Seeing the Comet through your own eyes

In October 2024, the night sky in Hawai'i received a visit from the comet Tsuchinshan-ATLAS, a rare occasion as it was the brightest comet in the Northern Hemisphere since 1997, and the comet would not return to the inner solar system for 80.000 years (Subaru Telescope, 2024). This cosmic event is the reason I got a text from my friend who performs the observations for one of the telescopes, asking me if I wanted a tour of the observatory. This was a great opportunity for both of us, as she wanted to see the comet which she had been observing through the telescope with her own eyes, and giving me a tour meant we could take the company car. As I waited for her to pick me up in the garden of the place I was staying, my jeans and sweatshirt felt suffocating in the late afternoon sun, and somewhat foreign against my skin after the months I had spent wearing shorts and tank tops. I already knew, however, that the clothes that were too warm for any other day on the Island would not be nearly warm enough for our evening plans.

Leaving the town of Hilo behind us, we drove toward the Mauna, and there was a slow shift in the views from my passenger seat window. The palm trees and beaches made way for lava rocks and evergreen trees, misted in low-hanging clouds as we climbed up in elevation. Hawai'i is often considered a tropical paradise; the islands have come to embody the idealised ever-sunny beach-and-palm tree destination. Although you can definitely find places like that in Hawai'i, the islands actually host a diverse range of climates and corresponding landscapes. Some of these climates, like the Af Rainforest or the Cfb Oceanic, fit better into the image people have of Hawai'i than the ET Tundra climate of Mauna Kea (Britannica, 2024). This tundra climate is what we were getting close to when we had to stop at the visitor's centre to acclimate to the altitude for the required 30 minutes. We had a quick look around the visitor's centre museum and gift shop, made sure to visit the restrooms, and spent the rest of our time walking around the area. This spot is the gate between the island and the mountain top. The ground is a rust red that matches the Mauna, but there are still trees and birds at this altitude. The remaining climb to the summit only takes another 30-minute car ride over an unpaved road, but it feels like entering a different realm. Kānaka Maoli (Native Hawaiians) have long conceptualised this as a different realm, too. In their tradition, anything above the clouds in the wao akua (realm of the gods), and therefore is not always fit for humans. Fujikane (2021) explains how kilo (observation) occupies a special role when visiting Mauna Kea. The custom is to ask permission to gain access to the land, and you will receive an answer to your request in the form of a sign from the spirits. This could be a change in the wind, in the ground, or within your own body. I had learned about this way of asking permission from literature as well as through talking to Kānaka and how they approached entering into the wao akua. In the current era, where there is an effort to include these indigenous land conceptions into the astronomical practice at Mauna Kea, I wondered if this was something astronomers had taken on. I asked my friend if she had ever asked permission from the akua (gods) when going up the mountain for work. The question was asked with some hesitation on my part, as I was afraid it might come across as an accusation. She told me she had never done it because she did not feel it would be sincere if she did. It was not a practice she could do with belief, and pretending felt inappropriate. Hearing her explain this made me feel shy about my own practice. In order to show up in a culturally appropriate way and respect the custom, I had taken a moment every time I went up the mountain to engage in kilo. I didn't know

how to ‘oli (chant) any of the ‘oli that would be appropriate for this moment, so instead I would close my eyes and put out a silent call. I would introduce myself, state my intentions for my visit, and ask to be granted access to the realm. I would pay attention to the way I was explained to do, to what I hear, and what I feel. But could I really interpret these signs? Is it actually any less respectful for me to pretend that I could hear a reply? If I were being honest, would I even honour this answer to my request if I did receive it? Knowing this visit was the kind of opportunity I had wished to get in my fieldwork, I couldn’t say I would pass it up and tell my friend to leave me here and go to the observatory without me. I decided that wrestling with these questions was the best I could do for now, and we got back in the car to drive up to the observatory.

The observatories line the summit in an array of different modern white shapes, and they look starkly out of place among the millions year old pu’u (cinder cones) that are scattered around the mountain. When we got to the telescope my friend worked at, it seemed silly to me that she could unlock this huge facility with a key she had carried in her pocket from the base facility. We stepped into the building and right away were met with the sight of a giant dish. Being a submillimetre-wavelength radio telescope, there is no lens, and the dish faces a tarp, which can open up but is kept closed most of the time to limit exposure to the elements. This configuration challenged my idea of what a telescope was. We might not put our eyes up to the lens of a telescope anymore, but in my conceptualisation, they were still supposed to have some kind of eye themselves to look out into space with. We went up some stairs to a control room, which sat empty, and my friend called down to the base facility to let the person in charge of the current observations know we were there, for safety reasons. She started my tour, she showed me around all the instruments, and we climbed up to the highest level of the structure. When the whole building started to rotate, she told me to hold on to the railing and that it would be over soon. Experiencing this movement, it seemed absurd to me that someone so far away was pushing some buttons that were now causing this massive structure to move. When everything was still again, we continued our climb until we reached the top level, where we climbed outside so we were standing on the metal ring around the top of the observatory. At this time, the sun was setting, and we now had a view of the mountain being coloured by the golden hour I had never seen before. Once the last rays of pink and orange had sunk below the horizon, we climbed down to go outside. We drove the car to the main outlook post on the summit to watch the comet make its path across the sky. Even though it was freezing cold, we opted to lie down next to the car so we could take a picture on the longest exposure our phone cameras would allow, to hopefully capture the path of light left in the tail of the comet. At this moment, I felt so undeniably part of the universe, watching the comet over the horizon and looking up at the Milky Way while feeling my back connect to the tallest piece of land from the sea into the sky. Being present on the Mauna makes it instantly understandable why it holds this important role on our planet. What was also crossing my mind, however, was why I could lie here uninterrupted. While I was lying there, taking in one of the clearest views of our universe one can see with the naked eye, something I had seen online kept playing over in my mind. This was a video of a ranger interrupting Kānaka, who were in ceremony during the sunset at Mauna Kea, asking them to leave and how much longer they were going to be. I had heard rumours that they wanted to remove these Kānaka to make space for the buses of the stargazing tours run by commercial companies. Most people get told to leave the summit by rangers as soon as the sun has set, but we would

not be asked to move because the car we were in had the logo of the observatory printed on the side. When everyone seems to recognise the power of a spiritual connection to the universe facilitated by the Mauna, it says a lot that the priority for the experience of this connection is given to astronomers and paying tourists, and not to those for whom this is so deeply enshrined in their cultural identity.

Once our fingertips had gone numb from the below-freezing temperature, and the tail of the comet had faded from the sky, we started our travel back to Hilo. We had to go to the base facility to drop off the car, and my friend gave me a tour of this building as well. Because of the hour, all the offices but one were deserted. The one office with the lights on had a man sitting behind multiple monitors. This was the person who had been doing the observing for the evening and had been moving around the enormous facility we had found ourselves in a few hours ago. He asked us how viewing the comet was, and I joked that I could ask him the same question. He pulled up some of the observations made of the comet that evening, and it was all lines and dots I could not possibly comprehend as to coming together into any kind of visual. This is how divorced the observing with these world-class instruments is from the human experience of looking up at night, but it is the reason that chance is obstructed for many Indigenous Hawaiians.

Brittanica (2024) *Hawaii*. Available at: https://www.britannica.com/place/Hawaii-island-Hawaii (Accessed 21/12/2024).

Fujikane, C., 2021. *Mapping abundance for a planetary future: Kanaka Maoli and critical settler cartographies in Hawai'i*. Duke University Press.

Subaru Telescope (2024) *Comet Tsuchinshan-ATLAS Captures on Maunkea*. Available at: https://subarutelescope.org/en/news/topics/2024/10/09/3453.html (Accessed on 2/4/2025)