

3-D technology helps preserve iconic heritage

About 2,000 kilometers from the Yungang Grottoes, a 1,500-year-old UNESCO World Heritage site in Shanxi province, a small army of 3-D printers has been working around the clock to save a cultural heritage from oblivion.

Over the past five months, the 20 machines, housed at a workshop in Shenzhen, Guangdong province, have been cranking out full-size replicas of three of the grottoes' Buddha statues. Faithful copies will soon be displayed in the eastern coastal city of Qingdao.

The grottoes contain more than 51,000 statues. But the original works, which were carved into soft stone, will gradually disappear as erosion runs its inexorable course.

"Even today, scientists are unable to stop the aging of the grottoes using chemical or physical methods," said Li Zhirong, an associate professor of archaeology at Zhejiang University who is dedicated to cultural heritage. "Therefore, the best way to protect the grottoes is to preserve their information in a scientific, comprehensive and authentic way."

Using 3-D scanners, the institute provided all the original data needed to reproduce the cave and its carvings. For a 10-meter-tall statue, the error between the original work and the replica is less than 5 millimeters.

Such technology has been employed in other projects. For example, researchers replicated cave No 220 of the world-renowned Mogao Grottoes in Dunhuang, Gansu province. During the project, the team used newly developed equipment to record every detail of the frescoes, which date to the Tang Dynasty (618-907).

After making high-resolution images, the team used software to stitch them together into a single picture with high precision, said Diao Changyu, a computer specialist.

The technology can also help solve archaeological mysteries, researchers say. For instance, the team helped identify a badly damaged stone tablet last year after collecting 3-D images of it.

Courts rule for probation in maternal

filicide

A court in Guangzhou has sentenced an elderly mother to probation for killing her mentally handicapped son, reports thepaper.cn.

The 83-year-old fed her 46-years old son with sleeping pills and then smothered him to death at their shared home in Guangzhou, Guangdong Province on May 9, 2017. She turned herself into the police on the same day.

The mother, only identified by her surname Huang, describes it as a mercy killing, saying her son – who born with a brain disorder – was starting to suffer physically after being bed-ridden.

She also testified that she feared for her son's future due to her own concern that she was going to die, leaving him helpless.

"With my care, he had better food and better company," said Huang, after being asked why she didn't seek hospice care for her son.

Huang's other son, along with other family members, petitioned the court to show mercy in the case.

While she has been found guilty of intentional homicide, the court says it's based its sentence on her voluntary confession, her advanced age and the pleas of her family.

"It's a special case in which the mother killed her son out of love. This is hugely different compared with other violent homicide cases," said Wan Yunfeng, head of the court in Yuexiu District in Guangzhou.

China's reusable spacecraft to be launched in 2020

China plans to launch its reusable spacecraft in 2020, according to a statement from China Aerospace Science and Technology Corporation Tuesday.

Unlike traditional one-off spacecraft, the new spacecraft will fly into the sky like an aircraft, said Chen Hongbo, a researcher from the corporation.

The spacecraft can transport people or payload into the orbit and return to Earth.

Chen said that the spacecraft will be easier to maintain and can improve the frequency of launches at lower cost, bringing new opportunities for more people to travel into space.

Wuhan launches world-leading quantum network

Wuhan, Hubei province, launched the world's most advanced civilian quantum communication network on Tuesday, and will soon connect all the city's government bodies, financial institutions and other entities to allow the secure transmission of classified information, according to project managers.

A launch ceremony was held during a laser technology forum in Wuhan hosted by China Aerospace Science and Industry Corp, the major builder of the network. The company mainly develops and produces missiles and carrier rockets but also invests heavily in laser technologies and instruments, which are key components of a quantum communication network.

CASIC said in a news release that the network's operation will ensure the "absolute safety" of the transmission of classified information and will boost the efficiency of such communications.

Quantum communication systems feature ultra high security. It is theoretically impossible to wiretap, intercept or crack information transmitted through them, according to research findings.

Wu Xiaofeng, a senior manager at CASIC who is overseeing the project, said that Beijing and Shanghai; Hefei, Anhui province; and Jinan, Shandong province, have started trials for intracity quantum communication networks, but the Wuhan system is the largest and most advanced civilian network in the world.

He noted that the Wuhan network will also have more users than its predecessors and that it is set to become fully operational before the end of this year. After that, the system will be extended to eight cities surrounding Wuhan in the province, he said.

"The intracity network in Wuhan is the first in the world that has used the cutting-edge technology known as 'wavelength-division multiplexing' in a civilian quantum communication system," said Wang Shaoyi, chairman of Wuhan Space Sanjiang Quantum Communication, a CASIC subsidiary focused on quantum transmission technologies.

China has been allotting considerable resources to quantum technologies in an attempt to be at the forefront of what its leaders believe is one of the most important fields in science and technology.

The world's longest quantum communications network, the 2,000-kilometer Beijing-Shanghai network, was put into service in late September, mainly securing quantum encryption communication by government and military authorities in Beijing and financial institutions in Shanghai.

The network works in conjunction with the world's first quantum experiment satellite, which was launched by China in August last year to verify quantum communication theories.

Wu said his company is working with University of Science and Technology of China in the construction of the 300-km Wuhan-Hefei quantum communication line. The new link will go into operation in 2018 and then will be connected with the Beijing-Shanghai network.

[Four Chinese cities picked as UNESCO Creative Cities](#)

The United Nations Organization for Education, Science and Culture (UNESCO) has picked up four Chinese cities to join its Creative Cities Network (UCCN), the organization said on Tuesday.

Created in 2004, the UCCN is covering seven creative fields, namely Crafts&Folk Art, Design, Film, Gastronomy, Literature, Music and Media Arts.

The four Chinese cities, Changsha (media arts), Macao Special Administrative Region (gastronomy), Qingdao (Film) and Wuhan (design) are among 64 cities from 44 countries and regions which join the network.

The UNESCO said on Tuesday that the four Chinese cities were picked for their efforts to “develop and exchange innovative best practices to promote creative industries, strengthen participation in cultural life and integrate culture into sustainable urban development policies.”

The Paris-based UN body said in a statement that “Within the framework of the implementation of the United Nations 2030 Agenda for Sustainable Development and the New Urban Agenda, the Network provides a platform for cities to demonstrate culture’s role as an enabler for building sustainable cities.”