

## Criminalistics 2

### **Positive identification starting with a skull visualized by a 3D scanner using image superimposition and the 3D Max software. Cases developed from 2004 to 2014 in the Forensic Science and Legal Medicine Institute of the Public Prosecutor's Office**

*Dr. Danny Jesus Humpire Molina, Forensic Science and Legal Medicine Institute of the Public Prosecutor's Office, Peru*

**Abstract:** The present article includes 50 cases notable for their international and national media impact, which occurred between 2004 and 2014. The study used digital analysis methods to compare photographs of skulls with photographs of possible victims. The method achieved 100% success as verified by established genetic (DNA), fingerprint, and odontogram analyses. The digital method has a significant advantage over the established methods because the identifications are completed more speedily, saving up to several months, with no loss of accuracy. The use of this method will make a significant contribution to the humanitarian impact of the work and possibly speed the processes of justice.

The present research was useful not only to identify the skulls, but also to study the facial morphology for identification of the fans or delinquents recorded by closed circuit cameras which would help in identifying the criminals by superimposing the images.

The objective of the research is to assess the effectiveness of two morphometric analyses in establishing the personal identities of skulls recovered from crime scenes.

The study compares the superposition of photographs of skulls on photographs of possible victims using software Adobe Phostoshop with superimposition of photographs from different angles on images from the 3D scanner brand Polhemus model Fastcan Scorpion.

The study included images of 50 Peruvian cases of both sexes. The outcomes showed a margin for error of 3-2%, because of the aging of the photographs, for the 3D Studio Max software. Three solved cases by means of this equipment permit us to conclude that two morphometric analysis stages are necessary to produce the positive identification.