I would like to write in favor of the current plan for the Mauna Kea Science Reserve, the construction of the Thirty Meter Telescope and the overall plan for telescope commissioning/decommissioning on the summit. While others will surely touch on aspects of environment, I would like to highlight a few key points: that concerns from the Cultural Impact Assessment were taken into account, the building of TMT is a compromise between science and cultural sensitivity, and the long-term plan for astronomy activity on the summit reflects a break with and improvement upon past practices.

TMT made a good-faith effort to reach out to the indigenous Hawaiian community, seeking their input on TMT construction as it may impact cultural practices on the summit. There were several comments that stand out that I would like to address.

First, one why didn’t they choose another site? Even the best mainland telescope sites are not competitive with Maunakea. Not. Even. Close. For instance, the best mainland sites are in Arizona and even these (Mt. Hopkins and Mt. Graham; the sites of MMT and LBT, respectively) have consistently far poorer seeing (a very rough estimate of the ability to do key aspects of astronomy, in particular achieve high spatial resolution imaging) than Maunakea. I should know: I did my PhD thesis work largely from Mt Hopkins. Additionally, the Arizona sites are practically unusable for an entire 6-8 weeks each year due to the monsoon season: we used to dred getting time in July because of this and in August they wouldn’t even try. Another site, Palomar, likewise with poorer seeing, was started between LA and San Diego in the 1936: now that area has 15 million people. You can imagine how this might be a problem for astronomy. Mt Hopkins is also being threatened by population growth (mostly retiree communities) and mining activity to the point that the types of astronomical observatories that will set TMT apart may someday simply be impossible at this site.

Chile is more competitive, but even here the situation still favors Maunakea. My understanding is that the typical wind speed (which affects AO which in turn affects our ability to get sharp images) is worse on the E-ELT/Cerro Azores site. Additionally, the median seeing looks like it is worse on Cerro Azores than has been measured on Maunakea. Maunakea is also far, far better than ESO’s flagship site right now (Cerro Paranal) and better than Cerro Pachon, the site of Gemini-South (e.g. the best, once-in-a-year-event seeing we can get at Gemini-South is pretty typical for Maunakea). Finally, there are practical concerns. The existing partners either already have ties to the Hawaiian community (e.g. U. Hawaii, Japan, mainland US institutions, and China I think as well) or have no ties (India). Japan sort of has ties to Chile (through some ALMA time) but that’s about it, I think (plus, they specifically said Maunakea or nothing). Logistically it’s far more straightforward to have an observatory in Hawaii than in Chile when the partners are almost all North American or Pacific Rim. Additionally, in Hawaii we would be able to connect with a strong local astronomy program (U. Hawaii). Chile’s astronomy community is growing but is nowhere near as capable as U. Hawaii. One of the great things is that U. Hawaii has an enormous astronomy program, which means that native Hawaiian students interested in astronomy as a career will have the ability to do research using the TMT. That’s probably not an opportunity students at, say, Princeton, MIT, or Cornell will have.

Second, why is the 21 N site itself a byproduct of TMT listening to the concerns of native Hawaiian cultural practitioners? From purely an astronomy perspective, there are better sites on the summit, especially those on the ridge. The TMT site was a compromise between scientific capability and cultural sensitivity. One example: view obstruction -- Yes, some of the sites of existing telescopes (e.g. CFHT, I think) offer better seeing than the TMT site. But then the protestors concerns about TMT being rather obtrusive would have some validity. Instead, the TMT will be this ~185ft tall structure (just a bit taller than existing domes like Subaru),... that almost no one on the island will see because it sits ~700 ft below the summit, having a 14% viewing plane (compared to, say, ~35+% for Gemini). Concerns were raised about whether the TMT would be located near culturally sensitive sites. The 21 N site is located far away from the lake and other culturally sensitive sites on the south side and not located in a region with any known archeologically significant finds, burials, etc.
Third, a prevailing comment is a request to know the status of other, smaller telescopes on the mountain. As was reported recently, there *are* plans to decommission some of the older telescopes. CSO is going to be the first to go (in ~3 years). Either JCMT or SMA are probably going to go in the following decade. It is unclear what unique thing the other 2–4m class telescopes will do 20 years from now, and perhaps these should be evaluated on a case-by-case basis. Someday, the current leading telescopes (Keck, Subaru, Gemini) will become obsolete. Someday TMT will be obsolete. At such a time, these telescopes will be decommissioned as well. If someone’s main concern is that there are “too many telescopes” on Maunakea, then that person’s cause is best served by making sure UH delivers on its promise to decommission the soon-obsolete telescopes in a timely manner and return the land to its original state as much as is possible. That is certainly something that much of the astronomical community could get behind as well. 

Finally, I want to emphasize that as an astronomer using Maunakea I likewise revere the mountain. In papers using data acquired on Maunakea we state that we “recognize and acknowledge the very significant cultural role and reverence that the summit of Maunakea has always had within the indigenous Hawaiian community. We are most fortunate to have the opportunity to conduct observations from this mountain.” I look forward to both exploring the universe using Maunakea observatories and working to preserve the cultural heritage of the mountain.

-Thayne Currie, Hilo Hawaii

Note - These are my personal opinions as a professional astronomer. I do not speak on behalf of my employer, the Subaru Telescope, nor the Thirty Meter Telescope.