E9 Right Analysis, Wrong Picture

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The goal of this presentation is to show the forensic community that indiscriminate use of modern technology, in this case computer animation, although accurate, may show the wrong picture. This paper will demonstrate how an accurate animation of the events leading up to a vehicular crash can create a miss-impression in the minds of a jury and why it is often better to supplement simple graphics and then to go with the more advanced technology.

Technology available today allows engineers to check their manual analysis of a collision using the computer, and to quickly animate their analysis in three dimensions consistent with the physical evidence and the laws of physics. Such three dimensional representation of a collision analysis can be extremely useful as a demonstrative exhibit, which, for example will aid a jury in understanding the facts of the case. However, sometimes the picture portrayed is not always what is wanted to be shown. View bias, depth perception and inconsistencies can result in misleading and confusing results. One must evaluate the strength of the animation; whether or not it illustrates the points of the engineer and attorney are trying to get across and whether or not the jury will see what the analysis revealed.

A person is driving a big rig down a two-lane, two-way road. As he enters a right curve, he becomes aware of a mail truck entering the roadway in front of him. He responds, not by applying his brakes, but by turning to the left and crossing the road. The result is a horrendous two-truck crash and a fatality. Analysis reveals that the relative movement of the mail truck to the big rig would have provided sufficient time and distance for the driver to stop without contact with the mail truck. What caused the response and who's at fault? But, most of all, how is it explained it to a jury?

Motor vehicle crashes are often precipitated by a so-called noninvolved vehicle, object, or pedestrian. It is not unusual for a driver to respond to a situation that is not readily apparent to the investigator and does not appear on the police report. An awareness of the driver's response and an understanding of why is often critical to the analysis of the crash and to the understanding of the events leading up to the crash. It is essential that in preparing any exhibit to help a layperson comprehend what occurred, that these factors be built into the program.

The case used as an example in this paper lent itself, with great excitement and great cost on the part of the attorney, to the development of a computer animation of the crash sequence. It showed with effectiveness the effect of the conditions known as Fovea, and when coupled with what is accepted as good driver's training, precipitated the actions that resulted in the fatal crash, that need not have occurred.

The analysis shows how the physical evidence provided the data to reconstruct the crash sequence. But, the understanding of why it occurred was not apparent until the pre-impact conditions were established and evaluated. It is the demonstration of the pre-impact conditions and the driver's response that challenged modern technology to make it clear to the jury of demonstrating the pre-impact conditions clear. The presentation will show that although the time-distance-speed relationships are accurate, as hard as one tries, the "real world" view of the sequence cannot always be captured.

Computer Animation, Demonstrating Pre-crash Conditions, Demonstrative Exhibits

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