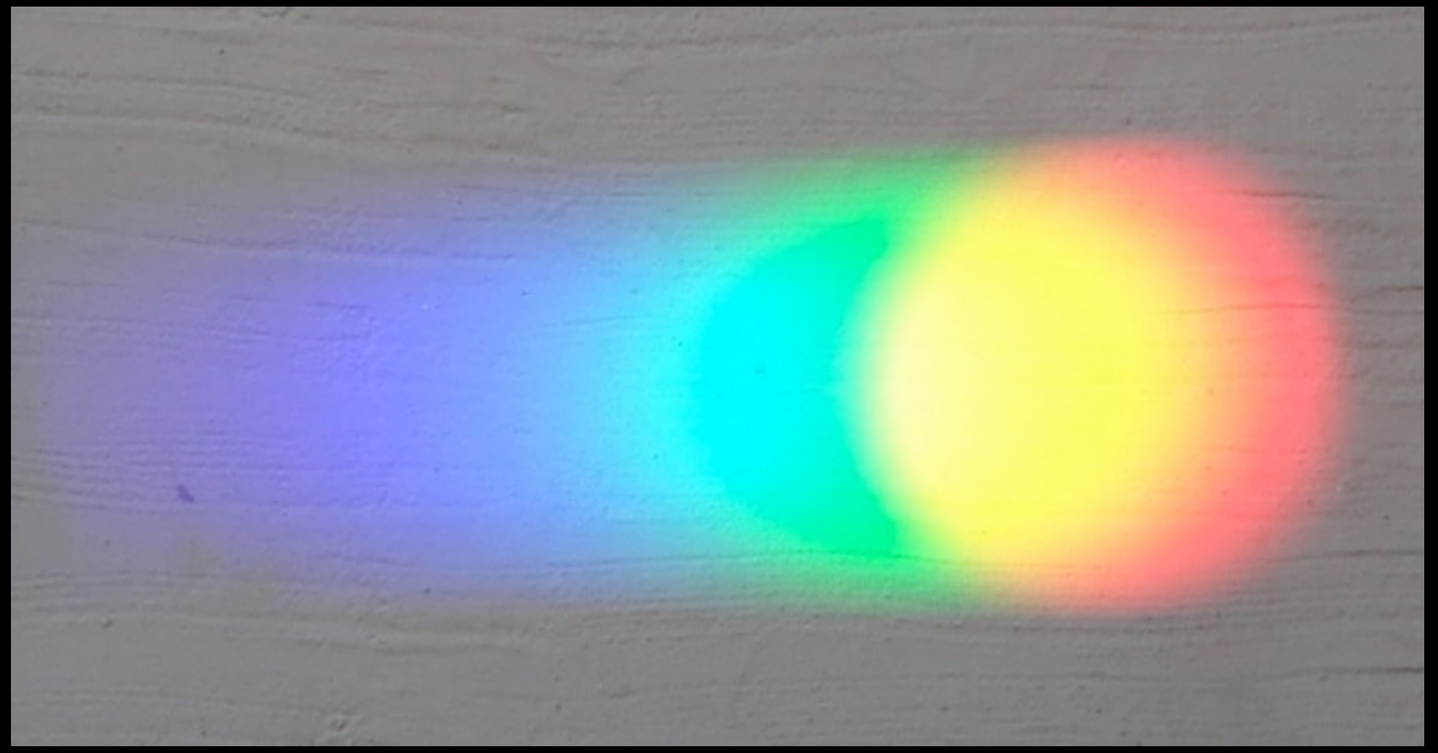
A building to the east is in the exact mirror position of the western observation point, and is lined up to view the sunsets over the 13 towers.

The gaps between the towers are wide enough for just one or two sunrises to be observed in each. The regularity of the gaps suggests that the year was divided into set intervals.

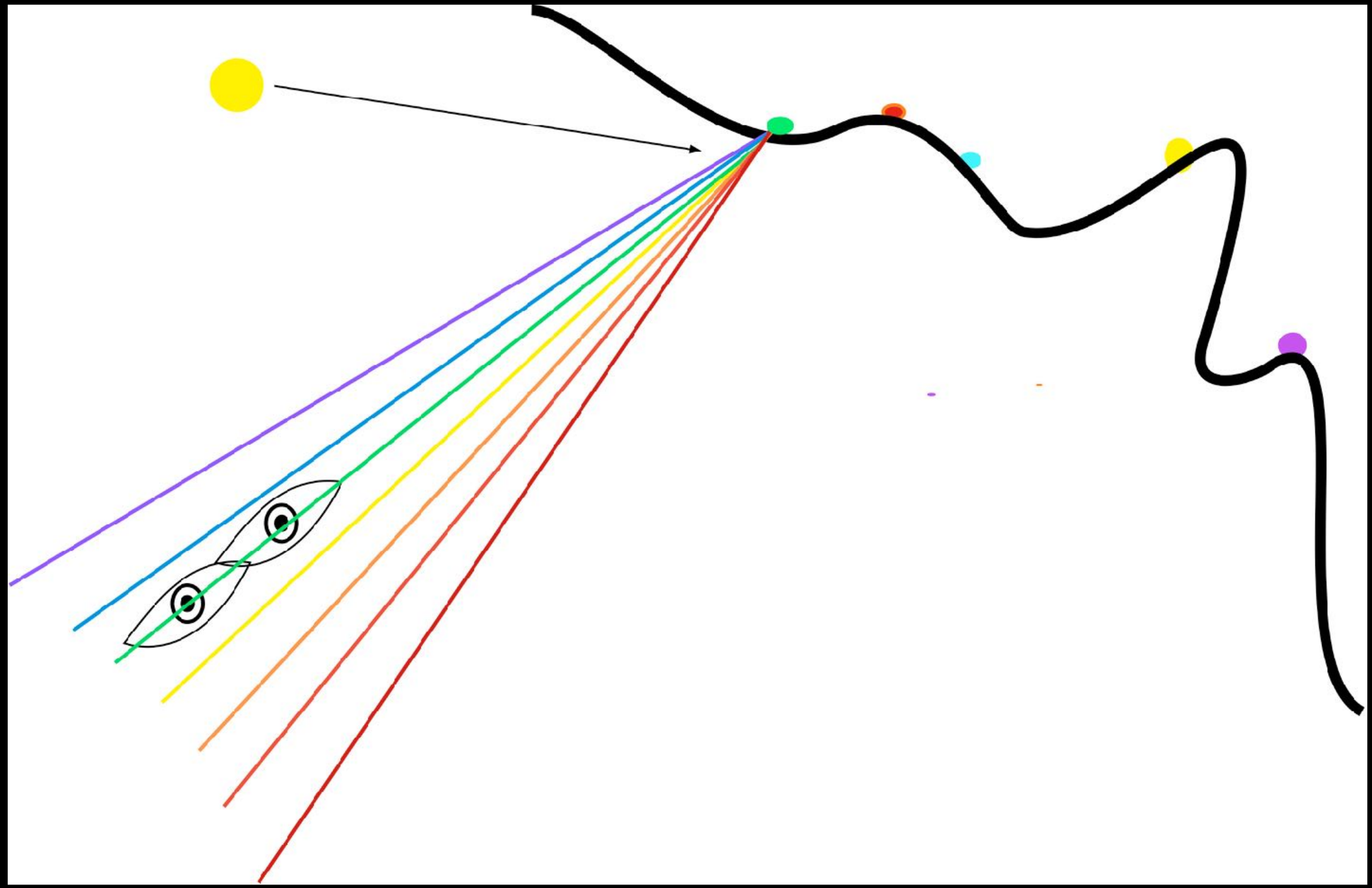
The team believes that observation points were "restricted to individuals with special status." This, along with warrior figurines found at the site, suggest the authority of a royal few. As with the Inca empire, two millennia later, sun worship and cosmology may have helped legitimise that authority.

According to the authors, monuments are statements about how a society is organised; about who has power, and who does not. The people who controlled these monuments "controlled" the movement of the sun. The authors suggest that this knowledge could have been translated into the powerful political statement, "See, I control the sun!"

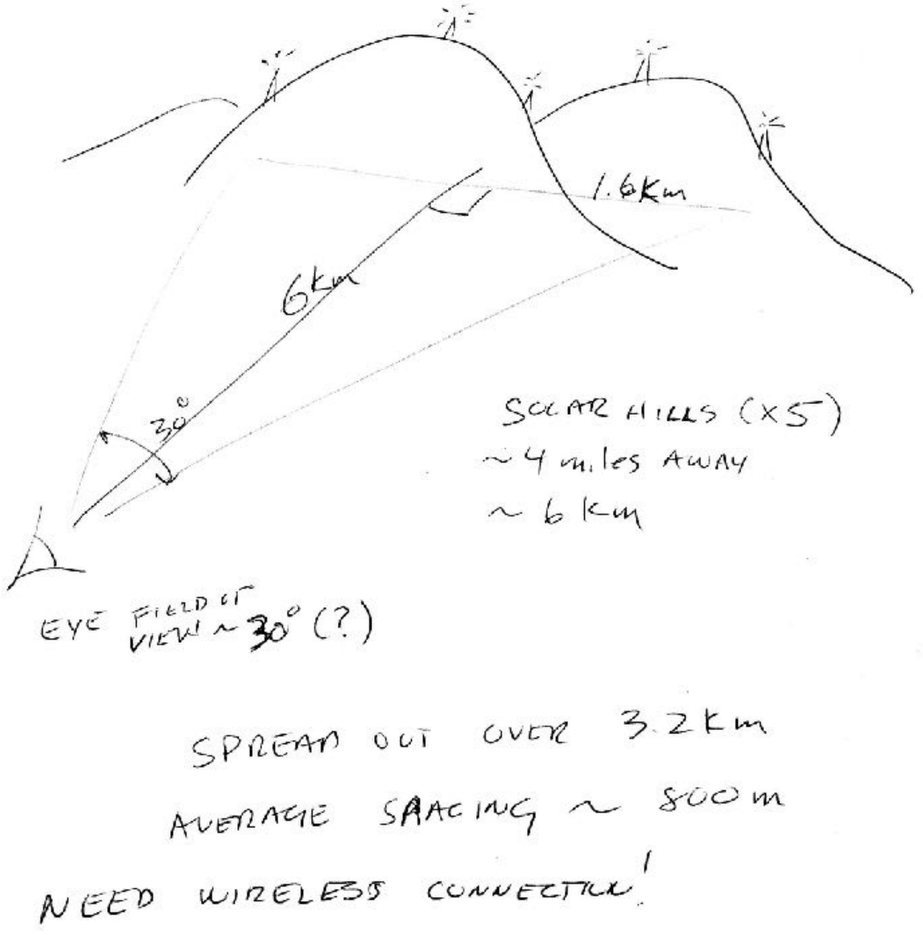
Earthwatch Institute supports scientific research by offering members of the public opportunities to work alongside field scientists.



A heliostat is a device that orients a mirror to keep the Sun’s reflection at a fixed location, even as the Sun’s apparent position moves across the sky. A spectro-heliostat uses prisms instead of mirrors and, therefore, projects fixed rainbows of light over large distances.



John’s sketch showing average 800m spacing between 5 Spectroheliostats spread across 2 hills seen from a position 6 km away.



Pat Jelinsky
software

Jason McPhate
mechanical design

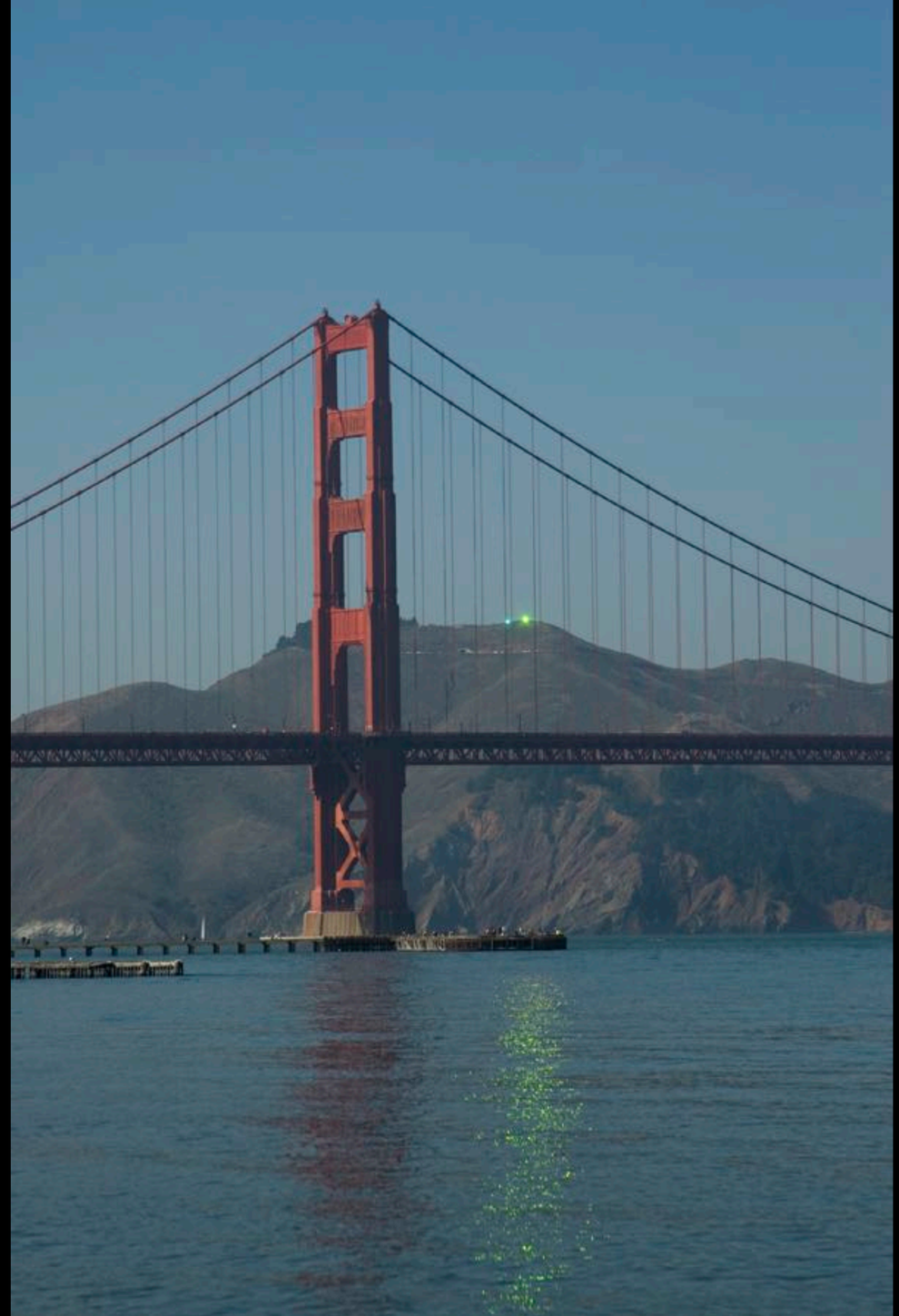
John Vallerga
optical design

Testing two Spectroheliostats
2008

In 2008, John and I with a small team of scientists tested 2 Spectroheliostats from Hawks Peak in Marin County across the Golden Gate to Crissey Field in San Francisco, a favourite weekend stroll.

Distance as crow flys: 2 miles 3.2 kilometres

Note the spectral colours reflecting off the water!!



2006

An important outcome of Lijn's residency at Space Sciences Laboratory is her collaboration with astrophysicist John Vallerga who suggests reflecting sunlight using computer controlled mount.

2007

Lijn is seed funded by Arts Council England and Gulbenkian Foundation to work with Vallerga on developing spectro-heliostats.

2011

Solar Hills selected by City of Marseille to project light from Mont Sainte Victoire in an Homage to Cezanne.

2012

Solar Beacon mounted on Golden Gate Bridge towers for 75th anniversary celebration, using mirrors.

2014

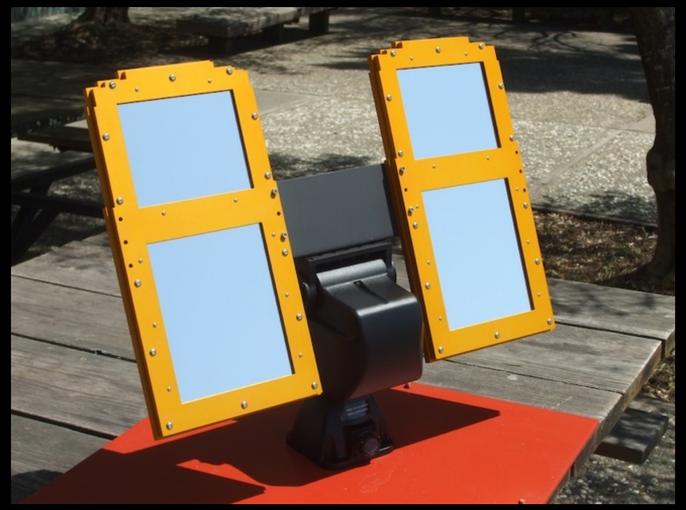
Sather Beacon (on UC Berkeley Campanile) up and still beaming.

2017

Mounted on Mt Wilson 150' Solar Tower

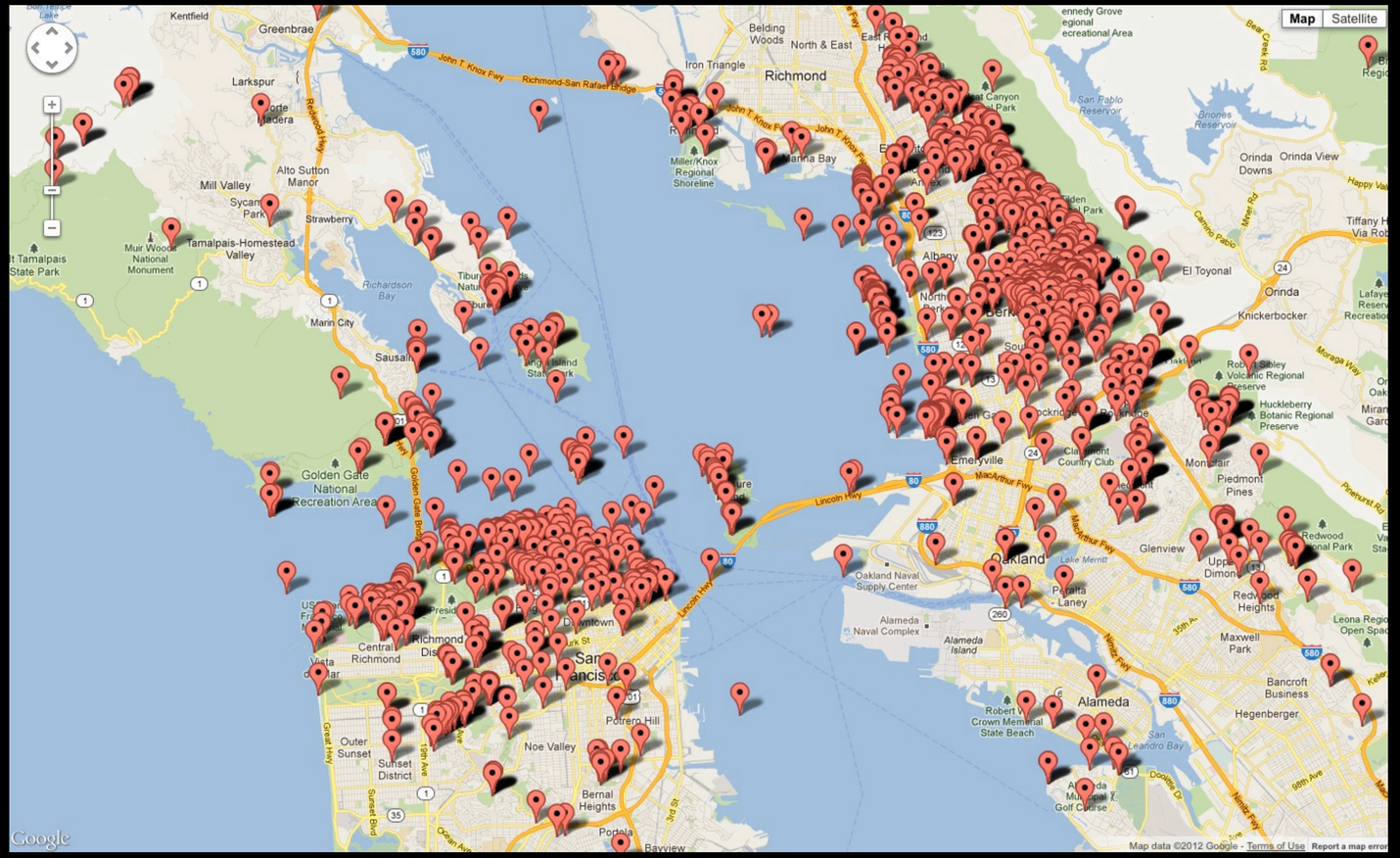
Installation of Solar Hills as imagined on Mont St Victoire

Solar Beacon on GG Bridge and Sather uses mirrors and projects white light.



www.solarbeacon.org

Example – Solar Beacon GG Bridge Appointments



Sather Beacon at University of California, Berkeley

Sunstar mounted on the 150’ Hale solar tower on Mt Wilson

Sunstar seen from Pasadena

As the Indian *mahasiddha* and Dzogchen master
Padampa Sangye proclaimed,
“ pure awareness is without fixation,
like a rainbow in the sky."

An image from the Lukhang murals in Lhasa

We know that our sun is a star but it is only when witnessing a solar eclipse that we become aware of that seemingly everyday fact.

Why?

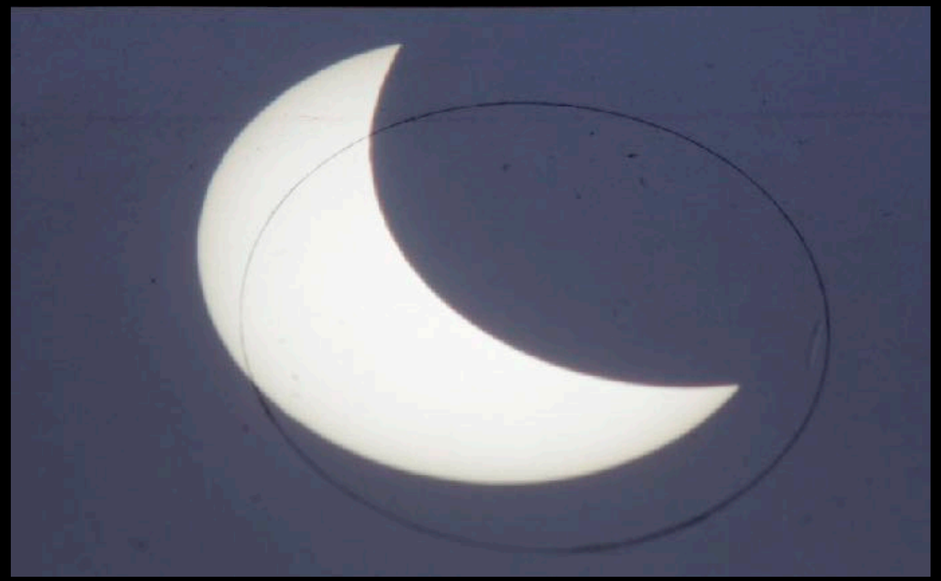
Because during a totality we are able to look directly at the sun.
Only for that very short space of time.

The August 21, 2017 totality lasted a maximum of 2 minutes 43 seconds.

The longest total solar eclipse from 4000 BCE to 8000 CE, a span of 12,000 years, will occur on July 16, 2186 and will last 7 minutes 29 seconds.

Because we watch the slow progress of the shadow of the moon slipping over and obscuring the sun. Appearing to take bites out of it, to devour it.

It is this awareness of the sun as a star that I feel is important.



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The installation is called Spinning Dolls.

It is difficult to translate this title into Italian because, spinning in English has a double meaning that it does not have in Italian, namely, spinning as in yarn (referring to the main role of the Museum di Canapa) and rotating in space.

The two presented forms create a many layered metaphor of the feminine archetype.

Conical, skirt-like, dancing dizzily, they evoke the multiple meanings of creation, from the making of cloth through spinning and weaving to the Moirae or Fates, the Greek Goddesses, who spin out human destiny, to the cosmic gyration of atomic particles, planets and entire galaxies. Spinning, these textile discs rise due to centrifugal forces, suggesting with their spiral arms the forms taken by galaxies.

This installation has been created in collaboration with Giovanna Amoroso and Istvan Zimmermann, Plastikart Studio, Cesena and commissioned by Glenda Giampauli Direttrice, Museo della Canapa with the Comune Sant'Anatolia di Narco. This commission has been supported by the Region of Umbria.