Italy physicists unearth art fake using new 'bomb peak' method

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The Peggy Guggenheim Museum in Venice on June 5, 2009

Italian nuclear physicists turned art detectives said Thursday they have discovered that a painting in the prestigious Peggy Guggenheim Collection in Venice is a fake.

The art world's top experts and researchers have been trying to establish

since the 1970s whether a painting believed to be part of the "Contraste de Formes" series produced by French artist Fernand Leger between 1913 and 1914 was genuine.

The Guggenheim Collection kept the painting in storage while Leger expert Douglas Cooper—who suspected it may be a fake—tried along with others to certify its origin, without success.

Scientists at the Florence-based Institute for Nuclear Physicists triumphed with a brand new carbon 14 dating method, the so-called "bomb peak" curve, never before used in the art world.

"It is now a certainty that the painting is a fake. The enigma has now been solved," the institute said in a statement.

"The researchers measured the radiocarbon content in a minute fragment of unpainted canvas of the work, believed to be part of the Contraste de Formes series... then plotted their results against the so-called 'bomb peak' curve," it said.

"This comparison, used for the first time to ascertain the authenticity of a painting, demonstrated with absolute certainty that the canvas support was produced after 1959, at least four years later than Leger's death in 1955," it added.

The "bomb peak" is based on radiocarbon levels released during a series of nuclear tests conducted during the Cold War, after 1955.

One of the secondary effects of these was an enormous increase in the level of radiocarbon (C-14) in the earth's atmosphere, the institute said.

These levels peaked towards the mid-sixties and then fell again with the signing of various international treaties banning nuclear weapons tests.

"Scientists call this phenomenon the 'bomb peak'. As the level of radiocarbon in the atmosphere increased, it also increased at a corresponding rate in all living organisms, including the cotton and linen plants used to make canvases for artwork," it said.

The Guggenheim Collection sent a small sample from a folded, unpainted edge of the canvas of the painting and sent it to Florence where it was analysed using accelerator mass spectrometry.

Physicists measured the level of radiocarbon to establish the date of the canvas—based on when the crops used to make the canvas were harvested—by comparing the level of radiocarbon in the fabric with those over the bomb peak period.

The results of the analysis—which revealed a much higher radiocarbon content than there would have been had the work been an original—were published in The *European Physical Journal Plus* on January 21.

Pier Andrea Mando, head of the institute's Florence division, said it was "the first time radiocarbon dating has been used to reveal a forgery in contemporary art, by comparing levels of that isotope in the atmosphere during the bomb peak period."

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