Years ago an older man from Arizona well-versed in indigenous astronomies went with me to Kūkaniloko. He asked me, “there are seven directions – what are they?”

For about 12 years I’ve been researching precontact astronomy represented at Kūkaniloko, the site known as the piko of O’ahu – the navel, the center of the island. It is also one of only two royal birthing sites in Ka Pae ʻĀina, the Hawaiian archipelago. The piko-ness of Kūkaniloko has been very much at the core of my research data. And that data showed that precontact astronomy at Kūkaniloko was about much more than sun stations, star rises and sets, calendrics, and navigation. The data showed that bigger ideas, things like the
structure of space and time – ʻwā and ʻkā – and matters of gender relations, the importance of ʻao and ʻpō, and other philosophical or metaphysical ideas were embedded in Kūkaniloko’s astronomy.

The Pukui and Elbert dictionary’s definition-translation of *piko* includes navel, umbilical cord, figuratively blood relative, genitals; the summit of a hill or mountain; crest; crown of the head; tip of the ear; end of a rope; border of a land; center, as of a *kōnane* board; place where a stem is attached to a leaf; bottom round of a carrying net; thatch above a door.

So – What is a center? This list summarizes definitions from a variety of dictionaries:

- A center is a midpoint.
- It is an axis around which something revolves or rotates.
- It is the source of an influence, an action, a force.
- It is a place, person, or thing that is the most important for an activity or condition.
- It is the source from which something originates.
- It is the core of a thing.
- It is a point of mediation between opposites.

Thus the center mediates between/among things – between male and female, between stars, between sun and stars, between ʻao and ʻpō, between earth and sky.

Kūkaniloko is at the center of the island of O’ahu. The center does not need balance: the center is the point at which balance occurs. But for the center to be a center there have to be at least two things to be at the center of. In the case of Kūkaniloko’s astronomy that is both simple and complex. It is simple because the sun and every star has a rise in the east and a set in the west. It is complex because when more than one star or more than one sun station is included, relationships
between/among the stars and the sun stations are created, and these relationships must also be referenced by the center.

The graphic below shows how the solstices and equinoxes are balanced – centered – at Kūkaniloko.

Figure 1. Solstices and Equinoxes Centered at Kūkaniloko
The next graphic shows how star rises and sets are centered at Kūkaniloko.

![Figure 2. Centering Star Rises and Sets at Kūkaniloko](image)

Any place can be understood as centered by star and sun rises and sets. What makes Kūkaniloko unique is that the landscape markers for the sun and stars at sunrise and sunset are named for those celestial events as though they were visible from Kūkaniloko. In that way not only are the stars centered at Kūkaniloko, but so, too, is the geography of the island, and thus the island itself.

Why was it and is it that a particular place functions as a piko, as a navel and center? There are several reasons. One is the importance of a cultural and political nexus, a center of cultural and political importance from which information, such as periods for recognition of cultural importance, such as the birth of high-ranking infants or periods of certain observances is disseminated. Kūkaniloko was a center for these things. But it was also a knowledge center, an educational center, and a spiritual center for O’ahu. These three things are really one
thing – knowledge, education, and spirit are interdependent and interrelated.

A center is, of course, at the middle. A middle can be between two objects, or two moments in time, or two places.

**Wālua - Wā-lua**

two (lua) time/place (wā)

Figure 3. Wālua

The Pukui and Elbert dictionary gives *wālua* as the word for middle. *Lua* means two. *Wā* means time, space, and the interval between moments in time and/or places in space. The interval between times or places is not empty. It is a connecting interval – a kind of connecting tissue or ether or whatever one wants to call it. That is a metaphysical and spiritual understanding of the center.

A *piko* is a center, a *maka* (eye), an ʻōnohi (eyeball), *ka iʻo* (the heart of a matter, the essence of a thing or a place), the *ihō* (axis), the *kuʻina* (the center that joins things).

As the *piko* of Oʻahu, Kūkaniloko represents, well – *pikoness*. By “pikoness,” I mean the inclusion of all the senses of *piko* – geographical, metaphysical, spiritual, biological, cosmogonic, astronomical, and personal. But of especial importance at Kūkaniloko is the sun – who is and represents Kāne, the source of wisdom, knowledge, insight, and intuition.

The human body has three *pikos*.
Figure 4. The body’s three pikos

The Pukui and Elbert dictionary’s definitions of *piko* include the umbilicus, the genitals, and the crown of the head. The *piko* on the crown of the head is the part of us closest to the daytime sun, to Kāne – the part of us closest to the daytime sky and heavens. The *piko* between our legs, our *maʻi*, genitals, is the *piko* closest to Papa, Mother Earth, and the sky below the earth. The *piko* we have in the middle, our umbilicus, our belly button, is the center that connects the *piko* above to the *piko* below. The three *pikos* – the crown of the head, the belly button, and the genitals – form the vertical axis of our bodies.

We can think of ourselves, our bodies, as a post or pillar or axis that runs from the *manawa* at the top of the skull through the center at our belly button to the *maʻi*, the genitals. And we can consider the meaning of – and effect on – our body when it is at the *piko*, the geographical, cultural, and spiritual center of Oʻahu that is Kūkaniloko.

A particularly potent time is when the sun is at the zenith and its rays can enter one’s *manawa* – the center of the crown...
of the head, the juncture of the skull plates called the fontanel in infants – and through the head into the body to its central *piko*, the umbilicus, and from there to the third *piko*, the genitals.

Figure 5. The Tropics

![The Tropics](https://commons.wikimedia.org/w/index.php?curid=27385077)

The solar zenith happens twice a year in the Tropics, and it only happens in the Tropics, the region between the Tropic of Cancer, at 23.5° north of the equator, where the sun is at the June solstice, and the Tropic of Capricorn, at 23.5° south of the equator, where the sun is at the December solstice. At the latitude of O‘ahu the zeniths and take place about three weeks before and after the the June solstice and the nadirs take place about three weeks before and after the December solstice.

The solar zenith, like just about everything else in Hawaiian cultural astronomy, has a partner. The May zenith’s partner is the November solar nadir, and the July zenith’s partner is the January nadir, with the November nadir six months before the May zenith and the January nadir six months before the July zenith.
Figure 6. Left, Aldebaran and the sun at the May Zenith; Right, Cancer and the sun at the July zenith.

Figure 7. November solar nadir.
Figure 8. January solar nadir.

The nadir is the opposite of the zenith, the complement that creates unity. The zenith takes place when the sun is 90° overhead. The nadir takes place when the sun is 90° below your feet. The May zenith and November are more than partners and complements. They center the sky.

At the zenith the male (east) half of the sky and the female (west) half of the sky are united and equal in the sky above the earth. At the nadir the male (east) half of the sky and the female (west) half of the sky are united and equal in the sky below the earth.

When the May zenith takes place the sun is with Aldebaran, the bright red star in the constellation Taurus. When the May zenith’s partner and complement, the November nadir, the sun is accompanied by Antares, the bright red star in the constellation Scorpius.
Aldebaran is female. She has among her names the name Haumea. Haumea is also Papa (mother earth), and sometimes also La’ila’i, and sometimes also Hina. As Papa she is a half-sister and mate of Wākea (sky father). Antares is male, a brother of Wākea. They have blood relationships, and they have roles in cosmogony/creation. They are, of course, opposites and complements because Aldebaran is female and Antares is male, but they have a special oppositeness and complementarity. They are literally opposite one another, 180° apart in the sky.

At the November solar nadir, Antares is with the sun 90° below and Aldebaran is at the celestial zenith 90° above. In that way they are united. And in the unity of opposites – complements – something productive takes place, something is
created. That is an essential nature of complementarity, an essential outcome of the unity of opposites.

\[
\text{90° above}
\]

\[
* \quad \text{you}
\]

\[
\text{90° below}
\]

Figure 10. Zenith and Nadir

One of the things created by this particular unity is the third axis. Just as our bodies have a piko above at the top of the head, a piko at the center at our belly button, and a piko below at our genitals, forming an axis through the midline of our bodies connecting our uppermost piko through the umbilicus to our lowermost piko, Kūkaniloko has a third axis that unites the above through the middle to the below.

Figure 11. Zenith-nadir unification of male (east) and west (female) halves of the sky
The two generally known axes are the east-west axis (here you can think of the equator and of the equinoxes) and the north-south axis (approximated by Polaris and the Southern Cross). To these two axes other axes can be added, including the solstitial axes and the equinox axis and the nadir-zenith axis. These are all two-dimensional axes. And they all meet at Kūkaniloko. The Aldebaran-Antares axis pierces the intersection (Kūkaniloko) of the axes. The Aldebaran-Antares axis adds the third dimension – up-down/above-below. The piko is the connection among them.

We are now in a holistic universe, in a holistic world, a world that is represented, symbolized, and recreated in our own bodies. Our bodies hold that knowledge. Even when we do not think about it or even know about it, our bodies hold that knowledge. And when our bodies are at Kūkaniloko, the place that is the piko of the island – the center of the island – our bodies – even when we do not know it or feel it or understand it – are related to and associated with, and in a symbolic and a personal way replicate, the island’s piko. That is a big enough idea, but it is also a part of a wider idea or set of interlinked ideas.

O‘ahu has two mountain ranges, the Ko‘olau Range in the east and the Wai‘anae Range in the west. Both ranges are close to their respective shorelines, and both have a spine or ridgeline that runs roughly north-south. The two mountain ranges provide landscape markers for the rise of stars in the east and the set of stars in the west. That would not be unusual, of course. But what is unusual is that the stars’ landscape markers include places to the east of the Ko‘olau Range and places to the west of the Wai‘anae Range, thus places that could not have been and cannot be observed from Kūkaniloko.
That means that precontact sky experts were so knowledgeable about the cycles of stars that they were able to name places for the rise or set of stars they could not see. That is a big deal in the world of scholarly research about cultures’ astronomies. Most research has taken as a given that people in cultures that did not have a written language had to be able to visually observe a star rise or set. But Kūkaniloko’s sky experts could “see,” that is they knew where the rises and sets they couldn’t observe took place. In the words of one of my grad school instructors, “You mean they knew celestial mechanics?!?” Yes, they knew celestial mechanics.

We can see that from the names of stars’ landscape markers. The landscape markers indicate the rise and set of stars from the point of view of Kūkaniloko. Naming places in this way, from the point of view of Kūkaniloko, is another way the island was centered at Kūkaniloko.
The table below shows the rise and set azimuth of a few stars and the corresponding compass bearing for each star’s landscape markers.

Table 1. Hinaieelele/Aldebaran, Antares, Gemini, Pleiades and landscape markers

<table>
<thead>
<tr>
<th>Star and sun stations</th>
<th>Rise/Set dates</th>
<th>Rise azimuth</th>
<th>Rise marker bearing</th>
<th>Set azimuth</th>
<th>Set marker bearing</th>
<th>Sunset azimuth</th>
<th>Sunset marker at star evening rise</th>
</tr>
</thead>
<tbody>
<tr>
<td>Aldebaran</td>
<td>77</td>
<td>77</td>
<td>81-85 Kanehoalani 79 Pauao - mediator 74-80 Kaaawa - premature infant 72 Kahana - ridgepost; work</td>
<td>284</td>
<td>293 Kamana nui - great mana</td>
<td>244</td>
<td>244 Puu Kailio - Dog Mountain</td>
</tr>
<tr>
<td>May zenith – May 13</td>
<td>AM R</td>
<td>Nov nadir – Nov 20</td>
<td>AM S Nov 8 PM R Nov 21 PM S May 5</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

|                      | 74-76          | 81-85 Kanehoalani 79 Pauao - mediator 74-80 Kaaawa - premature infant 72 Kahana - ridgepost; work | 284-286 | 293 Kamana nui - great mana | 244 | 244 Puu Kailio - Dog Mountain    |
|                      | AM R           | May 24       | AM S Nov 6 PM R Nov 21 PM S May 5 |             |                   |                |                                  |

| Antares              | 119           | 119 Halekou - house of male potency 119 Kahanalii - chief’s place; chief’s work 119 Kahiakahoe - to work the fireplow 121 Konahuanui - his big testicles | 241 | 241 Puu Hapapahawk-catching hill; breath (life) of Papa; portion of an enclosure | 291 | 289 Kaupakuhale - house beam; figuratively the greatest |
| Nov. nadir (Nov. 21) | AM R Nov 20   | AM S May 4   | PM R PM S Nov 2 | | | | |
Kūkaniloko: What It Means as the Piko of O’ahu

<table>
<thead>
<tr>
<th>Gemini</th>
<th>AM R</th>
<th>June 26</th>
<th>AM S</th>
<th>Dec 15</th>
<th>PM R</th>
<th>Dec 23</th>
<th>PM S</th>
<th>June 13</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>58-65</td>
<td>57 Kaluanui – the great two</td>
<td>299-304</td>
<td>301 Aukuu 292-293 Mahoe Pali 297 Kawaihapai 293 Kamana nui</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>61 Makaua – we two</td>
<td></td>
<td>244</td>
<td></td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td>299-304</td>
<td>291</td>
<td>248</td>
<td>252 Puu Kumakalii – Mountain Pleiades Rise</td>
<td></td>
<td></td>
<td></td>
</tr>
</tbody>
</table>

<table>
<thead>
<tr>
<th>Pleiades</th>
<th>AM R</th>
<th>May 7</th>
<th>AM S Oct 31</th>
<th>PM R</th>
<th>Nov 6 PM S Apr 26</th>
</tr>
</thead>
<tbody>
<tr>
<td></td>
<td>69</td>
<td>65 Makalii Pt – Pleiades Pt</td>
<td>291</td>
<td>290 Alei – to leap; beloved 290 Alau – dividing, branches</td>
<td></td>
</tr>
<tr>
<td></td>
<td></td>
<td></td>
<td></td>
<td></td>
<td>248</td>
</tr>
</tbody>
</table>

Taking a closer look at a few of the stars and landscape markers shows how they help us understand the nature of piko-ness.
### Table 2. Paired names

One pair like these might be a coincidence. Nine is not a coincidence. Why did the sky and land experts do this? For one thing naming places on the opposite sides of the island with names that almost repeat one another magnifies the connection of the periphery of the island to the center. It also puts the two members of each pair in a relationship with one another – whether it is two places for one star as with Aldebaran and the `awa names and the kahana names, Betelgeuse with Kane.
names, pō and 'īlio names for the sun and Sirius, the mana names for the solstices.

The three-place-name stars show a more complex relationship. One of these is the mana names, two of which are for the sun at the solstices and the third of which is for Betelgeuse whose morning rise and evening rise closely coincide with the solstices. The other is Kahana and Kahanahaiki for Aldebaran and Kahanalii for Antares. This is because Aldebaran and Antares are a special quality of pair – male and female high chiefs, whose union gives us the third axis, and whose work in the sky includes creating and ruling over celestial structure of space and time.¹

Returning to the centeredness, the piko-ness, the mediating and uniting functions and effects of the center, we can look further at the Pukui and Elbert definitions:

navel, umbilical cord,
figuratively blood relative,
genitals;
the summit of a hill or mountain; crest;
crown of the head;
end of a rope;
border of a land;
center, as of a kōnane board;
place where a stem is attached to a leaf;
bottom round of a carrying net;
thatch above a door.

Navel, of course, is a reference to Kūkaniloko and together with umbilical cord is a reference to Kūkaniloko as the royal birthing site. But it is also not only the island’s navel and our individual physical navels, it is the umbilical cord that connects places and people to Papa – cosmogony and Mother Earth – and stars to places on the island.

Blood relatives refers to genealogy, particularly to chiefly genealogies whose blood inheritance reaches back to the beginning – not just to Papa and Wākea in the era of ao, but also farther back into the eras of pō, and possibly even farther back to Io in Kolekole.

Genitals is another piko reference, to the piko between our legs, that part of us that participates in the creation of a new child. And that child is a continuation of genealogy into the future. And we remember that our genital piko is itself a product of our ancestors whose reproduction and genealogy gave life to each of us.

The summit of a hill of mountain, or the crest, recognizes the above-below, up-down hierarchical organization of the process of creation and of the culture. At the summit, one is closer to the sun and stars, and the closer one is to the sun and stars, the greater one’s awareness of that connection and its meanings is. Height matters, even for celestial objects. They are at their greatest power when they are at their zenith, the highest point in their passage across the sky.

The crown of the head, the uppermost piko of a person, the manawa, is the summit of our body.

The end of a rope is also a center. When you measure something, the rope, or in our modern world a tape measure, is secured at the beginning of the measurement – its piko. It is also a reference to the rope or road of the sun, the ecliptic. The ecliptic begins and ends at the solstices, the opposite ends of the year – with the equinoxes at the middle of the journey.
We can also see the rope as the imaginary line from Kūkaniloko to the rise and set of stars and sun, centering celestial motion at Kūkaniloko.

Figure 14. Stars centered at Kūkaniloko.
Border of a land has multiple references. The borders of the island are the points of attachment of the periphery to the center. They are also how we orient ourselves on the land, thus how we find our center at the moment.

And this brings us back to the question the Arizona elder asked. What are the seven directions? They are above and below, left and right, in front and in back, and where you are (the center).

And how does that matter? It is a portable construct. It goes with you, it is wherever you are. And if your spiritual or cultural or knowledge center is Kūkanilokō, you carry that knowledge with you. It allows you to center yourself using stars, using Kūkanilokō’s understanding of the relationships of stars and the sun centered on a place – in other words that knowledge is with you and where you are is the center.

The borders of lands within the island – the mokus – are also markers for stars from the point of view of Kūkanilokō, again a centering of O’ahu at Kūkanilokō that unites each moku and all of the mokus at the center.

Kōnane is the Hawaiian board game that resembles checkers. But kōnane also means the bright light of the moon and to shine like the moon. This recalls the moon as Hina and Hina’s association with Papa and Haumea and La’ila’i. This in turn recalls creation and the advent of humankind.

Nane of kōnane means riddle and to speak in parables. A riddle is a clever word game, but as Tui Atua Tupua Tamasese Ta’isi Efi phrased it, the riddle, the parable, is also the mystery of deity.²

The place where a stem is attached to a leaf refers again to genealogy, to the attachment of the periphery to the center, to the metaphors of family –including the families of gods and stars, to the dependence of the younger on the older and the connection of the present to the past.

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The bottom of a carrying net refers to birth, old age, and death. The carrying net also suggests the ‘eke, the basket made up of Aldebaran and three of the Hyades, and the container that is the womb.

The thatch above a door is the last part of building a hale, a house. The building of a house repeats the construction of the sky.

Ikuwa (Antares) and Haumea (Aldebaran) are the stars who rule the structure of space and time. The structure is perceived as a house, with posts, roofbeam, rafters, purlins, thatch, and so on – all of which figure in the names and landscape marker names of Antares and Aldebaran.

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Before a completed house could be entered the thatch over the door was trimmed and a kahuna prayed the Kuwa prayer. When the Kuwa prayer was done the house could be entered. In Chapter 33 of Hawaiian Antiquities, Malo provided a Kuwa prayer:

"Ku lalani ka pule a keoloalu i ke akua
O Kuwa wahi’a i ke piko o ka hale o Mea
A ku! A wa! A moku ka piko
A moku, a moku iho la!

Orderly and harmonious is the prayer of the multitude to God
Kuwa now cuts the piko of the house of Mea
He stands! He cuts! The thatch is cut.
It is cut! Lo it is cut!"

In the second line Kuwa stands for Ikuwa (Antares) and Mea stands for Haumea (Aldebaran).

Here we look at the names for Aldebaran and Antares to see what their names tell us about some of the characteristics that relate them to the piko. These names for Aldebaran show her association with femaleness, conception and pregnancy, and with cosmogony. They also show her status as a high ali‘i and a ruler.

Table 3. Names of Aldebaran

<table>
<thead>
<tr>
<th>Name</th>
<th>Celestial meaning/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Haumea</td>
<td>Goddess of childbirth; to organize (hang, gird, lace, tie); at times also meaning Papa, La‘ila‘i, and/or Hina</td>
</tr>
<tr>
<td>Oma</td>
<td>High officer of a chief</td>
</tr>
</tbody>
</table>

'Oma – oven; sacrificial victim; first man killed in war; space where first man killed in war was sacrificed; small adze

Keoma
The Oma and the 'Oma

Lilioma
Blasted, as fruit; jealous
Lilioma – to organize (hang, gird, lace, tie)

Muakeoma
The first or senior line and future Oma/'Oma

Hulikahikeoma
Oma/'Oma turns at this place (the zenith)

Keoma-aiku
The ruling high officer of a chief

Kapuahi
Fireplace, oven; sacred fire

ʻUnu
Altar, heiau; to draw together

Hokuula
Red star

Her landscape markers reflect her names.

Table 4. Landscape markers for Aldebaran

<table>
<thead>
<tr>
<th>Hinaiael e-ele-Aldebaran</th>
<th>AMr</th>
<th>May</th>
<th>74</th>
<th>81-85</th>
<th>Kanehoalani – Kāne who rules the heavens</th>
<th>284</th>
<th>278</th>
<th>29</th>
</tr>
</thead>
<tbody>
<tr>
<td>May zenith</td>
<td></td>
<td></td>
<td>24,</td>
<td></td>
<td>79 Pauao – mediator</td>
<td>74-80</td>
<td>280-284</td>
<td>3</td>
</tr>
<tr>
<td>(May 13, - 4.4° alt)</td>
<td></td>
<td></td>
<td>s</td>
<td></td>
<td>Kaaawa – premature infant</td>
<td>72</td>
<td>283-287</td>
<td>24</td>
</tr>
<tr>
<td>Nov nadir (Nov 20, 6.6° alt., zenith at midnight)</td>
<td>PMr</td>
<td>No v 6</td>
<td>21,</td>
<td>s Ma y 5</td>
<td>Kahanahāki – turning point, small cut, line drawn</td>
<td>287 Puu Pueo – main purlin; owl (Kāne)</td>
<td>293</td>
<td>24</td>
</tr>
</tbody>
</table>

Kaneholani tells us she is related to Kāne. All stars are related to Kāne, but Aldebaran has a particular set of
relationships to him. Kāne and Wākea have a symmetrical relationship – that means that in some respects they are equivalent. As Papa, Aldebaran was the mate of Wākea. And again as Haumea she was the mate of Wākea. In some Polynesian cosmogonies she and Wākea are the parents of Kāne. In those cosmogonies it is Kāne who separated Papa from Wākea.

Her relationship to Kāne is also evident at the May zenith when she and the sun are together when the sun is at its highest place in the sky. That relationship is also present at the November solar nadir, when she is at the celestial zenith when Antares and the sun are together below the earth – the moment when the third axis is apparent to the sky experts.

Pōhaku La‘ila‘i recalls the symmetry or equivalence among Papa, Haumea, Hina, and La‘ila‘i, and the cosmogony and mo‘olelo about them. Kaaawa and Keawaula refer to the first Hāloa who was premature and stillborn, from whose burial place the first kalo (taro) plant emerged. This is again cosmogony.

Kahana and Kahanahaiki refer to structure and show east-west unity through Kūkaniloko.

Below are tables for the names of Antares and for the landscape markers for Antares:

Table 5. Names of Antares

<table>
<thead>
<tr>
<th>Name</th>
<th>Celestial meaning/reference</th>
</tr>
</thead>
<tbody>
<tr>
<td>Lehua</td>
<td>Blossom of 'ōhūa; warrior; first man killed in battle</td>
</tr>
<tr>
<td>Polehua</td>
<td>Antares in pō</td>
</tr>
<tr>
<td>Lehuaula</td>
<td>Red lehua</td>
</tr>
<tr>
<td>Lehua-kona</td>
<td>Southern lehua</td>
</tr>
<tr>
<td>Ikuwa</td>
<td>Great ruler of space and time</td>
</tr>
<tr>
<td>Kukulukulu</td>
<td>Pillar, post, to build a house; to construct, organize; to lay an oven; timber used in houses</td>
</tr>
<tr>
<td>Nakulu</td>
<td>Timber used in houses</td>
</tr>
</tbody>
</table>
Mehakuakoko | Solitary master/lord [who] arranges, puts in order, ties up strings/rope, and fulfils
Kahuaokalani | The foundation of heaven/sky; the regent of heaven realm; the caretaker/regent of royal enlightenment
Hua | Seed, testicles – maybe short for Kahuaokalani
Hai | To offer, sacrifice
Kao | The continuing appearance; the continuing piercing
Auhaele | The coming and going of time/eras/cycles
Welehu | Suspended joining/uniting of many
Hokuula | Red star

| Ikuwa and Weleh | AM r Nov 20, s May 4 | 119 Halekou – house of kou, prosperity, male potency | 241 Puu Hapapa – Hawk-catchin g stick; half a year; breath of Papa |
| Weleh | PM r May 18, s Nov 2 | Kahanalii – chief’s work, chief’s place | Konahuan ui – his big hua |
| Nov | Nov 21, 5.6° alt | Kahiakahu e – alone at the paddle, work the fireplow | Kaupakuha le – house ridgebeam, greatest |

Table 6. Landscape markers for Antares

The center matters. And centering matters. The center – the piko, the middle – mediates and connects separate places, times, people, and even ideas. At the center differences
meet. The center connects and mediates between east and west, north and south, the two axes of the world. But the third axis, the axis evident in the relationship between Aldebaran and Antares, connects and mediates the opposites and includes other objects and times and places – seen as radiating lines from the axis.

One of the landscape markers for the rise of Aldebaran is Pauao. One of the meanings of Pauao is place (pā) [of] mediation, reconciliation, peacemaking (ʻuao). That’s what third axis does. It mediates, it reconciles, it equalizes. It mediates and reconciles and equalizes in several respects. It joins the sky below and the sky above through the medium of the earth (honua, Papa). It joins east and west, the north and south, and other terrestrial axes at the piko, the center. It joins male and female through the axial union of Aldebaran (female) and Antares (male). It mediates between the pō of the womb and the ao of the living the newborn child enters. It joins as equal halves the male part of the sky (east) and the female part of the sky (west) not just in the sky above the earth, but also in the sky below the earth.

The center, the piko, then, is a place of mana, a place of unity and union, a place of material and spiritual substance and essence, a place of connection and connections, a place of engagement – of insight, intuition, inspiration; of wisdom, knowledge, and understanding; engagement of awareness, knowledge and realization.

The center is a multidimensional place. The center is holistic, a hologram. But the wā – the connection of past to present to future, the connection of place to place – enhances, adds to, even alters, the experience of, and the knowledge potentially accessible at, the center. And it adds a fourth dimension – time.

Hawaiian scholar 'Umi Perkins, in his discussion of Indigenous Theory, describes its five components - (a) the concept of harmony or balance, which can be seen in the structure of Indigenous societies and could be described as dynamic equilibrium or pono; (b) the importance of place and history; (c) experience, practice, and process; (d) the holistic and
collective nature of indigeneity; and (e) the cyclical and genealogical nature of time, represented by the spiral or koru.\textsuperscript{5}

Tongan scholars Tevita Ka‘ili, PhD, and Okusitina Mahina, PhD have been developing a tā-vā (Hawaiian kā-uā) theory of Polynesian time and space.\textsuperscript{6} Time and space intersect.

Throughout Oceanic cultures the past is the time in front and the future is the time in back. This is reflected in understanding of island geography – the west – the direction of ancestors, beginnings, and the past – is the front of the island, and the east – what is yet to come, the future – is the back of the island.

Ka‘ili and Mahina explain that tā/kā and vā/wā are rhythmically beaten (as on a drum) in symmetrical form in space. And that this symmetrical formation of spacetime produces harmony.

Samoan spatial design scholar, Albert Refiti, PhD, said that “In Samoan thought, architecture is related to performing a material manifestation of ‘space-towards-the-ancestors,’ marked by an opening, the va. . . . This va, or co-openness, located at the centre of every gathering, every sociality, structures Samoan identity.”\textsuperscript{7}

Throughout Oceania the sky is represented as a house, with main posts, a roofbeam, support posts, roof purlins, a door, and so on. The names for Aldebaran and Antares show that they are main posts of celestial structure of spacetime – of the concept of structure as a hale, a building. Aldebaran and Antares intersect with or pierce the earth as the above-below/up-down axis at the center that unites. They are the main front and back posts of the hale, as their Tahitian names


show – Ana mua (post/pillar in front) and Ana muli (post/pillar in back). As Refiti said, “Light, as knowledge and understanding is not something that comes to us from outside. Rather, it appears as a divine force emanating from a centrality.”

8 ibid., p. 10.
References


