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Annette Lee: As It Is Above, It Is Below

Podcast Title: As It Is Above, It Is Below

This podcast features Professor Annette Lee, pictured here.



Lakota words used in the podcast

Wanbli Luta – Red Eagle

Wichanpi Oyate – Star Nation or Star People

Kapemni – As it is above, it is below

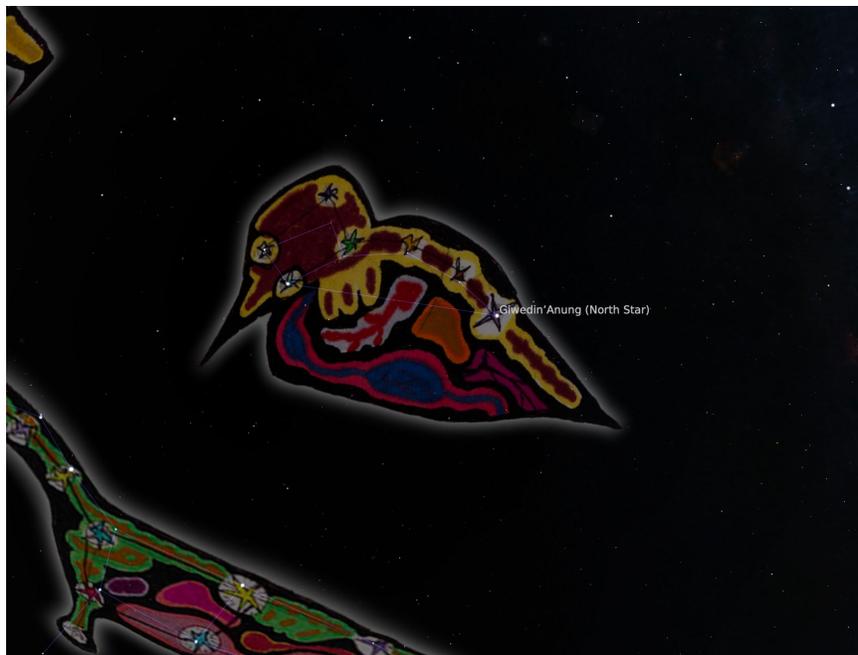
Ojibwe words used in the podcast

Maang – Loon

Mishi Bizhiw – Curly Tail or Great Panther



The Ojibwe constellation Mishi Bizhiw – Curly Tail or Great Panther – simulated using Stellarium planetarium software.



The Ojibwe constellation Maang – Loon – simulated using Stellarium planetarium software.



This map shows the approximate extent of the Lakota and Ojibwe lands in North America before colonization.

Podcast Transcript

Narrator

Hi, my name is Sergio Salgado, and I'm part of a team called OpenSciEd that provides freely available, high quality science instructional materials. We spoke with astronomers from around the world to get their perspectives on the relationship between the Earth and sky. What we learned was fascinating, and we are excited to share their stories with you. We hope these stories get you thinking about how patterns in the sky set the rhythm for your life, your community, and all life on Earth.

Professor Lee

The relationship with the sky is really important because it gives us our direction, where we come from, what we're doing now, and where we're going.

Narrator

That was Professor Annette Lee, an indigenous scholar, astronomer, visual artist, and a full-time tenured faculty in the Physics and Astronomy Department at St. Cloud State University. We sat down with her to find out more about her relationship with the sky and how the people in her community have connected to the sky over generations.

Narrator

Professor Lee is mixed-race Lakota, and her communities are Ojibwe and Dakota/Lakota.

Professor Lee

I'm living here currently in the place called Mni Sota Makoce or Minnesota. And I like to also acknowledge this is the land of the Dakota people. And later the Ojibwe people have been living here for hundreds and thousands of years. My family's Lakota, which is from the *Wambley Luta*, which is the Red Eagle family. And my husband is Ojibwe.

Narrator

We asked Professor Lee about why she chose to be an astronomer.

Professor Lee

I've always had a really strong connection to the stars. Science allowed me to pursue astronomy and a connection to the stars. I wanted to go down this path of developing this relationship with the sky.

Science is a laser-focused precision tool. And it has gotten us far and wide. I mean, we got to the Moon, we're sending orbiters and landers on Mars. There is culture in what we think of as objective science, and it's Western European. It's time to acknowledge that other cultures have science and have been doing science and are participating in science.

Narrator

When we say "science," we have an image in our head of what that means, and that image comes from Western European history. But knowledge about the natural world was not invented by Europeans like Galileo and Newton. For thousands of years, people around the world have been observing the sky, collecting knowledge about the sky, testing their ideas, and using stories to transmit those ideas to the next generation. And according to Professor Lee, narrowing our definition of what counts as scientific knowledge has come at a price.

Professor Lee

Science has given us all these advancements and technology, but what are the ethics? What are the social considerations that go into this? And we're not dealing with that. When we talk about what's the difference between indigenous way of knowing indigenous knowledge systems or indigenous scientific knowledge systems, one of the very first things is the acknowledgement that all living things are related and that we're all connected. So when we get back to the sky, then the relationship with the sky is really important because it gives us our direction, where we come from, what we're doing now, and where we're going.

Narrator

We asked Professor Lee for an example where we have taken too narrow a focus and forgotten how everything is connected.

Professor Lee

Where I grew up in St. Louis, there's nuclear waste sites where they dumped a whole bunch of radioactive waste along the river. Just think about that.

For the majority of human existence, go back 10,000 years, though they knew that the land around the river was the best land, the most fertile land, right, because the river is constantly changing, it's flipping and flopping around. And when it floods it has these rich sediments, these nutrients in the water, but those rich nutrients drop when the floods recede and that makes the land right next to the river the most fertile, and that's how you grow your food to survive. So the Egyptians knew this, and they had the Nile River and their entire calendar system was oriented around the flooding of the Nile. Because to grow that food meant the difference between life and death. And that was also connected to the heliacal rising of the star Sirius, the brightest star in the night sky,

Narrator

According to Professor Lee, when people dump nuclear waste next to a river, they have lost focus on how this river is connected to our lives and the rhythms of the Earth. The Egyptians used a pattern in the sky, the appearance of the star Sirius above the Sun each year, to understand and predict a very important rhythm on Earth, the rhythm of the flooding of the Nile each year. And they knew that it wasn't enough to understand just the pattern of the star or just the flooding of the Nile or just the nutrients needed in the soil. Rather, all this knowledge had to be connected for the Egyptians to grow food and survive. Like the Egyptians, for the Lakota/Dakota community, the sky was more than just a set of isolated patterns to be studied.

Professor Lee

It's so fundamentally part of who we are. We come from the stars. *We chunk bay oyate* in Lakota, *we chunk bay oyate*. We are star people. It's important to have this relationship with sky because it gives us the information that we need. But it also gives us more than that, the direction and the hope, the guidance.

Narrator

In other words, the sky and the Earth are not separate systems. The sky is where we come from, and it is what sets the rhythm of our lives. Professor Lee told us about a Lakota phrase that describes this relationship between the Earth and the sky.

Professor Lee

I personally remember going to different ceremonies and hearing different elders say *as it is above, it is below*, in Lakota this is *capenimi, capenimi*. What it is, is the idea that there's really two parts to the whole—a top part is the sky, or the spirit world, the below is the earth or the material world. So there's these two parts that are equally real and are part of the whole, and their relationship is that they mirror each other. It's a reflection. So the above and the below.

The word *capenimi* has *nimi*, and the *nimi* is water. So that's a flow. So it's moving. We want there to be this flow because that's what keeps us healthy and strong, and the healing is coming through that flow.

Narrator

We asked Professor Lee about some of the stories that her people used to organize and understand this relationship with the sky. The list of 88 constellations recognized by the International Astronomical Union goes back at least 6,000 years to Babylonia, now modern-day Iraq, but they are no more or less scientific than those of the Lakota/Dakota or the Ojibwe. Indigenous communities also used constellations to organize the patterns they saw in the sky and to make connections between Earth and the larger system of the universe.

[Loon calls in background]

The Ojibwe loon, which is *[Ojibwe] Maang [Ojibwe]*, is right there at the center of their night sky, or where Polaris would be or the Little Dipper. The Loon is part of helping place the stars in the sky and the planets. So the loon is really special.

Narrator

The Loon is an Ojibwe constellation that is visible all night and all year round. This is not true of most constellations, which rise and set and are only visible at certain times of the year. For example, the familiar Greek constellation of Leo the Lion forms the curved tail of the Ojibwe constellation of *[Ojibwe] Mishi Bizhiw [Ojibwe]*, the Great Panther, and includes the stars of Cancer. The Great Panther is only visible for part of the year. There are many important cultural teachings about the relationship between the Great Panther and water. According to Ojibwe elder, Carl Gawboy, when the Great Panther was overhead in spring, the Ojibwe rejoiced winter's end and the renewal of life. The arrival of spring and the Great Panther also meant snow melt, thin ice, flooding, and violent storms on the Great Lakes.

Professor Lee

We all know, we have different things that we experience or we enjoy in different seasons, and you go to the store and you see, you know, St. Patrick's Day or Easter decorations. So you see in your backyard right now, it's springtime, right? You see that the buds are first starting on the trees, but there's no leaves. You see the birds, they're singing. The snow is melting. So every person has that. That's just what we do.

But the seasons unfolding in the stars has another meaning. If we can look to the seasons and getting to know the motion and the seasons go by, each time we can look at the stars, we can acknowledge them, then that gives us the opportunity to participate in this rhythm. And the rhythm is unfolding in the seasons all the time. But also in the stars and in the Sun and the Moon. And the more that we can be a part of that relationship, the more it helps us to get back on track. It helps calibrate our own rhythm.

Everything you need is in the stars. If we can slow down and we can do something simple, like listen, and we're just sitting on the ground on a blanket, under the stars. Then we're listening. We're taking in those rhythms. We're taking in the teachings, the patterns that come from the stars, everything you need is in the stars.

[Twinkle, Twinkle Little Star by the Black Lodge Singers song fades in.]

Narrator

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