



Conflict on Mauna Kea: For Whom Are the Stars?

Timothy Freeman
The University of Hawai'i at Hilo

The conflict over the proposed Thirty Meter Telescope on the summit of Mauna Kea has divided the community in Hawaii and especially on the Big Island, polarizing friends and sometimes even family members on opposing sides of the dispute. On the one hand, it is easy to understand this polarizing effect as the clash has been described as one that involves two positive sets of values: "the urge to preserve and protect our natural and cultural resources, and the urge to understand and investigate the nature of the universe" (Lind, 2015). Yet on the other hand the conflict is not really very well understood. It is seen by many as simply a conflict between science and religion, the pursuit of knowledge versus superstition. The Hawaiian's sense of the sacredness of the place was characterized in an article in the New York Times as equivalent to religious fundamentalism and creationists' rejection of evolution. (Johnson, 2014). An astronomer in 2011 described it as "an argument about returning to the stone age versus understanding our universe" (Herman, 2015).

A distinction between "space" and "place" in which "place" is something that emerges over time incorporating "the experiences and aspirations of a people," and "spaces" are openings for

different kinds of "places" is perhaps helpful in thinking about this conflict (Tuan, 1977). Using this distinction it is easy to see that the summit of Mauna Kea is a space that is really two very different places. On the one hand, due to its high elevation and pristine viewing conditions, the summit of Mauna Kea simply is one of the premier places for astronomy on the planet. For many Hawaiians, however, the summit of Mauna Kea is a sacred place. The highest peak in the Hawaiian Islands, the abode of the gods, such as Poli'ahu, the goddess of the snow, it is perhaps the most sacred place, not only Hawai'i, but in all of Polynesia. There are many issues to consider in thinking about this conflict, in trying to understand why for many Hawaiians, these two places are simply incompatible.

Perhaps the most difficult issue is that the summit has become, for many Hawaiians, a place for resistance to the continuing legacy of colonialism in Hawai'i. Many scientists, however, and others who support the TMT, think that the knowledge to be gained by the telescope is so important for all humankind that the construction of the telescope should not be encumbered by such unfortunate political circumstances. For philosophers schooled in the suspicion raised by Nietzsche's questions concerning the origin of knowledge, the very idea of pure value-free knowledge has become questionable. For these philosophers, all human knowledge must be viewed through political, cultural, and ideological contexts. The argument that the advancement of scientific knowledge justifies overriding Hawaiian cultural concerns is itself a continuation of the narrative of colonialism and imperialism, exposed by Edward Said, first in his landmark text *Orientalism*, and developed further in *Culture and Imperialism* and other texts. The conflict over the summit of Mauna Kea is really about two conflicting narratives, two different stories that frame two distinct places. As Said puts it in *Culture and Imperialism*, what is decisive is narrative: "The main battle in imperialism is over land, of course, but when it came to who owned the land, who had the right to settle and work on it, who kept it going, who won it back, and who now plans its future—these issues were reflected, contested, and even for a time decided in narrative" (Said, 1993).

I am borrowing the title of my presentation from a book, *For Whom Are the Stars?*, which chronicles the events of the 1893 overthrow of Queen Lili'uokalani and the Kingdom of Hawai'i. In explaining her title the author gets to the crucial issue at stake: "As for the title, 'For Whom Are the Stars?' is a line from the ancient Hawaiian *mele*, or chant, 'A Song for Kualii.' It voices the persistent and often painful question as to who shall control the destiny of a nation—a king, a queen, the people of a certain race, or all those who make that place their home" (Loomis, 1976). I shall return later to the story of this chant from which the title is taken, for now it is necessary to give some sense of these two competing narratives and the distinct places that conflict on the summit of Mauna Kea.

Due to its high elevation and location in the middle of the Pacific the summit of Mauna Kea is a unique and extraordinary location for astronomy. Since the first telescopes were built on the mountain in the late 1960s, the Mauna Kea Observatories have become one of the most important land based astronomy sites in the world. From discoveries about our neighboring planets to revelations about the most distant stars the telescopes have led to many significant advances in astronomy. The proposed Thirty Meter Telescope is one of three planned next generation extremely large telescopes (ELTs), and the TMT would not only have the highest elevation of the three and the pristine viewing conditions at Mauna Kea, it would be the only one scanning the northern skies. As described in the New York Times, the TMT would "be the most powerful

telescope yet built on the best stargazing site on the planet" (Downes, 2015). The TMT promises astounding discoveries, higher resolution images of distant galaxies, stars and planets, and observations far deeper into space and further back in time than ever before. The TMT may enable a look back toward the beginning of it all, gathering the most distant light from the first light after the Big Bang and beginning of the universe and the beginning of time. The TMT would allow astronomers to get closer than ever before to the most lofty goal of astronomy—to find our place in the universe—perhaps best summarized in the oft quoted lines from T.S. Eliot:

we shall not cease from exploration
and the end of all our exploring
will be to arrive where we started
and know the place for the first time

For Hawaiians Mauna Kea is also about origins and also about the stars. Many of the stories about Mauna Kea, from oral histories and historical accounts, are collected in a text bearing the title: *Mauna Kea—Ka Piko Kaulana O Ka 'Āina* (*Mauna Kea: The Famous Summit of the Land*). The most well-known story is the *Kumulipo*, a "genealogical chant linking the royal family to not only the gods, but the stars in the heavens, telling of the Hawaiian practices of navigation, knowledge of the stars and the world around them" (Maly & Maly, 2005). In her introduction to the text, Queen Lili'uokalani wrote: "The ancient Hawaiians were astronomers, and the terms used appertained to the heavens, the stars, terrestrial science, and the gods" (Lili'uokalani, 1897). In the *Kumulipo*, Mauna Kea is understood as the offspring, the first-born of the coupling of the sky father and earth mother. What is most interesting in this origin story is that human beings are born from the same creative forces that gave birth to the islands. In this perspective human beings are in a kinship relationship with the environment. There is a familiar Hawaiian proverb that suggests the "intimate relationship to place" for Hawaiians: "Hānau ka `āina, hānau ke ali`i, hānau ke kanaka" (born was the land, born were the chiefs, born were the common people)" (Nāone, 2008, 317; Pukui, 1983, 54). This proverb illustrates the hierarchy of the Hawaiian world order, with the `āina as most important, followed by the ali`i and then the people. In this hierarchy a reciprocal relationship is implied, "where each one needs the other in order to flourish" (Nāone, 2008, 317).

In an important text, *From a Native Daughter: Colonialism and Sovereignty in Hawai`i*, Haunani-Kay Trask elaborates on the "genius of the mutually beneficial political system of pre-*haole* Hawai`i": "If kinship formed the economic base of Hawaiian society, it also established the complex network of ali`i (chiefs), who competed in terms of rank (established by *mana*, or spiritual power, derived from chiefly genealogies or from conquest in war) and ability to create order and prosperity on the land" (Trask, 1999, 4). Trask points out that the Hawaiian people were not bound to the land or the rulers like in the European feudal system, but were free to choose where and under which ali`i they were to live. "The result," she explains, "was an incentive for the society's leaders to provide for all their constituents' well-being and contentment. To fail to do so meant the loss of status and thus of *mana* for the ali`i" (Trask, 1999, 5).

It must also be emphasized that this reciprocal relationship not only included the relationship between the people and the ali`i, but also the relationship between human beings and the `āina. Here it is worth mentioning that the word `āina, usually translated as "land" might best be understood in the sense put forward in the "Land Ethic" where, as Aldo Leopold first put it,

"Land, then, is not merely soil; it is a fountain of energy flowing through a circuit of soils, plants, and animals" (Leopold, 1966, 253). This ethic changes the relationship between human beings and the rest of the natural world "from conqueror of the land-community to plain member and citizen of it" (Leopold, 1966, 240). Leopold proposed the land ethic as a further evolution of morality; but perhaps there was already something very much like what he was proposing in the Hawaiian system *kapu* system in which, as Trask explains, "[n]ature was not objectified but personified, resulting in an extraordinary respect (when compared to Western ideas of nature) for the life of the sea, the heavens, and the earth" (Trask, 1999, 5).

Returning now to the collection of stories about Mauna Kea in the text, *Mauna Kea—Ka Piko Kaulana O Ka 'Āina*, it is worth noting that the summit of Mauna Kea is a *piko*. This is a most interesting word. In a classic sourcebook of Hawaiian cultural practices, concepts and beliefs, it is explained that the word *piko* can refer to a summit or peak, but there is also the notion of the triple *piko* of a person, the three areas of the body that connect the individual with the past, present, and the future (Pukui, 1972, 182). Thus the crown of the head connects one with the past, one's ancestors; the umbilical cord connects one through the mother symbolically to all blood-kin in the present; and the genitals connects one to "even those yet unborn" (Pukui, 1972, 182). There is yet another sense of the *piko* as a center, or a place to be centered, the center in the sense of a gathering place such as a community center (King, 2001).

There is also an expression, *mō ka piko* (the cord is cut) that was used symbolically to convey "a tragic disruption of loving relationship" (Pukui, 1972, 185). This expression would be used then, when a serious offense had been done that led to a break in a family relationship. Thus, for example, as explained in this text, "*mō ka piko* resulted when family members took opposite sides in a religious-social—perhaps even political—issue" (Pukui, 1972, 185). Thus *mō ka piko* was a terrible thing that would require some serious restitution in order to retie the cord.

Thus, the summit of Mauna Kea is a *piko*—perhaps not just in the literal sense of being the summit of the mountain, but also perhaps in the multiple ways that the word *piko* suggests. Perhaps Mauna Kea might be thought of as a *piko* in the sense of the triple *piko* of a person. Obviously, since Mauna Kea was the first-born from which the whole of the 'āina, and then the *ali'i*, and then the people descended, it is like the crown *piko* of a person connecting the Hawaiian people through their genealogy to their origins. Perhaps Mauna Kea is also like the umbilical *piko* connecting the people in the present, especially as it has become a gathering place, a connecting point, something like a community center in becoming a place for resistance against the legacy of colonialism that for many Hawaiians is not at all something in the past, but rather something that very much still frames the present. Finally, perhaps Mauna Kea is also like the genital *piko* in connecting the Hawaiian people with their future. For many Hawaiians in the sovereignty movement what is at stake is nothing less than their continued existence as a distinctly Hawaiian people.

To see just how much the dispute over Mauna Kea is entangled in the legacy of colonialism one has to appreciate how much the history of astronomy in Hawai'i is entwined in the history of colonialism. It was, after all, a scientific mission that led to Captain Cook's first voyage to the Pacific. The Royal Society had sent Cook to Tahiti in 1769 to observe the transit of Venus as a means of establishing longitude as well as the astronomical unit, and thus more accurately determine the dimensions of the solar system. The mission was not completely successful but it did help to establish longitude, however, and thus when Cook came to the Hawaiian Islands on his

third voyage in the Pacific in 1778, he carried with him astronomers from the Royal Society and what they accomplished literally put Hawai‘i on the map by pinpointing its latitude and longitude (Chauvin, 1993). Obviously, the mapping of the globe, and the placement of Hawai‘i on the map would greatly aid navigation, and thus the development of colonialism.

The next transit of Venus, in 1874 when Kalākaua was king, led to an awkward encounter between the British astronomers and Hawaiians. Kalākaua was initially very enthusiastic and warmly welcomed the visitors. The king was so excited about the telescopes that he came on several occasions, bringing with him an entourage of noble women to view the marvels of the night sky. The astronomer in charge of the mission eventually lost patience with the 'intolerable nuisance' and in another visit a couple of weeks before the transit, he harshly ushered the king and his guests out (Chauvin, 1993). The king did not even stay for the transit, as he had to travel to Washington D.C. to negotiate the contentious Reciprocity Treaty of 1875. And when the transit day came, armed marines were stationed outside the observatory compound to keep the curious Hawaiians away.

It is worth briefly recounting a few key points about the events that led to the overthrow of the kingdom in 1893. First of all, it is important to understand the transformation of Hawaiian society, especially in regards to land, which came after the arrival of the *haoles*. In pre-contact Hawai‘i there was no private property, and thus no basis, as Trask explains, "for economic exploitation in pre-*haole* Hawai‘i" (Trask, 1999, 4). As she goes on to explain, it was "gunboat diplomacy" that forced the Hawaiian chiefs into accepting the Great Māhele of 1848-1850 that introduced private land ownership, and "by 1888, three-quarters of all arable land was controlled by *haole*" (Trask, 1999, 7). Jonathan Osorio examines the Māhele in depth in his book *Dismembering Lāhui*, and in reading his account it becomes clear just how devastating the introduction of private property was to Hawaiian society.

Kalākaua was forced to sign another Reciprocity Treaty in 1887 in which the Pearl River Lagoon was ceded to the United States in exchange for duty-free sugar. The treaty also necessitated a new constitution for Hawai‘i, often referred to as the "Bayonet Constitution," that severely undercut the power of the monarch by making the Ministry responsible to the legislature, which was of course dominated by *haole* property owners, rather than the King. Thus, when Lili‘uokalani came to the throne after her brother's death in 1891, one of her prime objectives was to reverse the Bayonet Constitution. It is easy to understand what happened. The merchants and property owners who controlled the legislature saw a monarch trying to grab power and they saw themselves as new American revolutionaries. Three days later American marines would be brought ashore in a show of force and at dusk on January 17, 1893 the Queen surrendered the sovereignty of Hawai‘i.

Initially, the deposed Queen had hopes the injustice would be recognized and the sovereignty of her nation restored and she appealed both to the American President and the British Queen for help in reversing the injustice that had been done to her and her people. President Garfield sent a commissioner, James Blount, to investigate what happened and the Blount report concluded with a serious indictment of the overthrow. Unfortunately, unbeknownst to the Hawaiians who were confident that Garfield would surely order the restoration of Hawai‘i's sovereignty, the President was stricken by cancer and never responded to the Blount report. When McKinley became President any chance for restoration of the monarchy evaporated. After the Spanish-American War, the "manifest destiny" that had justified the slaughter of indigenous

peoples and the expansion of the United States across the continent swept across the Pacific leading to the annexation of Hawai‘i in 1898. Six decades later, at a time when the great European powers were relinquishing their colonial holdings and many former colonies gained independence, the former colony of Hawai‘i was finally fully absorbed into the United States.

Of course, there is no denying the sense of racial and cultural superiority that underlie the notion of manifest destiny that propelled American expansionism and imperialism. We understand as well how this sense of superiority arose out of the confidence of the European Enlightenment, the confidence in the virtues of democracy and capitalism, and the conviction that modern science was leading humanity forward beyond the mere superstitions of more primitive people. There is no denying the fact that it was the overthrow of the Queen that determined the fate of the summit of Mauna Kea. The land was part of the Crown lands, almost 2 million acres of land that had been reserved at the time of the Great Māhele to be set aside for the Hawaiian people under the control of the Crown. The summit of Mauna Kea was under the control of Lili‘uokalani at the time she was overthrown that fateful day in January of 1893.

I don't know if it makes sense to say this, since the phrase apparently originated in Hawaiian culture to refer to a break in a familial relationship, but if we consider our ancestral ties to all human beings, perhaps we could say that what happened in the overthrow was *mō ka piko*, the cord has been cut. It seems we must begin by acknowledging that this is what happened and that this cut deeply wounded Hawaiian people. Especially in considering the various senses in which the summit of Mauna Kea might be considered a *piko*, the essential question is perhaps to ask how it could be possible to build the TMT without further *mō ka piko*? How is restitution possible? How can the cord ever really be mended and this wound healed?

In thinking about this dispute it becomes obvious how deeply entrenched colonial attitudes and thinking remain in the arguments for the telescopes. One often hears the argument that astronomy and Hawaiian culture should be able to coexist on the mountain. Ancient Hawaiians were astronomers, using the stars to navigate their way across the Pacific, and that Hawaiians today should thus welcome the astronomy that takes place on the summit. Why can't the mission the telescopes serve be part of the sacredness of the mountain? Surely, the mountain is large enough to accommodate both telescopes and sacred sites for Hawaiians. Why can't Hawaiians still practice their culture on the mountain and allow for the telescopes? The *‘Imiloa Astronomy Center* on the campus of UH-Hilo is an expression of the hope that astronomy and Hawaiian culture can coexist, a demonstration of respect for Hawaiian culture and an exposition of the importance of the mission of astronomy. The proposal for the TMT acknowledges that there will be some cultural impacts, but offers some mitigation for these impacts in the form of a benefits package including a generous, one million dollar per year, STEM education program for Hawaiian youth. In addition, proponents are sure to emphasize, the existence of the TMT on Mauna Kea will be an economic boon for the local economy, while its rejection will certainly set that economy back for years to come.

First of all, in regards to this proposal for an STEM educational program for Hawaiian youth, perhaps it might be considered whether this is at least to some extent a self-serving offer. Oh, we're sorry for the overthrow of your nation and for the cultural impacts that the telescopes might have, but here's a 'generous' offer to educate some of your children to think more like us. Perhaps, if more Hawaiians were educated in science, technology, engineering and math, they would understand how right we are that the way forward for all of us lies in the development of science and technology. Perhaps I am raising here an important question about the limitations of

a merely STEM education. At the very least, I don't see how such an offer comes close to the kind of restitution that could possibly reconnect the *piko* that was cut and heal the wound that Hawaiians have suffered. Perhaps, if it were an offer to fund not just STEM programs, but Hawaiian studies as well, it might be more of a really generous offer. There is no doubt that Hawaiians continue to suffer the effects of colonialism. Perhaps, there should be a better offer to assist the Hawaiian community than merely the 'trickle down' effect from telescope development.

Such efforts, however, still would not address the fundamental issue of whether mitigation efforts could ever be adequate in addressing cultural impacts of the telescopes on Mauna Kea. Here we come to the issue which raises the most interesting philosophical questions, and that is just what is it about the existence of the telescopes that amounts to a desecration of the sacred summit? Sometimes one hears an argument that contests the protectors' claims about the sacredness of the summit. Some concede that one wouldn't put a scientific lab in a cathedral or temple, but then argue that there really isn't much historical or archaeological evidence that Hawaiians ever really used the summit of Mauna Kea as a temple. On the one hand, this argument repeats a colonialist argument dismissing as more primitive those cultures that did not have a well-developed tradition of written literature. Although, there is no evidence of a temple, a *heiau*, on the summit, there is significant archaeological evidence of a ring of small shrines, consisting of one or more upright stones, encircling the summit. The obvious reason there is nothing on the summit, acknowledged by archeologists, is that the *piko* was *kapu*. It was a place reserved for the gods, and only on extraordinary occasions would an *ali'i* make the ascent. There is a story of Queen Emma's journey to the summit in 1882, and, apparently, it is in this account that the phrase *ka piko kaulana o ka 'āina* was first recorded. It might also be worth mentioning that on the arduous ascent to the summit she and her party stayed at an old stone house, *Hale Pohaku*, which I'm guessing must have been near here.

Another issue concerns questions about technology such as were raised by Heidegger's reflections on the problem of technology. For Heidegger, the problem with modern technology results from reducing all of nature to a mere resource for human use. One can certainly imagine a lot worse uses of Mauna Kea than using it as a resource for astronomy. Though there is an alliance between the protectors of Mauna Kea and the protectors at Standing Rock, the construction of the oil pipeline across the Dakotas seems perhaps worse than telescopes on Mauna Kea, and surely the use of Yucca Mountain, a sacred place for the Shoshone people, as a repository for nuclear waste is much worse. Nevertheless, even though ancient Hawaiians were astronomers using the stars to navigate, they didn't build massive telescopes that would dramatically change the landscape and have such a lasting impact upon the land. Obviously, the common element in all three cases concerns how the land was appropriated and taken out of the control of the indigenous peoples.

In the end the case for building the TMT rests upon the importance of the mission of the telescopes, and for the proponents this justifies the natural or cultural impacts that cannot be avoided. We are reminded that the Mauna Kea Observatories have led both to the development of innovative technologies that have contributed to "making the world a better place" and also to "amazing discoveries that have advanced civilization". In pushing our vision deeper into space and further back in time than ever before, the TMT would be another great leap for humankind.

Its development will lead to further technological innovation and it serves everyone in seeking to better understand our place, the place of all humankind, in the universe.

In coming to a conclusion, I would like now to return to the ancient Hawaiian chant, 'A Song for Kualī'i,' from which the title of this presentation is taken. There are apparently a number of versions of the chant and I found a translation of one version in *The Journal of the Polynesian Society* in the year 1893. Ku was an *ali'i* living on Oahu a couple of generations before the arrival of Captain Cook. The translators explain that the chant was spoken to Ku before a great battle. It begins reciting his genealogy and telling of his exploits in war. In asking a series of questions such as 'For whom is the rain?,' and 'For whom is the sea?,' and even 'For whom are the stars?,' the chant asserts that everything belongs to Ku, the land, the sea, the rain, and even the sun and the stars. The chant goes on at great length explaining who Ku is by contrasting him with what he is not. He is not like the *ohia* tree with its *lehua* flowers, not like waving leafed *olapa*, not like the sweet smelling *poholua* tree, not like the *mamaki*, not like the *naia*, the dolphins in the sea. At the end the chant finally reveals who he is, and it says: "Ku is a *haole* from Kahiki." Yes, it was rather surprising to read that; but let me assure you that even though 'Kahiki' can mean a 'foreign country', the chant is not saying he is a white man from America. The translators explain in their introduction that the word *haole* meant something like 'supernatural being.' The chant is lifting Ku up above the ranks of ordinary men. It finally ends by declaring him to even be a god, the peer of Lono, Kane, and Kanaloa. The chant is thus extolling his status as *ali'i*; and thus what we find here is a narrative that displays the *kapu* system in which all of the *āina*, and even the sun and the stars, belong to the *ali'i*.

Most contemporary *haoles* will dismiss the Hawaiian world-view as inferior to the modern world-view that is the product of the Enlightenment. The challenge in dealing with the lingering problems of colonialism, however, requires recognizing the ways in which the development of the Enlightenment, with its celebration of individualism and private property, freedom and democracy, science and technology, was always entangled with colonialism. Perhaps, in moving forward we have to proceed carefully in finding a way to defend freedom without being blind to economic oppression, democracy without overlooking when it is used to justify imperialism, and scientific inquiry without turning away when it may conflict with the demands of justice.

It is perhaps ironic that the latest scientific evidence warning of the danger posed by the problem of climate change suggests perhaps that modern Western civilization is not as advanced in some ways as earlier indigenous cultures that emphasized a kinship relationship between humans and the natural world. There is no question that the development of our modern industrial civilization has reached a point of crisis. In an article in the Smithsonian titled "The Heart of the Hawaiian Peoples' Arguments Against the Telescopes on Mauna Kea," Doug Herman, a geographer and specialist in cultural knowledge of Hawai'i and the Pacific Islands, draws attention to a renewed interest in indigenous peoples' world views as a result of this global crisis. Herman emphasizes that in the dispute about the summit of Mauna Kea "what is really at stake, however, is a conflict between two ways of knowing and being in the world" (Herman, 2015) and what he suggests is that perhaps there is something valuable to be learned in understanding the heart of the Hawaiian peoples' arguments against the telescope. In another article, Herman writes about the current voyage of the Hōkūle'a, the famous replica of an ancient Polynesian voyaging canoe. The title for its current worldwide voyage is *Mālama Honua* ("to take care of the Earth"). Herman quotes the famed navigator Nainoa Thompson who succinctly summed up the problem with our

Conflict on Mauna Kea: For Whom Are the Stars?

modern civilization: "The sail plan we're on is not sustainable" (Herman, 2014). Herman emphasizes that it may be difficult to make the transition to a sustainable civilization, but it might be possible, he suggests, if we realize that "we are all in the same boat" (Herman, 2014).

In closing I would like to call attention to a shocking conclusion that the latest climate science may be suggesting, and that is that, yes, we may indeed all be in the same boat—but unfortunately it is not the Hōkūle‘a, but the Titanic. One could go on at length, I think, exploring how perfect the Titanic may be as a metaphor for our modern civilization. In any case, many scientists are warning that the problem of climate change is much, much worse than most realize. Some scientists think that we are very close to or maybe even already past the tipping point when climate change will be irreversible no matter what we do. It seems more and more obvious that unless we quickly develop a sustainable sail plan that we are headed toward extinction. I cannot definitively answer the question of whether the TMT could be consistent with such a sail plan, but it would surely be tragically ironic—and perhaps a sad final epitaph for humankind—if the telescope enabled us to discover something about the origin of the universe, and helped us find our place in the universe, just as we were about to go extinct because we never found our place on Earth.

Conflict on Mauna Kea: For Whom Are the Stars?

References:

- Chauvin, Michael E. 1993. "Astronomy in the Sandwich Islands: The 1874 Transit of Venus." *The Hawaiian Journal of History*, vol 27.
- Downes, Lawrence. 2015. "The Fight Over Mauna Kea." *The New York Times*, June 25, 2015. Retrieved from <http://takingnote.blogs.nytimes.com/2105/06/25/the-fight-over-mauna-kea/>
- Eliot, T.S. 1943 "Little Gidding." Four Quartets. Retrieved from <http://davidgorman.com/4Quartets/4-gidding.htm>
- Heidegger, Martin. 1977. "The Question Concerning Technology" in *Martin Heidegger: Basic Writings*. Edited by David Farrell Krell. New York: Harper & Row. Martin Heidegger. Vorträge und Aufsätze. Pfullingen: Gunter Neske Verlag, 1954.
- Herman, Doug. 2014. "A New Way for Stewardship of Mother Earth: Indigeneity." *Smithsonian*, September 30, 2014. Retrieved from <http://www.smithsonianmag.com/smithsonian-institution/new-way-stewardship-mother-earth-indigeneity-180952855/>
- Herman, Doug. 2015. "The Heart of the Hawaiian Peoples' Arguments Against the Telescope on Mauna Kea." *Smithsonian*, April 23, 2015. Retrieved from <http://www.smithsonianmag.com/smithsonian-institution/heart-hawaiian-people-arguments-arguments-against-telescope-mauna-kea-180955057/?no-ist>
- Johnson, George. 2014. "Seeking Stars, Finding Creationism." *The New York Times*, October 20, 2014.
- King, Serge Kahili. 2001. "Getting Centered." *Aloha International*. Retrieved from <http://www.huna.org.html/centered.html>
- Lafrance, Adrienne. 2015. "What Makes a Volcano Sacred?" *The Atlantic*, October 30, 2015.
- Leopold, Aldo. 1966. *A Sand County Almanac*. New York: Ballantine Books.
- Lili'uokalani, L. 1897. *An Account of the Creation of the World According to Hawaiian Tradition*. Translated from the Original Manuscripts preserved exclusively in her Majesty's family. (Reprint by Pueo Press, 1978)
- Lind, Ian. 2015. "The Legal Challenge to the Thirty Meter Telescope." *Honolulu Civil Beat*, April 22, 2015. Retrieved from <http://www.civilbeat.com/2015/04/ian-lind-the-legal-challenge-to-the-thirty-meter-telescope/>

Conflict on Mauna Kea: For Whom Are the Stars?

- Loomis, Albertine. 1976. *For Whom Are the Stars?* Honolulu: The University Press of Hawaii.
- Lyons, Curtis J., translator, "The Song of Kualii of Hawaii," *Journal of the Polynesian Society*, 1893.
- Maly, Kepa and Onaona Maly. 2005. *Mauna Kea—Ka Piko Kaulana O Ka ‘Āina (Mauna Kea: The Famous Summit of the Land): A Collection of Native Traditions, Historical Accounts, and Oral History Interviews for: Mauna Kea, the Lands of Ka`ohe, Humu`ula and the ‘Āina Mauna on the Island of Hawai`i*. Kumu Pono Associates, LLC.
- Nāone, C. Kanoelani. 2008. "O Ka ‘Āina, Ka ‘Ōlelo, A Me Ke Kaiāulu," *Hūlili: Multidisciplinary Research on Hawaiian Well-Being*, Vol. 5. 2008.
- Osorio, Jonathan Kamakawiwo‘le. 2002. *Dismembering Lāhui: A History of the Hawaiian Nation to 1887*. Honolulu: University of Hawai‘i Press.
- Pukui, Mary Kawena, E.W. Hartig, and Catherine A. Lee. 1972. *Nānā I Ke Kumu (Look to the Source)*. Honolulu: The Queen Lili‘uokalani Children's Center, Lili‘uokalani Trust.
- Trask, Haunani-Kay. 1999. *From a Native Daughter: Colonialism and Sovereignty in Hawai‘i*. Honolulu: University of Hawai‘i Press.
- Tuan, Yi-Fu. 1977. *Space and Place: The Perspective of Experience*. Minneapolis: University of Minnesota Press.