

MOTION TO BRING ON REBUTTAL WITNESS ON BEHALF OF KEALOHA PISCIOTTA AND MAUNA KEA ANAINA HOU.

Comes now, Petitioner Kealoha Pisciotta and Mauna Kea Anaina Hou, Who wish to call Kupuna Liko Martin and Mr. Tom Peek as rebuttal witnesses in our case.

Motion in support of the following Rebuttal Witnesses.

Kupuna Liko Martin has requested the opportunity to be heard and to challenges the general assertions made by University witnesses claiming that the 8 Criteria have been met and that this project will not have a negative impact on the health and wellbeing of the Native Hawaiians/Kanaka Maoli People's, that is will not impact the veiwplanes, open spaces and natural beauty or that the TMT has adequately analyzed and evaluated the projects actually impact including those that damage the spiritual and cultural nature and associated practices or damage the sacred nature of Mauna Kea. His testimony will rebut UH witness such as Mr. Jim Hayes and others who may have asserted such claims. Kupuna Martin's rebuttal testimony is attached below.

Mr. Tom Peek is a Planner has education and work experience in planning and public policy. His testimony would be brought forward to rebut testimonies of Drs. Edward Stone, Gary Sanders, Robert McLaren and Günther Hasinger and the testimony of other witnesses that may have made the following assertions;

- The assertion that TMT and UH officials were surprised at the level of public opposition to their telescope proposal.
- The assertion that astronomers and UH and DLNR officials conscientiously addressed the numerous environmental, cultural and legal concerns raised by the community about further telescope development on Mauna Kea.
- The assertion that astronomers and UH and DLNR officials are interested in restoring balance to the mountaintop and its multiple uses.
- The assertion that UH and DLNR created the Office of Mauna Kea Management(OMKM) to better manage the mountain.

We would like the record to reflect that without actual transcripts it is difficult to name all the possible witnesses that may have made various assertions or that would require rebuttal testimony. We thank you for your time and consideration.

In Aloha we remain

/s/ Kealoha Pisciotta on behalf of herself and Mauna Kea Anaina Hou

Statement of Liko-o-kalani Martin as a witness regarding the Contested Case hearing relating to the construction of a Thirty Meter Telescope on the summit of Mauna a Wakea, aka Maunakea Mountain situated in the Hawaiian Archipelago on the Island of Hawaii.

Statement of Liko-o-kalani Martin DOB, October 25, 1945, Place of Birth, Aiea, Oahu.

My name is Liko-o-kalani Martin, a Part-Hawaiian native Inhabitant of Hawaii, and a part of the group identified under the United Nations Charter, Chapter XI- Declaration Regarding Non-Self-Governing Territories under which Hawaii was listed between 1946-1959.

I testify as a living person, a Part-Hawaiian, Heir with Rights, Titles and Interest in continuity with the Kingdom of Hawaii, and a protected person under international law.

My comments are in regards to the eight (8) criteria required for the issuance of a permit wick would allow the construction of a thirty millimeter telescope in the summit area known as the Ring of Shrines.

If the proposed construction of the TMT was to proceed, it would have an impact of destroying a personal cultural link to the continued use and occupancy of Maunakea by my fellow Kanaka Maoli. Maunakea stands as a historic monument in the creation of this world, and a pillar and institution of indigenous knowledge with respect to the human understanding of astronomy and the universe as we know it.

In my attempt to perpetuate and protect the sanctity of Mauna a Wakea, I see before me many obstacles that impair my ability to do so. The following are a list of those obstacles due to enforcement of distinctions, exclusions, restrictions, and limitations exclusively based on grounds of race, colour,

descent or national or ethnic origins which constitute a denial of fundamental human rights, as applied to fulfilling the eight (8) criteria:

- 1) Denial of my right of political self-determination in conformity with the purpose and principles of the United Nations Charter, and freedom to pursue economic, social and cultural development.
- 2) Deprive me of a means of subsistence, and access to the natural wealth and resources.
- 3) Lack of respect to ensure the protection of and exercise of my civil and political rights without distinction of any kind, such as race, colour, sex, language, religion, political or other opinion, national or social origin, property, birth or status.
- 4) The absence of laws which give effect to the protection of my freedoms, and my civil and political rights.
- 5) Lack of an effective remedy for disputes due to the lack of a court of competent jurisdiction.
- 6) Lack of compliance by persons of authority or those who purport to act in an official capacity.
- 7) Lack of equal respect for men and women in the enjoyment of civil and political rights.
- 8) Lack of consistency in the providing of protections under international law to prevent discrimination on the grounds of race, religion, and social origin.
- 9) Lack of a State party to notify the Secretary-General of the United Nations of the derogation from international obligations to adhere to the rule of law, in a time of emergency that is affecting my group as a whole and in part who have an interest and are intrinsically connected to Maunakea by national origins.
- 10) The implication by the USCSOH that they are facilitating, engaging in activities and performing acts that are aimed at destroying and limiting aspects of my rights and freedoms, and those of my national group.
- 11) The restrictions and derogations from my fundamental human rights, under the pretext that inadvertent discrimination is acceptable.

- 12) Arbitrary deprivation of my right to life.
- 13) Subjection to serious crimes which are contrary to the International Convention on the Prevention and Punishment of the Crime of Genocide.
- 14) Subjection to inhumane and degrading treatment.
- 15) Subjected to a life in servitude.
- 16) Arbitrarily denied of my liberty, security, and/or protection from arbitrary arrest and/or detention.
- 17) Lack of competent judges or officers to exercise judicial power.
- 18) Lack of protection from unlawful arrest or detention or an enforceable right to compensation.
- 19) Denial of my liberty of movement.
- 20) Control over my right to freedom of thought, conscience, and the manifestation of religious worship, observance, practice and teaching.
- 21) Pressure and subjugation to coercion in the impairment of my religion and beliefs.
- 22) Lack of protection of the national interests, and integrity of our "national lands". Advocacy against national identity constituting an incitement to discrimination and hostility.
- 23) Restrictions on the right of peaceful assembly in the protection of Hawaiian national interests, safety, spiritual health, morals, rights, and freedoms.
- 24) Lack of restrictions on foreign armed forces and police from preventing freedom of association in the formation of unions for the protection of our national interests.
- 25) Lack of protection of the families, Hawaiian and Part Hawaiian, and their lawfully vested interests, and that society as a whole and in part, by the United States as the administrative Power over Hawaii.
- 26) Unequal protection before the law by discrimination based on race, religion, political or other opinions, and national origins.
- 27) Denied the right to enjoy a cultural lifestyle, in community with other members of our group.

- 28) Failure by the U.S. as the Administering Power over Hawaii to recognize the applicability of international laws relating to the protection of political and civil rights of the Hawaiians and Part Hawaiians who are protected persons under international law, as a result of the confessions of illegal acts contained in the U.S. “apology” resolution.
- 29) Prohibition and impairment of my, and my national groups, rights in the utilization and enjoyment of our national wealth, natural wealth and resources.

Submitted before the people’s tribunal-Contested Case regarding the contemplated construction of a thirty millimeter telescope near the summit of Mauna a Wakea.

_____/_____
Liko-o-kalani Martin (Signature) (Date)

Rebuttal Testimony of Tom Peek

Former Mauna Kea Observatory Guide and Author

Contested Case Hearing for the TMT Conservation District Use Permit, February 2017

Biographical statement: Tom Peek, former observatory guide and author

I witnessed firsthand twenty-nine years of the five-decade controversy over Mauna Kea astronomy development, starting in 1988 when I was hired to expand the visitor information program for the Mauna Kea Observatories¹ as an RCUH (Research Corporation of the University of Hawai‘i) employee. Over those many years I’ve also had personal conversations and/or correspondence with key members of the astronomy community (including TMT leaders), participated at myriad UH, DLNR, TMT and other hearings since 1999, and visited the upper regions of the mountain—on my own, with family, and with Native Hawaiian cultural practitioners.

Along the way I have written about the controversy for newspapers and other publications in Hawai‘i and on the continent, including *Sky and Telescope* magazine, the *San Jose Mercury News* and the *Sacramento Bee*. Mauna Kea and astronomy also play significant roles in my award-winning multicultural novel *Daughters of Fire*, and the telescope controversy influenced two underlying themes of the book. Indeed, I have probably written more about this controversy over a longer period of time than any other writer.

Deepening my observations over the years has been my professional training in planning and public policy. I hold a Master’s degree from the University of Minnesota’s Hubert H. Humphrey Institute for Public Affairs, and before being hired to expand the observatories’ visitor information program, I wrote public policy studies (including on environmental and land use issues) for the University of Minnesota’s Center for Urban and Regional Affairs, where I worked for almost a decade.

Summary: A rebuttal to University of Hawai‘i and Thirty Meter Telescope witnesses

This testimony recounts historical information (some available to me only because I was an “insider” employed by the observatories) that rebuts key assertions made by University of

¹ I was the first Manager of the Mauna Kea Visitor Information Program from January 1988 to January 1989, after which I worked as a consultant to the University of Minnesota Center for Urban and Regional Affairs writing a Ford Foundation-funded sequel to a documentary I’d produced there. But sorely missing the Big Island and Mauna Kea, I turned down an offer to return to my old university job and moved back to the island. A short while later Tom Krieger rehired me to work as one of the part-time guides, which I did from December 1991 to May 1996, while also periodically teaching writing at UH-Hilo and English at United Hawai‘i College.

Hawai‘i (UH) and Thirty Meter Telescope (TMT) witnesses, including Drs. Edward Stone and Gary Sanders of the TMT project and Drs. Robert McLaren and Günther Hasinger of the Institute for Astronomy. These include:

- *The assertion that TMT and UH officials were surprised at the level of public opposition to their telescope proposal.* I will show that the island community’s opposition to additional telescopes—and TMT in particular—has been obvious for more than a decade, in hearings and in the media, and that only a person with their eyes and ears closed could possibly make the claims of surprise that TMT and UH officials have made during this hearing.
- *The assertion that astronomers and UH and DLNR officials conscientiously addressed the numerous environmental, cultural and legal concerns raised by the community about further telescope development on Mauna Kea.* I will show that the opposite is true, that those concerns were never really taken to heart by those officials or the astronomy community, including TMT officials.
- *The assertion that astronomers and UH and DLNR officials are interested in restoring balance to the mountaintop and its multiple uses.* I will show that they have, in fact, done just the reverse by continually pushing for more telescopes despite public concern that Mauna Kea has long been overbuilt.
- *The assertion that UH and DLNR created the Office of Mauna Kea Management (OMKM) to better manage the mountain.* I will show that OMKM’s creation—consistently opposed by community members from day one—was part of a UH/DLNR public relations strategy designed to facilitate building more telescopes—not create more balance—on Mauna Kea, and that part of OMKM’s mission was to fulfill UH and DLNR’s desire to limit the public’s access to the mountaintop.

My testimony also reveals:

- How the seeds of the TMT controversy go back many decades.
- How the once cordial relationship between Big Islanders and the mountain’s astronomy community deteriorated after Caltech and the University of California

(UC) began operating their Keck I telescope, and that that relationship further deteriorated after they proposed their Keck Outriggers and TMT projects.

- How efforts to educate the astronomers and UH and DLNR officials about longstanding Big Island community concerns fell largely on deaf ears, even after the State Legislative Auditor issued her scathing 1998 management audit.
- How DLNR and UH set themselves up for legal challenges that further tarnished their local reputations, as well as the reputations of Caltech and UC (and their telescope proposals).
- How TMT officials were forewarned in detail about the prodigious legal and political constraints on their proposal, but forged ahead anyway, further damaging astronomy's relationship with Native Hawaiians and the island community as a whole.

As part of this rebuttal, I have included four of my commentaries on the controversy, reflecting four periods of the dispute—pieces published in 1998, 2004, 2010 and 2015. Each contains information that supports my testimony.

Mahalo for considering the historical information and insider perspective offered here.

Twenty-nine years watching the controversy unfold

Being an astronomy and mountain guide for the observatories was one of the most exciting and inspiring jobs of my life, comparable only with my work as an eruption duty ranger and exhibit writer at Hawai'i Volcanoes National Park. My guide job also made me an integral part of the Mauna Kea astronomy community with an “insider” status that turned out to be a mixed blessing, exposing me to the less than savory aspects of our quest.

Expanding the visitor information program at Hale Pohaku

I was hired in 1988 to run—and expand—the observatories' fledgling visitor information program by the first “Mountain Superintendent,” Tom Krieger, who managed Mauna Kea Support Services. On my first day of work Tom told me that my job was to serve the people of the Big Island and Hawai'i by making Mauna Kea astronomy accessible to them. We did this with a Friday-through-Monday visitor program based out of our then brand new Visitor

Information Station (VIS) at Hale Pohaku. I manned the VIS during the day, led daily afternoon observatory tours on the summit, and conducted a three-hour stargazing program on Friday and Saturday nights. During my work stint I stayed in the astronomers' dormitory at Hale Pohaku.

I was also tasked with sharing the geology, biology, history and Native Hawaiian cultural heritage of Mauna Kea with the public—particularly nonresident visitors who usually knew little about the mountain that hosted our world-famous observatories. Driving up with Tom Krieger on my first day of work, he stopped near the construction camp below the VIS and walked me to an ancient *marae* of upright stones. “Archaeologists say this shrine was a religious site,” he explained. “I want you to remember, Tom, that Hawaiians used this mountain long before we showed up with our telescopes.” Tom’s message was reinforced when we got to the VIS. At that time fully half of the beautifully produced exhibits were about the non-astronomical aspects of Mauna Kea, including its rich Hawaiian cultural traditions and the mountain’s connection to the island’s paniolos in Waimea.

In the early days I conducted my stargazing programs on the summit using the Air Force 24-inch telescope and the 24-inch Planetary Patrol telescope. But the thin air at that elevation was too dangerous for children under 14. We had a couple of cheap, cardboard refractor telescopes at the 9,000-foot-elevation VIS, which Tom Krieger agreed were inadequate (and an embarrassment for an observatory complex with Mauna Kea’s growing international reputation). Our budget (funded by UH with small annual contributions from the telescopes) was extremely limited, so Tom approached Big Island businessman Chuckie Matsuo who gave us \$5,000 so that I could purchase an 11-inch reflector telescope that families could safely enjoy at that lower elevation, a telescope still used today. Tom also purchased a large screen TV and VCR to show astronomy and mountain-related videos. Once the new gear was in place, I helped publicize our expanded program in the media.

I was also occasionally asked to help out with special duties. I participated in our expanded nighttime program when Comet Shoemaker-Levy collided with Jupiter in July 1994. Twice I was called on to help search for missing visitors. On snow days I talked story with visitors about astronomy and the mountain (and provided weather updates) at a roadblock near two snow-play parking lots at the 12,500 foot elevation, built there to provide a safer location for snow-play between winter storms than the more hazardous summit. In the mid-1990s, after Sierra Club had raised concerns about old construction materials that had blown off the summit

in high winds, the new Mountain Superintendent, Ron Kohler, asked me to help him assess the extent of the problem and determine whether the size of some of the debris would require big military helicopters to remove it (it did). I also helped Ron write a proposal to the National Science Foundation for funding to expand our visitor program after he was unable to obtain increased contributions from the telescopes atop the mountain.

Despite being a newcomer, I was warmly accepted by the base camp staff, day crews from the various telescopes, as well as in-house astronomers from the international observatories, several of whom helped me master Hawai'i's night sky and identify exciting celestial objects that would thrill the lay people attending my stargazing program. Indeed, I soon became an integral member of the astronomy and base camp 'ohana at Hale Pohaku and developed friendships that persist to this day.

One of the great gifts of working at the Visitor Information Station and in the Hale Pohaku community was that I had the opportunity to meet Native Hawaiians and other islanders with longstanding connections to the mountain, including hunters, former Boy Scouts, and contemporary cultural practitioners. One of those practitioners was a young telescope operator for the British James Clerk Maxwell Telescope, Kealoha Pisciotta, and through her I was introduced to the deeper meanings of the mountain and to the kupuna who would eventually hanai me. Other mountain employees, including on the road crew, housekeeping staff and in the kitchen, had deep connections to Mauna Kea, and through them I met many others who quietly, behind the scenes, practiced their culture on the mountain. I now understood why, on my treks across the vast summit regions, I had seen evidence of contemporary use of ancient shrines, fresh offerings at old upright stones.

Interactions with visiting astronomers

One of the fascinating aspects of my job was chatting with visiting astronomers and gleaning from those conversations exciting examples of their research work on Mauna Kea to share with people attending my observatory tours and stargazing programs. Occasionally astronomers would come down to the VIS to look at our exhibits, and a few would ask questions about the mountain's geology and cultural traditions. Now and again an astronomer would add a day or two of island exploration to their professional trip and would stop by for advice on visiting Kilauea volcano and other sights. Many or most of the observers were physicists, so they

rarely attended my stargazing program, but those who did usually expressed delight at being able to look at these spectacular celestial objects directly through a traditional eyepiece rather than just watching data from them pour across their glowing computer screens.

What struck me about my numerous interactions with the astronomers was how little even those who had observed on Mauna Kea for years knew about the mountain or the islands that hosted their endeavor. For example, most did not know:

- That Mauna Kea is a dormant—not extinct—volcano
- That Native Hawaiians had long visited the upper slopes and summit of Mauna Kea or that they considered the mountain sacred
- That there was an alpine lake at the 13,000 foot elevation or that Hawaiians considered it sacred and had long deposited the *piko* (umbilical cords) of their children there
- That just below the lake stood the largest adze quarry in Polynesia or that its high quality stone blades had been traded throughout the Pacific Islands
- That Mauna Kea is the highest ancient burial ground in Polynesia
- That Hawaiians (and other Pacific Islanders) had long been masters of astronomy and celestial navigation
- That the remnants of an ancient observatory, rivaling Stonehenge, stood in the saddle between Mauna Kea, Mauna Loa and Hualalai
- That Native Hawaiians made up a significant portion of the state’s population (Currently, about 300,000 of the state’s residents have some Hawaiian ancestry, and 13% of Big Islanders identify themselves as solely Native Hawaiian or other Pacific Islander, with a much higher percentage having mixed ancestry that includes Hawaiian or Pacific Islander lineage.²)
- That Hawaiian culture had undergone a renaissance in the decades following statehood

The few astronomers who did visit the VIS or attend my programs seemed to appreciate that we provided this service to the public, and I came to realize that educating the observing

² “After 200 Years, Native Hawaiians Make a Comeback,” Pew Research Center, April 6, 2015; US Census Bureau Hawai‘i County Quick Facts, July 1, 2015 data.

astronomers was also an important function of the program. Now, given the conflicts that have ensued since then, I wish more scientists had taken advantage of it.

Discovering the politics of early planning

While my mountain job was inspiring—and incredibly fun—it did have one downside: sometimes when one is on the inside of an organization or group one learns more than one would like to know.

During the early weeks of my job Tom Krieger asked for a special favor. He'd noticed on my resume that prior to my time in Polynesia—Hawai'i and the South Seas—I'd earned a Master's degree from the Hubert H. Humphrey Institute of Public Affairs at the University of Minnesota and had spent nearly a decade on the staff of the University's Center for Urban and Regional Affairs writing public policy studies on various issues, including environmental policy and land use. Although I was only paid eight-something dollars an hour at the VIS, Tom asked, would I mind reviewing the planning documents for Mauna Kea? By then, so thrilled with this great new job, I agreed to do that for him, and he showed up a day or two later with a tall stack of documents, including the *DLNR Mauna Kea Plan*, the *University of Hawai'i Research Development Plan for the Mauna Kea Science Reserve and Related Facilities (UH RDP)* and the *Mauna Kea Science Reserve Complex Development Plan*. Tom wanted me to look at them with my more trained eye to help him evaluate whether the actions spelled out in these DLNR and UH documents would adequately protect the mountain's resources and properly serve the public.

In between tours and visitors popping into the VIS I read the documents. I was surprised and dismayed by their obvious political nature—plans that seemed designed more to legitimize telescope development than protect the mountain's multiple resources, with cleverly parsed language that superficially addressed concerns raised by hunters, skiers, environmentalists, and people concerned about Hawaiian “archaeological” sites, but without solid commitments to adequately mitigate potential negative impacts. Here was my early exposure to the planning documents³ that reflected—and facilitated—the pro-development collusion between DLNR and UH that years later Legislative Auditor Marion Higa would characterize in her 1998 audit as decades of state mismanagement. As she would conclude, “Both the university and the [DLNR] failed to develop and implement adequate controls to balance the environmental concerns with

³ As I recall, these planning documents were prepared by the Honolulu firm Group 70 International.

astronomy development.” (*Audit of the Mauna Kea Management and the Mauna Kea Science Reserve*, 1998, page 15)

I typed up a long evaluative memo to Tom, which, as it turned out, affirmed his own private conclusions. He then asked if I would fly over to Honolulu with him to convey this news to the UH Institute for Astronomy’s Associate Director at the time. Again I agreed. That was probably the shortest lunch meeting I ever attended, quickly terminated after Tom presented the Associate Director with my memo.

Because of Tom Krieger’s special assignment, I also knew from the get-go that a few years earlier DLNR and UH had promised the public they’d limit the number of telescopes on the mountain to eleven “major” telescopes and the two small 24-inch telescopes from the late 1960s that were anticipated to be removed (*UH RDP*, p. 42). According to the plans, that limit was imposed to address the public’s concern that “astronomy interests might completely take over the mountain” (*Mauna Kea Reserve Complex Development Plan*, p. 3). Whenever local folks came into the VIS worried about further development, I told them there were limits and that we would soon achieve them. Nothing beyond that was allowed, at least until the year 2000. I also told them—in answer to an even more frequent question—what I had been told, that there were no plans to limit the public’s access to the mountaintop.

Within a few years, both assurances would turn out not to be true.

Californians arrive to use Keck and the mountain atmosphere changes

Despite islanders’ longstanding worries about the mountain’s development, in those first years that I worked on the mountain, relations between the public and the cadre of international and local astronomers working there were pretty good. Astronomers showed genuine gratitude for having access to the dark, unpolluted skies above Mauna Kea, one of the last northern hemisphere sites suitable for cutting-edge astronomy. Observatory staff and visiting astronomers occasionally offered impromptu tours of their facilities, aided visitors with car trouble or when they got stuck in the snow, and happily contributed to community events and organizations in Hilo and Waimea. A few grew interested in Hawaiian culture and joined halau hula, took an interest in the Polynesian Voyaging Society or even studied Hawaiian language. Remember, this was back before remote observing, and anyone using the telescopes did so directly on the mountain rather than, as today, from control rooms in Hilo or Waimea or in university offices

elsewhere around the world. Being on the mountain fostered their genuine appreciation of its beauty and magnificence and for some, created a deeply felt bond.

All that began to change when a revolutionary new telescope appeared on Mauna Kea—the multi-mirror Keck I, the largest, finest telescope ever built. A more proprietary—and acquisitive—breed of astronomers began showing up on the mountain, particularly observers from the University of California and Caltech who had built the Keck. I remember dining at the astronomy base camp during that time when a haughty UC astronomer asked, “When are you going to gate the road to the summit and keep the public out?” Veteran astronomers and technicians immediately dressed down the newcomer, explaining that the mountain belonged to the islanders long before we astronomers showed up.

That new breed felt privileged, not because they observed from Mauna Kea, but because they had been chosen to use the celebrated emperor of telescopes. After Keck II saw first light and the other new telescopes (the Smithsonian Submillimeter Array, Subaru and Gemini) began construction, Mauna Kea became the most prestigious observatory complex on Earth, and the possessiveness of the new breed—especially astronomers from Caltech and UC—grew.

That attitude heightened—and public concern intensified—when astronomers’ future plans for Mauna Kea started trickling out in the media, including 16 more antennas for Smithsonian’s 8-telescope submillimeter array, six so-called “Outrigger” telescopes to add to the two Kecks, a 30-meter Next Generation Telescope (now called the TMT) to be placed on the northern plateau, and a joint US/Japan submillimeter array—MMA—comprised of a whopping 90 radio antennas to be built below the summit ridge near an important ancient burial site and right over an ancient trail coming up from Hamakua.

Mauna Kea controversy reflects post-statehood politics

During the early 1990s some local friends introduced me to the landmark 1985 study of post-statehood land use politics, *Land and Power in Hawai‘i, the Democratic Years*, by lawyer George Cooper and esteemed historian Gavan Daws. This 500-page tome documented in stunning—and disquieting—detail the often corrupt relationships between members of the ruling Democratic Party and real estate developers, labor union leaders, organized crime figures and government officials (including here on the Big Island).

The analysis in that book not only helped frame stories I was reading in the newspapers, but also helped me understand why things had gone so badly on Mauna Kea. How much of what was being characterized as “mismanagement” or “inept planning” was actually the result of a concerted effort by DLNR, UH and their allies in the construction industry to circumvent laws and misuse planning tools in order to develop an astronomy industry on the mountain? Indeed, I began taking note of construction company names on the equipment building Keck II and the other new observatories.

Meanwhile, as the 100th anniversary of the 1893 overthrow of Hawai‘i’s constitutional monarchy approached, newspapers were filled with stories about the US-backed coup d’état, annexation and statehood, as well as the protests, healing ceremonies, and other events leading up to the ‘Onipa‘a event during which 10,000 Native Hawaiians and others marched through Honolulu to ‘Iolani Palace. During that time I learned from my local friends and newspapers about the then three-decade-old Hawaiian cultural renaissance and the native sovereignty movement that had grown out of it. What deeply moved me during all this was the demonstrated persistence of the Hawaiians’ commitment to aloha, despite past and present discrimination and oppression that would have provoked most other cultures to violence.

Also recounted during that anniversary period were the many land use battles of the 1970s and ‘80s, including over Kaho‘olawe, Makua Valley, and the Wao Kele O Puna forest slated for geothermal development. Again I noticed that Hawaiians remained true to their tradition of aloha, even when civil disobedience occurred.

Given the cultural significance of Mauna Kea and astronomers’ ambitious plans to add at least seven more infrared/optical telescopes and over 100 submillimeter antennas to the mountaintop, no one with their eyes open could have missed that the Mauna Kea controversy had the potential to become yet another of those historic battles growing out of post-statehood development and the Hawaiians’ cultural renaissance and sovereignty movement.

Ninety-telescope proposal raises moral issue

It was finding out about the proposed MMA project of 90 submillimeter telescopes that compelled me to seriously consider quitting what had been one of the most inspiring and enjoyable jobs of my life (even though Ron Kohler had encouraged me to come on full-time if additional funding came through to expand our program to all week). But I decided that before I

would leave, I'd try to share what I knew of the faulty plans and the local community's concerns with my friends and colleagues in the astronomy community. I thought that as an observatory insider and astronomy enthusiast, who by then also had significant relationships with Native Hawaiians and other locals, I might be able to foster a greater understanding of just how disrespectful these expansion plans would look to Big Islanders, save for a few people in the construction industry and the chambers of commerce.

Trying to foster understanding

I urged a more sensitive, balanced approach with members of the mountain astronomy community, including astronomers and administrators I knew at the UH Institute for Astronomy (IfA) and at the various observatories, as well as technicians and other employees on the mountain. I was not surprised that some of those folks also felt that we might be wearing out our welcome and that a bigger conflict lay ahead. But the other message I got from them—with their longer experience—was that the current astronomy leadership, spearheaded by IfA Director Donald Hall, was unlikely to moderate its ambitions, even if that would improve our relations with the island community.

They were correct, and by the mid-1990s longstanding worry in the community had transformed into a full-blown controversy—on the island, in the media, and at the base camp. This controversy was fueled by news that windblown construction materials dating back to the first telescopes had scattered over miles of the upper slopes; that an important wekiu bug habitat—long identified for protection—had been severely damaged during Subaru's construction; and that the Smithsonian/Harvard group had carved into the side of Pu'u Poli'ahu during construction of their sprawling submillimeter array. It was only of matter of time before all kinds of other "mismanagement" issues hit the newspapers.

After the editorial board of the *Honolulu Advertiser* expressed its own concerns about DLNR and UH mismanagement in an Op-Ed and political cartoon, I decided to write my own Op-Ed, adding information that the newspaper apparently didn't have and offering the perspective of an astronomy enthusiast who also respected the mountain and the local community connected to it. My target audience for that 1996 editorial—and others I would write

over the years (including at the request of *Sky and Telescope's* editors)⁴—was astronomers, who I'd come to believe were good people doing noble science but who were largely ignorant when it came to the mountain's history and the island people who hosted them. At that point, and until recently, I truly believed that most members of that scientific community (and even some of its ambitious administrative leaders) would be surprised and offended by the unseemly history that had led to their renowned complex of telescopes.

After my Op-Ed was published, I got positive feedback from a number of astronomy employees on the mountain. One at Keck, for example, said, “thank you for giving me a place to stand” as an employee and a member of the Big Island community. In stark contrast was Dr. Hall's rebuking letter to me. Its coarseness and threatening tone irked me, especially since he himself had recognized my contributions over the years to improve our visitor program and our ties to the Big Island community. A few weeks later I resigned with a letter copied to our mountain 'ohana in which I expressed worry about the “general defensiveness” that had set in among astronomers and sadness that the “constructive dialogue” I had hoped for was not happening.

The controversy continued to build after the State Legislative Auditor issued her stunning 1998 rebuke of DLNR and UH, which more than confirmed critics' charges of mismanagement, broken promises, and flouted environmental laws. During their thirty years of managing Mauna Kea, she said, “little was done to protect its natural resources.” She also raised concern about the questionable way UH and DLNR had counted the multi-telescope arrays in order to circumvent the 11 major telescope limit promised to the public.

Rather than seize the “teachable moment,” DLNR and UH circled their wagons, issuing statements that either denied the problems or suggested that all that bad stuff was in the past, and that they were acting differently now. To make matters worse, UH President Kenneth Mortimer and IfA's then Interim Director, Bob McLaren, joined the Land Board Chairman, Michael Wilson, in blaming the public for whatever environmental and cultural damage had occurred. They proposed limiting islanders' access to the mountain, including nighttime restrictions, entry fees and a phase out of all non-astronomy vehicles on the mountain road. The public was outraged, and the stage was set for yet another, larger confrontation over IfA's ambitious “master

⁴ Four of these Op-Eds are included as part of my testimony. Together, they illuminate the history of four phases of the controversy—just after the 1998 Legislative Audit, during the early period of the TMT controversy, a few years into that controversy, and now.

plan” proposal for post-2000 expansion on the summit. That battle was played out at myriad hearings attended by hundreds of telescope opponents during which an old rebuke by former Big Island Mayor Herbert Matayoshi was resurrected, his slam that the domes were “pimples” blemishing the island’s landmark feature.

The public’s concern—fueled by the legislative audit, the defensive posture of UH and BLNR, and their proposal to limit public access—rendered astronomers’ plans for 100-plus additional telescopes not only embarrassing but politically untenable. Fortunately, the MMA project later decided to build their sprawling array (now called the Atacama Large Millimeter Array) in Chile’s Atacama Desert, saying that the high, dry site would better serve their submillimeter project. The Smithsonian Institution and Harvard also eventually dropped their 16-telescope expansion plan, apparently for budgetary reasons. Though the plans for both projects had been specifically criticized by Sierra Club and others, neither project publicly acknowledged community opposition as a reason for changing their plans. Nor did either say anything indicating that they had made those decisions out of respect for the island community or because of its many cultural and environmental concerns. Thus an opportunity to improve astronomy’s relationship with the community (albeit late in coming) was lost, and the push for the other telescopes intensified.

Broken Visitor Information Station promises

Among the broken promises *not* discussed in the Auditor’s report were those associated with our visitor information program. As time went on I had learned that the Visitor Information Station was a product of the controversy created by the second wave of telescopes in the 1970s and 1980s, when the State Legislature had demanded that a substantial visitor program be put into place. The reason the VIS is so small is because it was only half completed. Before his illness and death, Tom Krieger and I had gone over detailed blueprints of the 75-80 person auditorium that had been planned for the south side of the VIS and discussed possible nearby locations for one of the 24-inch telescopes that had long been promised to us once they were removed from the summit.

There had also been serious discussion over the years of establishing a fee-based shuttle service run by the visitor program to transport people without four-wheel-drive vehicles to the summit once or twice a day (tourists, particularly, had often expressed surprise and

disappointment when they found out there was no shuttle). Part of the rationale for the shuttle was to eliminate some of the tourist traffic on the summit—just then beginning to swell—without disrupting Big Islanders’ long tradition of driving up with their own vehicles. I’m not sure why that sound idea fell by the wayside. In the end, the Office of Mauna Kea Management and the Land Board encouraged dramatic expansion of summit traffic through policies that accommodated ambitious commercial tour operators, including a pro-development member of the Land Board at the time, Rob Pacheco.

Post-audit management response was mostly for public relations

When circling the wagons also proved untenable, UH and DLNR officials responded to the criticisms of the audit and the island community by proposing a new UH management body administratively located at UH-Hilo—the Office of Mauna Kea Management (OMKM). But the proposal was politically motivated, a public relations effort to respond to the audit-verified charge of gross mismanagement without actually addressing the community’s belief that their mountaintop had been overbuilt. The pitch for OMKM was that if management was improved (and located on the Big Island), building more telescopes (like those proposed in UH’s 2000 master plan, including TMT) would become more politically viable.

Sierra Club, Ka Lahui Hawai‘i, the Royal Order of Kamehameha, Mauna Kea Anaina Hou and others in the community opposed OMKM’s creation, rightly worried that UH—as a committed proponent of more telescopes—had an obvious conflict of interest that made it unsuitable for managing the mountain. Some wondered if even DLNR—despite its abysmal management record—would be better than UH management. But the best solution, they argued, would be to create a wholly new management agency designed to represent the legal “rightholders” to the mountaintop (as a conservation district comprised of ceded lands) rather than the same old “stakeholders” who had done such a poor job in the past. As Sierra Club’s Nelson Ho said in a June 2000 letter to the Board of Regents:

The [master] plan’s proposed management authority is little more than a glorified make-over of the existing Mauna Kea Support Services and is certainly insufficient to cope with the complex planning, monitoring, and enforcement requirements necessary to protect the mountain’s unique environmental and cultural resources. Sierra Club agrees

with Ka Lahui Hawai‘i that IfA has a significant conflict of interest on Mauna Kea which explains their inability to manage the mountain. Therefore, the Club continues to support Ka Lahui’s proposal to establish a new regulatory and administrative body to manage the mountain as a *public trust* subject to applicable federal, state and county laws.

In 2001 the Royal Order of Kamehameha and Mauna Kea Anaina Hou (both having also criticized the proposed OMKM) expanded on the idea of a conflict-free management structure in their detailed “Temple Report” (*Mauna Kea - The Temple: Protecting the Sacred Resource*).

Sadly, these widely publicized proposals were completely ignored by UH and DLNR officials, the State Legislature and the astronomy community. Since then community representatives have continued to object to OMKM and its inherent conflict of interest. As Nelson Ho said in a June 14, 2010 Op-Ed in the *Honolulu Star-Advertiser*:

Despite vigorously lobbying for more telescopes (and getting taxpayers to defend against legal challenges), UH continues to claim it can responsibly manage Mauna Kea – a "fox guarding the hen house" sham environmentalists and Hawaiians have long opposed. The Board of Land and Natural Resources' continued willingness to let UH police itself – avoiding BLNR's statutory responsibilities – makes Hawaii's land management agency little more than a rubber stamp for whatever international astronomy wants, the same unsavory arrangement two legislative audits lambasted.

Despite these constructive community proposals for a sounder management agency than OMKM, the only public official to openly advocate a new management arrangement—and only recently—was Big Island Mayor Harry Kim⁵.

OMKM’s mission to limit public access

One of the most discouraging aspects of the creation of OMKM has been its efforts to regulate non-commercial public access to the mountaintop. This effort grew out of statements by UH and DLNR officials as an almost vindictive reaction to the 1998 legislative audit. At

⁵ “A Mauna Kea ‘people’s park’? Kim to seek new designation for mountain,” Hawai‘i Tribune-Herald, December 6, 2016.

meetings and in the media, Sierra Club's Nelson Ho characterized those statements as "scapegoating the public." In a 2002 *Honolulu Advertiser* news article, Ho said the real issue was the environmental and cultural damage caused by astronomy interests, and the "industrialization and commercialization of the summit—not island residents driving up with their families."⁶ In his earlier 2000 letter to the UH Board of Regents responding to access restrictions proposed in the 2000 master plan, Ho challenged UH's argument that "public safety" demanded the restrictions:

The irony is that while the plan justifies these public restrictions largely on the basis of safety concerns, it is observatory and construction vehicles which, according to data in the plan, are making the roads hazardous (see page VIII-14 and 15 for detail).

While OMKM's creation of "rangers" on the mountain may have contributed to improved public safety in emergencies, their constant presence—including their attempts to interfere with Big Islanders' access to parts of the mountain and to order visitors off the mountaintop after sunset (without legal authority to do either)—has not enamored the islanders to the rangers whose regulatory presence is seen as a part of the continuing effort of astronomers to take over the mountaintop.

OMKM has also kept the road closed at Hale Pohaku during and between inclement weather more than we had back when Mauna Kea Support Services was in charge, further adding to local resentment (and compelling some residents to drive up the Mauna Loa weather observatory road in search of snow after blizzards⁷).

It may be shocking—but certainly not surprising—that OMKM is now trying to enact rules that regulate Native Hawaiians' traditional uses of Mauna Kea, even requiring that they get a permit to construct shrines and other traditional religious and cultural structures on the mountain. After all that's been done to their sacred mountain to promote astronomy over these past five decades, the effrontery of this proposal demonstrates that OMKM's mission is about anything but creating more balance on Mauna Kea.

⁶ "Group opposes plans for Mauna Kea Access," *Honolulu Advertiser*, October 14, 2002.

⁷ Reported on Big Island Video News, December 4, 2016.

“A man hears what he wants to hear and disregards the rest”⁸

During the two decades since I resigned my post, I’ve continued to try to broaden the perspective of members of the astronomy community, through public testimony at numerous hearings and through private conversations and correspondence. Being firmly rooted in both communities, it seemed a logical role for me to play, and also reflected my own concerns for the mountain that I had come to love. I urged the scientists to take to heart the island community’s concerns (not just offer public relations platitudes) and to seriously consider moderating their ambitions—and restore balance to the mountaintop—if for no other reason than to help reestablish the cordial relations that had once existed between the astronomy and the Big Island communities.

Some of the key people pushing TMT are among those to whom I communicated this message, including former IfA Director Rolf-Peter Kudritzki, IfA Associate Director Bob McLaren, IfA Assistant Director Michael Maberry, former Keck Observatory Director Fred Chaffee, TMT Board members Drs. Henry Yang and Michael Bolte, Caltech President Jean-Lou Chameau, and billionaire TMT donor Gordon Moore’s consultant Dr. Peter Adler of the Keystone Center.

I also submitted occasional Op-Eds to newspapers, including two in California that I’d hoped would influence Caltech and UC. Those institutions had by that time generated bad blood in Hawai‘i pushing their Keck Outriggers project (ultimately derailed by court rulings that found it in violation of state and federal laws⁹) and their Thirty Meter Telescope (also stymied by courts who upheld the due process and civil rights of Native Hawaiians in four separate rulings against the DLNR’s efforts on behalf of the telescope¹⁰).

The only person of that key leadership group to take to heart what I and other islanders had told him was Dr. Peter Adler, the consultant hired by Gordon Moore to find out if the \$200

⁸ From the song, “The Boxer” by Paul Simon.

⁹ The Keck Outriggers was probably the first federally-funded telescope on Mauna Kea to actually follow the requirements of the National Environmental Policy Act and Section 106 of the National Historic Preservation Act, but only after a successful lawsuit brought by Native Hawaiians and others. Previous federally-funded telescopes on Mauna Kea (that apparently also did not follow these laws) include the NASA Infrared Telescope, Smithsonian Submillimeter Array, the Very Long Base Array Telescope, and the Gemini Telescope.

¹⁰ Over the past 14 months, DLNR has lost four lawsuits upholding the due process and civil rights of Native Hawaiians—starting with the December 2015 Supreme Court decision vacating BLNR’s CUA permit for TMT and followed by three lower court rulings: one voiding BLNR’s “emergency” access rules during the TMT protests, one voiding several DOCARE arrests of Native Hawaiians trying to protect their mountain from “desecration,” and one vacating BLNR’s consent of TMT’s UH-issued sublease.

million “investment” donated to TMT by his philanthropic foundation was in jeopardy. Adler’s prescient 2007 report to the Gordon and Betty Moore Foundation (*Assessment of the Risks of Siting the Thirty Meter Telescope on Mauna Kea*) outlined the many political and legal “tripwires” that could derail Moore’s legacy telescope. But Moore and his foundation, along with TMT’s Board of Directors, UH officials, the Land Board and the Office of Mauna Kea Management ignored Adler’s report and forged ahead with their plans for Mauna Kea.

I knew at the time that our local conflict—and the extraordinary pressure being placed on Hawai‘i’s mountain and people by TMT and its partners—was but a small part of a larger battle between powerful scientific organizations who sought twenty-first-century dominance in the world of astronomical research (a dominance that Caltech and UC had secured in the twentieth century with their Kecks). That rivalry is the subtext of astronomers’ current quest to build three giant “Next Generation Large Telescopes” (also called “GODS” or “Giant Optical Devices”). They are the Americans’ Giant Magellan Telescope (GMT) and the TMT, and the European’s Extremely Large Telescope (E-ELT), which at 39 meters will be the world’s largest.

What I didn’t realize, until *Scientific American* revealed it in a December 2015 exposé called “Telescope Wars,” was that a 100-year-old “grudge” between Caltech and the Carnegie Institution for Science in Washington D.C. (backers of the Magellan) was why the two renowned American institutions had not joined forces—and funding—to build a single giant telescope in Chile. For one thing, the National Science Foundation can’t afford to fund both American projects, and until recently the two competed over which one would get NSF’s big sack of federal government aid. In 2000 Carnegie invited Caltech to collaborate, but nothing came of it, and the battle shifted to Hawai‘i. Now, according to the article, American astronomers worry that neither telescope has sufficient funds for its completion and operation.

What IfA and TMT officials never tell the local folks is that TMT and its decision to locate on Mauna Kea does not have unanimous support among American astronomers, particularly those whose research will be affected by the closure of as many as 84 older observatories in order to shift funding to TMT and a few other large projects¹¹. In addition, some astronomers have always preferred the Chilean site, not only because of its competitive “seeing conditions,” but because, frankly, with all the recent and planned observatory construction there, Chile is where most cutting-edge astronomy will take place in the early twenty-first century, in

¹¹ “Big Glass and the Age of New Astronomy,” Dennis Hollier, *Air & Space Magazine*, September 2016.

the same way that Hawai‘i did so in the latter twentieth century. Nor are all astronomers happy with the way Caltech and UC have treated the islanders, particularly Native Hawaiians¹².

Giving up

So, sadly, little came of my communication efforts. Indeed, multiple hearings held by TMT, UH and DLNR demonstrated their uncompromising intransigence. Hundreds of Big Islanders testified—almost all in opposition—raising numerous environmental, cultural and legal concerns. But the officials from TMT, BLNR, UH and the Office of Mauna Kea Management pushed ahead anyway, ignoring the hearings’ main message—that the mountaintop is overbuilt. I gnashed my teeth, with both embarrassment and dismay, each time one of the scientists or government officials—or the lawyers representing them¹³—responded with ethnocentric arguments or patronizing tones. “Balance” to them meant getting permission for more telescopes from a community that had already given them more than the mountain or the islanders could handle, and so they called the opponents “uncompromising.”

I finally concluded that the California and Hawai‘i astronomers—particularly their leadership—will never give up their ambition to build more telescopes on Mauna Kea. Indeed, they won’t even commit to TMT being the last telescope, but instead parse their language to say that the TMT “site” will be the last area of the mountaintop where they’ll build telescopes. Also, many local residents don’t realize that several of the existing telescopes on the summit have long planned to “recycle” their sites with much larger telescopes—such as the 10-meter Maunakea Spectroscopic Explorer (MSE) that officials at the Canada-France-Hawai‘i Telescope (CFHT) hope will replace their current 3.6 meter telescope¹⁴. No wonder CFHT Executive Director Doug Simons is devoting so much public relations time drumming up support for TMT; a loss there could imperil his observatory’s next telescope (something news reports confirm¹⁵).

The acquisitiveness of these astronomers may be understandable (given human frailty), but what to me is unforgiveable is their unwillingness to recognize the real nature of what they’re

¹² “The Thirty Meter Telescope Reveals Ethical Challenges for the Astronomy Community,” Dr. Janet D. Stemwedel, *Forbes*, 6-12-15.

¹³ Articles in the *Honolulu Star-Advertiser* and *Ka Leo*, published before the current Contested Case Hearing began, indicate that Hawai‘i taxpayers may already have spent as much as \$5 million dollars on UH attorney fees to fight Native Hawaiians and other citizens challenging telescope permits on Mauna Kea and Haleakala. How much taxpayers have spent for attorneys representing DLNR has not yet been reported, as far as I know.

¹⁴ Visit <http://mse.cfht.hawaii.edu/> for details.

¹⁵ “Common Ground for the Peak,” *Honolulu Star-Advertiser*, 5-17-15.

in the middle of—a longstanding land use conflict that is not about science versus religion (as they so often bemoan), or reverence for the past versus commitment to progress (as they also say), but about the privileges of American colonial power over respect for first nations people and their civil rights. Nor is this land use conflict about islanders' ignorance of the benefits of astronomy, but about the cultural, environmental and visual costs of those benefits. The clash is also not about nitpicky procedural delays caused by irrational naysayers, but about citizens fighting a continuing pattern of state and federal agencies violating state and federal laws in order to expand astronomy on Mauna Kea.

And most damning of all, this conflict is sustained by that same collusion between ambitious astronomers and the less-than-stellar state agencies that the Legislative Auditor exposed a decade ago (DLNR and UH). Sadly, it's about scientific parochialism, unseemly politics, and shoddy, disingenuous planning to benefit political and economic special interests and create another construction boom on the mountain (like the one underway when I was a guide).

I still love the cosmos and astronomy, and you'll often find me outdoors with my wide-field binoculars gazing at planets, galaxies, nebulae or even the odd comet (as I was on the night of New Year's Day). But I'm no longer certain about the profession's nobility, and I wonder if scientific discoveries were always achieved this way, through moral-numbing ambition? (And who else was crushed under *those* fervent feet?) Or is this a mostly modern phenomenon best exemplified by American astronomers and their conflicts with native people over mountains like Kitt Peak, Mount Graham and Mauna Kea?

In either case, the astronomy community has some real soul searching to do—and apologies to offer. After all that I've seen since I conducted my first stargazing show from Mauna Kea's summit back in 1988, I find myself skeptical that I'll ever hear those apologies. I am optimistic, however, that Hawai'i's courts will continue to uphold the due process and civil rights of Native Hawaiians and the public. And that may bring about some long overdue introspection and a real course correction—finally.

Respecting Mauna Kea

Tom Peek urges, "No more telescopes, please!"

I believe exploring the heavens is nothing less than the search for human identity — to discover our place in the universe.

The summit of Mauna Kea is undeniably one of the best places on Earth to do so. But we must never take for granted the mountain's rich Polynesian heritage or the island people who have allowed astronomers to observe there. Sadly, we are wearing out our welcome. Dazzled by exciting visions of discovery, many astronomers, particularly the observatory leadership, have blinded themselves to Mauna Kea's history and even its scientific gifts in geology, biology, and archaeology.

As one of the observatory's first guides, I explained astronomical marvels and showed the night sky to thousands, all the while learning about the mountain itself. The highest peak in Polynesia (13,796 feet), Mauna Kea is sacred to native Hawaiians and other islanders. Its stunning volcanic slopes contain the Pacific's largest ancient stone adz quarry and dozens of religious shrines. Here Hawaiians buried their important dead, and rare plants and insects evolved through millenniums of frigid winters.

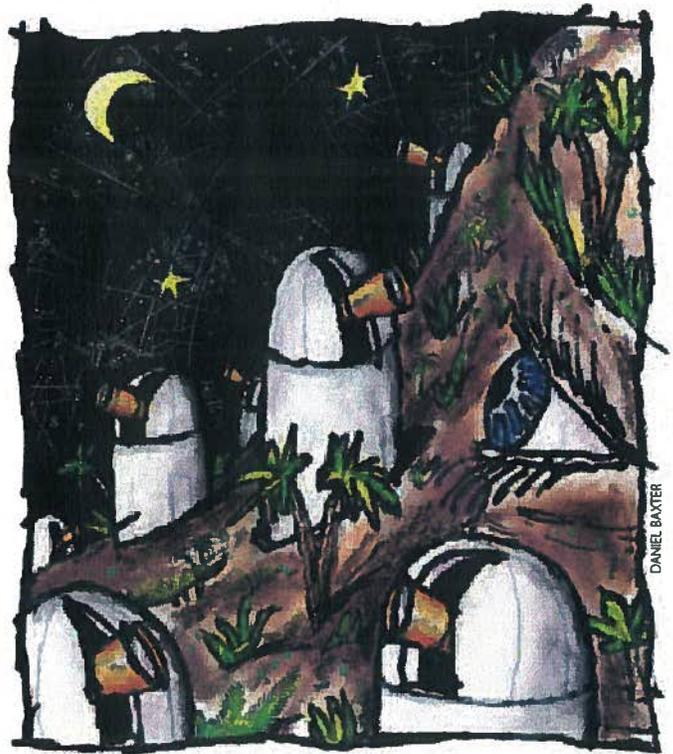
A Hawaiian elder once told me that at first some thought having modern astronomers on the sacred mountain might be appropriate — given Hawaiians' own heritage of stellar navigation and astronomy. But as the new stargazers continued to erect their telescopes, that viewpoint changed. As the domes increased from eight in 1988 to 20 today, the once-quiet summit road became a busy thoroughfare for construction crews, observatory staff, and tourists. The gigantic cinder cones, once pristine, became littered with construction trash blown by high winds.

More and more islanders expressed worry about their mountain. I watched — and tried to explain — the construction of the Smithsonian Institution's eight-telescope array, a colossal project that violated the telescope limit adopted by the University of Hawai'i and the state land board in the early 1980s. At that time, in response to islanders' concerns, the university's regents had agreed that only 11 major telescopes (along with two 24-inch telescopes existing at the time) would be allowed before the year 2000.

However, in March 1995 the university's Institute for Astronomy (IfA), citing a lack of funds, persuaded the land board to discard many of the master plan's provisions. During the Smithsonian construction, a cinder cone long acknowledged as the sacred home of the Hawaiian snow goddess, Poli'ahu, was thoughtlessly (and unnecessarily) excavated. I have heard the persistent rumors among construction crews that Hawaiian burials have been disturbed during the building of the telescopes.

Two years ago we learned that Japan and the National Science Foundation were studying Mauna Kea as the possible site for a jointly operated interferometer of 90 submillimeter telescopes. Conceived by Japanese and mainland astronomers ignorant of Mauna Kea's sensitive cultural and biological environment, this project was so excessive that it embarrassed even astronomy enthusiasts like me. That's when I felt compelled to resign my position, giving up one of the most inspiring jobs of my life.

Since then yet another dome (for Gemini) has appeared on the



DANIEL BAXTER

mountain. Like all others built on the summit since 1983, Gemini was approved even though there were no broad public hearings, no project-specific environmental-impact statements, and no attempt whatsoever to solicit public comment on what was happening. No wonder community resentment is now so high.

The controversy was further fueled last February by a legislative audit of the Mauna Kea science reserve. It more than confirmed critics' charges of mismanagement, broken promises, and ignored environmental laws. In a detailed rebuke, the audit concluded that both IfA and the land board had "failed to develop and implement adequate controls to balance the environmental concerns with astronomy development," and that during their 30 years of managing Mauna Kea "little was done to protect its natural resources." To make matters worse, the university's president and the IfA's interim director joined the land board's chair in blaming the public for whatever environmental and cultural damage had occurred. They proposed limiting public access to the summit, a suggestion that has infuriated many island residents.

With interest in building as many as 22 more telescopes on Mauna Kea (16 more for the Smithsonian and six for Keck), the university is now formulating a new master plan — and once again generating great concern. The observatory directors and IfA management find themselves in a controversy that won't go away with bland public assurances or press releases heralding the telescopes' accomplishments. The solution to their woe is using their hearts and minds to overcome their ignorance of the mountain and adopt a respectful, balanced view. They need to accept, graciously, that their observatory complex is finally complete, that being allowed to operate 20 of the world's finest telescopes under the clearest, darkest skies on the planet is a more than ample gift from the people of Hawai'i.

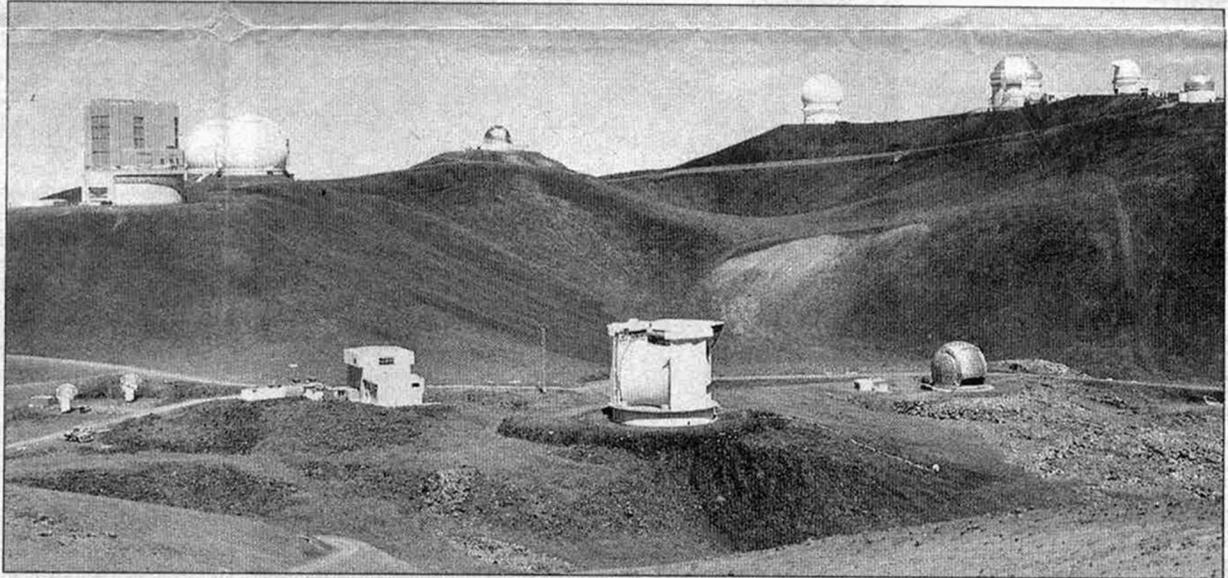
TOM PEEK worked at the Onizuka Center for International Astronomy from 1988 to 1996. He lives in Volcano, within eyeshot of Mauna Kea.



Tom Peek at the Visitor Information Station in 1988.



Conducting a stargazing program on Mauna Kea in 1993.



The summit of Mauna Kea on the island of Hawaii hosts the world's largest astronomical observatory, with telescopes operated by astronomers from eleven countries.

NEW YORK TIMES

Hawaiian summit deserves respect

TELESCOPES AND ASTRONOMERS PUT A STRAIN ON MAUNA KEA

By Tom Peek

Californians follow exciting discoveries made with the twin 10-meter Keck telescopes on Hawaii's Mauna Kea volcano. But how many realize that the telescopes' owners — the University of California and Caltech (with funding from NASA) — are making enemies in the land of aloha?

The current push for two more huge projects — adding six "outrigger" telescopes to the existing telescopes and a 30-meter telescope — is fueling resentment that began after the first Keck telescope arrived in 1992. The outrigger project's environmental impact statement is to be released this summer.

As an early observatory guide, I saw firsthand the once affable relations between islanders and astronomers deteriorate. Although islanders always worried about development of their highest mountain (sacred to native Hawaiians), earlier astronomers showed genuine gratitude for access to the dark, unpolluted skies above Mauna Kea, now arguably the last northern hemisphere site suitable for cutting-edge astronomy.

But when the revolutionary telescope proved successful and the construction of a second Keck telescope began, a more proprietary breed of

astronomers began showing up on the mountain. I remember dining at the astronomy base camp years ago when a haughty UC astronomer asked, "When are you going to gate the road to the summit and keep the public out?" Veteran astronomers and technicians dressed down the newcomer, explaining that the mountain belonged to the islanders long before astronomers showed up.

The new breed felt privileged, not because they observed from Mauna Kea, but because they had been chosen to use the celebrated emperor of telescopes. After Keck II and the other giants now on the mountain, Subaru and Gemini, opened their domes, Mauna Kea became the most prestigious observatory complex on Earth.

A new summit expansion plan that accommodates the UC/Caltech telescopes also outlines steps to limit islanders' access, including nighttime restrictions, entry fees and a phase-out of all non-astronomy vehicles on the mountain road Hawaii taxpayers helped build.

You would think that California astronomers would bend over backward to maintain good relations with the community that owns the mountain. The record shows the opposite:

■ UC and Caltech prepared no environmental impact statements for the twin Keck telescopes — studies that Californians would have insisted on had these been built in their state. The proposed outrigger project also refused to prepare an environmental

impact statement until a federal judge intervened on behalf of the state's Office of Hawaiian Affairs.

■ UC and Caltech astronomers did not consult native Hawaiians before building the Kecks and leveled part of a complex of summit cinder cones so sacred that only ancient Hawaiian priests visited them.

■ No biological studies were done before building the Kecks, so UC and Caltech destroyed a key habitat for the wekiu bug, an extraordinary — and now endangered — animal found only on Mauna Kea.

Keck officials opposed community proposals for observatory "impact fees" to repair past damage and pay for future protections. Instead, the telescope operators pay Hawaii one dollar a year to lease their sites.

All of this has upset the community, reflected in a decade of local news about anguished hearings, protest vigils, Hawaiian elders' pleas for no more telescopes, and a legislative audit lambasting astronomers and state regulators for ignoring cultural and environmental concerns.

California astronomers can restore community trust by accepting that having Earth's two largest telescopes under Mauna Kea's fine skies is a more than ample gift from the people of Hawaii. California residents — especially astronomy enthusiasts — can help by urging UC and Caltech to treat the islanders with the same respect they would give their own people back home.

TOM PEEK worked for the Mauna Kea observatories between 1988 and 1996. He lives on the island of Hawaii near the summit of Kilauea volcano. He wrote this for the Mercury News.



Nearly 14,000 feet high and remote, the summit of Mauna Kea is prized by those searching space. But it is also sacred to native Hawaiians.

RICHARD WAINSCOAT University of Hawaii
Institute of Astronomy file, 1998.

My View: Hawaiians, mountain in 'Avatar'-like struggle

By Tom Peek

Special to The Bee <http://www.sacbee.com/2010/03/09/2592650/hawaiians-mountain-in-avatar-like.html>

Published Tuesday, Mar. 09, 2010

If you're one of the millions who sat riveted to James Cameron's blockbuster movie Avatar, you probably sympathized with the indigenous Na'vi when American colonists bulldozed their magical rain forest to mine unobtainium, the prized mineral on Pandora, planet Polyphemus' moon.

When the corporate/scientific/military confederation "negotiated" with Na'vi elders to quell growing unrest – bearing the usual "community benefits" trinket – you probably groaned. And when the invaders, unable to cajole the natives, bulldozed their Tree of Souls, where guiding ancestors' voices could be heard, and bombed their giant Hometree dwelling, did your fists clench with rage?

Were you relieved – maybe you even cheered aloud – when the native defenders turned back the invaders before they could destroy their holiest Tree of Souls, connecting place to their deity, Eywa?

If you responded like many people did in the Hawaii theater where I saw Avatar, the answer is probably yes.

It doesn't take a cultural anthropologist to recognize Avatar's story line parallels in Hawaii, except that in the movie, ambitious (if sympathetic) biologists rather than Christian missionaries laid the groundwork for business and military interests, using genetically engineered human-Na'vi hybrids to infiltrate the culture. Unlike on Pandora, it took a century of bulldozing Hawaii's revered places to finally reach native Hawaiians' holiest spot – 14,000-foot Mauna Kea. Here, too, people connect with ancestors and deities.

Leaving the theater, I bumped into some Hawaiian friends waiting for the next show, a family with deep ancestral roots to Mauna Kea. This got me thinking about the campaign by the University of California and Caltech (allied with University of Hawaii astronomers and pro-business politicians) to bulldoze a pristine plain below the mountain's already-developed summit cones to add another giant observatory to their science colony – the Thirty Meter Telescope, or TMT.

The California astronomers' "unobtainium" quest – research papers revealing "the secrets of the universe" and identifying planets beyond our solar system – is certainly more noble than mining minerals, but it's another example of promoting one culture's notion of progress by overriding another's reverence for the land. As in the movie, behind the Mauna Kea invaders stands the big money of a starry-eyed entrepreneur, Intel co-founder and telescope donor Gordon Moore.

For Hawaiians, Mauna Kea's summit is where their genesis story took place; it's the burial ground of their most revered ancestors. Hawaiians still conduct traditional spiritual and astronomical ceremonies there, despite the visual and noise intrusions of 20 telescopes crowding the summit. Biologists also revere the mountaintop, home to species found nowhere else on Earth, including plants and insects that rival those in Cameron's film.

Decades of insensitive development have fueled public anguish over Mauna Kea's industrialization, replete with weeping elders and young activists gritting their teeth in rising frustration. Two legislative audits lambasted state agencies for collusion with astronomy interests, and two courts ruled against the last UC/Caltech telescope project – the Keck Outriggers – for violating state and federal environmental and cultural laws, one ruling halting the project.

Seeking a peaceful solution to the increasingly polarized controversy, Hawaiians and local Sierra Club leaders met last year in private with TMT board chairman and UC Santa Barbara Chancellor Henry Yang, Caltech President Jean-Lou Chameau and a Moore representative, to implore the Californians to build the TMT at their second-choice site in Chile.

Ignoring all that, TMT officials decided in July to forge ahead with their Mauna Kea plans, pulling out all the stops to get what they desire. But this is America, not Pandora, so instead of enlisting military mercenaries, as in the movie, the Hawaii invaders hired an army of attorneys, lobbyists and planners to put a positive spin on their intrusive project and get around environmental and cultural laws governing the state conservation district where the telescope colony resides.

Hawaiians and environmentalists are again forced to defend in court the state and federal laws designed to protect places like Mauna Kea and native people like the Hawaiians – the same laws the last UC/Caltech project violated.

After spending tens of thousands of taxpayer dollars supporting California astronomers' fight against the islanders, the University of Hawaii (desirous of sharing TMT's prestige and precious telescope time), recently asked Hawaii's legislature for \$2.1 million to "ensure" the TMT bid. Local businessmen and politicians are being courted by astronomers – and pressured by powerful members of Hawaii's congressional delegation – to back a huge project that will bring lucrative construction contracts to the summit.

Last month, the same Hawaii judge who in 2007 halted the previous UC/Caltech project dismissed islanders' first legal challenge in the TMT battle – while observatory and construction workers picketed his courthouse with pro-TMT signs.

Whether that decision means Hawaii's judges are now under intense pressure to support TMT is anyone's guess. But if islanders are prevented from using the legal system to protect their sacred mountaintop, what choices remain for them?

Fortunately, no one is talking about following the Na'vi's tactic of fierce resistance – aloha is too strong a tradition here.

Even so, peaceful civil disobedience could be just around the corner if islanders' next day in court is like their last one.

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Tom Peek, a former astronomy guide for the Mauna Kea observatories, writes and teaches on the Big Island of Hawaii.

Visiting astronomers should meet with TMT 'protectors'

By Tom Peek

Thousands of the world's leading astronomers are in Hawaii for their triennial International Astronomical Union conference, a perfect kismet-like opportunity to learn firsthand why their noble and important profession has been tarnished during the protracted controversy over California's Thirty Meter Telescope (TMT) — yet another example of astronomers pitted against native people over a mountaintop.

If they're wise, they'll take advantage of the opportunity and meet with the Mauna Kea "protectors."

As an early astronomy guide for the Mauna Kea observatories, I've long admired the analytical prowess of the astronomers



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on the mountain whose trailblazing research has led to so many important discoveries.

But I've also grown dismayed by their apparent inability to grasp why so many islanders, now in the thousands and of all ethnicities, want no more telescopes on the summit.

Nor do they seem to recognize that, at its heart, this decades-long conflict has always been about land use — about development on a sacred and environmentally sensitive mountain — and has little to do with science itself.

Ample evidence documenting these concerns — testimony at hearings, reports in the media, records from multiple court cases — date all the way back to the 1970s, and yet astronomers speak as if the recent outcry over TMT astonishes them.

Perhaps it does, but not because the evidence isn't out there.

It's because they've willfully ignored it.

"People have the need not to know," my graduate school adviser (a physicist) had warned us in class, an irrational state of mind that

shields people from inconvenient truths.

I've often heard astronomers say, "If the local community just understood what we do, and how important it is, they wouldn't be against us."

Indeed, astronomers often act as if they're innocent victims in a battle "between science and religion," an emotional construct employed to avoid seeing themselves as the latest in a long line of outsiders who've exploited Hawaii's resources — including plantation owners, generals and hoteliers.

Yes, Mauna Kea is the last clear-sky mountaintop in the northern hemisphere where cutting-edge astronomy can be done (the others spoiled by light and air pollution), and the

Californians' TMT, like their twin Kecks, is a powerful tool that will illuminate the nature of the universe and perhaps identify other worlds where life exists.

Previous exploiters of Hawaii made similar claims of precedence — the best place to grow sugarcane, the finest harbor for staging military vessels, the most beautiful place on Earth for resorts.

Overriding local interests and concerns in those cases resulted in newcomers taking over lands that once belonged to Hawaiians, disenfranchising local people with new power arrangements controlled by outsiders and replacing island values with those belonging to the colonizers.

LATER THIS MONTH, the state's Supreme Court will

hear the Hawaiians' appeal of the TMT's permit, a challenge to the unseemly, politicized process through which the permit was obtained.

Meanwhile tensions rise, arrests increase, and the governor's threat to call in the National Guard to break the protest movement looms — all in the name of astronomy and TMT.

It's time for the world's astronomers to burst their self-imposed bubble of delusion, dispassionately study the public record, and in so doing restore their own noble reputation.

Perhaps, after doing that homework, they'll even ask their California colleagues to seriously consider the compromise TMT opponents have long requested — to take their important telescope to Chile.