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Rosetta disk goes back to the future

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What have a comet-chasing spacecraft, a 2200-year-old volcanic rock and a global language archive got in common? The answer: not only are all of them named 'Rosetta', but all three offer a bridge through time, creating an enduring link across the millennia.

The remarkable story began just over 200 years ago, near the village of Rashid (known to Europeans as Rosetta) in the Nile delta. During a routine demolition of a stone wall, soldiers of Napoleon's army discovered a strange slab of volcanic rock. Carved on the flat face of the basaltic block were three different forms of inscription: Egyptian hieroglyphics, Greek and Demotic, an everyday form of ancient Egyptian.

The unique juxtaposition of these parallel texts was the key to unravelling the secrets of a long-dead civilisation. Painstaking work by pioneers such as French scholar, Jean Francois Champollion, and English physician, Thomas Young, eventually led to the first deciphering of hieroglyphics, one of the most significant breakthroughs in understanding the life and culture of the land of the pharaohs.

Almost two centuries later, this discovery was remembered by European scientists as they began to plan the first mission to orbit and land on a comet. The European Space Agency subsequently agreed to name the ambitious venture after the Rosetta Stone.

Just as the Rosetta Stone provided the key to an ancient civilisation, so ESA's Rosetta mission will unlock the mysteries of comets, the oldest building blocks of our Solar System. As the worthy successor of Champollion and Young, Rosetta will allow scientists to look back through the mists of time to an epoch, 4.6 billion years ago, when no planets existed and only a vast swarm of cosmic debris surrounded the Sun.

Rosetta's unprecedented mission to explore a primitive ice world will officially end after 10.5 years, after which the dormant robotic ambassador from Earth will begin an eternal odyssey around the Sun. However, Rosetta's usefulness will not entirely come to an end. Safely preserved beneath the spacecraft's thermal blankets will be the Rosetta Disk, the modern equivalent of the original Rosetta Stone.

Micro-etched on this 7.5 cm nickel disk are 1000 different languages, a comprehensive cultural archive gathered by the San Francisco-based Long Now Foundation. Each page of text, which is miniaturized and etched onto the disk as an image, requires only a microscope to be read. Such simplicity guards against the threat of changing technologies, which could make a digital disk unreadable by computers in the future.

At a pre-launch press event in Kourou, French Guiana, on 18 November, this unique disk was attached to the Rosetta Orbiter.

"The Long Now Foundation is trying to preserve the world's languages for future generations and we are happy to carry the disk on the Rosetta spacecraft in order to ensure that the archive survives for posterity," said John Ellwood (Rosetta Project Manager).

How will Rosetta offer such an enduring home for Earth's linguistic legacy?

"Rosetta will be following a stable orbit that will enable it to circle the Sun for thousands of years," explained Gerhard Schwehm (Rosetta Project Scientist).

"Effectively, the spacecraft may become also a linguistic treasure trove comparable to the first Rosetta Stone."

While linguists on Earth struggle to keep the rich heritage of global languages alive, the Rosetta spacecraft will preserve a record of current linguistic diversity far into the future - long after its speakers are gone and many of their languages are forgotten.

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