

The Star Compass: Polaris to Pohnpei

By Onawa Powell at Create4STEM



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Is there something that you know how to do so well that you could do it even in your sleep? Not because you've memorized it but because you can feel it? For Mau's grandpa, it was navigation, he knew the skies and the seas around their island of Chuuk so well that he could point in the right direction without even looking up. He would often tell Mau about his adventures on the sea and he would sing to him,

"The ocean is tremendous, sometimes in our canoe we feel afraid. We just have to remember to look around us and to feel the rocking of the waves. If the **ocean swells** reach our boat from the same direction, then we will know that our path hasn't changed."

Mau's grandpa would sing this to him as he taught him all about navigating the seas. The two of them would sit under the sun on the beaches of Chuuk and draw maps of the sky into the sand using sticks and stones for illustration and decoration. Mau would look up at his grandpa with admiration, wishing that he could be so wise and know so many things and have so many important stories to tell.

Eagerly, Mau listened to the stories of his grandpa and he dreamed about having adventures of his own. Unlike his grandpa, Mau had only left Chuuk for day trips to go fishing near the island; as he had only been around the sun 12 times, he had been on that island his whole life. That was, until the day that his grandpa decided that it was time for him to make a

trip to trade with the other men of Chuuk. They were all to head to another island nearby, an island called Pohnpei. The men were bringing with them dried coconut, called **copra** and to Chuuk, they were to bring back delicious taro and sweet potatoes.

On the day of Mau's first big trip, all of the men and women of Chuuk worked together to gather dozens and dozens of coconuts; some were for the journey and the rest were for the trade. The coconuts were loaded onto their **double-hulled** canoe along with some taro enough to last the men a week on the sea. After the coconuts and taro were loaded, the men climbed on board. Mau said goodbye to his grandpa and his grandpa told him to remember just two words, "pay attention".

It was exciting being on the canoe with the other men of Chuuk as the canoes' sails guided them along their journey. Mau could smell the ocean and feel the sea breeze move through his hair. He felt as if he belonged there as he sat in the canoe, drinking from a coconut and watching as everyone in the boat worked together. Some men were focused on steering the canoe and others were busy preparing the food that they had brought along.

As stars began to fill the sky one of the men, Satawal, came and sat next to Mau. Satawal pointed towards the constellation that we call the **Big Dipper (Ursa Major)** and he asked, "Do you see those two bright stars there?" He was pointing to the last two stars that make the "bowl" end of the constellation. He said, "If you follow an imaginary line that connects these two stars and you follow that imaginary line to the right, you will see that they are pointing to another star, a star that is always in the same place and makes **wayfinding** so simple."

Do you know which star Satawal was talking about? He was talking about the North Star also known as Polaris and as their canoe sailed east towards Pohnpei, Satawal told Mau all about the North Star. He told Mau that the North Star is practically **due north** which means that it sits on top of the North Pole and he told him that it never moves. He explained, "The fixed position of the North Star makes navigating easy because we can always count on it to guide us in the right direction as it always points North."

Mau gazed in the direction that Satawal was pointing and he asked, "But how do we know which one is the North Star?" To this Satawal responded, "Well, it's not as bright as other stars in the sky and so we need to use bright **helper constellations** like the Big Dipper as a guide."

As we think about Mau and Satawal discussing the twinkling stars above, we must keep in mind that they were speaking a language called Chuukese and so the names of the stars and constellations that they used were very different from the ones that we are familiar with. Yet, despite their different names, the stars that Mau and Satawal could see on that starry and warm, late-August night are the same ones that we would be able to see this August if we were sitting in the middle of the Pacific, right where Mau and Satawal had been.

Mau already knew that the stars in the sky changed throughout the year because his grandpa had already told him all about it. His grandpa would say, "On the same day, at the same time each year, we can always see the exact same stars so long as we are looking up from the

exact same place.” Do you know why this is? It’s because the earth rotates through space as it makes its journey around the sun.

As the earth was spinning on this particular night, Satawal continued to explain to Mau how he could identify the marvelously reliable North Star. Satawal said, “We must draw a line using the two bright **pointer stars** in the Big Dipper named **Merak** and **Dubhe**. If we follow this line all the way through Dubhe, then we will reach the North Star.” Satawal asked Mau if he knew how to recognize when they had reached the North Star and Mau beamed, “We will know it because we will see that it is the star at the end of the **Little Dipper (Ursa Minor)**.”

“Exactly!” Replied Satawal, “and once we know which way is north, we can orient ourselves from there and we can observe all of the other stars in the sky as they rotate in a circle around the North star, rising in the East and setting in the West.”

From his double-hulled canoe, Mau could see the stars doing just that; he could see the planet **Saturn** high above the horizon in the Northeast and in the North which was to his left, he could see the constellation **Draco**, arcing above the North star. Well above the horizon ahead of him in the East, Mau could see the constellation **Aquila** with it’s brightest star **Libertas** shining bright above the sea. Behind him was the constellation **Virgo** and high in the sky above him, he could see the planet **Jupiter**. To his left was the constellation **Pegasus** and to his right a little bit higher was the constellation **Capricornus**. The Big Dipper was setting in the northwest to the left of the North Star and so Mau said goodbye to Merak and Dubhe as he scanned the sky.

The canoe continued forward for six days as the men used the stars and the sea to navigate and as they told each other stories and sang the songs of the islands. They were just one day away from Pohnpei; tomorrow, they would reach its shores. Mau felt safe and at peace on the sea and on the last night, as he closed his eyes and dozed off; he dreamt about the kinds of people that he would meet and the things that he would see once they reached Pohnpei.

As Mau dreamed, the stars should have been decorating the night sky but instead, it began filling with dark storm clouds. The breeze that had previously moved the men graciously across the sea, began to pick up and quickly, it turned into a ferocious wind. The waves started to reach higher as they cracked against the side of the canoe and rain began pouring down. Mau awoke with the first slap of thunder and he watched as lightning filled the sky.

Mau had heard of such storms and the damage and the loss that they had caused. However, he had never imagined the kind of fright and terror that he felt that night as the weather mixed with the sea creating an impossible path for navigation. The men around him were scrambling to gain control of the canoe but as the winds and waters pushed and tugged on the boat and its **cargo**, it seemed that they would not overcome the storm.

With the strike of one vicious wave, the canoe was taken over and the bottom of the canoe began facing the sky. What does this mean? It means that the boat had **capsized** and that all of the men and the coconuts and taro flooded out. The men swam out from under the canoe and struggled for something solid to hold onto. Mau found Satawal clinging onto the **hull** of the canoe; Satawal shouted above the fury of the storm, “ The sails have been wrecked and most of

the paddles have vanished with the waves. I don't know how we will reach the shore with our lives intact.”

In this moment of panic, Satawal yelled to the other men that someone must take the boat's only wooden raft and travel alone to the shores of Pohnpei in order to get help. Mau remembered the words of his grandpa, “pay attention” and he knew that it was time for action; “I'll do it,” he said. Satawal could feel Mau's confidence and so he sent him off on the raft as the rest of the men clambered for space on the capsized canoe.

Once Mau hit the rough waters alone, he feared that maybe he had made a mistake. It was impossible to control the raft in these conditions and the water was terribly cold. The stormy skies above were blocking all chances of him catching a glimpse of any stars. Mau worried about the men stranded in the middle of the sea and he worried about the sorrow that his grandpa would feel when he didn't return home to Chuuk. Mau wanted to cry but he knew that his tears wouldn't carry him to shore. Then he remembered his grandpa's song and stranded there in the middle of the ocean, Mau sang to himself,

“The ocean is tremendous, sometimes in our canoe we feel afraid. We just have to remember to look around us and to feel the rocking of the waves. If the ocean swells reach our boat from the same direction, then we will know that our path hasn't changed.”

Mau felt the waves rocking against his raft and was soon able to determine that he had indeed been heading the right way. He felt hopeful and continued in the direction that the waves motioned him to go. After a few hours, the skies began to clear and Mau could see the constellations **Pisces** and **Aries** ahead of him and he could spot the North Star to the left of him. The map of stars calmed him and reassured him that he was near to Pohnpei. After a couple of hours of navigating clear skies on a calm sea, a crescent moon began to peak just above the horizon in front of Mau and he knew that this meant that the sun would be rising soon.

Mau knew then that he would reach the shores of Pohnpei by morning. Excitement crept through him when he realized that he would be able to get help for the other men because he had been paying attention; he remembered just where the boat had capsized and he knew how to get back there. Everything that Mau's grandpa had taught him about navigating had guided him through the storm and had made him feel at home on the sea. The company of the stars and the waves reminded Mau of his grandpa and he could feel that his grandpa was there too, urging him to reach Pohnpei. Now, Mau would have his own story to tell his grandpa when he returned home to Chuuk.

If you want to see the stars that Mau could see on his journey to Pohnpei, you can visit <https://www.timeanddate.com/astronomy/night/> and enter the dates of August 22-29.

Look at the night sky from the island of Chuuk on August 22 around 7:00pm and on August 28 around 11:00pm.

Can you find the North Star using the constellations Ursa Major and Ursa Minor? Can you find Merak and Dubhe at the end of the bowl in Ursa Major?

Can you find planets the planets Saturn and Jupiter?

What about the constellations Draco, Aquila, Virgo, Pegasus, Capricornus, Pisces and Aries?

