AirSpace Season 3, Episode 11: Blinded by the Light

Intro music in and under

Matt:

Welcome to AirSpace from the Smithsonian's National Air & Space Museum. I'm Matt.

Emily:

I'm Emily.

Nick:

And I'm Nick

Emily:

Today more than half of the world's population lives in cities and in a lot of cities, if you look up to the night sky, you can't really see anything. There's just too much light pollution. Even in rural places the light is encroaching on the darkness.

Nick:

And dark skies are important for a lot of really great reasons. They give nocturnal animals a nighttime to live in. They allow scientists to see and study outer space and at its most basic, this should be very important for everyone, it just gets you a better night's sleep.

Matt:

Well, dark skies are also really important in a lot of cultures for religious or spiritual reasons, for storytelling, for agriculture and for navigation. As there are fewer and fewer places to get a good view of the night sky, those cultures lose something that can't be replaced. We're talking about the cultural importance of the night sky, including a conversation with a Smithsonian curator who's a native Hawaiian coming up on AirSpace.

Music up and out

Emily:

So when do you remember first being aware of seeing something really special that maybe was really common and you just never knew it?

Nick:

I've talked Before about seeing the Milky Way for the first time. And if anyone has my aircraft carrier story on their bingo card, like, I saw it for the first time when I was deep into my 30s out in the middle of the ocean.

Emily:

But that couldn't have been your first experience?

Nick:

No, no, no. My first experience looking up and being really shocked at the night sky was also kind of a stereotypical city mouse experience. It was during a blackout. When enough of the city blacks out, you look up and there's an overwhelming number of stars compared to what you're used to, to the point where I've read stories and this did not happen to me personally, but I've read stories that in the early '90s there was a blackout in Los Angeles that resulted in a lot of people calling 911 to report strange clouds in the sky. And they were just, they were seeing the Milky Way for the first time. A bunch of people called the police on the Milky Way, that's LA for you. (all laugh)

Emily:

Matt, what about you?

Matt:

Well, I was going to say, I don't think it's that surprising, the types of stories that Nick's telling, because you don't have to live in a big city to have light pollution prevent you from seeing a lot of the night sky. I grew up in the suburbs of Phoenix and even though that was an area that was still developing and didn't have a ton of dense population, there was enough just from the streetlights and everything else that you really had a limited view of the night sky.

Nick:

Emily, would you like to tell us about your earliest recollections of the night sky?

Emily:

I feel like as a person who studies space for a living, I should have a way better story than I do because I think I've talked about on the podcast before. I didn't think about space or studying space until like late in college, but I didn't really have that sense of, "Whoa," until senior year when the advanced observational astronomy class got to go to Cape Cod. And by go to Cape Cod, I really mean, like, drive an hour to one of my professor's houses late in the evening and get to sit out on the beach and just check out the night sky. And I think that was my first experience with it being like, "Whoa."

Musical Transition

Emily:

Today we're going to focus specifically on the cultural significance of the night sky, but we want to place a really strict disclaimer in here that we recognize that there are an enormous number of cultures that rely on the night sky. There's a lot of cultures that have traditions relating to the night sky and the darkness, and we cannot cover all of those cultures and those histories in this podcast and we are not intending to. We're just trying to give a sample of ways in which different cultures utilize the night sky.

Matt:

The history of astronomy is so complex. And one of the things that I think you have to start with is the idea that the night sky doesn't really belong to anyone, but at the same time, it belongs to everyone and has played an important role in many cultures. And it's one thing that we talk about in history of science

is you really can't point out who first noticed Mars or who first noticed that constellation or the stars in that constellation because people were looking at the stars long before we started recording any history of it.

Nick:

We grew up knowing the names of constellations, whether or not we could see them. And almost everything that we were taught came from the Greeks and the Romans, but everybody looked at the same set of stars, whether you were in the Northern hemisphere or the Southern hemisphere that matters, but overall the same sky plays across the night each and every time. So everybody was working from the same map. It's like the line in Somewhere Out There from American Tale, deep namecheck 1980s cartoons about how no matter how far apart you are, you're probably looking at the same star.

Movie Clip: An American Tale

(singing) It helps to think we might be wishing on the same bright star

Matt:

And those stars tended to become important to different cultures for very similar reasons, right? Like for us, like you said, we have these Greek and Roman names for the constellations and the planets, and that comes from their mapping of the Zodiac and their use of that Zodiac in tracking the movement of the planets, the Moon and the Sun through the sky and in timing their religious ceremonies, their agricultural activities were related to where the planets were in the Zodiac, especially the Sun and the Moon. And we find that that pretty much existed in some form or other in most cultures.

Emily:

So for a lot of the native cultures around the world, losing dark skies is as much about colonialism as it is about light pollution. And so, I had the opportunity to talk to Kālewa Correa.

Kālewa Correa (interview):

Aloha Mai Kākou this is Kālewa Correa. I served as the curator of Hawai'i and the Pacific for the Asian Pacific American Center at the Smithsonian Institution. We Kānaka, so Kānaka or Kānaka maoli or Kānaka ōiwi are the original aboriginal people of the Hawai'ian archipelago. We come from darkness, we grow in the darkness, we thrive in the darkness. We come from Pō and Pō is this concept of the deep dark night, the deep dark ocean and then we return to Pō when we basically leave this plane. Within our cosmology and within our thoughts we have this chant and it's the Hawai'ian creation chant it's called the Kumulipo and what that details is the development of the universe and origin of the Hawai'an people within the Hawai'ian archipelago.

Emily:

I think initially my reaction to this idea of coming from the darkness, I'm like, "Gosh, that's dark," but what's so interesting in listening to Kālewa talk about it is it's so light and inspiring and interesting, and thinking about the Western perspective of the night sky is so ingrained into how many of us think about the night sky that we completely take for granted all of the really beautiful cosmology that the night sky and the dark sky embodies for so many different kinds of people. And we miss out on a lot of that diversity when we talk about the night sky.

Kālewa Correa (interview):

Within our cosmology and within our thoughts, we have this chant and it's the Hawaiian creation chant, it's called the Kumulipo.

“O ke au i kahuli wela ka honua/ O ke au i kahuli lole ka lani/ O ke au i kuka'iaka ka la.
E ho'omalamalama i ka malama/ O ke au o Makali'i ka po/ O ka walewale ho'okumu honua ia/ O ke kumu o ka lipo, i lipo ai/ O ke kumu o ka Po, i po ai/ O ka lipolipo, o ka lipolipo/ O ka lipo o ka la, o ka lipo o ka po/ Po wale ho--'i/ Hanau ka po”
“At the time that turned the heat of the earth/ At the time when the heavens turned and changed/ At the time when the light of the sun was subdued/ To cause light to break forth. At the time of the night of Makalii [winter]/ Then began the slime which established the earth, The source of deepest darkness, Of the depth of darkness, of the depth of darkness, Of the darkness of the sun, in the depth of night, It is night, So was night born.” Translation from Queen Liliuokalani, 1897. [translation is not in audio]

And what that details is the development of the universe and the origin of the Hawai’ian people within the Hawai’ian archipelago.

Emily:

So when you're talking about the night sky specifically in the Hawaiian context, it could fit into three categories, religion, navigation, and agriculture. We'll start with religion.

Kālewa Correa (interview):

One of them is our traditional temples, called Heiau, Heiau’s are our place of worship the place that priest and the Ali’i, Ali’i are our chiefs, they would go to connect the planes between the heavens and the Earth to connect with God and these would be spaces of spirituality where you would pray for abundance, pray for victory, pray for basically your standing and your mana [spiritual energy of power and strength] in this place, the Hawai’ian archipelago. And so these Heiau, what most people don’t know is that traditionally they were aligned to the constellations.

Emily:

The night sky is also hugely important for all Pacific Islanders for navigation.

Kālewa Correa (interview):

Voyaging is a very good cultural example of the need for dark skies. In voyaging you’re going to get much better truthing of a canoe, of a wa’a, if you have dark skies and you’re going by the constellations at night as opposed to during the daytime where it’s veiled by the sun. Kānaka, native Hawai’ians, why we were, and all Pacific Islanders throughout the Pacific, why they’re such good navigators was this understanding of seasonality, tides, working with your natural environment and the stars.

Emily:

And agricultural practices are also traditionally aligned with the night sky.

Kālewa Correa (interview):
This idea of even the way that we would plant, our agriculture, we used to follow the moon calendar and even during the dark of the moon, during the dark parts of the month there were specific things that you would plant. And we kind of got away from that and we did for a long time, we did just traditional agriculture. I'm not saying all of us did but we went to this method of just put stuff in the ground, you walk away from it. But since looking at and researching those older ways and methods of planting and understanding your environment and interacting with it we now plant at night, we plant during the moon cycles. We plant certain medicinal herbs during the dark of the month. There's ways that we are looking back to, and a lot of times this information that we're getting is going back to the old Hawai'ian language newspapers, because that's our repository of cultural knowledge as we've lost a lot of it over the years

Nick:

That brings us to something that's on the one hand a little bit closer to our normal ballywick of observing the sky and space science, but that's not to say that this gets any easier or less complicated or less dynamic as we're considering where the skies are dark and where they're not, and what implications that has for people around the world.

Emily:

Where scientists want to place earth based telescopes, they want to be high up and they also want to be in places where there is limited light pollution. And Hawaii is one of those places that already has an enormous number of ground based telescopes. But if you're one of the people who reads the newspaper once in a while, you would have heard about the most recent challenges with a new 30 meter telescope being placed on Mauna Kea.

Kālewa Correa (interview):

Mauna Kea is actually a very complex subject because it's not just a relationship of the Kanaka Maoli people, native Hawaiians to the mountain itself, which is a sacred mountain. The TMT, the 30 meter telescope that has been in the news for a number of years now is just the final line in the sand. It was the breaking point for a lot of people and a lot of the kupuna elders, native Hawaiian elders, not just native Hawaiian either. There's a multitude of people up there, that are there to protect Mauna Kea. They said enough is enough and if this is our last fight, we're going to go down with this fight. I do understand why the observatories that are on top of Mauna Kea here on Hawai'i Island do want to be here to conduct their research because it is some really unprecedented viewing that does happen here. It just so happens too that there's a native population here too that has a relationship separate from those telescopes.

Musical transition

Nick:

I mentioned sodium lights a few times, and I'm talking about the orange highway street lamps, and those were popular for a lot of reasons. They were relatively energy efficient, but they're not quite as energy efficient as LEDs, which are much more prevalent now. But the problem is that while LEDs save energy, they also put out a lot more light in a section of the spectrum that encroaches a lot more on observation.

Emily:

Well, and I think there's an environmental impact that people are now recognizing also with respect to not just screwing up circadian rhythms of humans, but also of animals, plants in different environments. And so, I think there's a lot of different cross purposes that are all pointing in the direction of trying to preserve dark skies.

Nick:

Yeah, and there's a lot of thoughtful stuff that you can do to help keep the sky dark when it doesn't need to be lit up. And there are a lot of resources out there, things like special lights that are approved by dark sky authorities that cast light down, and that only operate in certain wavelengths that aren't nearly as disruptive to humans and wildlife and things like timers and motion detectors, so that you only have light when you need the light and it's not just shining all of the time, all of the place.

Emily:

Well, and it's certainly going to affect your energy bills to not pay for all that electricity for lighting that you're not using. And if you really want to get involved, there's a lot of different citizen science projects out there that you can connect with to help scientists, sort of, measure the amount of light pollution in your neighborhood, in your city, in your region. And scientists can use that information to not only understand how that light pollution is affecting the environment around you, but also to help come up with strategies to try and mitigate that.

Music up then under

Nick:

AirSpace is from the Smithsonian's National Air & Space Museum. You can follow us on Twitter or Instagram @AirSpacePod. AirSpace is produced by Katie Moyer and Jennifer Weingart. Mix by Tarek Fouda. Special thanks to Andrew Fletcher, distributed by PRX.

Music out

Matt:

And you might think that the lights outside your house keep you safe at night, but really they just make it possible for people to see the booby traps that you've laid out for them. So consider whether you need those lights or not.

Nick:

We're learning whole new things about Matt's bungalow in the woods that he speaks so fondly about.

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