

ELISE BUTLER



## Telescope opponents fight the process, not science

Painting Native Hawaiian culture as against modern science is a false dichotomy, explains **Rosie Alegado**.

Around the time that Hawaiian society reached its zenith for navigation and sustainable agriculture and aquaculture, the Catholic Church in Europe was persecuting the astronomer Galileo Galilei for his support of heliocentrism. No wonder those of us challenging the construction of the Thirty Meter Telescope (TMT) today reject the notion that we are opposing science.

After decades of legal challenges, permits for the new telescope on Mauna Kea, Hawaii's tallest mountain, were ruled valid, and construction was set to resume on 15 July. By 17 July, about 1,000 opponents were blocking access to the site, and Hawaii's governor, David Ige, issued an emergency proclamation to expand powers of law enforcement, arguing that people should be satisfied that the construction was "not an oil pipeline". Dozens of elders were arrested.

As a Native Hawaiian scientist who studies how marine microbes have influenced ecosystems and evolution, it is not my experience that Hawaiian religion or culture has a problem with Western science. So I'm frustrated that this assumption is distorting the conversation, escalating tensions, and denying the legitimacy of Indigenous forms of inquiry.

So often, tropes about science versus religion assume Western science and use 'religion' as shorthand for Christianity. But that framing is not always accurate. Science is part of culture, and how science is done depends on the culture in which it is practised. Consider how many medical studies were based on male mice and male patients, and so missed important biomedical insights.

When the eighteenth-century British explorer James Cook arrived in Hawaii, he encountered a thriving civilization with a system of rules and regulations based on sustainability. Ancient Hawaiians realized that to maintain a large, healthy population, areas rich in resources such as rainfall and biodiversity must remain undisturbed. The wilderness of the mountains was the realm of gods (*wao akua*) forbidden to humans, whereas the lowlands where intensive agriculture and aquaculture took place were the realm of people (*wao kanaka*). Such evidence-based Indigenous practices are still applied today in fisheries conservation.

The protectors of Mauna Kea ascribe the word *kapu* to how the mountain should be treated. This concept can be translated as 'restricted' or 'forbidden', or even as 'holy' or 'sacred'. Why such a broad spectrum of meanings? Hawaiian was translated from an oral language into the written word by Protestant missionaries intent on converting natives. In my view, this entrenched Western interpretations of Hawaiian concepts.

To Native Hawaiians, *kapu* requires us as members of society to exercise caution: to question whether an action should be taken. Recognizing that which is *kapu* — in need of being regulated or set aside — is a cornerstone of Hawaiian values of caring for people and place. Strictures on how to interact with the land abound in traditional

songs, chants and oral histories. Mauna Kea — with its high elevation and clear skies — offers a powerful opportunity to study the Universe, but that potential must be weighed against the potential for further harm, evident in past management.

Western science adheres to *kapu* as well — we call it ethics — and we must take this responsibility to the public, and to the environment, seriously. No field of science exists outside the sphere of culture, no matter how far out to sea our ships take us. The processes of agreeing on codes of ethics are often imperfect; yet the scientific community continues to grapple sincerely with the morality of new research such as work on stem cells, gene editing and climate engineering.

Continual reflection on the principles underlying our science is a good thing, and I am heartened by the many signatories — including many astronomers and junior researchers — to an open letter urging the authorities to de-escalate the tensions at Mauna Kea. It

is courageous for scholars to speak out on the ethical implications of using force in the name of science.

As a faculty member at the University of Hawaii at Manoa, I hold my university accountable for much of the ill will the community feels. A lack of transparency and egregious mismanagement of Mauna Kea has persisted since the earliest arrangements between astronomers and the university. In late July, a University of Hawaii promotional video admitted that a 1998 state audit highlighting these deficiencies was a "wake-up call" that brought an era of more-responsive management, but I consider that

neither the state of Hawaii nor the university has met their obligations.

I think we need to halt construction and restart a conversation between the state, the universities and Native Hawaiians about potential alternative futures for Mauna Kea — which include restoring the ecological damage caused by the 13 other telescopes on the mountain and dismantling the 5 telescopes slated for decommissioning. Such steps would provide credibility that the University of Hawaii recognizes its responsibility to take care of Mauna Kea. Moving the TMT to an alternative site in the Canary Islands should also be seriously discussed in consideration of the community.

Being cautious is not the same as being anti-progress. Ethical science is inherently responsive to society. Obtaining patient consent for medical research might slow progress, but no one suggests we return to the days when vulnerable people were experimented on without their permission. In our excitement to herald new avenues of research, we must ensure that we are doing so within appropriate bounds, and we must try to determine whether the price we pay might be too great. ■

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