E50   The Impact of 3D Digitizations and Printed Models of Osteological Trauma When Presented to the Jury as Demonstrative Evidence

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After attending this presentation, attendees will gain better understanding of the importance and the need for 3D digitizations within the courtroom. Furthermore, attendees will recognize the positive impact these digitizations have on jurors.

This presentation will impact the forensic science community by demonstrating the potential of 3D digitizations within forensic anthropology and the courtroom. Additionally, the forensic science community will see the advantages of these techniques as an explanatory tool for the jury.

Virtual environments, simulations, and 3D images are becoming commonplace within some jurisdictions, specifically in the United States; however, there has been a slower adoption of these techniques in the United Kingdom. As osteological trauma cannot be taken into the courtroom due to its sensitive nature, photography and, more recently, 3D digitization through the use of computed tomography, magnetic resonance imaging, and surface scanning has been utilized for visual representation of demonstrative evidence. Although there are a number of advantages discussed within the literature, including its visual and illustrative prowess, some of the negativities have yet to be debated or investigated.

One of the biggest limitations for using this technology within the courtroom is whether these techniques have any influence over the decision-making process or will bias the evidence visualized within the courtroom. Also, it is important to understand whether these displays deflect the viewer's attention away from the key issues and whether the jury is willing to accept the scenario into which they are placed. As a result, experiments must be designed to determine the effects of newer visualization methods so that any influence that could be created can be avoided.

The present study used a transcript to mimic an actual court case. As a control, each of the juries listened to the same case under the same conditions within an actual courtroom; however, for the demonstrational evidence presented by the expert witness, different displays for the same exhibit (osteological trauma to a cranium) were shown. This included verbal description, photographic images, 3D digitizations, and 3D printed models. Following the case, each member of the jury had to answer a questionnaire relating to the case and the particular technique they saw. The questionnaire was designed to determine each individual opinion on the outcome of the case and the demonstrative techniques that were used.

This research showed that the jurors for each of the demonstrative techniques gave the same verdicts in their case. This meant that when using 3D techniques, no influence was created over the jurors. The results showed that the jurors felt that the 3D digitizations and 3D models were more appropriate for demonstrating complicated information and helped clarify technical jargon over standard demonstrative techniques. Furthermore, these techniques do not bias the outcome of the results, demonstrated spatially what was being discussed by the expert witness, and therefore could be implemented within the courtroom to relay technical information to non-technically minded people.

Surface Scanning, Demonstrative Evidence, Jurors