

Computer-generated exhibits on trial

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It has not infrequently been charged that the modern jury is asked to perform heroic feats of attention and recall well beyond the capacities of ordinary men. A trial, it has been argued, presents to the jury a mass of material it cannot possibly absorb, and presents it in an artificial sequence which aggravates the jury's intellectual problems.

Harry Kalven and Hans Zeisel, *The American Jury* (1966), p.149

When Delta Air Lines flight 191 crash-landed at Dallas/Fort Worth airport in 1985, there was a tragic loss of 137 lives. The legal argument centred on whether the incident was due primarily to pilot error or environmental factors. In one of the first cases to use a computer-generated exhibit (CGE) in court, the US National Transportation Safety Board created a 45-minute animated sequence to support their version of events. Using data from the flight recorder and the audio of the conversations between the pilots and air traffic control, prosecutors were able to show in 'real-time' how the aircraft eventually became embroiled in a severe weather pattern that ultimately led to its demise. Partly as a result of this convincing demonstration, pilot error was established as the key contributing factor; additional training and aircraft warning systems were introduced as a result, and lawyers heralded a new era in litigation techniques.

However, not every CGE is based

upon information as rich as flight data and voice recordings. Common to many criminal trials in particular are the inconclusive and often contradictory forensic evidence and eyewitness accounts. Yet the CGE may still be used, in essence as a visual representation of these tiers of evidence.

Unlike the Delta Air Lines animation, there is little to restrict the creativity involved in the construction of these digital illustrations. With the advent of the modern personal computer, the traditional 'chalkboard and easel' has been replaced by more active PowerPoint presentations and digital imagery. A range of sophisticated presentation techniques may accompany evidence, designed to deliver the 'facts' of a case in a user-friendly format. To some, this is not of any particular concern; rather, it represents a natural integration of technology into our courtrooms in the same way it has permeated everyday life (Galves, 2000). However, more recently, the game has moved on considerably and legal teams now have access to increasingly realistic animations and virtual-reality (VR) techniques (Schofield & Mason, 2010).

One of the surprising issues to arise in debates on the admissibility of CGEs is that there are very few formal guidelines as to the appearance, content and style these exhibits should adhere to. In the US, the Daubert and Frye standards (see Gatowski et al., 2001) set a range of guidelines for the acceptance of expert,

technical and/or scientific evidence; predominantly it is for the 'Judge as Gatekeeper' to arrive at these decisions. This leads to substantial variability on the acceptance of CGEs at trial.

To a psychologist, this will undoubtedly raise a number of questions and concerns. Experimental methodologies designed to manipulate often minute and discrete variables have been shown to exert wildly different results; hence, the variation in presentation styles and technology used will undoubtedly create problems for jurors and other legal decision makers (Norris & Reeves, 2012). Indeed, a recent publication on the evaluation of expert witnesses by psychologist Jane Ireland (2012) has raised important questions more generally about the use of expert opinion and the standards imposed in UK courts by the equivalent Turner rule.

Surprisingly, there has been relatively little empirical examination of the potential impact CGEs could have over more traditional presentation techniques. One early experimental study by Kassir and Dunn (1997), presented participants with a number of hypothetical scenarios based around an equivocal suicide. In short, the overall premise under investigation was whether the deceased had fallen or jumped from a roof of a building; this was established by the distance the body was from the edge (5–10 or 20–25 feet) and supported or contradicted by a computer-generated animation of the incident. Overall, the results suggested that when the physical evidence was congruent with the animated sequence, the video evidence served to improve juror decision accuracy. However, when the animated sequence was contradicted by the written description, the inclusion of the animation influenced a significant number of participants to believe that a person who slipped and fell could land some 20–25 feet from the edge of a building. Ultimately, the suggestion was that people are 'poor intuitive physicists' and easily influenced by a CGE.

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Psychological studies of perception and attention can illuminate the way that people judge ambiguous situations.

The style with which the evidence is presented can also be explored by reference to psychological principles. In a recent case from the United States (*Connecticut v. Murtha*), a police officer was charged with manslaughter following the shooting of a suspect during a traffic pursuit. At trial, the defence produced an animated sequence in an attempt to demonstrate that officer Murtha had acted in self-defence (see tinyurl.com/murtha2). The CGE was interspersed with live in-car footage from another patrol car and shows the suspect's car rejoining the carriageway in close proximity to officer Murtha (who was on foot). The 'creative' part was to show jurors how the defendant may have viewed the approaching vehicle as an act of



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aggression, by interspersing a short computer-animated sequence from the viewpoint of the officer. Murtha was eventually acquitted, although commentators have questioned the validity and reliability of the CGE used in this case (see Feigenson & Spiesel, 2009).

Putting the jury 'in the shoes' of officer Murtha is attribution theory in action. At the most basic level, attribution

error predicts that we tend to assign a situational rationale to our own actions, but explain the behaviour of others in terms of dispositional traits. You can even reverse this: using videotaped recordings of verbal interactions, Storms (1973) found an increased tendency to refer to dispositional effects when participants were shown the replay of their own behaviour. In my own research, manipulating the 'angle of view' in an animated vehicle accident demonstrated stark differences in culpability judgements when presented from different angles, e.g. overhead or in-car (Norris, in press). With more sophisticated VR evidence – where jurors can take on an interactive first-person role – understanding the potential psychological impact of this technology is vitally important to ensure fairness and proportionality.

Psychological theories have also been summoned to explain the way in which CGEs might be beneficial to the overall level of comprehension in a trial. Morell (1999) conducted an experiment to test the 'dual-coding theory of multi-media Learning' (Mayer, 1997), underpinned by a range of psychological components, including Alan Baddeley's working memory model and John Sweller's cognitive load theory. Four groups of 'mock jurors' were provided with different presentation styles (expert testimony with either visual aids, diagrams, computer animation, and both diagrams and computer animation) and their recall was tested after a two-week delay. In line with expectations, the latter two conditions significantly outperformed the singular visual aids/diagram sequences. The study – though illuminating – leaves many unanswered questions regarding the way jurors assimilate evidence presented in this way.

I argue that bespoke theories taking into account a range of psychological processes in legal contexts are needed, as trials increasingly look to capitalise upon the way in which CGEs can influence

jurors. Elsewhere (Norris, 2011) I have questioned the validity of the graphic animated sequence in the acquittal of Amanda Knox for the murder of British student Meredith Kercher. At a basic level, jurors and other legal decision makers must be made aware that these exhibits are merely a representation of one potential sequence of events. Clearly, the vivid and easily compressible nature of these demonstrations can be linked to hypothesised models of jury decision making, for example, the 'story model' (Pennington & Hastie, 1986).

My own research has highlighted a range of these potential biases and I am currently looking at some more specific applied areas where these might influence judgements. One such project is examining the difference between younger and older people in their perceptions of CGEs. Using an eye-tracker, we will be looking to see whether there are age-related factors that will influence central and peripheral vision (a question lawyers often ask me). Alongside the academic research, I have delivered educational programmes to members of the American Bar Association as part of a special panel on 'Psychology in the Courtroom' and I will be providing similar training to criminal defence lawyers in Las Vegas.

In summary, it would appear that psychological theories and research methodologies have a great deal to offer the courts and legal profession in relation to CGEs. It is important that psychologists are involved in this growing area of research and practice. Other professions, including law, will make their own observations and contributions to the way in which CGEs are used in legal contexts; however, as has been observed in other areas (e.g. 'offender profiling' evidence – see Freckleton, 2009), safeguards are not always duly implemented. Psychology has much to offer the legal system in terms of establishing a range of advice about where and why potential problems might arise. Just as it seems incredible that we would have once put a child witness in a courtroom or introduced relatively unqualified 'experts' to offer advice, so we may also find ourselves in the dock for allowing sophisticated techniques of persuasion without any real safeguards or guidelines.



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