Making China and the World Stronger Through Cooperation

By Staff Reporters

Gretchen Kalonji is an American materials scientist and academic administrator. Having previously served as the assistant director general for natural sciences at UNESCO, and in professional roles at MIT, the University of Washington and the University of California, she is currently dean of the Institute for Disaster Management and Reconstruction at Sichuan University, an institute formed in collaboration with the Hong Kong Polytechnic University, after the Wenchuan earthquake of May 12, 2008.

Kalonji recently shared her perspective on China's development, international collaboration, and other related issues with *Science and Technology Daily*.

Professor Gretchen Kalonji. (COURTESY PHOTO)

Sichuan, maybe my current hometown

Choosing Sichuan University as her research destination was not a random choice. Her connection with China began 23 years ago when she worked at the University of Washington. "We established a very creative program with Sichuan University on environmental science for students from both sides in 1998," said Kalonji. These cooperative experiences and her eagerness for new discoveries contributed to her choice to work in Sichuan.

As an old friend of Chinese people, she is, "Happy to live in China, the country that lifted hundreds of millions of people out of poverty." She uses words like "incredible" to describe China's advancements in the fields of science and technology in particular.

When asked about her views on China's academic environment, she said that China has invested enormously in the sci-tech field and achieved remarkable results. "My opinion is that our universities are the most creative part of society. And we need to focus on how to unleash the creative energies of our students," she said, adding that promoting interdisciplinary research and drawing in more international experts are critical to create academic communities that are both more robust and innovative in China.

She also believes that China needs to further strengthen "connections between industry and universities" in order to effectively and promptly deliver research results to society.

Valuing diversity

Diversity is a word frequently used by Kalonji. "In my professional life, for many years, the challenge is to make our professional communities more diverse," she said, adding that she spent many years in her early career in the U.S. trying to get more women and ethnic minorities involved in science, in programs funded by the US National Science Foundation.

As a child, Kalonji said she had a strong interest in science. She was a self-taught inventor who built her own chemistry lab. Her decades of international work and personal experiences have shaped her into an unbiased observer of the science and technology field.

She devotes considerable attention to promoting equitable participation of women in the scientific and engineering workforce. From her perspective, China could make the most of its "strategic advantage" to promote female participation in the sci-tech field, through its capacity to design and implement national level policies relatively quickly and effectively.

Kalonji said that we all know that our Chinese girls do extremely well in the early stages of the sci-tech pipeline, including in the gao kao (China's College Entrance Examination), and in undergraduate education performance. However, as they move up the career pathway, in PhD programs and in entry and high-level positions in universities and research institutes, the relative participation of women becomes dramatically reduced. She hopes Chinese women scientists get full and equitable participation in all stages of their career development.

Cooperation on common challenges

Speaking of international cooperation, she emphasized that the U.S. and China are two major economies of the world with "deep historical connections." At the same time, she urged the U.S. and China to work together to cope with common challenges, such as climate change, disaster risk reduction and other fields, adding that advancing human progress needs to be achieved through multilateral cooperation, not just limited to exchanges between the U.S. and China. In her current role, in which she is based in China but collaborates with colleagues in research and educational institutions worldwide, she has found a great deal of fulfillment.

In addition to her professional ties to China, Kalonji has personally formed a strong attachment to China. She joked that Sichuan may now be her "first home." She said that what impresses her most is that Sichuan is a multicultural society within China, with many minority groups living harmoniously, not to mention wide diversity in landscapes.

In terms of her future plans, Kalonji said she will continue to work on disaster risk reduction (DRR), with a homebase in China. She stressed that DRR is a subject intrinsically linked to almost all of the sustainable development challenges facing our societies worldwide. She will continue to focus on strengthening international collaborations between Chinese institutions and international partners on disaster risk reduction and response. Her second major focus will be to continue to work on innovations in the Chinese higher education system. "Make China stronger while also making the rest of the world stronger in collaboration with China," said she. In 2021, Kalonji received the Chinese Government Friendship Award, the highest honor given by China to outstanding foreign experts working in China.

Myth Busters

By CHEN Xi and BI Weizi

Rumor A: People with weaker chewing ability are more apt to develop Alzheimer's disease.

Truth: There is no causal relationship between chewing ability and Alzheimer's disease.

Alzheimer's disease, commonly known as dementia, is a chronic progressive brain disorder caused by damage to brain cells, which mainly causes a continuous decline in thinking, behavioral and social skills that affects a person's ability to function independently. According to clinical data, there is no effective cure for this disease yet. However, a recent post on Weibo has attracted a lot of attention. It's said that the risk of Alzheimer's disease can be predicted by the ability to chew, and the stronger one's chewing ability, the lower the risk of him or her developing Alzheimer's disease.

Although the ability to chew and Alzheimer's disease are not related, it seems that some people have found a connection that links chewing ability to health. In 2012, a study was published in *The Journal of the American Geriatrics Society*. The study looked at 557 people aged 77 or older in Sweden and found that people with multiple tooth loss and difficulty chewing hard food were significantly more likely to have cognitive impairment.

"It's an epidemiological study that can only show a correlation between chewing ability and Alzheimer's disease, but it cannot yet indicate whether there is a causal relationship between the two, and the mechanism needs further verification by scientific research," Zhou Yuying, chief physician of the Department of Neurology at Tianjin Huanhu Hospital, told *Science and Technology Daily*, adding that the exact cause of Alzheimer's disease is not yet clear to the medical community, but there are some contributing factors that have been identified, among which aging is the most prominent. The risk of developing Alzheimer's disease increases as people age.

According to Zhou, people who lack hobbies and lead a dull and monotonous life are more likely to develop Alzheimer's disease, so environmental stimulation is very effective in preventing the disease. A rich life and social circle can effectively stimulate the cerebral cortex, and a "live and learn" philosophy can also continue to exercise the brain to prevent Alzheimer's disease, she said.

Rumor B: Negative pressure wards (NPWs) will cause patients to have difficulty in breathing.

Truth: The pressure difference does not cause any discomfort

NPW plays a pivotal role in the fight against the pandemic. However, due to lack of knowledge about these wards, some people believe that negative pressure can cause breathing difficulties for patients.

"NPW is a ward where the air pressure inside is lower than the air pressure outside, and it's mainly set up for patients suffering from respiratory infectious diseases," Wang Yimin, chief physician of the Department of Intensive Care Medicine at Tianjin TEDA Hospital, told *Science and Technology Daily*, adding that the conventional atmospheric pressure is 1.013×105 Pascal (unit of pressure), while there is only a pressure difference of 25 Pascal between the air pressure in NPW and the conventional atmospheric pressure. "This difference in air pressure is difficult to notice, and patients do not feel any discomfort in NPW," he said.

Because the air pressure in a NPW ward is lower than the air pressure outside, the air can only flow in one direction, so that when medical personnel enter and leave the ward, it can ensure that fresh air from outside can flow into the ward, but the contaminated air in the ward will not spread outside. The polluted air will not be discharged at will, but collected through special pipes and discharged to a fixed place, and then to the outside world after layers of filtration and disinfection.

CIEP Forum on Supporting Rural Revitalization Opens

By Staff Reporters

As a part of the Conference on International Exchange of Professionals (CIEP), the Forum on Scientific and Technological Innovation Underpinning Rural Revitalization kicked off online on June 22.

With a focus on international sci-tech cooperation and professional exchange in agriculture, the first sub forum was held on the same day.

During the sub forum, Li Xin, deputy director-general of Department of Foreign Expert Services, the Ministry of Science and Technology, introduced the status quo of international cooperation and talent exchange in agricultural sci-tech innovation in China, and measures to be taken to promote such exchange during the 14th Five-Year Plan period.

Mikami Yoshiyuki, counselor of the Embassy of Japan in China, introduced the current situation of smart agriculture in Japan, and hoped the exchange within different countries will be an opportunity for further development of smart agriculture in the future.

Jihong Liu Clarke, research professor and coordinator for China relations at the Norwegian Institute of Bioeconomy Research, shared insights in knowledge transfer between China and Europe via the project SiEuGreen, which aspires to enhance the EU-China cooperation in promoting urban agriculture for food security, resource efficiency and smart, resilient cities.

Experts from other institutions in China, Japan and Romania also shared their views.

Lasting for four days, the forum was an extension of the international cooperation matchmaking meeting on sci-tech innovation supporting rural revitalization held by CIEP last year.

Driven by needs, the forum aims to share ideas and experience of development in agriculture and rural areas, provide opportunities for international sci-tech innovation cooperation and talent exchange in agriculture and rural development areas, and set up pragmatic platforms to serve for rural revitalization.

Foreign Experts Enjoy Guangxi Folk Songs

Ben Linde, an American teacher, teaches music in the School of Arts of Guangxi Minzu University. (PHOTO: DENG ZHUOYUAN)

By DENG Zhuoyuan

Organized by the Science and Technology Department of Guangxi Zhuang Autonomous Region, the Chinese Culture Post International Salon on Folk Song Appreciation was held on June 11 in Nanning, Guangxi Zhuang Autonomous Region, attracting around 20 foreign experts working in the region.

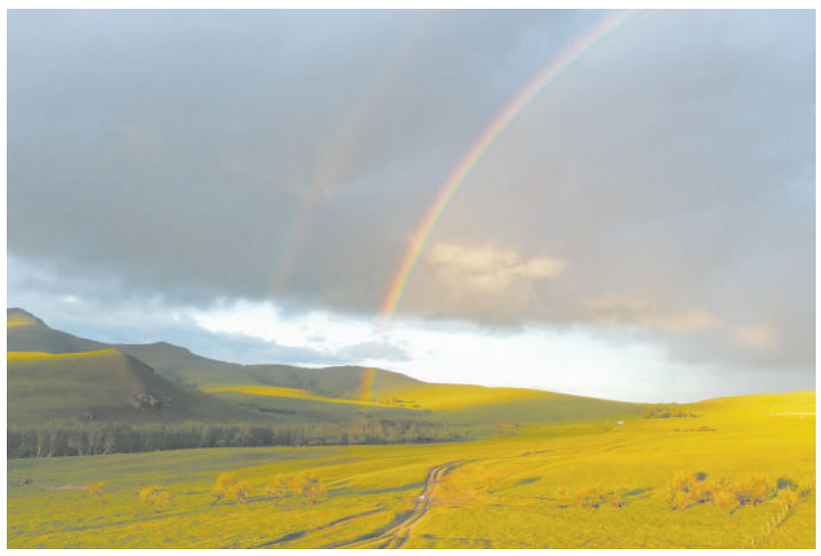
Ethnic groups living in Guangxi have their own distinctive folk songs. Li Lin, associate professor of Guangxi Arts University, said that the soul of ethnic music lies in its deeper meaning, rather than the melody and singing, and the people of Guangxi are proud of their traditional music.

Nancy Eldars from the United Kingdom, currently working at the Harrow Innovation Leadership Academy in Nanning, said it was her first time to participate in the cultural experience activity held by the Administration of Foreign Experts Affairs, adding that the excellent event allowed her to experience the region's authentic folk songs.

Since 2017, the Science and Technology Department of Guangxi Zhuang Autonomous Region has run a campaign to encourage foreign experts working in Guangxi to learn more about the region, by holding activities such as cultural events and policy promotion.

Source: Science and Technology Department of Guangxi Zhuang Autonomous Region

Photo News



Ar Horqin Grassland

The Ar Horqin Grassland nomadic system located in Chifeng, Inner Mongolia is the first nomadic agricultural heritage area designated in China. According to the Ministry of Agriculture and Rural Affairs, the system is an example for global sustainable animal husbandry and the management of fragile grazing lands. The photo shows the view of the Ar Horqin Grassland. (PHOTO: XINHUA)

Rudder: Ancient Chinese Shipbuilding Wisdom

Traditional Eastern Wisdom

By BI Weizi

China is the first country in the world to invent the rudder, which is a major achievement in China's shipbuilding and navigation technology, and subsequently went on to have a profound influence on the world of navigation.

A rudder is the device used for steering and maneuvering a vessel, which is attached to the outside of the hull and operates by redirecting water past the hull.

The rudder developed from an oar, which is an implement used for waterborne propulsion. In the early days of ancient navigation, there were two types of oars, one for rowing and the other for controlling the direction of the boat. The oars controlling direction were called rudder oars. The position of the rudder propeller gradually moved from the side to the center of the stern, becoming the tail propeller. The operation method gradually changed from rowing, to swinging left and right, without leaving the water surface. However, such a tail rudder propeller had some defects, for example being difficult to operate when encountering shoals of fish or landing. This led to ongoing improvement in the shape and installation of the rudder, until the rudder we know today was invented.

The world's oldest depiction of a stern-post rudder can be seen on a pottery model of a Chinese junk from the Han Dynasty (202 BC-220 AD), a thousand years before they appeared in the West. It was discovered during archaeological excavations in Guangzhou in 1954.

In the 10th century A.D., Arab sailors began to use the Chinese rudder. From late 12th century to early 13th century, it was introduced into Europe through Arabia, which laid the technical foundations for creating the great sailing era of humankind in the 15th century.