USE OF COMPUTER DEMONSTRATIONS AT TRIAL

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With the onset of the computer age, many of us are just getting used to using word processing systems, computerized calendars and the like. Nonetheless, computers have found their way into the courtroom. Computer generated simulations can serve to better explain the facts of the case to the jury. Moreover, a computer generated simulation can keep the jury interested in your case and lend credence to your case by demonstrating that your case is well prepared and scientifically based.

Computer generated simulations do have their drawbacks, primarily expense and hazards concerning admissibility. First, computer generated simulations are, for the most part, more expensive than photographs, models or diagrams. Second, due to the higher complexity and novelty of computer generated simulations, they may be subjected to rigorous examination regarding admissibility. Computer generated simulations should be considered when:

" 1. A dynamic event or object is difficult to visualize;
2. A precise presentation in real time is difficult;
3. The event is too dangerous or too expensive to physically replicate;
4. The event is difficult for the expert to explain or for the lay person to understand;
5. Phenomenon cannot be shown clearly through visual presentation (for example, the elapsed time is too short for any other medium to show the details); or
6. Important facts are questionable (for example, experts have different reconstructions or there are conflicting eyewitness accounts)."[1]

Whether to use a computer generated simulation is a determination which necessarily depends upon the facts of each case. While cases of lesser dollar value may warrant more old fashioned, less expensive techniques, higher dollar value cases are subject to potential use of computer generated simulations if the planned presentation of the case warrants, and if the

[1] Schaefer, Messina and Bollard, Computer Simulations in Court, Trial, July 1987, PP. 70-72.

current state of the art for computer generated stimulations in that area can meet the necessary requirements of admissibility in court.

Generally, in order to be admissible, the attorney must demonstrate that the simulation is:

i) authentic;

ii) relevant to the issues in the case;

iii) meets hearsay requirements; and

iv) has been properly tested, has employed proper methodologies, is properly accepted or at least considered by the scientific community, and has a known rate of error.

These rules are not unique — they are the same rules used to evaluate and govern admission of all evidence. The only thing unique is in their application. Nonetheless, if the practitioner uses common sense and analyzes computer generated evidence using traditional rules, but with a more critical eye, he or she can maximize the chances for admission of such testimony.

AUTHENTICITY

Like with any other evidence, the first step of admission is authentication. The attorney must establish that the evidence is authentic. That means that there must be evidence sufficient to support a finding that the matter in question is what it purports to be. Federal Rule of Evidence 901. With regard to the Federal Rules, there is a separate rule of evidence regarding authenticating a "process or system." The authentication of a process or system is established by:

> Evidence describing a process or system used to produce a result and showing that the processor system produces an accurate result.

Federal Rule of Evidence 901(b)(9).

Obviously, the process of authentication for a computer generated simulation is not as simple as authenticating a photograph, chart or diagram, etc. On the contrary, you will need technical testimony concerning the simulation. Obviously, the best way is to have the person who prepared the program which conducted the simulation testify as to the design, production and function of that program. Such testimony will not always be available. Many times, such testimony must come from an expert using a program produced and manufactured by some other party. Under those circumstances, whomever you put on the witness stand to authenticate the program better be fully prepared to explain the underpinnings of the program, its history, and have such technical knowledge as the general failure rate of the program, etc.

The process of authentication in large part overlaps with the underlying analysis of the computer program which will be subject to challenges for reliability and relevance. However, the basic authentication process should not be overlooked in the "check list" of the admissibility of this type of evidence.

RELEVANCE

The attorney must demonstrate that the computer generated simulation is "relevant." Relevant evidence is generally "evidence having a tendency to make the existence of any fact that is of consequence to the determination of the issue more probable or less probable than it would be without the evidence." Federal Rule of Evidence 401. With regard to computer generated simulations, there should be little difficulty with establishing relevance. Obviously, with the time, effort and expense involved in preparing such a simulation, this evidence will in almost all circumstances go to a central issue in the case and certainly meet the general definition of showing that a fact was "more probable or less probable."

The more difficult relevance hurdle will be that set forth in Federal Rule 403. Rule 403 provides that although relevant, evidence may be excluded if its probative value is substantially outweighed by the danger of unfair prejudice, confusion of the issues, or misleading the jury, or by considerations of undue delay, waste of time or needless presentation of cumulative evidence.

Rule 403 is obviously a fertile ground for exclusion of computer generated simulations. A computer generated simulation will certainly be entertaining and persuasive. However, because of the "entertainment" value of this evidence and because of its persuasive effect, this evidence will be examined closely. The attorney must be fully prepared to show that the computer program is sufficiently reliable and is based upon objective facts and data from the particular case such that the probative value of the events demonstrated by the simulation outweighs any danger of the prejudicial effect of the simulation on your opponent's case. The attorney must make sure that he or she can "justify" this evidence by demonstrating the reliability of the presentation and/or conclusion of the simulation in each particular case.

HEARSAY

The attorney must be aware of potential hearsay problems involved in the use of a computer simulation. Most of the time, the facts which are programmed into the computer simulation will in all likelihood be facts admitted into evidence and therefore not be subject to a hearsay problem. However, if the simulation incorporates information not admitted into evidence, such as witness statements as to what occurred, etc. the attorney must be prepared to justify the admission of the simulation.

Of primary aid admitting this evidence is Rule 703 of the Federal Rules of Evidence which provides that the facts or data underlying expert opinion need not be in evidence so long as it is the "type" of facts or data reasonably relied upon by experts in that field. (See also Maravich v. Aetna Life and Casualty Company, 350 Pa. Super. 392, 504 A.2d 896 (1986), setting forth similar standards for Pennsylvania). The attorney should have his expert fully prepared to testify that with regard to any facts or data used in the simulation not admitted into evidence, such facts or data are typically relied upon by such experts and in use with such simulations. However, there are limits to this type of testimony, and the majority of the objective facts and data used to prepare the computer simulation should be admitted into evidence rather than relying on the simulation as a mere "conduit" for hearsay.

EXPERT ANALYSIS

By its nature, computer generated simulations will probably be deemed to fall under the category of "novel scientific tests or studies." They will therefore probably be subjected to a more rigid standard of analysis such as that found in Daubert v. Merrill Dow. The 1993 Supreme Court decision in Daubert v. Merrill Dow Pharmaceuticals, Inc., 125 L. Ed. 2d 469 (1993), has altered the landscape of scientific expert testimony. The Daubert Court reiterated the obligation of the trial judge to screen potentially unreliable evidence, in that the

trial judge "must ensure that any and all scientific testimony or evidence admitted is not only relevant, but reliable." The Court then went on to list several factors which the trial court should consider in determining the admissibility of scientific testimony. The Court should review whether a theory or technique:

(1) can be (and has been) tested;
(2) has been subjected to peer review and publication;
(3) has a known potential rate of error;
(4) has the existence and maintenance of standards controlling the technique's operations; and
(5) has gained "general acceptance" in the relevant scientific community.

Daubert, 125 L.Ed.2d at 482-83.

The attorney should be prepared to demonstrate that any computer evidence which in essence offers "opinion" testimony can satisfy these standards.

Illustrative Cases

The published opinions on the admissibility of computer generated simulations vary in results. They demonstrate everything from general acceptance of simulations as being useful tool to explain the evidence, being excluded as not generally accepted and also, at times, demonstrating concern for computers usurping the function of the court and jury by analyzing the evidence to reach the ultimate conclusion in the case. The following is a sample of case law:

Strock v. Southern Farm Bureau Casualty Insurance Company,

998 F.2d 1010, 1993 W.L. 279069 (4th Cir. 1993).

In Strock, an insured's home was destroyed during Hurricane Hugo. The insurance carrier contended that the loss was caused by water rather than wind. At trial, the insured introduced a computer generated simulation demonstrating that the loss was actually caused by wind. The insurer argued that the Court should adopt a hard and fast rule that computer generated recreation of events be "substantially similar to the actual events." The Fourth Circuit Court of Appeals refused to adopt such a rigid standard "at this time." The Court

held that the admissibility of such computer simulations was within the "sound discretion" of the trial judge who is in the best position to consider the relevancy and probative value of the evidence and balance it against its prejudicial effect.

Livingston v. Isuzu Motors, Ltd.,
1995 WL 757853 (D. Mont. 1995)

The plaintiffs introduced a computer generated simulation of an automobile accident which had been prepared by one of the plaintiffs' expert witnesses. The defendant argued that the Court erred in admitting this evidence because it was neither scientific nor reliable. In analyzing the admission of this evidence, the Court, predictably, subjected the simulation to the Daubert analysis. Using the Daubert factors, the Court allowed the testimony. The expert who prepared the computer generated simulation testified that the computer program was made up of various physical laws and equations commonly understood in science. This satisfied the Court's requirement that the "theory" of the computer be tested. With regard to the second factor, the computer simulated methodology had been the subject of several lectures and presentations to members of the scientific community, and the Court held that the simulation had been subjected to satisfactory peer review. The expert also testified that given advances in technology, the computer simulation was reliable and the rate of error was therefore low. As to the fourth factor, general acceptance in the scientific community, the Court held that the expert was not the only person who used such simulations. Other peers also used such simulations, and the expert had presented his theories both in publications and in lectures. Applying all these factors, the Court held that the Daubert requirements were satisfied, and the evidence was properly admitted.

Perma Research and Development v. Singer Company,
542 F.2d 111 (2d Cir. 1976) cert denied 429 U.S. 987 (1977)

The plaintiff's experts introduced a computer simulation to show that a particular anti-skid device was perfectible and marketable. The defendant objected to the use of the results of this computer simulation as the basis for the opinions of two of the plaintiff's experts. The Court held that while it might have been better practice for counsel to have provided all of the details and underlying datas and theorems employed in the simulations in advance of trial, the trial judge did not abuse his discretion in allowing the experts to testify as to this particular basis of their opinions.

The Perma case exemplifies that while it might not be disastrous to produce just the simulation, without the underlying programs, data, etc. there is a risk that a Court could exclude this evidence for failure to provide the opposing party with the full basis for the opinions set forth in the computer simulation. The dissent in the Perma case would have excluded the evidence. It noted that the input into the computer program was hearsay and therefore not competent. The dissenting opinion further showed some skepticism of computers in general by stating "as one of the many who have received computerized bills and dunning letters for accounts long since paid, I am not prepared to accept the product of a computer as the equivalent of holy writ." Although this opinion was written in 1986, it demonstrates that by their very nature, computer simulations and other computer evidence may be met with skepticism.

State v. Marta Ortiz,
448 A.2d 1241 (R.I. 1982)

In the Ortiz case, the defendant was charged with the murder of her seven-year old son. At trial, the defendant attempted to introduce testimony regarding a computer printout analysis of the defendant's mental condition at the time of the offense. The defendant was going to have a psychiatrist describe how information about the defendant was recorded and fed to a computer, which then analyzed the data. Although the psychiatrist himself considered the

computer analysis to be accurate, no other evidence was presented to establish the accuracy and reliability of this form of testing. The Supreme Court of Rhode Island held that this evidence was properly excluded because she could not demonstrate a proper foundation that the test was reliable in the relevant scientific field.

Reynolds v. United States,

805 F. Supp. 336 (W.D.N.C. 1992)

In Reynolds, the Court allowed an accident reconstruction expert to testify regarding an accident reconstruction computer program known as "EDSMAC". The expert ran many computer simulations, and then opined that the defendant was one foot over the center line when the accident occurred and that the plaintiff was in his own lane and traveling at 55 mph. The expert conceded that the computer program contained a cautionary statement that "it is not intended that the user should consider the results as the only way a particular accident could have occurred." Nonetheless, the Court allowed the computer simulation-based testimony into evidence. It should be noted, however, that it is not clear from the opinion whether the defendant objected to this evidence, and, moreover, this was a bench trial pursuant to the Federal Tort Claims Act, and therefore the issue of jury confusion or prejudice was not involved.

Commonwealth v. Klinghoffer,

564 A.2d 1240 (Pa. 1989)

In the Klinghoffer case, the defendant was charged with vehicular homicide when his car allegedly crossed over two lanes of traffic at a high rate of speed, collided with two cars in oncoming lanes of traffic, and killed two people. The issue in the case was the speed at which the defendant was operating the vehicle at the time of the accident.

The Commonwealth introduced testimony from an expert in the field of "vehicular dynamics", who testified that the defendant's vehicle had been traveling at

approximately 75 mph at the point of the first collision. This opinion was generated by a computer using a program known as "Applecrash."

No majority opinion was written by the Court. In Justice Larson's dissent, he stated that the crucial issue was how much information about the computer program and the data that went into it should be required by the trial court in order to establish the reliability of the computer opinion and lay an adequate foundation for its introduction into evidence. Justice Larson recognized that the use of a computer program to produce information specifically for purposes of litigation should be placed on entirely different footing than the introduction of other computer records which are business records used in day-to-day business reliance. He noted that whenever such litigation programs are used, the opposing counsel must have an opportunity to scrutinize the program prior to trial to use in his cross-examination. Justice Larson further cautioned:

> As the saying goes, "garbage in — garbage out." If computer generated evidence and expert opinions are to be used to deprive a person of his liberty as here (and such use of computer evidence can be expected to be made with increasing frequency), surely the judicial system must demand a high degree of reliability and disclosure of adequate information as to programming and input to allow meaningful cross-examination, and to permit the jury to determine whether any garbage went into and contaminated the computer program. Moreover, we must require disclosure of the necessary information to the opponent prior to trial to allow sufficient time to locate a qualified expert in the field who speaks the unique foreign language of the particular computer program who can assist the opponent and his advocate in meaningfully interpreting the date and program and in challenging the accuracy of the results. While there are some exceptions, as a rule I would not expect our judges, juries or lawyers to be well-versed in the foreign computer language used, nor to have the requisite expertise and knowledge to understand how a computer generated a particular opinion. On the other hand, it is easy for a layman to grasp the computer's final result, for example "defendant was traveling at 75 mph," and to be seduced by the magic and technology which enables a computer to analyze staggering

amounts of information and variables and transform that data into a conclusion.

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