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today

KAUAI CLAYMAKER
Ceramist David Kuraoka creates curvy, complex pieces >> **F7**

Study in plastic

Jack and Kim Johnson and their foundation are behind an art show that aims to spur debate on the material

By Nina Wu
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In one of the ditties that singer Jack Johnson performs for school kids, he says that "single-use plastic is not so fantastic/We use it for a minute or two/And then it sits around for a few/Thousand years, maybe even more …"

Getting youngsters and adults alike to minimize consumption of single-use plastics through lifestyle changes has long been one of the messages the international music star and his wife, Kim, have been promoting through their Kokua Hawai'i Foundation. And now they are spotlighting the issue through the "Plastic Fantastic?" exhibit opening Wednesday at the Honolulu Museum of Art's Spalding House. It ends July 10.

Through the lens of art, the exhibit examines the evolution of plastic over the past century — how it has shaped global culture and affected nature. Five contemporary artists from around the world examine plastic from their own perspectives via collages, textiles, photographs and sculptures.

In a piece called "Stepping Stones," Native Hawaiian artist Maika'i Tubbs created sculptural rock formations made of trash inspired by plastiglomerate, a newly coined term used to describe the fusion of microplastics, rock, sand, basalt and other geologic materials.

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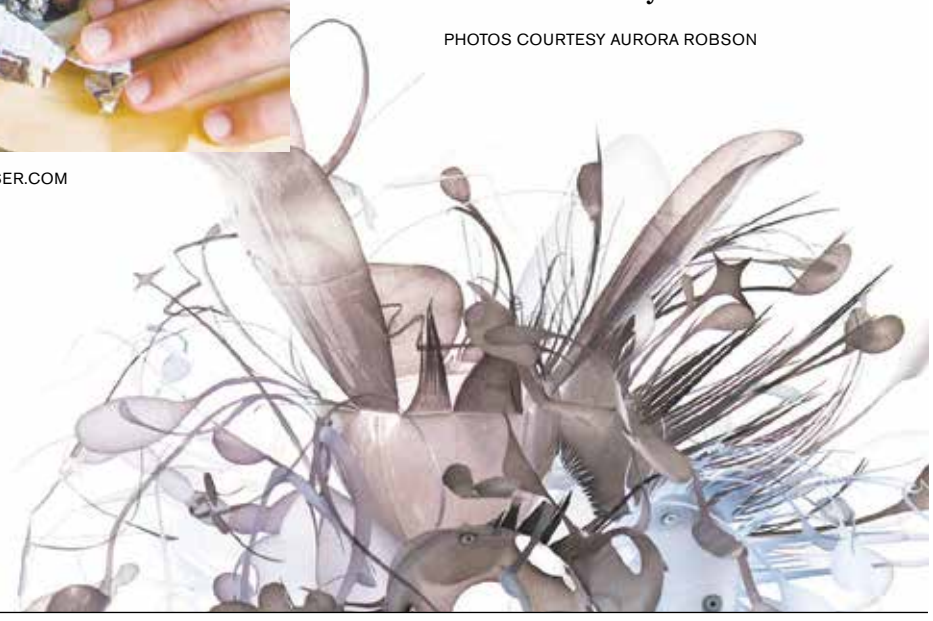
Pictured in the background are detailed pictures of art pieces made from recycled plastic by artist Aurora Robson. At top is "Midas" and below is "Verity."

PHOTOS COURTESY AURORA ROBSON



"Everyone might be at a different awareness level when it comes to plastics, but we want to … have them at least think about it more."

Kim Johnson
Pictured with husband Jack Johnson. She is holding up one ounce of plastic collected from Hawaii shorelines that was made into an art object, and Jack holds a bolus or material regurgitated by an albatross chick from Kure Atoll

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Mid-Pac students apply new tech to historic site

By Mindy Pennybacker
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Picture the game of Quidditch in "Harry Potter," only you're flying around and through a real building instead of Hogwarts. That's the kind of virtual experience 14 Mid-Pacific Institute high school students are engineering in their historical preservation class using a very new technology — 3-D laser scanning — to make a model of a very old building.

On a field trip to Kaniakapupu, King Kamehameha III's 170-year-old summer home in Nuuanu, the students used a 3-D laser scanner to take photos of the picturesque ruins, one section at a time. Back in the classroom, using special software installed on each student's PC laptop, they were tasked with processing the scans into 3-D digital reproductions of the entire structure.

"It's reality capture," said Paul Turnbull, president of the school. "The laser captures every surface it touches in a 360-degree sphere and puts it on a memory card," he explained. "In the classroom you upload all those files and have essentially the most complicated 3-D jigsaw puzzle ever."

The goal is "making sure that our community can retain the incredible past that's all around us," Turnbull added.

Mid-Pacific Institute is the first Hawaii school — and reportedly the only K-12 school worldwide — to have integrated 3-D scanning into its curriculum, said Turnbull, 47, who launched the program in a partnership with CyArk, an international nonprofit organization that digitally preserves heritage sites such as Mount Rushmore and the Tower of London. CyArk provides

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John Yen, left, and Joshua Nichols demonstrated their 3-D scanner (on the tripod) and a white target in their historical preservation class at Mid-Pacific Institute.

COURTESY MAIKAI TUBBS

Maika'i Tubbs' "Stepping Stones" are rock sculptures made from trash he found.

COURTESY ANNE SUNDERMANN

German artist Swaantje Guntzel created "Great Pacific Garbage Patch."

COURTESY DIANNA COHEN

Dianna Cohen's "Wave Lens" is constructed of plastic bags and thread.

PLASTIC

Continued from **F1**

'PLASTIC FANTASTIC?'

A retrospective on plastic, examining both the good and bad of this ubiquitous material through sculptures, photographs and collage. Visitors are invited to participate in a public art installation to be unveiled at the World Conservation Congress this fall.

>> **When:** Feb. 3 to July 10
>> **Where:** Honolulu Museum of Art's Spalding House, 2411 Makiki Heights Drive
>> **Cost:** $10 adults; free ages 17 and under, members
>> **Info:** 532-8700 or honolulumuseum.org

Tubbs makes the "stones" from trash he's found, such as paper plates, plastic bags, newspapers, cigarette butts and food wrappers.

For her contribution to the exhibit, multimedia artist Aurora Robson, who grew up on Maui and is now based in New York, transformed plastic debris into ethereal, intricately detailed sculptures using repurposed water bottles and caps combined with tinted polycrylic that resemble floral bouquets.

Kim Johnson, who has an affinity for art, approached the museum about hosting the exhibit. It is the first time the museum is offering an exhibit about plastic and the first collaboration with the Johnsons, who live on Oahu's North Shore, and their foundation.

"I really believe in art as a medium for people to get inspired," she said. "Everyone might be at a different awareness level when it comes to plastics, but we want to … have them at least think about it more."

The topic is timely, given a recent World Economic Forum study predicting the world's oceans will be filled with more plastics than fish by 2050. Plastic production has grown twentyfold, from 15 million tons in 1964 to 311 million tons in 2014. The volume of throwaway plastics is also growing, according to reports, with about 8 million tons of it ending up in the ocean every year.

But the purpose of the exhibit is not solely to preach about plastic pollution, according to Aaron Padilla, Spalding House director and curator. It examines plastic as a material that has shaped our culture and habits, both good and bad, over the last century.

There are more than 50 pieces in the exhibit, including some from Spalding's existing collection that give a visual narrative of the history of plastic. The lightweight, durable material has brought us everything from Bakelite to hula hoops, and its practical uses range from tamper-proof medication seals to lightweight automobile and aircraft parts.

It has also provided convenience in the form of disposable water bottles, packaging and grocery bags that are now littering the globe.

"Art reflects life," Padilla said. "Art is the way people react to the world around them. Why not have a show about this material and really look at it? We can just throw it all out there, and people can make the choices on their own."

Seattle artist Chris Jordan illustrated the sober reality of what plastic pollution does to living creatures through a series of photos of Midway Atoll albatross carcasses full of plastic pieces. In a more subtle approach, Los Angeles-based artist Dianna Cohen assembled plastic bag collages with thread as a statement about our throwaway culture due to the proliferation of plastics.

German artist Swaantje Guntzel uses textiles to create a map of plastic impacts, including an outline of the Great Pacific Garbage Patch.

Spalding House visitors will be invited to create their own, stringing together 1-ounce fragments of predrilled plastic debris collected during beach cleanups throughout the Hawaiian Isles. One ounce represents the amount of disposable plastics an average American uses every three hours. The creations will be integrated into a public art installation to be unveiled during the World Conservation Congress to be held in Honolulu in September.

School groups are welcome to tour the "Plastic Fantastic?" exhibit, which can tie into science, ecology and contemporary art studies.

The startling reality of how much plastic is in the ocean hit close to home for Jack Johnson during a research expedition with the 5 Gyres Institute that sailed from Miami to the Bahamas last summer.

"We got to the bluest water I'd ever seen," he said. "But here's the problem: Hour after hour, every single trawl we put out, for seven days straight, you would think you didn't see anything and sure enough, every time you pulled it out, you could fill your hand with microdebris."

Still, the art exhibit is not about demonizing plastic, Johnson said, nor does he expect every person who visits to walk out the door committed to using reusable water bottles.

"I mean, that would be great," he said. "I think it's more about starting that conversation. As with any good art, not everyone should react the same way."

SCANS

Continued from **F1**

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COURTESY MID-PACIFIC INSTITUTE

Students in historical preservation class work on 3-D scan technology projects at Mid-Pacific Institute. Technology specialist Tony Johansen helps (clockwise, from far left) Evan Low, John Yen, Erin Kelly and Destiny Cabrera solve software glitches. At left is a scanned image of Kaniakapupu, King Kamehameha III's summer home.

training to Mid-Pacific teachers, who then train their students in the technology.

A happy, creative buzz filled a Mid-Pacific classroom, its sunny windows overlooking a green Manoa ridge, as historical preservation teacher Heather Calabro, 33, circulated among her students with a friendly smile, checking their progress and offering help.

When Turnbull offered Calabro the opportunity to learn the technology, she was thrilled, she said. Not only did the technology meet the academic and community service criteria of her class, but also, in addition to researching historic Hawaii sites and artifacts that merited preservation, her students could actually be involved in preserving them.

Choosing the Honouliuli internment camp on Oahu as a historical preservation project, she applied for and received funds through the Japanese American Confinement Sites Grant Program of the National Park Service to help the school purchase a $65,000 Faro LiDar 3-D laser scanner. In August 2014 she began teaching her first class using the scanner, with Honouliuli as the pilot project.

Because the scans document the features of an object down to a millimeter in accuracy, an architect can use them to redesign and rebuild a structure, Calabro said. In the case of Kamehameha III's summer home, "We thought it would be a service to the community because we could preserve Kaniakapupu as it is before it deteriorates further."

In addition, the scans could help protect the actual palace and its environment because "people can watch this file instead of going into the (protected) watershed to see Kaniakapupu," Calabro said, adding that with the guidance of the Sierra Club, the students obtained visitor permits from the state Department of Land and Natural Resources.

Older technology, such as pencils, paper and markers, is also used. Calabro gestured to a large whiteboard covered with drawings of a site map. Kaniakapupu was surrounded with symbols that showed the many spots where the scanner and white spherical targets (think volleyballs) would be placed around it. And when they arrived at the site, the students made sketches with pen and paper to mark where they'd taken a scan; 27 individual scans were shot at Kaniakapupu.

"We set up the scanner on its tripod, taking just one shot of one piece of the structure at a time, moving it to get all the angles. You need 20 percent of overlap between adjoining scans to make sure you have all surfaces painted with the laser," Calabro said. The targets mark three common points, and the software enables the students to "stitch" the pictures together where the targets line up.

"The whole point of the overlap is to avoid voids," explained senior Joshua Nichols, 17. In other words, there can't be any puka in the final file. The goal is to make a seamless 3-D video providing a virtual fly-through experience of Kaniakapupu. "You have to set points to get a fly-through, which lets you go through doors and go under stuff," Nichols explained.

"It's kind of like if you had a spider web and each of the ends have to match," said John Yen, 17, a senior.

After the scans are successfully merged, the targets are edited out.

As they worked the students traded tips and quips, with frequent smiles and laughter. At times they also vented frustration with the complex and elusive software. "It's not user-friendly," Calabro said.

"If the scans are uneven, we walk the student back to see where the mistake happened," said Tony Johansen, the school's technology specialist. "Those who make big mistakes, the next time it happens they don't need us."

There were also more mundane challenges, such as blocked access when the software automatically updated. "Evidently none of them remember their passwords," Johansen said.

The students also have to develop verbal and written communications skills as a class requirement. Before a project gets the green light, they must research a site and write a persuasive essay on its significance to Hawaiian history, Calabro said.

Some students were putting the finishing touches on other projects. "It's fun, it's interesting because it's not like anything I've ever seen before," said senior Destiny Cabrera, 17, about the technology. "And scanning artifacts is not only useful to Mid-Pac, but to the community. We scanned an old koa canoe for Hui Nalu (canoe club), and they can use it to make a new canoe."

"I like how we get to go on a lot of field trips and see a lot of historic sites we wouldn't see otherwise," said senior Erin Kelly, 17. The girls described their class trip to the Niu Valley home of Hui Nalu member Rick Bauer, where the canoe rested on stands in a carport. "We had to flip the canoe, which was kind of hard, and put the scanner underneath," Kelly said. "And there were all these dogs running around, and we had to make sure they weren't in the scans."

Younger Mid-Pacific students are using 3-D scanning as well: Elementary-schoolers study geometry by carving virtual pumpkins, and middle school students are scanning people. The high school freshmen and sophomores use a GoPro Freedom 360 Rig to shoot videos at the historical preservation sites.

"Because of a partnership with a virtual-reality firm in Los Angeles, we have access to GoPro's proprietary software," Turnbull said.

He said he's proud that Mid-Pacific students "walk away with not only incredible digital storytelling skills, but also high-grade engineering skills in technology that's not readily available even to some graduate schools."

Next year they'll be animating the technology. "That gets into gaming, augmented reality," Turnbull said. But, he cautioned, "it's not a toy to play with. You have to use the technology to benefit the community. That's the most important thing."

Other 3-D mapping projects include the coronation pavilion at Iolani Palace, Hawaii's first printing press at the Hawaiian Mission Houses Historic Site and Archives, and a cottage at Hawaii's Plantation Village in Waipahu. All can be seen at midpac.edu/preservation. To see 3-D videos-in-progress of scanned projects, including Kaniakapupu, go to youtu.be/dnBVrBicjjo.