

Then Try This • Algorithmic Pattern Salon

Proportions of a luminous cosmos

Sandra De Berduccy

Then Try This

URL: <https://alpaca.pubpub.org/pub/l2r0dcro>

License: [Creative Commons Attribution-ShareAlike 4.0 International License \(CC-BY-SA 4.0\)](https://creativecommons.org/licenses/by-sa/4.0/)

ABSTRACT

This text explores how the master weavers of the Andean tradition maintained a constant search to understand the universe. Identifies a cosmological model whose centre would be the observer/weaver. This proportional model, found in pre-Inca pieces of textiles and metallurgy, remains as patterns present in contemporary textiles.

Proportions of a luminous cosmos

Andean istallas: interfaces to observe the universe

aruma | Sandra De Berduccy

In Andean lands, still exist textiles such as the Quechua *istallas*, which record the movement of the sun from the point of view of the weaver. These fabrics allow complex cosmic movements to be identified from a central point, that unfolds to align with the points that mark the solstices and equinoxes, turning the Andean textile patterns into the abstraction of a cosmological model, an interface to understand and order a concrete space-time.

In this text, it is proposed a scheme that would reveal a system of proportions through which a model encoded in textile patterns and its proportional growth can be visualized as the basis of the organization of the Andean territory. It is also proposed to contribute, from art-based research and textile studies, to the understanding of a system of patterns and proportions related to the observation of the solar cycle. This scheme was initially proposed by Emerita Bucher (2023) based on a group of feather cloaks studied that has key characteristics for a reading, with an astronomical perspective, the patterns and proportions of contemporary Andean fabrics.

This knowledge embodied in textiles would not expire, because in textile pieces such as the Quechua *istallas* we can still observe the movement of the cosmos, silently following the patterns of the pre-Inca cloaks. In these textile pieces, the relationship of fabrics with the deep knowledge of the universe, mathematics and ecosystems that the Andean textile culture possesses is explicit; it is in fabric patterns where this textile-technological memory is maintained and stored.

Used by the ancient Andean people this cosmological model is based on the observation of the movements of the earth in relation to the sun, taking as reference the points where the sun and the horizon line mark the solstices and equinoxes. Locating these points in the Andean space was decisive for agricultural production, camelid breeding and an entire system of resource optimization through exchange between ecological floors. The knowledge and location of these points on the horizon would also determine the observation of the night sky, thus defining reference points, “the pillars” for more complex astronomical observations.

A cosmological model

According to Emerita Bucher (2023), certain fabrics of pre-Inca cultures were particularly elaborated for the purposes of recording and observing solar, lunar, stellar and planetary cycles. These would be key pieces to understand a pattern presented by pre-Inca textiles related to the observation of solar cycles. The author observes in these textiles a correspondence with the symbols identified in the Blas Valera document *Exsul Immeritus* (1618), where the sun is related to a “golden plate” in a rectangular shape. By measuring the height and width of these pieces, this author identified a rectangular pattern, determined by the 23.5° inclination angle of planet Earth. (Fig. 1) where each angle of the rectangle coincides with the equinoctial and solstitial points. (Bucher, 2023, p. 43).

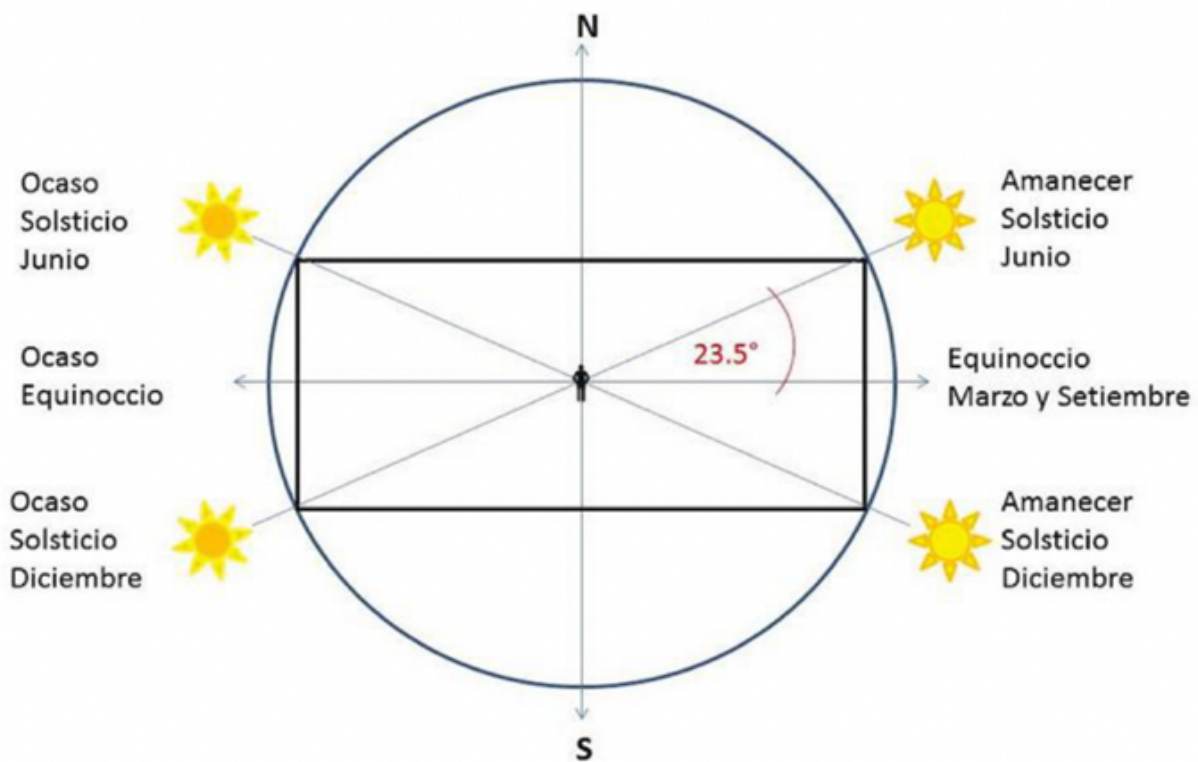


Figure 1

Scheme made by Emerita Bucher, 2023, p. 45

Bucher starts from a central observation point and from that axis the points of solstices and equinoxes on the horizon are identified. The first reference point is the place where the sun rises during the spring (September 21) and autumn (March 21) equinox since on these two dates the sun rises in exactly the same place. This point will be the midpoint and draw a line to the point where the sun sets.

“The north-south line marks the culmination of the sun in the mid-days and divides the day into morning and afternoon. Then the “rectangular Sun” arises from drawing a circle with the cardinal lines and then measuring 23.5° from the center of the equinoctial line; The four points are joined with four straight lines, in order to

obtain the rectangle” (Bucher, 2023 p.45). This rectangle would define a rectangular proportional system based on the earth-sun cycle and the corners of certain fabrics would coincide with the sunrises and sunsets of solstices and equinoxes. Unfolding from these, an entire complex system of proportions, which has key characteristics for a reading, with an astronomical perspective, of the patterns and proportions present in Andean fabrics for thousands of years.

Proportional system of a luminous cosmos

Emerita Bucher (2023) identified a group of feather art pieces that combine two colours of feathers alternating symmetrically in four rectangular spaces (Fig 2). Made with Blue Macaw (*Ara ararauna*) feathers on plain cotton fabric, the particularity of these pieces is that they are part of a group of 96 similar feathers pieces found rolled and folded inside large ceramic jars, buried at the Corral Redondo site, Ocoña Valley, Arequipa, southern coast of Peru, dated between 800 AD. to 1300 AD.



Figure 2

Nasca – Huari cloak. Cotton with feather applications. 80 x 219 cm. Sala 5, Vitrina 60

Considered banners by their conservators at the Larco Museum in Lima, their use was intended to “cover walls of temples or ceremonial spaces.” Going beyond a decorative function, this author identified the rectangular pattern, determined by the 23.5° inclination angle of the planet Earth. Measuring the height (80cm) and width (219 cm) of these pieces, the same length and width ratios as those of the Nasca-Huari feather cloaks (Bucher, 2023 p.45).

To test the correspondence of these proportions with the feather cloaks, I superimposed the scheme proposed by Bucher, observing that the proportions indeed coincide. It can be inferred that, if we placed these fabrics on the top of the central pyramid of the Andean “temples or ceremonial spaces” where these cloaks were found, the corners of the fabrics would coincide with the sunrises and sunsets of solstices and equinoxes.

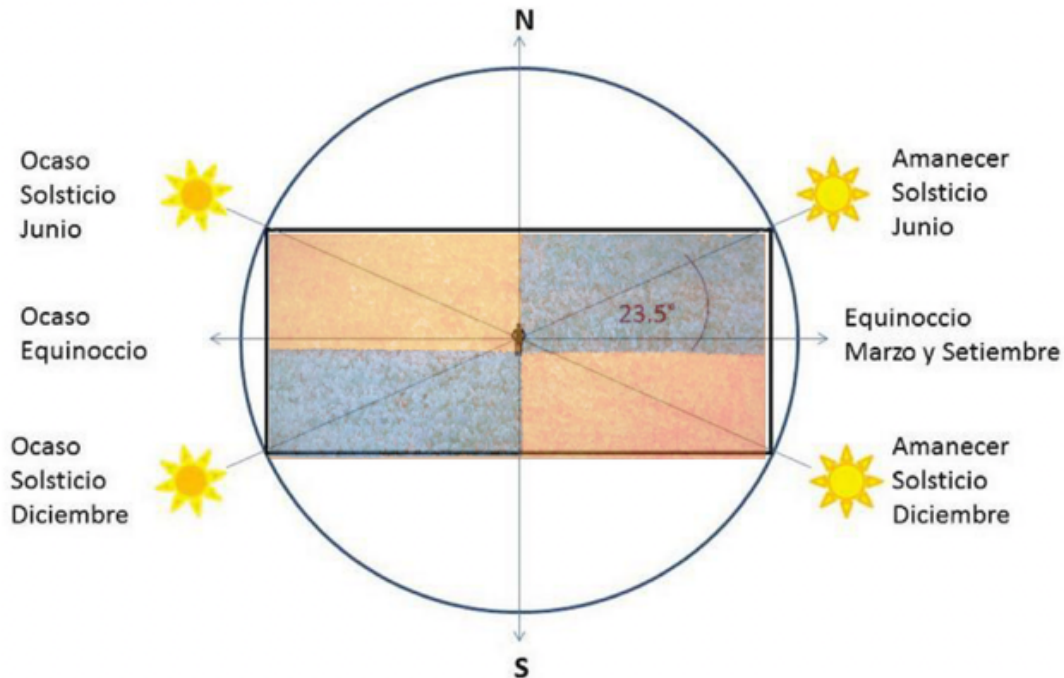


Figure 3

Emerita Bucher's scheme, 2023, p. 44. (Fig. 1) with superimposition of feather cloak (Fig. 2)

The author maintains that the knowledge captured in textiles never expires, since we can still confer events such as solstices and equinoxes or remember events such as the planetary alignment that occurred at the equinox of 898, an event widely celebrated and remembered in textiles and stone carvings of the Tiwanaku culture (Bucher, 2023) that are still preserved in Bolivia. These observations by Emerita Bucher also coincide with the schemes made in the distribution of several archaeological sites throughout the Andean zone, and also coincide with the Mayan observatory of Uaxactún in El Petén, Guatemala, the oldest Mayan observatory of which there is reference.

A knowledge that does not expire

Was this proportional system maintained in ethnographic and contemporary textiles?

To answer this question, I selected a piece from my collection: a Quechua *istalla* (Fig.4) that was bought at the peasant market of Sucre - Bolivia in 2012, its proportions not only coincided with Emerita Bucher's scheme, but (to my excitement) also presents many similarities with the Nasca – Huari feather cloaks (Fig. 2).



Figure 4
Contemporary Quechua *istalla* from North Potosí, Bolivia (2012)

This contemporary Quechua *istalla* is made with synthetic materials, the plain fabric is a cloth woven on an industrial loom and the decorations that surround the entire perimeter of the fabric are made with a sewing machine, with motifs that recall Republican iconography, with thread and acrylic threads. If the image of the feather cloak (Fig. 6) is superimposed on its image, in addition to observing the same proportions, it becomes evident that it presents the same composition of bilateral symmetry towards the ends, which in turn unfold, also symmetrically, towards the extremes in a generative gesture of unity, duality and quadripartition, very common in Andean fabrics.

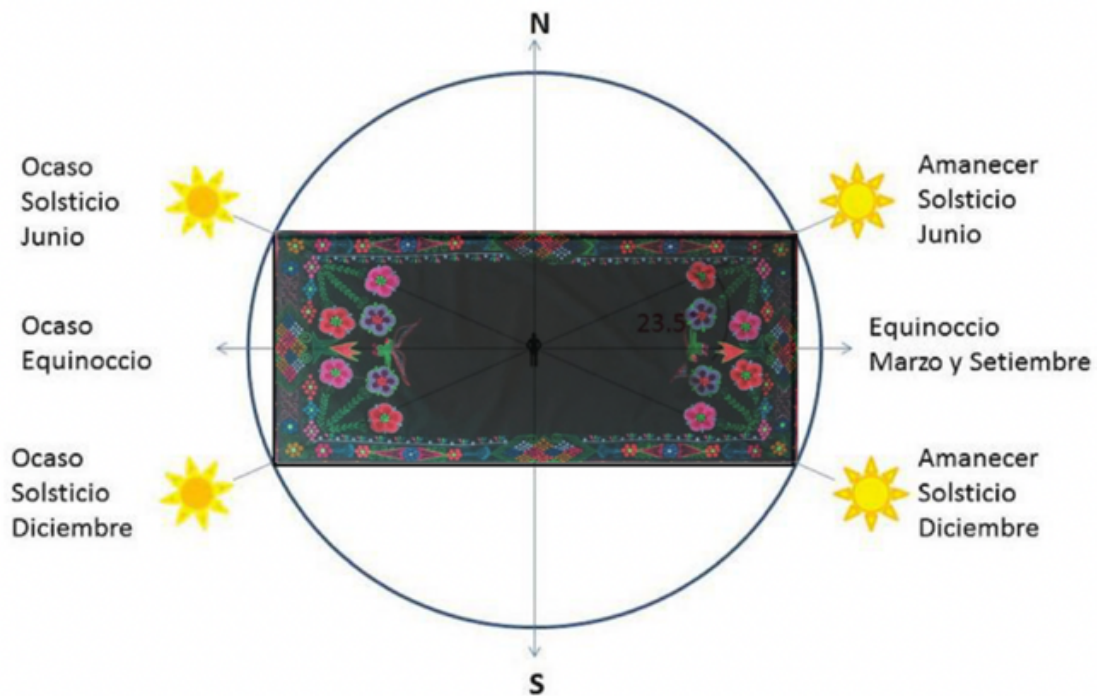


Figure 5

Quechua *istalla*, (Fig 4) superimposed on Emerita Bucher's scheme (Fig. 1)

The only element that does not follow the symmetry that divides the fabric into four are two parrots (*Ara ararauna*?) that fly in apparently opposite directions. According to Emerita Bucher, the direction of the characters in the Andean textiles are spatio-temporal keys for their reading (2023, p.37). As in Egyptian hieroglyphs, the direction in which the represented beings look marks the direction in which the signs must be read. Following these conventions, these birds would mark the direction of movement towards the west, it is a circular movement from right to left with the center as the axis.

The movement of the sun from east to west? Remembering the weavers of the Q'ero community, who describe the movement of the sun from the point of view of the one who weaves and uses the textile garment “*Inti Lluqsimuchkan*, the Sun rises and radiates from me” followed by “*Inti Chinkapuchkan*, the sun It hides from me”, this Quechua *istalla* would mark the passage of the sun from the gaze of the person who wears it, a conception of space-time that can be incorporated.

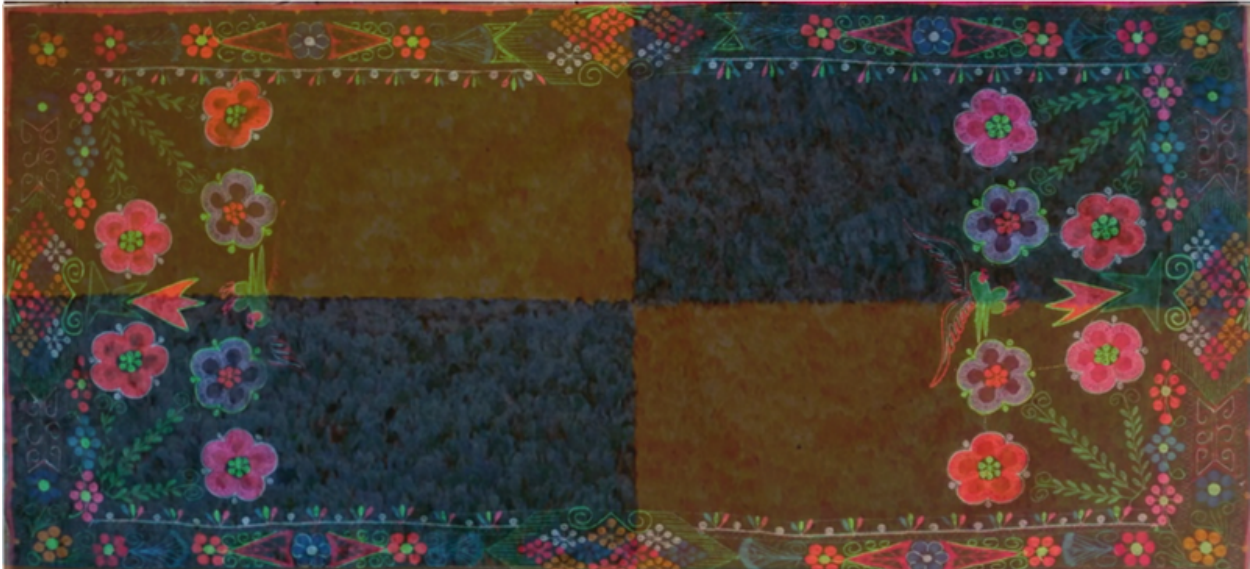


Figure 6

Superposition of Nasca-Huari feather cloak (Fig. 2) with the contemporary Quechua *Istalla* (Fig. 4).

Another element that draws attention is the contrast in both pieces; in the pre-Hispanic feather cloak there is the contrast of the four spaces marked by the difference in color of the feathers. And in the *Istalla*, the colorful decoration is distributed at the ends of the piece, leaving the central part completely absent of information, dark, reminding us that *naya* the first person singular in Aymara, “I” in English, suggests the concept of nothingness or emptiness.

Denise Arnold mentions that the contemporary *istallas* of the Qaqachaqa region, Norte Potosí, Bolivia, have the power to “speak everything” and “through their speech, to instruct the incoming *ayllu* authorities each year about their duties to guarantee the community rights to land” (2016 p. 68). Without a doubt, these tissues continue to provide us with information about temporal cyclical relationships in specific spaces.

Strategies for the permanence of these cultural patterns

In conclusion, I will briefly identify three trends that may have enabled the permanence of these patterns and proportions to this day: permanence, the adoption of new aesthetics and the appropriation of materials.

The first trend is “the permanence” of certain aspects of memory, superimposed on technical features that are linked to the existence of a symbolic substrate that foreign cultures such as Europe were very far from imagining. The specific features of Andean textiles have been highlighted, but no colonial prohibition took into account that the conservation of certain technical elements “could have their own ideological weight and thus play a subversive role.” (Desrosiers, 1997, p. 333).

The second, the adoption of new aesthetics, such as that of the Manila shawl, which would later become an identifying symbol of urban Aymara culture in Bolivia, could have allowed colonized peoples to preserve and express their own cultural principles and forms to see the world as non-negotiable, changing the situations imposed by hybrid practices and thus giving continuity when recreating material objects. As the anthropologist Denise Arnold sustains

Hybrid practices can promote transformations of pre-existing identities and at the same time can initiate a search among practitioners, in their innovations that produce new material objects, for similarities with their own experiences and material repertoires, rather than differences, as a basis on which to restore continuities. (Arnold, 2023, p. 176)

Thus, hybrid spaces become generative spaces, where the active materialization of cultural continuity, identification and subjectivity is engendered, in this case through textiles, cultural elements that support and will support new identities as long as an attitude remains. This would also indicate that “indigenous populations are not passive victims of colonial and postcolonial events” (Voss, 2015, p. 656).

The third trend is the “appropriation” of materials and technologies, an evident situation of experimentation, where the novelty of foreign technology is recognized at the same time as experimenting with the limits of both technologies. In that creative-generative moment, a spectrum of reasonable possibilities will appear before these limits, as spaces of mediation between elements that are at first sight opposite. It is suggested that they are intermediate spaces for negotiation and experimentation. The fact is that Andean weavers like to experiment.

SOLAR

Solar (2023) is a work of my authorship exhibited for the first time in September 2023 at the Museum of Pre-Hispanic and Indigenous Art MAPI in Montevideo, Uruguay. (Fig.7). Like the use of LED lights in the festive attire of contemporary carnival and Aymaran Gran Poder festivity, it includes the three “continuity trends” mentioned above. It is a piece that maintains the rectangular pattern, woven with optical fibre on a traditional loom and complemented with a detailed macramé craftwork characteristic of the Aymaran shawls currently worn in Bolivia.

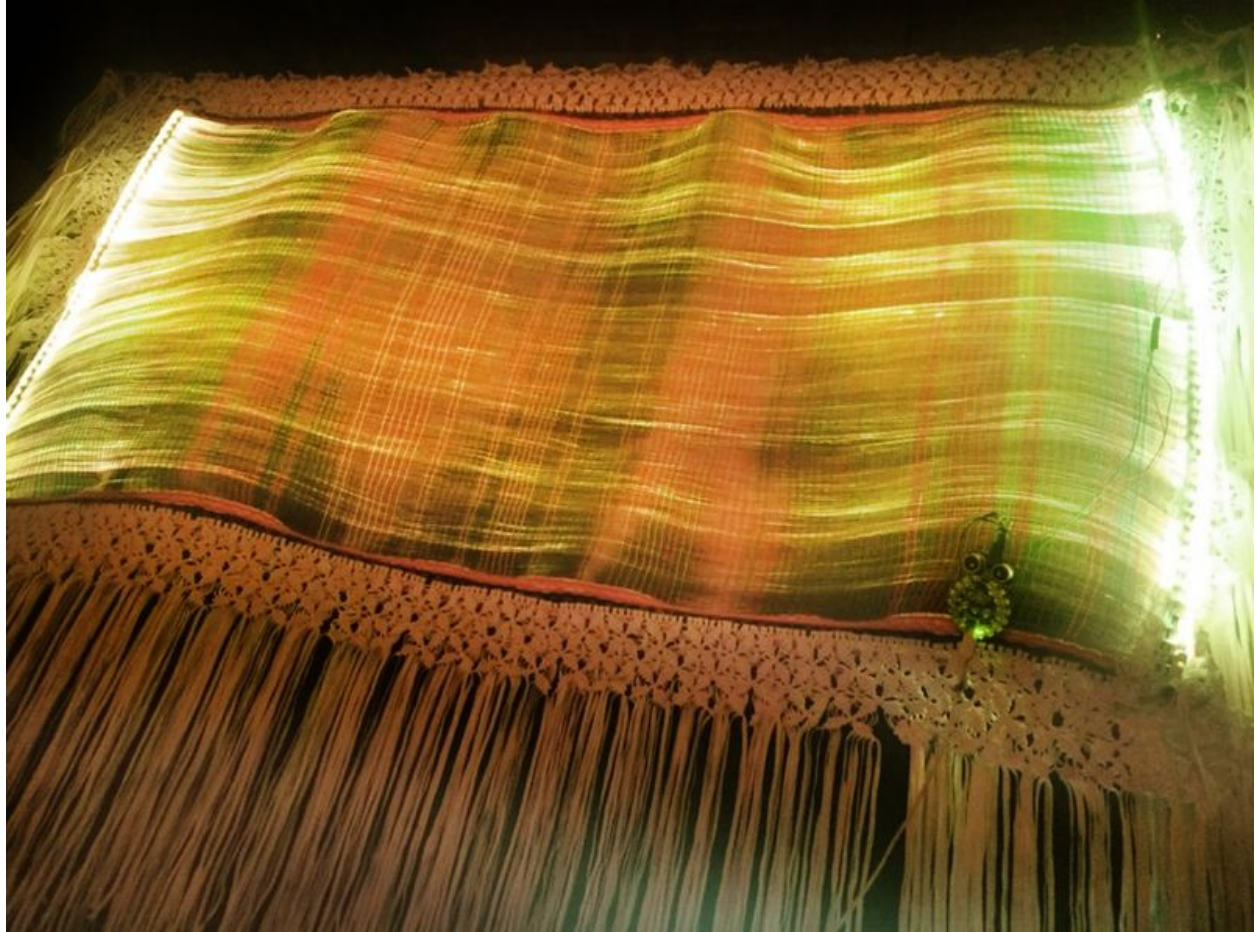


Figure 7
SOLAR. aruma | Sandra De Berduccy, 2023

The optical fibre is connected to digital LEDs activated by an ultrasonic sensor and controlled by a microcontroller arranged in the shape of a *Tupu*. When the observer approaches the range of the sensor, the emitted light is directed towards the west, in a circular movement from right to left, with the centre (empty) as the axis.

Following the ancient conventions, the light, as the birds flight, marks the direction of movement towards the west, a circular movement from right to left. Remembering the sun from the point of view of the one who weaves and uses the textile garment “*Inti Lluqsimuchkan*, the Sun rises and radiates from me” followed by “*Inti Chinkapuchkan*, the sun It hides from me”, this work would mark the passage of the sun.

References

Arnold, D. (2016). *El textil y la documentación del tributo en los Andes: los significados del tejido en contextos tributarios*. Ediciones ILCA

(2023). Técnicas Andinas de tornasol como memoria cultural: prácticas coloniales de tejer textiles iridiscentes y sus precedentes regionales. En: Ocho entrelazados entre los tejidos andinos y el mundo.

Bucher, E. (2023) la astronomía en el arte textil andino – Diseños y modelos de los ciclos astronómicos en las culturas preincas.

Desrosiers, S. (1997). Lógicas textiles y lógicas culturales en los Andes. In Bouysse Cassagne, T. (Ed.), *Saberes y memorias en los Andes: In memoriam Thierry Saignes*.

Museo Larco. Official website

<https://www.museolarco.org/exposicion/exposicion-permanente/exposicion-en-linea/tejidos-del-antiguo-peru/plumario-nasca-huari/>

Voss, B. L. (2015). *What's New? Rethinking Ethnogenesis in the Archaeology of Colonialism*.