

SCANNING FOR FRAUD

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Art and technology have started to come together in an unlikely place—under the gaze of 3D digitizers.

VanDuzen Archives of Dallas has built a growing business around the use of imaging hardware and digital shape sampling software as tools to authenticate and conserve works of art. And in one recent job, the company helped ferret out a forged copy of Picasso's Tete de Fernande, a bronze bust.

Speaking at the SME's Rapid 2008 conference, VanDuzen president and CEO Nancy Hairston recounted how a major New York auction house, which she wouldn't name because of confidentiality agreements, had become suspicious of a Tete de Fernande bust that one of its client wanted to put up for auction. The bust had supposedly been cast, in the 1920's, from Picasso's original plaster molds.

Art experts seeking to authenticate a casting such as this usually take a series of linear measurements using calipers and then compare the measurements to authenticated versions of the same casting. Size deviations bigger than shrink values for the cast material are one indication that a piece is just not right.

In the case of the bust, initial linear measurements showed it to be 15 percent smaller than three authenticated castings – including ones at the Tate Gallery in London and the MOMA in New York. "Bronze shrinks approximately 10 percent from the plaster molds, so that wasn't a possible shrink value," Hairston says.

To be sure, though, the auction house turned to VanDuzen, which took a high tech approach to measuring the sculptures. The company first digitized the suspect bronze as well as three authenticated versions of the Tete de Fernande using a portable Konica Minolta VIVID 9i non-contact digitizer. Hairston recalls that it took about 150 scans and six hours to digitize each piece.

The scan data was then analyzed using digital shape sampling and processing (DSSP) software from Geomagic. The software let VanDuzen perform deviation studies that would be difficult or impossible to do accurately with linear measurements. One study compared the total volume of the suspect bust with those of authenticated pieces. And another, a registration study, showed how well the busts line up with one another.

After running several deviation studies, VanDuyzen determined the bust didn't line up at all with the originals. Hairston says the registration study revealed that the suspect bust was off kilter due to the addition of excess material on its base. "Forger added material to the base to throw off liner measurements," she says. Once that excess material was digitally trimmed, the suspect bust turned out to be 20 percent smaller than the authenticated models. "That's what sunk the piece," she says.

Aside from using 3D imaging to uncover fraud, VanDuzen has also applied the technology to conservation applications. It archives encrypted 3D data about art objects for use by restorers or to monitor the condition of a piece over time. "Conservators think it's fabulous," Hairston says.