Collaboration with Integrity: Indigenous Knowledge (IK) in 21st Century Astronomy

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Inclusive Astronomy 2
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USF
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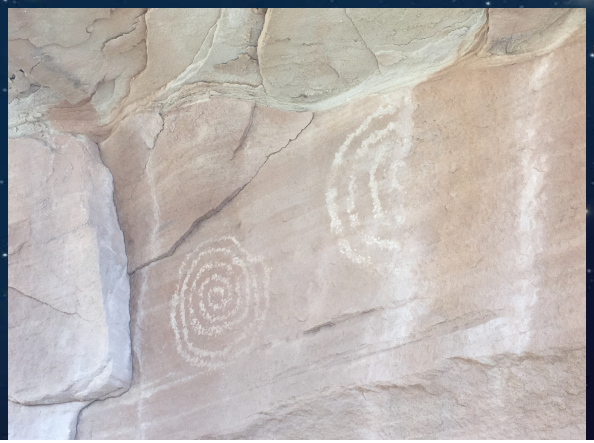
Gratitude to:

- My IK collaborators: Nancy Maryboy and David Begay (IEI and University of Washington), Isabel Hawkins (SF Exploratorium), Ka'iu Kimura ('Imiloa Astronomy Center), Laura Peticolas (Sonoma State), Adam Burgasser (UC San Diego)

- *I respectfully acknowledge those whose ancestral homelands I am speaking on and where this meeting is being held: the Coast Miwok and Ohlone of Northern California, and the Piscataway, Lumbee, and other peoples of Baltimore.*
- I also honor those who could not be present at this meeting, and the courage of many Astro2020 APC WP authors
- My field elders and life elders – their science, wisdom and stories are my medicine
- Thanks to the conference organizers, USF and NSF funding

Indigenous Peoples' Day, Occupation of Alcatraz Turns 50

- We respectfully acknowledge the presence and practices of the protectors, activists, and scientists on Maunakea



Astronomy and IK

- Astronomy is uniquely grounded in the cultural and scientific practices of indigenous peoples worldwide through Indigenous Knowledge (IK).
- This places a unique obligation for astronomers to partner with indigenous communities and preserve IK practices, especially when indigenous lands or resources are involved.

Image copyright Sergei Makurin

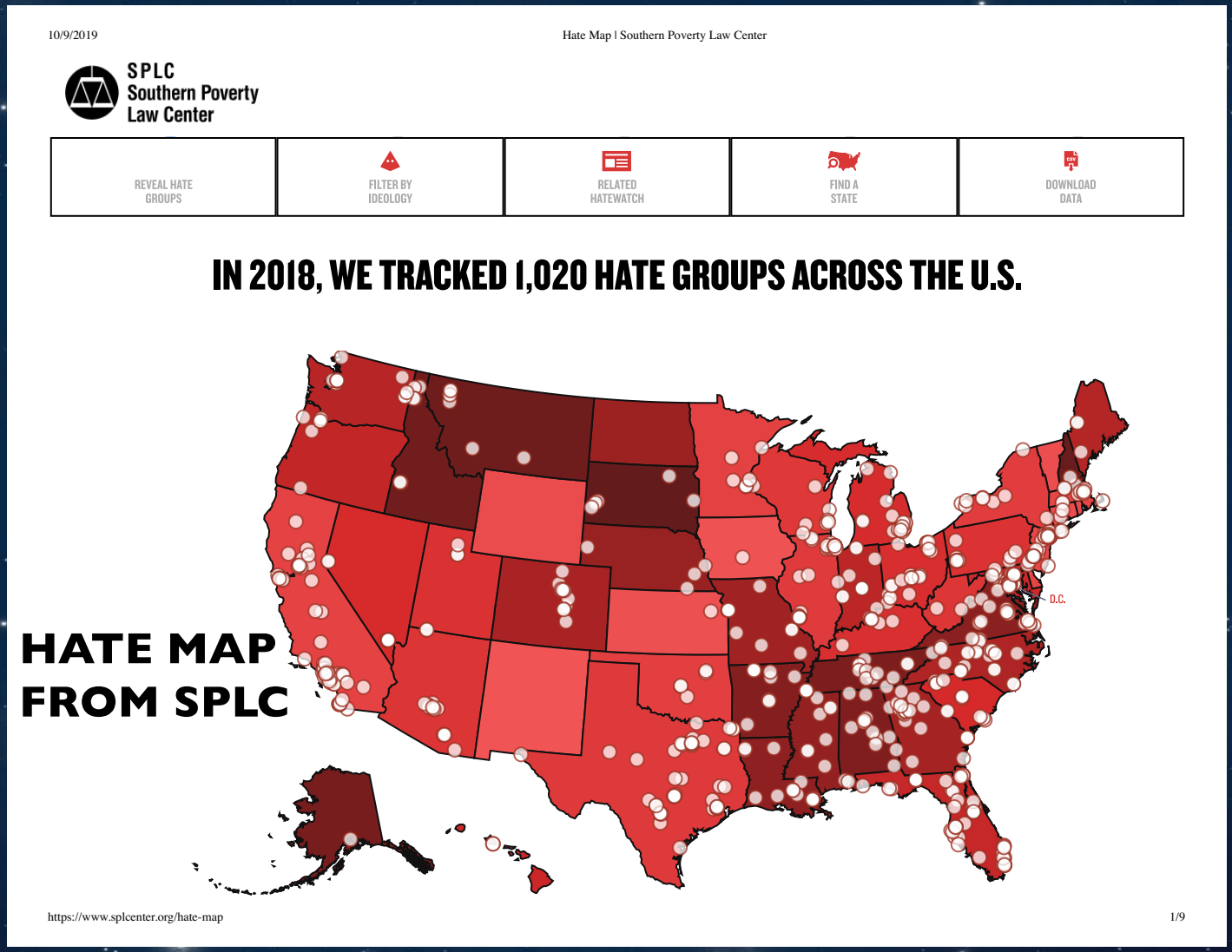
Background

- We use indigenous as our preference for a general term designating the original inhabitants of any land, who existed or exist for thousands of years in an explicitly interconnected local system of relationships including community, environment, and sky (Begay & Maryboy 1998, Aikenhead and Michell 2011)
- Indigenous Knowledge: a living, language-rooted practice unique to each indigenous culture and adapted to their specific environment, framed through the lens of their cultural values and spiritual traditions. IK is inherently interdisciplinary, multigenerational, and expressed through sustainable practices (Maryboy, Begay & Peticolas 2012). Connection to place and naming traditions are essential components.

Inclusive practices on Earth and in space

- As below, so above? The role of colonization in world history and the global fallout through today. We are at great risk of exporting the mindset and practices of colonization to a truly cosmic scale given the pace and manner in which we are occupying near-Earth and interplanetary space.
- C. Prescod-Weinstein Decolonizing Science Reading List:
- https://medium.com/@chanda/decolonising-science-reading-list-339fb773d51f
- At global crossroads which is a great opportunity for nations and governing bodies to learn from IK about sustainable solutions. Critical as most of us are schooled in western models of science and scientific achievement.
- Astronomy must be prepared to do the patient long-term work of deep listening and genuine dialogue with indigenous communities and leaders.

- Our campuses, institutions and facilities have the potential to lead positive change; they (perhaps as a result) attract hate as well



I-WISE Conference 2015

- I-WISE (Indigenous Worldviews in Informal Science Education): http://iwiseconference.org/
- 4 strands including Collaboration with Integrity and Next Generation Youth
- The lessons and perspectives shared at this meeting → potential ways forward to honor indigenous practices and communities

Maria Avila Vera, AV and Isabel Hawkins

Collaboration with Integrity

- Models of partnering with indigenous communities involving Collaboration with Integrity (Maryboy, Begay & Peticolas 2012). This could co-create an inclusive scientific enterprise on Earth and in space.
- Recognizing the great scientific value of the multigenerational data gathering and experiential wealth contained holistically in IK. This approach has the potential for innovative solutions from **all** human ways of knowing, and could surprise us with progress that is richer than from one perspective alone

Astro2020 White Paper on IK

- Venkatesan+2019: BAAS 51(7), 20. Also at: https://arxiv.org/abs/1908.02822

- Shared 6 specific actionable recommendations for U.S. funding agencies, drawn from our collective experience of being professional astronomers and knowledge-holders in a variety of formal and informal astronomy research/learning environments.

- These are first steps towards developing sustainable inclusive partnerships with IK and astronomy. They are also a charge to the funding agencies for Astro2030.

1. Successful Initiatives/Models of Collaboration with Integrity

- IK is a lived practice demonstrating how science is inseparable from the people conducting the science. Opportunity for co-creating a more inclusive scientific endeavor with intent and respect.

- We must challenge ourselves, our institutions and granting agencies, to have the collective imagination and resolve to go beyond divisive dualities. We can do this without the historical pattern of appropriation or assimilation into nonindigenous knowledge systems.

1. Successful Initiatives/Models of Collaboration with Integrity

- Examples of such models and roadmaps of Collaboration with Integrity include:
- 'Imiloa Astronomy Center in Hawai'i: https://imiloahawaii.org/
- I-WISE (Indigenous Worldviews in Informal Science Education): http://iwiseconference.org
- Cosmic Serpent: http://www.cosmicserpent.org pioneered by the Indigenous Education Institute; http://indigenousedu.org/
- A Hua He Inoa: https://imiloahawaii.org/news/a-hua-he-inoa-8e3ax
- Envision MaunaKea: http://www.envisionmaunakea.org/
- Native Universe: http://www.nativeuniverse.org/
- MaunaKea Scholars: https://maunakeascholars.com/

2. Power of Collaborative Naming

- Resources and funding to promote collaboration, research, and naming/renaming opportunities on telescope sites on indigenous lands

- The power in naming is a belief common to nearly all indigenous peoples worldwide (see, e.g., Thornton 1997), as IK is deeply rooted in the traditional language base of each indigenous community

- Astronomy could be a platform that affirms the living nature of indigenous languages and empowers the history of indigenous communities. Broaden the cultural impact of astronomical discoveries

Recent examples

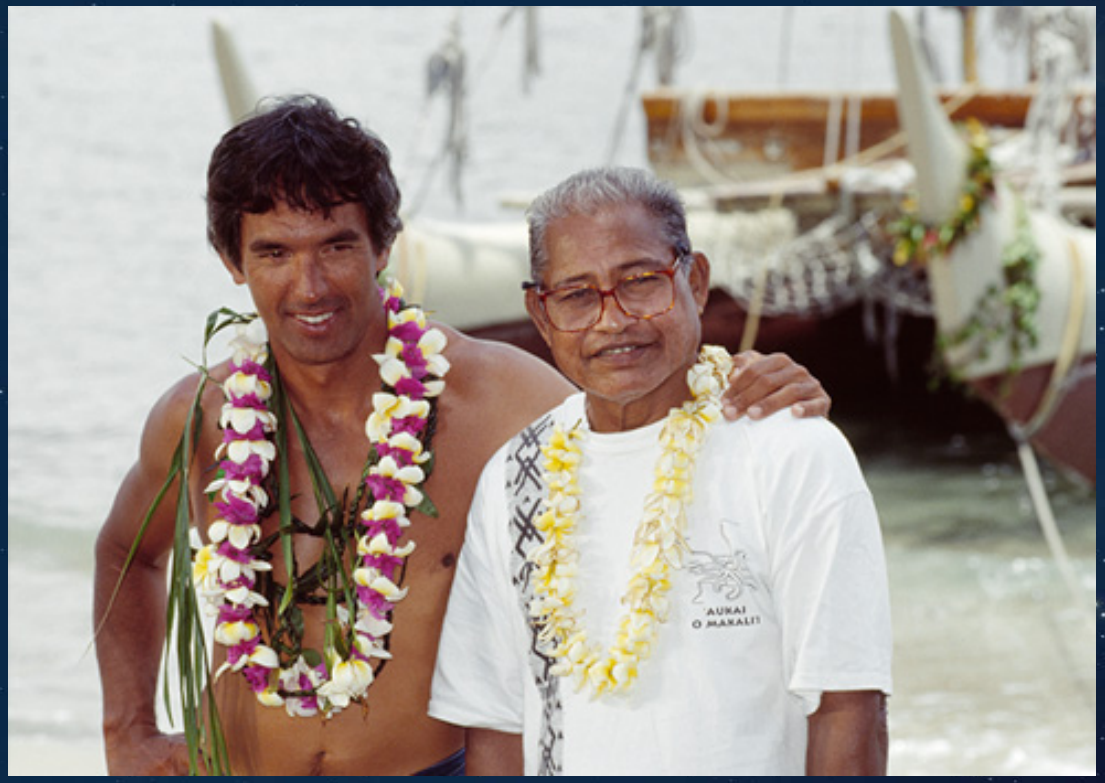
- Recent examples include the interstellar asteroid ‘Oumuamua through the A Hua He Inoa project (see Astro2020 white paper by Kimura et al. 2019, BAAS 51(7), 133) and Pōwehi, the first-imaged black hole, named by Larry Kimura (UH-Hilo)

3. Oral Traditions as Scientific Resources

- Institutions and agencies should move towards recognizing oral traditions as the experientially-tested peer-reviewed scientific references that they are.
- Like nonindigenous scientific research, oral traditions are integral systems of knowledge curation which are collaborative, build on previous knowledge and past results, and practice transmission across generations.

- Example: the revitalization of Polynesian wayfinding and celestial navigation beginning in the 1970s - the oral tradition of Micronesian navigators including master navigator Mau Piailug (Satawal, Micronesia) was critical.

- Nainoa Thompson, current president of the Polynesian Voyaging Society and Pwo navigator, and Mau Piailug, around 1998 (source: https://www.nlm.nih.gov/exhibition/avoyagetohealth/exhibition-legacy.html)



4. Long-term Interdisciplinary Grants

- Dedicated funding to support long-term, interdisciplinary science rooted in indigenous communities. Specifically recommend 5-10 year grants to establish strong relationship networks, and maximize the full range of outcomes arising from the necessarily multigenerational nature of IK/oral traditions and the observation-based research conducted by indigenous knowledge holders.

- We already know how to support such long-term or interdisciplinary work – astrometry, first BH image etc.

5. Communities, not Colonies, in Space

- Space is now the playground of billionaire investors and private companies. We need consistent international regulatory and ethical standards – otherwise we are in strong danger of expanding our history of colonialism/imperialism to cosmic scales. This first-come, first-claim strategy is already occurring in a race to ownership of space.
- Key theme in Astro2020 WP by Vidaurri+19, BAAS 51(7), 276; preprint at: https://arxiv.org/abs/1907.05834
- We must incentivize organizations and institutions, including professional societies, to include the perspectives of indigenous astronomers and leaders in the rapid acceleration of human activity and presence in space.
- Advocate for space being a resource that is held in community trust and belongs to everyone

What will the night sky look like by Astro2030?

- Who does space belong to?
- Dark skies as a human right, and recognizing its importance for the cultural practices of indigenous peoples including celestial navigators and wayfinders

Video: Marco Langbroek
Reuters and NYT
https://www.youtube.com/watch?v=ytUygPqjXEc

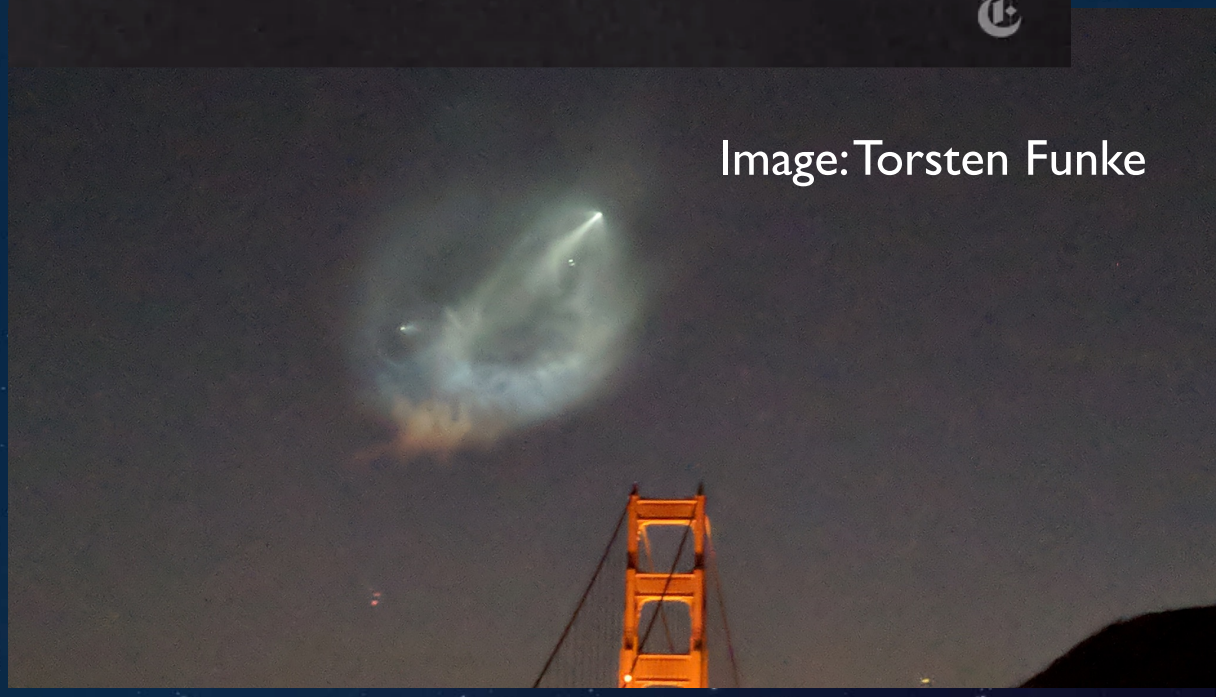


Image: Torsten Funke

6. Indigenous Youth

- Creating a culturally supported path for full participation of indigenous youth in science careers (see our WP for specific suggestions)

I like astronomy because it expresses creativity from all different cultures through time.

- CU Upward Bound high school student

Looking Ahead

IK contains the interdisciplinary intergenerational wealth of solutions our world truly needs for its pressing problems

Rather than presenting an inauthentic choice between science and culture, let us transform scientific culture

Please consider attending the sessions honoring IK and indigenous/Native Hawaiian perspectives at the upcoming SACNAS and AAS meetings in Honolulu

I offer the lesson of the stone mason; the greatest works require a tremendous effort with surprising patience, one stone at a time.

- Paul Coleman, first Native Hawaiian to receive a doctorate in astrophysics