Carbon dating uncovers forged Cubist painting

February 25 2014

Choosing the right physical technique to analyse paintings can make all the difference when it comes to ascertaining their authenticity. Now, a painting initially attributed as belonging to a series called 'Contraste de formes' by French Cubist painter Fernand Léger has definitely been identified as a forgery.

This is the first time it has been possible to identify a fake painting by relying on the anomalous behaviour of the concentration of the radioactive form of carbon (14C) in the atmosphere after 1955 to date the canvas. These findings were recently published in *EPJ Plus* by Mariaelenea Fedi of the National Institute of Nuclear Physics (INFN) in Florence, Italy, and colleagues.

Previously, art historians had called upon scientists to compare the alleged Léger painting from the Peggy Guggenheim Collection, in Venice, Italy, with an authentic painting of the 'Contraste de formes' series belonging to the Solomon Guggenheim Foundation in New York, USA.

They performed tests based on techniques including X-ray radiography and scanning electron microscope and energy dispersive X-Ray spectrometry. Though they demonstrated that the fibres in the canvases differed and that different pigments were used in the two paintings, they did not arrive at conclusive evidence.

This study shows that it was necessary to perform an analysis using

accelerator mass spectrometry of a sample of the canvas to conclusively date the painting. This approach definitely proved that the canvas sample contains a level of radioactive carbon found in 1959, years after Léger's death in 1955. The authors relied on the particularities of 14C concentration in the atmosphere, which are well-known for the period ranging from the mid-1950s to the present. They are referred to as the Bomb Peak, due to the atmospheric nuclear power tests.

More information: *European Physical Journal Plus*, DOI: 10.1140/epjp/i2014-14006-6

Provided by Springer