'Half of Me Belongs to Romania, Half to China'

Dialogue

By Staff Reporters

At the age of seven, standing in a classroom in 1970s Romania, little Luminita Balan saw Chinese characters written on the blackboard for the first time. "They were extraordinary, almost magical," she recalled. Instantly captivated, she felt certain these "mysterious symbols" would lead her into a world of profound beauty and meaning. That moment marked the beginning of a lifelong journey — one that would transform her from a curious schoolgirl into a leading sinologist, translator and cultural bridge between Romania and China.

Today, Luminita Balan, known as "the Chinese girl" among friends and family, is the Romanian co-director of the Confucius Institute at the University of Bucharest, a distinguished academic and an award-winning translator. In 2019, she was presented with the Chinese Government Friendship Award to honor her decades of dedication to promoting Chinese language and culture in Romania.

Professor Luminita Balan. (PHOTO: China University of Political Science and Law)

A childhood passion against the odds

In her youth, China was a distant, almost mythical land to most Romanians. But fate intervened when her elementary school became one of a few selected for a pilot program introducing Chinese language instruction, an unusual choice at the time. Her young, passionate teacher brought the language to life with humor and creativity, sparking Balan's deep fascination.

When her family moved farther from the school, she faced a difficult decision: transfer to a nearby school without Chinese classes, or continue commuting over two hours daily by tram. Determined not to give up her studies, she chose the latter. "Every minute mattered," she said. "I used the tram rides as my mobile classroom, reading Chinese stories and myths." While many classmates dropped out, Balan persisted, turning language learning into a way of life.

Without access to formal dictionaries, she created her own. She meticulously recorded new words in a notebook, organizing them in alphabetical order. To make it more vivid, she bought two copies of Chinese pictorial magazines — one to keep, one to cut up. She pasted images of landmarks, street scenes and traditional life into her handmade "dictionary," which became, in her words, a "miniature world of China."

It wasn't until her third year of university that she owned her first real Chinese dictionary. "It was so precious," she said. "No one in my family was allowed to touch it."

From dream to reality

For years, visiting China seemed like an impossible dream. "China felt like a mythical land," she recalled. "I thought I could only reach it in my dreams." After graduating from the University of Bucharest, she remained hopeful. In 1992, her dream finally came true when she was selected as an exchange student at Beijing Language Institute (now Beijing Language and Culture University).

Her flight landed on her birthday — the same day she first left Romania. "Touching down in Beijing felt like stepping into a fairy tale," she remembers. "The streets were full of people, bicycles flowed like rivers, and the dormitory caretaker greeted me with such warm, simple kindness. It eased my homesickness and made me feel instantly at home."

That day, she said, "everything felt destined", connecting Bucharest to Beijing, and her past to her future.

A translator's mission

In 2013, the Confucius Institute at the University of Bucharest was established through a partnership with China University of Political Science and Law. Balan became its Romanian director, finally realizing her long-held wish to make the Chinese language and culture accessible to more Romanians. Under her leadership, the institute has flourished — from just dozens of students to nearly 8,000 learners cumulatively. Students now range from five-year-old children to 78-year-old retirees, drawn by interests in Chinese martial arts, history, philosophy and cuisine.

Beyond teaching, Balan has dedicated herself to translating Chinese literature into Romanian. Her journey began with *Zhuangzi*, one of the Taoist classics by the philosopher Zhuang Zi of the Warring States Period and its later studies, inspired by a beloved university professor who introduced her to classical Chinese philosophy. Though initially hesitant about her language skills, she embarked on the project with a mentor and spent 20 years completing the translation.

During one of her darkest times, the loss of her father in 1998, a colleague gave her a copy of *Xunzi*, an ancient Chinese collection of philosophical writings attributed to Xun Kuang. "That book became my best friend," she said. Reading *Xunzi*'s teachings helped her find meaning again and inspired her to translate *Xunzi* as well. "Confucian classics offer timeless wisdom — on benevolence, integrity, justice and harmony. They're keys to navigating today's complex world."

In recent years, she has focused on contemporary Chinese literature, translating works by Mo Yan, Yu Hua and Ah Cheng. "Many Romanians know *Dream of the Red Chamber* or *Journey to the West*, but they don't know modern China," she explained. "Literature is one of the best ways to understand a nation's soul." Reflecting on her journey, Balan said simply: "Half of me belongs to Romania, and half to China."

This article was edited and translated based on the Chinese version by the Confucius Institute.

Tech+Culture

Large Model Links Relics Protection with Tourism

By BI Weizi & WANG Yuhan

A partial image of China's prized gigantic Chao Yuan Tu mural, ancient artwork that features a congregation of about 300 Taoist deities and tells the story of Taoist etiquette, was recently uploaded to a large AI model for cultural and tourism resource restoration and generation. Within five seconds, the damaged lower left corner was automatically repaired, with the repair marks virtually invisible to the naked eye. The granular detailed information captured from this repair can then be used to repair the mural wall itself.

This is a routine operation for the model, which was developed by Professor Jiao Licheng's team at the School of Artificial Intelligence at Xidian University, in Shaanxi province. Not only can it intelligently diagnose and repair ancient murals, but it can also generate personalized travel guides for tourists. This multimodal large model is injecting new momentum into cultural heritage protection and smart tourism thanks to its cross-disciplinary services.

In the school's demonstration area, team member Gao Zihan uploaded electronic images of the damaged Landscape Screen of Tang Huifei Wu's Tomb and Landscape Painting of Han Xiu's Tomb to the model, which immediately generated a detailed a "health" report. It not only provided an analysis of the type and extent of the damage, but also proposed appropriate repair methods, as well as suggesting which mineral pigments should be used for filling.

Through their deep involvement in the research, repair and restoration of murals, the team members developed a greater appreciation for the profound richness of Shaanxi's historical and cultural heritage. This led to consideration about what they could do to offer tourists a deeper and more comfortable cultural and tourism experience.

"Please help me plan a three-day trip to Xi'an. I have hypertension, hyperlipidaemia and hyperglycaemia, and I'm traveling with two children. I would like to enjoy the food in Xi'an, so the itinerary should not be too tight, but should also maximize cultural experiences and technological elements." After entering such a complex request, the model quickly generated a customized guide covering an itinerary overview, dietary suggestions, itinerary highlights, a transportation guide and important notes.

The model can also act as an intelligent travel companion. Zhang Jie uploaded an image of the Jade Nectar from the game "Black Myth: Wukong," and the model identified an ancient rhyton cup with a similar design through image retrieval. It also pointed out that the Shaanxi History Museum houses a similar national treasure and accurately located the cup within the museum, planned a visit route and provided explanations about the history of rhyton cups.

Through the deep integration of technology and culture, the team plans to expand its cooperation with cultural and tourism departments in various regions. Relying on artificial intelligence, big data and multimodal sensing technologies, the team will continuously innovate and explore areas such as the digital protection of cultural heritage, the intelligent recommendation of cultural and tourism resources, and immersive interactive experiences.

Visitors enjoy the Chang'an Lantern Festival at Xi'an's Tang Paradise in Shaanxi province (PHOTO: XINHUA)

Traditional Eastern Wisdom

Siyuan Shu: Pinnacle of Ancient Chinese Mathematics

By BI Weizi

In order to solve univariate higher-order equations in ancient China, Siyuan Shu (the four-variable method) was developed based on Tianyuan Shu (the one-variable method) by mathematician Li Ye and others, during the late Jin (1115-1234) and early Yuan (1271-1368) dynasties.

Mathematicians then progressed to explore multivariate equation systems. Ultimately, Zhu Shijie achieved a breakthrough by extending the theory to four variables, which brought the system to its peak. Hailed as "the greatest mathematician of the medieval world", Zhu Shijie was also an educator. He authored two major mathematical works: *Introduction to Mathematics* (1299) and *Jade Mirror of the Four Unknowns* (1303).

The Jade Mirror of the Four Unknowns consists of an introduction and three books containing a total of 288 mathematic problems. The first four problems in the introduction illustrate his "four-unknowns" method. Zhu demonstrated how to convert a verbal problem into a system of polynomial equations using up to four unknowns: Heaven, Earth, Man and Matter. He then demonstrated how to reduce the system to a single polynomial equation in one unknown by successively eliminating the unknowns.

The elimination steps are as follows: First, select one unknown as the main variable, treat the other variables as coefficients and form an univariate equation. Using techniques such as cancellation, transposition, mutual elimination and common denominator, the other unknown variables are gradually eliminated until a univariate higher-order equation is obtained.

This equation is then solved using Qin Jiushao's Linglong method, which was a powerful algorithm from his 1247 text *Mathematical Treatise in Nine Sections* for finding numerical solutions to high-degree polynomial equations.

The distinguishing feature of Siyuan Shu, is that it extends the elimination method to multivariate nonlinear equation systems, by integrating Qin Jiushao's method for solving high-degree equations and Li Ye's Tianyuan Shu. It represents the culmination of traditional Chinese mathematical algorithms.

The algorithmic thinking behind Siyuan Shu is remarkably similar to that behind modern computer algebra systems, reflecting the mechanized algorithm tradition of ancient Chinese mathematics. Siyuan Shu is a jewel in the crown of ancient Chinese mathematics, showcasing the mathematical wisdom of the Chinese nation. From Li Ye's Tianyuan Shu to Zhu Shijie's Siyuan Shu, it exemplifies the spirit of continuous exploration and innovation of Chinese mathematicians.

2025: A Bumper Year for Sci-tech Innovation

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During China's 15th National Games, "Kuafu," the world's first 5G-A humanoid robot, independently completed part of the relay in Shenzhen in south China.

In 2025, the 5G-A network, faster than 5G, was rapidly expanded to over 300 cities across the country, and applied in multiple scenarios such as intelligent manufacturing and major events.

The innovation drivers have not only improved industrial competitiveness, but also accelerated economic transformation and upgrade. In 2025, China's production and sales of new energy vehicles exceeded 16 million units, topping in the world for 11 consecutive years. China also built the world's largest clean power generation system and the largest power infrastructure system, facilitating its energy transformation.

Its low-altitude economy is expected to exceed 1.5 trillion RMB, and a strategic emerging industry cluster is rising.

Benefiting the people

In 2025, an increasing number of sci-tech achievements moved from laboratories to production lines, integrating into people's daily lives and bringing about tangible changes.

A Chinese-led team reported a breakthrough in brain-computer interface technology after completing the first-ever clinical trial to precisely locate deep-seated brain tumors using implanted microelectrode arrays. The technology could advance treatment of gliomas and brain metastases, which are difficult to remove because of their sensitivity locations.

Domestic high-end medical devices and innovative drugs are constantly being updated. Zhou Le, deputy director of the department of drug regulation of the National Medical Products Administration, said 76 innovative drugs were approved in 2025, ranking first in the world in terms of quantity.

Technologies such as intelligent driving are facilitating people's lives, while smart agriculture is harnessing meteorological big data to predict pests and crop diseases so that early warnings can be issued.

In museums such as the Palace Museum in Beijing and the Dunhuang Museum in Gansu province in northwest China, visitors can enjoy cultural relics in detail thanks to digital panoramic platforms and 3D modeling technology.

At the beginning of the 15th Five-Year Plan period (2026-2030), in the face of the complex global technological competition, China is steadily advancing high-quality development with independent innovation, so that innovation achievements reach every corner of life.

Shield Machines Rendezvous under Yangtze River

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The basic approach of this method is to install over 300 freezing pipes from the interior of the shield machine to cool and freeze the water-rich stratum, solidifying it into an "ice barrier" to ensure the safety of the subsequent connection.

However, when water freezes, it causes volume expansion. The expansion caused by over 300 pipes can squeeze the shield machine and the tunnel. So, it was vitally important to make sure that the freezing tubes could extend precisely to the designated position.

The team made a 1:1 model and organized the simulation training, repeatedly optimizing the selection of drilling tools, adjusting drilling parameters, and perfecting their operation skills.

Finally, after more than five months of preparation, the 363 boreholes for the freezing pipes were successfully completed. The deviation of the hole opening angles was all controlled within 0.2 degree, far exceeding the designed standard.

The interwoven frozen pipelines were deeply embedded in the soil, building a solid "barrier" 3.9 meters thick with an average stable temperature of -13℃.

Removing the shield machines

The construction process then reached the most critical step in the later stage — disassembling and extracting the shield machines.

As both shield machines could not be lifted out, they could only be cut and disassembled inside the tunnel. High-intensity cutting and welding generate a large amount of heat, which could have affected the newly formed frozen soil, said the project manager Liang Yuqiang.

Meanwhile, large machinery could not enter the tunnel due to the limited space, and all cutting and transportation work had to be done manually. Like "ants moving house," two shield machines, each weighing several thousand tons, were disassembled and transported out by hand, bit by bit.

On March 26, 2025, the construction teams on both sides met each other beneath the riverbed. On November 29, 2025, the main structure of the tunnel was completed, marking the full connection of the Jiangyin-Jingjiang Yangtze River Tunnel.

No safety accidents occurred throughout the entire construction process. The team's exceptional skills and courage transformed an unforeseen setback into a historic breakthrough in global tunnel engineering construction.