

# Art forgery

The brushstrokes of a master artist are surely unmistakable to discerning collectors or museum curators—but how can they be positive? Ingenious forgers have hoodwinked experts for years, creating “priceless” paintings, ceramics, and metalwork. Separating the first-rate from the phony takes more than just a critical gaze.

The crudest forgeries are easy to recognize on stylistic grounds alone. But adept forgers can fool the shrewdest connoisseur, especially when they create works that pander to contemporary taste. Some 19th-century forgers, for example, made their copies more sentimental than the genuine articles because romanticism was in fashion. Sometimes artworks can be exposed by their provenance—or lack of it. This “art pedigree” theoretically allows a buyer to trace back the progress of a work of art through auction rooms, museums, and private collections. But a provenance can be fabricated, too.

Scientific analysis is usually the most accurate, and the most objective, method of authenticating artworks. It compares a suspicious artwork's materials with those

of a genuine work by the same artist, or at least from the same period. Laboratory studies also look for the effects of aging, or use instrumental methods to actually measure how old a questioned piece is.

## Looking through varnish

With an oil painting, the simplest method for doing this is microscopic examination. Under a low-power stereomicroscope, it is easier to distinguish genuine from simulated aging of a paint surface. To create surface cracking, forgers roll the canvas, heat and cool it rapidly, or apply a contracting varnish. A stippling brush adds a flyblown appearance.

Other nondestructive testing methods make the difference more obvious. X-ray examination, for example, shows whether cracking penetrates every paint layer. The “Vermeers” painted in the 1930s by Dutch forger Hans van Meegeren (1889–1947) were unmasked by a pattern of cracks on the surface that did not match those on the lower paint layers.

Ultraviolet radiation causes specific fluorescence in materials, depending on their composition and age. A 19th-century varnish, for example, will fluoresce blue-green. Infrared may indicate a paint or ink



## SAMPLING PAINT ▲

To identify colors in a paint sample removed with a needle, this lab uses X-ray diffraction. Each pigment's unique crystal structure scatters an X-ray beam in a different and characteristic pattern.

characteristic to the artist. To an expert eye, familiar with the artist's style, this can help determine if the work is genuine.

If these examinations do not reveal any anomalies, conservators begin a more invasive study. Typically, they cut a paint sample from the edge of a crackle or



Measuring the quantity of impurities in pigment can make precise dating possible.

Binding agents can be identified by mass spectroscopy.

## ◀ INFRARED SCANNING

Multispectral analysis of paintings reveals detail invisible in normal light. This IR scanner makes surface layers of paint partially transparent, revealing underpainting or sketching. UV illumination (far left) can detect and identify retouching, overpainting, varnishes, and adhesives.

damaged area, mount it in cold-setting polymer, polish the edge, and identify the pigments microscopically, using X-ray diffraction (see left), spectrographically (see p. 83), or by chemical analysis.

Since oil painting began in the 15th century, artists have sought brighter, more permanent, or cheaper pigments for their work. The introduction of new colors is thus well documented, and the artist's palette puts an upper limit on a painting's age. For example, Prussian blue was first synthesized in 1704, so a canvas painted with this pigment cannot be more than three centuries old.

The canvas itself is a surprisingly poor guide to age. Though the weave might provide some clues, cunning forgers aiming to simulate the work of old masters may use the cleaned-off canvases of an unknown contemporary. By contrast, panel paintings can be dated using dendochronology, a tree-ring measurement technique that can pinpoint when the wood was cut with single-year precision.

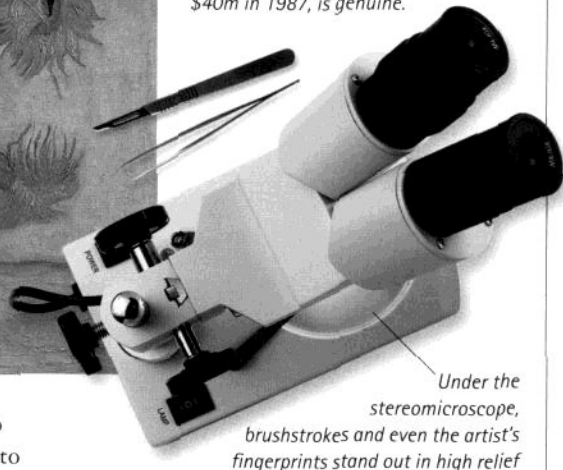
### Metals and ceramics

The incidence of forgery in other art media depends on their value and the labor, skill, or materials involved. Ceramics are hard to copy because success depends on obtaining clay from the same source as the original, and this is usually impossible. Almost all stone statues are authentic because forging them is so labor-intensive. The same is not true of cast metals. As many as half of all archaic Cretan bronze statuettes may be fakes. The tiny figures are easy to cast, and only



### ◀ VINCENT'S VASE

As many as 10% of modern French paintings may be forged, and the value of Van Gogh's work makes him the most popular target. Some experts even question whether Van Gogh's Sunflowers (left), sold for almost \$40m in 1987, is genuine.



Under the stereomicroscope, brushstrokes and even the artist's fingerprints stand out in high relief

the best examples are valuable enough to warrant the same minute scrutiny given to fine paintings.

To spot fakes in these media, curators wheel in some sophisticated technology. They date ceramics, with a precision rate of about 85%, using thermoluminescence. This works by measuring the natural radiation absorbed by the clay since the piece was fired. Unfortunately, the test is

destructive, requiring the removal of around 1 oz (30 g) of material. Dating of metal objects may be possible using nondestructive X-ray fluorescence analysis. Under this test, a piece emits an X-ray spectrum characteristic of the alloy from which it is made. It is necessary only to compare this spectrum with one from a similar artifact that dates from the same period and is known to be genuine.

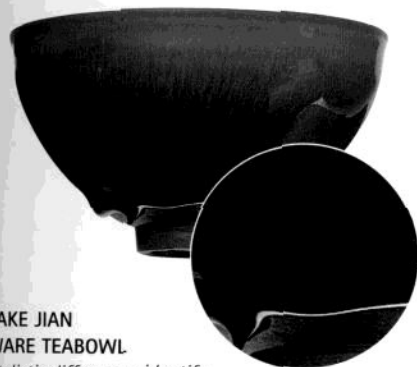
## CASE STUDY



London-born Tom Keating (1917-1984) ranks among the most brazen of modern forgers. During the 1970s he claimed to have painted more than

2,000 works by great artists, including Gainsborough, Degas, Fragonard, Renoir, and Modigliani. Ironically, it was not these big names that caught him out, but his fakes of the work of a comparatively minor 19th-century English artist, Samuel Palmer, who was best known for his illustrations of the works of William Blake. Keating was arrested when he tried to sell 13 "Palmer" watercolors.

## CASE STUDY



### FAKE JIAN WARE TEABOWL

Stylistic differences identify this supposed 1,000-year-old teabowl as a modern forgery. A close look at the base shows it is roughly joined, the markings are crude, and the glaze too shiny.

### FAKE GOLDEN EAGLE



### NOT-SO-GOLDEN EAGLE

Crude fakes are often good enough to take in greedy or ignorant collectors. The 19th-century eagle brooch on the left is made of bronze coated in gold leaf, but was passed off as a valuable Visigoth treasure.

### GENUINE ARTICLE

