SHORT STORY

Kaʻulani and Kekahu Make Pancakes
An Aerospace Engineering Story

"... The end. Good night, my loves. Aloha wau iā ʻolua," Tūtū Wahine whispered as she gently put the puke down on the bookshelf and left the room.

As Kekahu drifted off to sleep, his sister called to him from across the room. "Kekahu, Kekahu. Tomorrow is Tūtū Wahine's birthday. We should do something really special for her."

"What if we make her breakfast in bed?" Kekahu whispered as he closed his eyes. "We can make her favorite ʻulu pancakes."

"That's a great idea! Aloha wau iā ʻoe," Kaʻulani said.

"Aloha wau iā ʻoe," Kekahu replied as they both fell asleep.

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The next morning, the early summer sun peeked through the window and shined directly on Kekahu's sleepy face. Kekahu slowly opened his eyes and wiped away the maka piapia from his face. He knew that if Ka Lā was peeking through his window, it was time to get up and greet the day. Kekahu stood at the edge of his bed and started to chant, "E ala e, ka lā i ka hikina…"

Kaʻulani heard Kekahu greeting Ka Lā and jumped out of bed, excited to cook breakfast for Tūtū Wahine. The two siblings quickly changed clothes and went outside to pick some oh-so-sweet ʻulu.

With a mango picker in hand, Kaʻulani stood on her tippy toes and tried to reach the lowest-hanging fruit. To her surprise, no ʻulu fruits were in reach.

"Auwē! I guess one of us needs to climb the tree. Jan-ken-po?" Kaʻulani suggested as she clenched her fist.

"Ready... Jan-ken-po. Rock beats scissors!" Kekahu yelled with a grin on his face.

Kaʻulani laughed and made her way up the tall ʻulu tree. As she gently tossed a ripe ʻulu fruit from the top of the tree, she shouted, "Hūi! Catch!"

SPLAT!

"E Kaʻulani makaʻala," Kekahu said. "You are throwing it so hard!"

"Aʻole, it's not me—it's gravity!" Kaʻulani exclaimed. "I think gravity is pulling it down, making it fall a lot faster than I tossed it."

"Just keep going. I will catch one eventually," Kekahu replied.

Kaiʻulani sighed. "Aʻole. We can't waste good food. Don't you remember the story that Tūtū Kāne told us? He said that long ago the people of Hawaiʻi experienced a famine, and the god Kū made the ultimate sacrifice to save the people. Kū saw that his family and community were in need, so he dug head-first into the earth and disappeared into the ʻāina. A few days later, an ʻulu tree grew from the same spot. That tree provided fruit for his whole family and community. Just like that ʻulu tree in the story, this tree feeds our ʻohana. We have to think of another way to get this sweet fruit down without wasting it."

Kekahu called back to his sister with his hands cupped around his mouth, "Okay, then let's Facetime Anakē Likolani for some advice. She is very akamai."

RING! RING!

"Aloha kāua!" Likolani greeted them as she appeared on the screen of Kekahu's phone.

"Aloha Anakē Likolani!" Kekahu responded. "Kaiʻulani and I are trying to get sweet ʻulu down from the tree so we can make Tūtū Wahine her favorite ʻulu pancakes. The problem is the fruits are too high to use the mango stick, but it's too risky to throw the ʻulu from the tree. I know you are akamai because you are an aerospace engineer. Can you help us think of a solution to our problem?"

Anakē Likolani was currently working at the Hawaiʻi Space Exploration Analog and Simulation Site on Mauna Loa. Kekahu could see her smile and nod her head, but there was a delay in her audio response.

After a few seconds, Likolani replied, "Sure thing! Right now, I'm working on parts for a spacecraft that will land on Mars, and our biggest concern is ensuring we make a parachute large enough to create as much drag as possible, while taking into consideration the type of atmosphere that surrounds Mars."

"Drag! What's that?" Kaiʻulani called out as she climbed down from the tree.

"Drag has to do with the atmosphere," Likolani explained. "Even though we can't see or touch the atmosphere, it is still made up of stuff. So when an object moves through the atmosphere, it pushes all that stuff around, and that stuff pushes back. That stuff pushing back is called drag—and a well-designed parachute will create drag to slow down an object, just like your ʻulu."

"A parachute!" Kaiʻulani exclaimed. "What a great idea, Anakē. Mahalo! I wish we were cool like you and got to create the newest technology."

Likolani rushed to reassure the keiki. "You are still creating technology, Kaiʻulani. Remember, technology is anything that people create or design to help them solve problems,

and I know you will make a great parachute to solve your problem. Don't forget to use the engineering design process that I taught you both. I only wish I could be there to eat those ʻono ʻulu pancakes."

Both keiki waved goodbye. "Mahalo, Anakē, a hui hou!"

Kekahu ended the Facetime call, and the two siblings started collecting the items they wanted to use for their parachute.

"Okay, so I'm thinking we will need a canopy, a suspension line, and a load or a basket to hold our ʻulu fruit," Kekahu suggested.

"That's a great idea!" Kaiʻulani said. "Let's make a plan by drawing out what we imagine and then creating a list of materials."

Kaiʻulani ran inside the house to grab a notebook and a pencil.

<p style="text-align:center">*</p>

After a few minutes, their plan was created, and the two of them worked on a parachute with some string, a towel, and a bucket. Kekahu grabbed a handful of small rocks and dumped them into the bucket.

"Let's pretend these rocks are the ʻulu fruit and test it out!" Kekahu said as he grabbed the heavy parachute and climbed up the tree.

He dropped the parachute, and it quickly hit the ground with a *thud*.

"Oh no!" Kaiʻulani frowned. "All the rocks fell out, and the bucket still fell really fast. I think we need a bigger parachute to create more drag."

She ran away in search of a new parachute to use.

<p style="text-align:center">*</p>

Minutes later, she came back holding an old tarp they used to cover the kennel of Bully, their pet dog.

"Mom and Dad said they were going to throw this away," Kaiʻulani said while placing the tarp alongside the other materials. "Maybe we can cut it to make a bigger parachute that will create more drag."

Kaiʻulani and Kekahu worked hard, cutting the materials and testing their design over and over again to ensure a safe landing. After several attempts, their parachute was finally ready to hold the sweet ʻulu.

"Ready?" Kaiʻulani shouted from the top of the tree, holding the parachute and bucket with the ʻulu fruit inside.

Kekahu nodded.

"Okay, here it comes!" Kaiʻulani released the parachute, and it floated down safely.

"YES! It worked!" Kekahu yelled as he jumped for joy.

The two siblings took the ʻulu fruit back into the house and started to cook Tūtū Wahine's favorite pancakes.

<div align="center">*</div>

When they were done, the kids entered Tūtū Wahine's room and sang, "Hauʻoli lā hanau iā ʻoe, hau'oli lā hanau iā ʻoe."

The sweet smell of the ʻulu pancakes filled the room, and Tūtū Wahine smiled.

Vocabulary

Aloha wau iā ʻolua	I love you both
Tūtū Wahine	Grandmother
Puke	Book
ʻUlu	Breadfruit
Aloha wau iā ʻoe	I love you
Maka piapia	Encrusted white matter in the eyes from sleeping or irritation
Lā	Sun
"E ala e, ka lā i ka hikina…"	The beginning of the chant *E Ala E*
Auwē	Alas, oh dear
Jan-ken-po	Rock-paper-scissors game
Hūi	Hey
Makaʻala	Watch out
Aʻole	No
Tūtū Kāne	Grandfather
ʻĀina	Land, earth
ʻOhana	Family, community
Anakē	Auntie
Akamai	Smart
Aloha kāua	Hello
Aerospace Engineer	An engineer who helps design and test aircraft and spacecraft
Mahalo	Thank you
Keiki	Child
ʻOno	Sweet
A hui hou	See you later
Hauʻoli lā hanau iā ʻoe	Happy birthday to you

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