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NEW METHOD FOR DATING PREHISPANIC PAINTINGS

By Enrique Huerta

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The UNAM studies the color red to establish with more precision the dates of these works.

For the first time, Mexican researchers applied the method of pictorial remanent magnetization, which originated in Italy, to date prehispanic paintings.



Original Image, source: [Boletín UNAM-DGCS-883](#)

Avto Gogichashvili, Juan Morales, Ana María Soler and Jaime Urrutia Fucugauchi, members of the National Archeomagnetic Service (SAN) of the Institute of Geophysics (Igf) of the National Autonomous University of Mexico (UNAM), successfully applied this technique to four murals in the center of the country.

This process, which estimates the magnetic field engraved on the pigment minerals, was discovered in 1997 by Italian researchers Roberto Lanza and Giacomo Chiari, who applied it to frescoes from two ancient Roman cities: Pompeii and Herculaneum.

"This methodology opens a whole new perspective for dating in Mesoamerican cultures, and in other parts of the world," said Gogichashvili.



Original Image: "[Cacaxtla Glifo 002](#)" by HJPD, under CC BY 3.0, via Wikimedia Commons

Before the surging of this new technique, the method of pictorial dating used by archaeologists was simply through estimations of temporality relating it to the context of the enclosure where the paintings were found.

The red color in the pre-Columbian murals was the key to using this new technique, since the minerals contained in the pigments of this coloration contain particles of hematite and magnetite (ferric and ferric oxide minerals), which are free to move and align with the direction of the earth's magnetic field before drying.

"You cannot date with other shades; it must be red so that the magnetic field can be registered", remarked the specialist.



Original Image, courtesy of [INAH](#)

The results

The method of pictorial remanent magnetization was used in the Temple of Venus, Cacaxtla, in Tlaxcala; in the Red Temple and the Templo Mayor of Tenochtitlán; in Chapulines and Estrellas, both belonging to the complex of Cholula, in Puebla.

The results of the research, published in the Journal of Archaeological Science: Reports, state that Chapulines dates from 1105-1194 A.D., that the Temple of Venus is from 1002-1308 A.D. and Estrellas 340-649 A.D. All three are within the chronology and current archaeological context.

As for the Red Temple, "we find that its temporality is similar to that of the other paintings: between 300 and 1100 A.D., and not the original estimate, from 1829-1888 A.D. There is a possibility that the image has undergone an alteration after its elaboration, in an attempt of restoration or repainting, but we do not have the certainty", he emphasized.