

# sustainable japan

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## Sho Okiyama, doctor teaching AI expert skills for future

### Roundtable

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Ten years ago, Dr. Sho Okiyama was living an interesting life. As one of two doctors in a small hospital on the Okinawa island of Ishigaki, his nights were either a flying adventure or a rather boring study session.

The good shifts offered patients, with a hurried helicopter ride to one of the island's remote communities. The slower nights saw the fresh-faced 28-year-old in his small office, studying medical videos online.

It was so unlike his time working in an ER in Tokyo, where every shift meant a new challenge and a new chance to learn from his more experienced senior doctors. Ishigaki might be slower, but when the challenges came he faced them alone.

The young doctor's face clouds a little when he talks about those nights. "On the slower nights, I had to study. I would think, 'If only I had that surgical skill' or 'How can I have the eyes of (a more experienced) doctor, or the ears of another?' I wanted to be both a generalist and a specialist, but this is impossible. It takes time to become an expert in all the areas, and I just didn't think I could do it within my lifetime." Acting alone, as the sole physician on an island, made him acutely aware that all doctors are in some ways practicing alone, with the responsibility for their patients' lives in their hands.

### From helicopter to startup

Ten years later, Dr. Okiyama is practicing a

different kind of medicine. Instead of flying in helicopters, he is the founder of Aillis, a Japanese medical device startup that builds AI-powered tools for doctors all around the world.

Its first product is hardware: a small, purpose-built oral camera that takes a rapid series of photographs of a patient's throat and pharynx.

Its second product is the camera's software, which analyzes the photos to provide a highly accurate influenza diagnosis.

"There are minute differences between the different kinds of inflammations within the throat," he said. "In fact, the most challenging part of diagnosis is eliminating the other kinds of infection, which present very subtle differences in inflammation patterns on the throat, tonsils and larynx. It is here that most doctors have the most difficulty, and this results in a very high amount of misdiagnosis. Machine learning can be more successful in making that distinction."

Watching him during his appearance at The Japan Times' sustainability roundtable series, the fresh-faced, goateed doctor seemed too young to be changing medicine itself. Learning more about this soft-spoken man's life explains his unique character. Raised abroad, first in Philadelphia and then as a teenager in Rome, he returned to Japan to attend school here. In his gentle, fluent English, Okiyama described his overwhelming desire to "see the people I was helping immediately, in front of me, to see their smiles. So it seemed that the two choices for a career were either teacher or doctor." He chose medical college, which allowed him to



Sho Okiyama is the CEO and founder of Aillis Inc. YUICHO TAIYA FOR PHOTOMATE

graduate faster than his American counterparts, who must first go through undergraduate school.

### A new theory of knowledge

It was during medical school and in his practice afterward that he developed a unique taxonomy of medical knowledge. "I decided there are two types of knowledge: 'stock' knowledge and 'cycle' knowledge. Stock knowledge is... information which can be accumulated and stored, put into libraries. But there are certain types of knowledge that cannot be described verbally, which I call cycle knowledge. Examples of this might be medical technique, or medical skills

like examination. These skills are learned through practice and experience, and this takes time. I can add to the stock knowledge by publishing a paper. But even if I live to 100 years old and become an expert, skillful doctor, when I'm gone I cannot leave my skills behind."

When asked which kind of knowledge is more important for practicing medicine as a doctor, Okiyama didn't hesitate. He has come to believe that a doctor's skill is 20 percent stock knowledge and 80 percent cycle knowledge. Considering how slowly cycle knowledge accumulates, and the fleeting nature of acquired skills, improvement of the medical field can be seen as a unique

engineering problem. If this cycle knowledge could be gathered and stored beyond the time period of a single doctor's life, then all of medicine would improve. But how?

### The new tool: AI

The answer seemed clear: artificial intelligence. Okiyama compares the development of AI to humans' development of writing: before writing, all knowledge was cycle knowledge. Just as the written word allowed for basic information to be recorded, AI will do the same with the more complex information of technique. Instead of describing techniques, an AI will perform them. "There are chess-playing AI these days that can beat champions. Even if I read a book by a grand master, I cannot become a chess expert the next day. But if I preserve that grand master's knowledge and skills in an AI, then the expert's skills become instantly useful to me. With a smartphone, I might be able to beat another grand master using that AI." Okiyama sees AI as the ultimate tool for medicine, where the stakes are much higher than in chess. For a doctor, the disease is the opponent.

### Taking risks to help medicine

Such grand ambitions seem to come naturally to Okiyama, but he worries that other Japanese doctors feel pressure to not take risks. For instance, fewer doctors create medical startups in Japan compared to the USA, a fact that he mourns. In Japan, the prestige of a doctor's position in their hospital or practice is considerable. It can create a kind of pressure to never give that position up, even if they have ideas for startups or new medical technology. "To younger doctors, I would tell them that taking risks is essential to changing medicine. The risks may not be as big as you think they are. Even if you fail, you're a doctor — you will always have a way of earning a living. This is a reason to take risks. Give it a go! That's my message."

With Aillis's first two products currently awaiting approval, Okiyama sees huge



Medical helicopter used by Okiyama to reach out to his patients SHO OKIYAMA

potential for what might come next, both for Aillis and for the use of AI in medicine. "We have plans and beta software for other diseases. The throat and pharynx contain so much rich information. Remember, this is the inside of the body. We can see the blood vessels running behind the walls, the inflammatory patterns. The tonsils can tell us if an infection is bacterial or viral..." He stops himself, a little shy at his own enthusiasm. Okiyama might have big plans, but he is still too modest to talk big.

More than his ambitions for his own startup, it is Okiyama's vision for all of medicine that leaves the biggest impression. On Ishigaki, many of his patients still consulted shamans, an ancient tradition that many island families practice. When faced with a difficult medical decision over treatment or surgery, shamans provided principled and trusted advice, acting almost like a partner to the doctor. "Maybe in the future, a patient's diagnosis and options may come from the AI system. And we doctors would be more on the patient's side, consulting them."

At the memory of the islands, Okiyama smiled. "Almost like a shaman."

**Aillis**

Roundtable is a monthly series of English-language events organized by The Japan Times Cube. For more information visit <https://sustainable.japantimes.com/roundtable>



Sho Okiyama and Roundtable host Ross Rowbury discussing the benefits of artificial intelligence in medicine.

YUICHO TAIYA FOR PHOTOMATE

## First Ronnie Prize aims to revive traditional Japanese crafts

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JapanCraft21, a volunteer group that aims to reinvigorate Japan's traditional crafts, is launching its first Japan Traditional Craft Revitalization Contest, also called the Ronnie Prize in honor of an exemplary young individual and great admirer of Japanese crafts. The winner will receive a prize consisting of ¥5 million funding for his or her craft-related project as well as support from a special team of professional mentors in such areas as business, design, product development and marketing. The prize funding will be granted incrementally over time. The winner must meet certain criteria established by the mentors.

The Asia Society Japan Center in Tokyo's Minato Ward is co-sponsoring the event and sharing its networks of people and resources.

The Asia Society is a leading nonprofit educational institution, founded in 1956 by John D. Rockefeller III to nurture understanding and partnerships among individuals, leaders and institutions in Asia and the United States, especially in the fields of the arts, business, culture, education and policy.

Since its establishment in 2018, JapanCraft21 has been supporting the efforts of Tomohiro Naito, a young fifth-generation carpenter and president of Naito Koumuten, in establishing Shinmachiya Juku, a school offering training in high-level wood craftsmanship to young carpenters while providing them with scholarships. A specialist in wood building restoration, Naito



JapanCraft21 and fifth-generation carpenter Tomohiro Naito aim to halt and reverse the disappearance of Kyoto machiya townhouses by teaching young carpenters advanced techniques of wood joinery KAZUKI FUJIMOTO

has the passion, skills and determination to preserve the tradition of machiya-style houses built with wood joinery and without nails. Through this project, Naito and JapanCraft21 aim to halt and reverse the trend of disappearing machiya townhouses by teaching young carpenters necessary skills and techniques, enabling them to start building machiya homes in Kyoto again for the first time in 80 years.

In addition to teaching a new 18-month wood joinery course, Shinmachiya Juku will add two new related courses from May of this year for working professionals, one focused on Japanese bamboo mud wall construction, and the other on advanced Japanese gardening skills.

These are not the only fields in Japanese traditional culture that are vanishing at an alarming rate. Production and sales have been declining in many categories such as urushi lacquer, textile weaving and dyeing, bamboo basketry, metalworking, doll-making, wood-turning and ceramics, due to a number of factors including shrinking demand and shortage of successors.

Artists, craftsmen, designers and product planners in various fields of Japanese crafts are encouraged to apply to the contest. JapanCraft21 is committed to making this inaugural event successful. It will be followed by similar competitions held once or twice annually as part of its long-term strategy for revitalizing Japanese crafts.

Contest applicants must submit a simple application form by April 10, outlining their project proposal for revitalizing a tra-

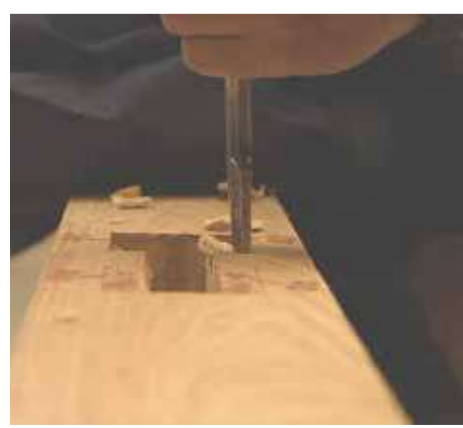
ditional Japanese craft. Contestants must address the functional beauty of Japanese crafts as well as the environmental impact of their plans. The application fee is ¥1,000. The top 50 applicants chosen in the preliminary selection process will be asked to submit more detailed project proposals along with information regarding their background and experience.

Ten finalists will be evaluated by six judges: Yuiji Akimoto, director of the University Art Museum of Tokyo University of the Arts; Shihoko Fukumoto, indigo dye artist; Eriko Horiki, washi designer and director of Eriko Horiki & Associates; professor Tsutomu Horiuchi of Tama University; Masamitsu Saito, collector and authority on Japanese bamboo baskets; and Reiko Sudo, founder, director and chief designer of Nuno Corp.

Besides the Grand Prize winner, who will receive ¥5 million and support from a group of mentors, four runners-up will also be given an opportunity to meet with the judges for strategic evaluation of their projects going forward. All 10 finalists will present their project concepts at an awards ceremony to be held in Tokyo and broadcasted worldwide via the internet.

More information and the application form can be found at the JapanCraft21 site, [www.japan-craft21.com](http://www.japan-craft21.com).

The Asia Society Japan: <https://asiasociety.org/japan/about-asia-society-japan>



Today, many traditional crafts struggle to survive, due to shrinking demand and a shortage of young crafts people. KAZUKI FUJIMOTO

## Tottori game meat spices up dinner table while curbing waste

### Satoyama ~ Authentic Japan

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Game birds and animals have been attracting attention in recent years in Japan not only as healthy, flavorful delicacies but also as a way to curb food loss because although many species are considered pests and are subject to culling, it is wasteful to just kill them — they are natural resources that can be used in various ways.

Most Japanese can enjoy game meat only at special restaurants, yet "Wild meats can also be used for home cooking," chef Takuto Murota said. "For example, minced venison can be cooked like ground beef, and sliced wild boar meat can be stir-fried with vegetables just like pork," he said on Jan. 20 at the online talk event Tottori Gibier Roundtable (the French term for game meat, *gibier*, has entered Japanese as *jibie*). The French restaurant he owns in Tokyo's Shibuya Ward, Lature, is known for Murota's refined and unique selection of ingredients, including various wild meats.

The event, which focused on the characteristics and potential of Tottori Gibier, wild venison and boar meat from Tottori Prefecture, opened with remarks from Tottori Gov. Shinji Hirai. "Game can be used for various dishes. It can also be enjoyed at home using food delivery services. I hope this discussion will provide an inspiring and refreshing time to the audience in these difficult times," he



Overview of decommissioning of deer's meat WAKASA NIKU KOB0



Oyster chowder with Boar Bacon TOTTORI PREFECTURE



Gibier hamburger with various mushrooms sauce TOTTORI PREFECTURE

said.

Tottori, in westernmost Honshu's Chugoku region, is the least populated of Japan's 47 prefectures. "But there are wild mountains that provide nutritious food and fresh water to the wild animals running through the woods," said Tateki Kawato, the facility manager of Wakasa Niku Kobo (Wakasa Meat Factory), a processing facility for wild deer and boars in the town of Wakasa in the eastern part of the prefecture.

Hiroshi Miyazaki, the owner and chef of Urmenoi, a traditional Japanese restaurant in Tottori, also noted that the muscles of wild animals grow strong to aid survival, which is why their fibers are firm and become juicy and tasty when roasted slowly. Even if one does not have an oven or other method of roasting at a controlled temperature, there are still ways to enjoy venison at home. "Venison remains tender if you cover slices with starch or flour before frying," Miyazaki said.

Murota pointed out that processing speed is also key to producing good game meat. "No other facilities can process wild meat as fast as Wakasa Niku Kobo does. Thanks to this efficiency, stress on animals is minimized, making the meat delicious," he said. Along with high processing capability, Tottori's intact tracts of unspoiled land allow a stable supply of high-quality wild game.

Miyazaki also noted that what makes Tottori game meat special is the passionate producers in the prefecture. He explained that there are producers like Japan Wild Boar Bokujou that are keen to receive feedback from clients and make constant progress in improving quality. Murota nodded and said, "The owner understands each client's preferences and tailors recommendations."

Japan Wild Boar Bokujou is a farm that raises wild boars caught young and also pro-

cesses boars brought in by hunters. Kenichi Tokuko, the owner of the farm, said he aims to keep quality consistent by raising boars for at least a minimum period of time. "We are also trying to minimize waste by using every part of the body. The parts that do not sell well, like shins, can be minced. The skin is used for leatherwork," Tokuko said. Kawato also said deer bones can be used for ramen broth or consommé.

Murota, whose Lature recently earned a Michelin Green Star — a distinction given to restaurants that take a greener and more sustainable approach to gastronomy — said that those in the food industry are responsible for taking into consideration issues such as food waste. He explained that consuming wild game meat in itself leads to less food waste because most such animals have been treated as merely pests and are otherwise thrown away after being hunted. "At the same time, Japanese game meat can only be enjoyed in Japan due to export restrictions. It can be a special attraction for inbound tourists who look for local delicacies," he said in concluding the talk.

Tottori Pref., Chugoku region, is Japan's least populated prefecture



Tottori Pref., Chugoku region, is Japan's least populated prefecture GOOGLE MAPS

"Sustainable Japan," features issues related to the environment and a sustainable society. For more information, see <https://sustainable.japantimes.com/satoyama>

