A Curious Mind for Science Communication

Dialogue

By LONG Yun

Danish chemistry Professor Troels Skrydstrup, from Aarhus University, has a passion for engaging with young minds and often takes his inquisitive students on sci- tech journeys. The most recent adventure on October 23 had them exploring carbon neutrality, where Skrydstrup's dedication to science communication was on full display, as he sought to ignite curiosity and responsibility in the next generation of scientists.

"They are the ones who will be addressing future challenges and need to take the helm and find solutions. These science outreach activities [also] show the fact that science can indeed be fun," he said.

Professor Troels Skrydstrup. (PHOTO: Science and Technology Daily)

Advancing green development

Skrydstrup's research is focused on critical environmental issues, including carbon neutrality, CO_2 activation, plastic waste recycling, and isotopic labeling of compounds. He is a firm believer in the urgent need for humanity to reduce its CO_2 emissions while simultaneously capturing and removing carbon from the atmosphere.

He highlighted the critical role of decarbonization and the transition to clean energy. Currently, we are using fossil fuels as our primary energy source, and burning these fuels leads to enormous CO_2 emissions — about 35 gigatons per year.

Direct air capture means using technologies that can take CO_2 directly from the air, but it's not enough to only depend on this method, according to Skrydstrup. Nature already has a great system for this and plants are experts at absorbing CO_2. "But to truly make an impact, we need to combine reducing emissions with actively removing CO_2," he said.

Green partnership for sustainability

"To combat climate change is the mission of humanity," Skrydstrup said, adding that solving environmental issues requires global collaboration.

To emphasize this, he mentioned how Denmark and China have long collaborated on sustainable development, with a renewed focus under the Green Joint Work Programme for 2023- 2026, which builds on their earlier cooperation from 2017- 2020. This partnership aims to foster green cooperation across various sectors, tackling global challenges such as climate change, CO_2 emissions, and energy transition.

Skrydstrup is optimistic about the role Denmark and China can play together in tackling global environmental challenges. "Both countries have made ambitious commitments, and while we may not have all the technologies yet, the collaboration between China and Denmark could help us achieve these targets faster."

Promoting sustainability

When asked about China's efforts in promoting sustainable development, Skrydstrup said: "China is probably the most active country in sustainable development today. It is now a leader in renewable energy technologies, especially solar power and wind energy."

He is also impressed with China's ability to accelerate technological advancements due to its unique infrastructure and government structure. "China can scale up technologies very quickly, which is exciting for scientists," he said, adding that China is an ideal partner for collaboration and the exploration of new opportunities for innovation.

From his perspective, China has the size and capability to implement technologies rapidly. "Once a decision is made, it is executed swiftly, such as the widespread adoption of some green technologies," he said.

Skrydstrup also spoke about his interest in forming an international platform for plastic recycling, a concept he is currently exploring with both Chinese and Danish partners. This platform could serve as a global hub for green technology development, especially in plastic waste management, an area where China and Denmark both have much to contribute.

Taking responsibility

"Be curious, be courageous, and take responsibility. Those are the qualities that will help young scientists make a difference," is Skrydstrup's encouraging message to the younger generation.

He believes that the challenges scientists face today, such as limited funding and the growing complexity of research, are outweighed by the potential to create meaningful solutions. "If you believe in the importance of your science, even rejections won't matter because you're working toward something good."

"Maintaining a curious mind" is a slogan Skrydstrup holds dear. By constantly shifting his research focus every decade, he has remained at the cutting edge of science. His recent work on plastic recycling, as well as his earlier contributions to pharmaceuticals show his philosophy of innovation and adaptation.

This article was also contributed by China Association for International Exchange of Personnel.

Chinese Moon-surface Spacesuit Empowers Astronauts

Science Outreach

By Staff Reporters

Recently, the China Manned Space Agency unveiled the exterior design of its moon-landing spacesuit for the first time, signaling that the country is one step closer to its goal of reaching the moon.

"The moon- landing spacesuit is specially designed for taikonauts to carry out exploration activities on the lunar surface, and it is one of the core [pieces of] equipment for the manned moon landing mission," said Cui Jun, professor at School of Atmospheric Sciences, Sun Yat- sen University. He added that the astronauts will be able to walk, climb, drive and conduct scientific tasks on the lunar surface when wearing the special suits.

Given the harsh and complicated environment on the moon, the moon-landing spacesuit has to be highly reliable, safe, lightweight and compact, Cai noted.

He further explained that the spacesuit must be able to adapt to the extreme temperature changes on the moon in order to keep the astronauts warm all the time; the airtight performance is also crucial to maintain an atmospheric pressure environment inside the suit; the ability to protect against cosmic ray radiation and to withstand the impact of tiny meteorites is also essential to safeguard the safety of astronauts.

In addition, fireproofing, anti-bloating and anti- deformation are also key factors in designing the suit.

The spacesuit is also equipped with a multifunctional integrated control panel that is easy to operate, as well as cameras for recording close- up and long- distance scenes. Flexible and reliable gloves, a panoramic glare-proof helmet visor, and joints adapted for low- gravity environments also make it possible for astronauts to conduct more complicated and delicate exploration tasks.

Compared with other existing space station spacesuits, this spacesuit fits the astronauts better with a slimmer and more coordinated appearance, which can facilitate them performing different postures while conducting activities on the moon surface, said Cai.

China has announced its plan to conduct its first manned mission to the moon around 2030. To achieve the goal, it needs to develop a host of cutting- edge hardware, including a manned lunar lander, a new crew spaceship and the special suit for lunar surface operations.

Chinese moon-landing spacesuit made its debut appearance in Chongqing, September 28, 2024. (PHOTO: XINHUA)

Traditional Eastern Wisdom

Xiatang Reveals 10,000-Year-Old Artifacts

By LU Zijian

Pottery dating back almost 10,000 years are part of the latest discoveries unearthed at the Xiatang historic site. News of the ancient artifacts was revealed at an archaeological conference held from October 25-27 in Xianju county, east China's Zhejiang province.

Located at the southernmost part of Shangshan cultural site cluster in Zhejiang, the Xiatang site covers an area of 30,000 square meters, with the layer of cultural relics being about 2.5 meters in depth, incorporating the most complete tribal elements, clearest structure and most abundant part of the cluster.

Dug in different historical periods, there were two ditches in the site. A dozen platforms built of earth were discovered on the central platform surrounded by the ditches. Most of the dirt platforms were scattered with artifact pits where some of the fine pottery was found. Pottery was also recovered from a burnt clay plaza, where it appears that ritual activities took place and a high-level tomb, thought to be the largest of its kind and of the highest standard during the Shangshan cultural period.

There were also canals and rice fields, providing a crucial sample for researching the origin of rice farming. It was possible that the ample output of rice enabled the ancestors to pursue a more refined lifestyle, as demonstrated by fine pottery. Four building sites with round and square shapes were also detected. To the north of the round building at the center of the site, there was a place that could have been used to grind grain, as evidenced by the many used millstones.

Discovered in 1984, the Xiatang historic site lasted during the entire Neolithic Age, going through Shangshan Culture, Kuahu Bridge Culture, Hemudu Culture and Haochuan Culture. Relics of different dynasties were also found at the site, demonstrating the ancient Chinese culture of 10 millennia.

My China Story

Teaching the Past, Embracing the Future

By Rainer Feldbacher

In 2008, when I visited two cities in China, Harbin and Beijing, for the first time, I was fascinated and captivated by its dynamism. And friendships and academic exchanges soon motivated me to become more involved in China.

Another point of attraction was my long- standing interest in the Silk Road. China was at the center of it and still is today. It was in operation for thousands of years, and as with any economic construct, there were occasional ups and downs. Ultimately the Silk Road was forgotten because it was no longer economically viable, as we would say today.

However, interest in it continued with the advent of research expeditions and it found an even greater response in recent years when China launched the new Silk Road in 2013. And so, I also took advantage of the many opportunities in China, the official initiator of the world's largest trading network 2,000 years ago.

Even if your original homeland is your anchor, you should not focus too much on your own environment and culture when you are abroad. This is something that you must learn. You have to avoid stereotypes and general preconceived ideas if you want to integrate yourself into the new surroundings.

During one of my earlier trips to Yunnan province in southwestern China, I found it amusing when in the absence of verbal communication, people wrote sentences on a piece of paper for me to exchange words with me — in Chinese characters. It was only later that I realized that in a society where information can be communicated and understood across borders using a standardized script, these people had sought to find a solution that suited their environment.

So for me, China remains an adventure with incredible opportunities. Apart from Hainan province in southernmost China and Xizang autonomous region in the southwest, for now, I have visited every province and municipality and was overwhelmed by the cultural legacy everywhere. China's diversity, not only in the culinary area, is underestimated outside China — its regions are as different as the countries of Europe.

But even more fascinating are the inhabitants, who are forging their own paths and are full of hope and hard work and are inventive in creating a better future for themselves. China and my School of History at the Capital Normal University in Beijing — where I have been employed as a distinguished associated professor since 2019 teaching Egyptian and Mesopotamian history and culture — also give me a lot of freedom and opportunities in my research.

Not only can I travel around the country in search of other highlights, be it in the open or in the many museums that reflect the country's archaeological wealth, but I often have the opportunity to get to know China and its people better. In rural areas as well as in the cities, they repeatedly demonstrate their friendliness and helpfulness.

A recent experience is worth mentioning: I bought the wrong metro ticket, and a worker there spoke to me in good English and wanted to help me. When he found out that I was Austrian, he switched to excellent German. When I asked him where he had learned it, he mentioned various language apps — one of many examples of diligence, intelligence and interest.

Something similar happened to me years ago in the city of Guangzhou in south China, when an elderly gentleman was painting in a park. Attracted by his paintings, we started talking, again in perfect German. In his case, in an era before smartphones he had learned German from German classic schoolbooks, without ever having been to Europe.

And so, I am integrating more and more and trying to learn the language of my hosts. After all, I feel at home in China as I do in my native Austria. In China in particular, you can see that the citizens have their ambitions for the future and their traditions are firmly anchored in the past and yet "anchored" is not the right word; after all, hardly any other country is moving forward as dynamically as this nation.

Traveling is like a book and the pages get filled with each new impression. You get to know foreign countries and yourself. My venture in China and along the Silk Road serves as a cultural bridge between the East and West — in the spirit of general transfers, serving, learning, and using from each other.

As the Chinese author Lu Xun wrote, "Hope cannot be said to exist, nor can it be said not to exist. It is just like roads across the earth. For actually the earth has no roads to begin with ... but when many people pass one way, a road is made."

Rainer Feldbacher is a distinguished associate professor of Oriental studies at the School of History at the Capital Normal University.

Photo News

The 136th China Import and Export Fair, popularly known as the Canton Fair, commenced in Guangzhou, Guangdong province in South China, on October 15 and will conclude on November 4.

Fourteen enterprises from the Qingyuan High- tech Zone in Qingyuan city, Guangdong are participating in the Canton Fair, covering industries such as motorcycles, consumer electronics and information, food, luggage and household textiles. Many Chinese brand products have caught the attention of global businesses.

The photo shows an international participant trying a retro-style, brightly colored electric motorcycle at the booth of Guangdong Mangosteen Technology Co., whose products have been sold to more than 40 countries and regions around the world. (COURTESY PHOTO)