COURTROOM COMPUTER ANALYSIS OF VEHICLE COLLISIONS

PART I
THE LAW OF COMPUTER ANALYSIS

PART II
DIRECT EXAMINATION OF COMPUTER ANALYSIS EXPERT

George A. LaMarca

LaMarca Law Group, P.C.

1820 N.W. 118th Street, Suite 200
Clive, Iowa 50325
Phone: 515-225-2600
www.YourIowaLawyers.com

With the assistance of
Andrew H. Doane

PART I – THE LAW OF COMPUTER ANALYSIS

INTRODUCTION AND SCOPE OF ARTICLE

There are essentially two types of accident reconstruction information generated by computers. The first is animation evidence, which consists of illustrations, charts, graphs, maps, etc. The second is simulation or recreation evidence, which consists of computer-generated conclusions as to what actually occurred. These are based on a reliable threshold of actual, preexisting data that can be documented or otherwise proven to a high degree of certainty.

The purpose of this article is to guide the trial lawyer through the case law, rules of evidence, and other authority showing how to properly prepare and admit into evidence both animation and simulation computer-generated evidence.

I.   **Computer Generated Evidence, Generally**

In an era where technology can be employed to merely illustrate past events, or to reconstruct past events through computing hard data, it is important to understand how this technology can be utilized to a trial lawyer's advantage in the courtroom. Although the Federal Rules of Evidence do not explicitly address the admissibility of computer-generated simulations and animations as evidence, such computer-generated evidence "has long been accepted as an appropriate means to communicate complex issues to a lay audience, so long as the expert's testimony indicates that the processes and calculations underlying the reconstruction or simulation are reliable." Ortiz v. Yale Materials Handling Corp., 2005 WL 2044923, *9 (D.N.J. 2005). The New Jersey District Court also noted

that in addition to their ability to contribute to the jury's understanding of disputed

issues, computer-generated simulations and animations are also valuable because

they permit accident reconstruction without posing a threat to human test subjects.

Id.

Applied in many cases involving computer-generated simulations and

animations, the *Daubert* test requires trial judges to ensure "that any and all

scientific testimony or evidence admitted is not only relevant, but reliable."

Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579, 589 (1993). Among the

factors established by the Supreme Court in determining whether testimony is

scientifically valid and reasonable are, "(1) whether a theory can be or has been

tested; (2) whether the theory has been subjected to peer review and publication;

(3) the known or potential rate of error; and (4) general acceptance in the scientific

community." Livingston v. Isuzu Motors, Inc., 910 F.Supp. 1473, 1494 (Mont.

Dist. 1995).[1]

While many states choose to follow or apply similar standards as those

applied under *Daubert*, other states continue to follow the previously established

Frye test. An appellate court in the state of Washington, for example, applied the

Frye test in determining whether an expert's computer-generated animation was

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[1] In Livingston, the plaintiffs' expert witness explained that the theory behind the computer-generated simulation he created had been tested and he testified that peer review had occurred by virtue of lectures and presentations given to members of the scientific community. Id. at 1495. The court determined that because any potential rate of error could be contested by the defendants on cross-examination and because the expert witness worked with peers within his discipline who further evaluated his work, the factors laid forth in the *Daubert* test were satisfied and the computer-generated simulation of the automobile accident was properly admitted at trial. Id.

admissible at trial. State v. Phillips, 98 P.3d 838, 841 (Wash. App. Div. 2, 2004).

The *Frye* test stipulates that the opinions of experts or skilled witnesses are

admissible at trial where the matter of inquiry does not lie within a common range

of experience or knowledge and further explanation is required in order for a

proper judgment to be rendered. *See* Frye v. U.S., 293 F. 1013, 1014 (D.C. Cir.

1923), *superseded by rule*, Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579

(1993).[2] In Phillips, the State provided substantial evidence that the software

program utilized by its accident reconstruction expert was generally accepted in

the accident reconstruction community and also pointed out that its accident

reconstruction expert had 30 years of experience and had used the said program

over a thousand times since 1995 or 1996. 98 P.3d at 841-842. The court held

that based on these factors, the evidence was admissible under the *Frye* test. Id.

State courts may also choose to modify or enhance the tests they use to

determine whether proper foundation has been laid to support the admissibility of

computer-generated. Looking to other jurisdictions and the Federal Rules of

Evidence, the Connecticut Supreme Court refined the test it used in determining

whether adequate foundation had been laid to provide for the admission of

computer-generated evidence. State v. Swinton, 847 A.2d 921 (Conn. 2004).

Initially, the state required "testimony by a person with some degree of computer

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[2] Although the Federal Rules of Evidence superseded the *Frye* general admissibility test for scientific, technical, or specialized information, the state of Washington still applies the *Frye* test. *See* State v. Copeland, 922 P.2d 1304 (Wash. 1996) (affirming Washington's application of the *Frye* test, despite the U.S. Supreme Court's adoption of an alternative test in Daubert v. Merrell Dow Pharms., Inc., 509 U.S. 579 (1993)).

expertise, who has sufficient knowledge to be examined and cross-examined about the functioning of the computer." American Oil Co. v. Valenti, 426 A.2d 305, 310 (Conn. 1979). In Swinton, however, this foundational standard was amplified by requiring six additional factors to be met. 847 A.2d at 942. The six factors that must be met require that, "(1) the computer equipment is accepted in the field as standard and competent and was in good working order, (2) qualified computer operators were employed, (3) proper procedures were followed in connection with the input and output of information, (4) a reliable software program was utilized, (5) the equipment was programmed and operated correctly, and (6) the exhibit is properly identified as the output in question." Id.

Having established the admissibility standards of computer-generated evidence in general, it is now necessary to examine the more specific types of computer-generated evidence- animation evidence and simulation evidence. It is important to note the differences between the two spheres of computer-generated evidence and to recognize the higher evidentiary standards that apply to computer-simulated evidence.

II.   **Animation Evidence**

Am. Jur. describes this first category as "computer-generated evidence not requiring special consideration." 57 Am. Jur. Proof of Facts 3d § 6. This kind of evidence includes charts, graphs, diagrams, printouts, and other computer-generated data created in the ordinary course of business. Id. The evidence does not require special attention because it "generally does not present special

admissibility problems[3], as any type of demonstrative evidence is not normally

used during jury deliberations, and courts often apply a less rigorous standard in

allowing their use in the courtroom." Id. at § 8.

Computer-generated charts, graphs, and diagrams "are treated no

differently than traditional, hand-drawn graphs and charts for the purpose of

admissibility. Thus, this type of. . . evidence is generally admissible if a

knowledgeable witness demonstrates that the evidence fairly and accurately

portrays subject matter which is relevant to the case." Id. § 6 (citations omitted).[4]

When this kind of evidence is used demonstratively, say to illustrate or depict an

actual event, the proponent of the evidence must "demonstrate that the evidence is

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[3] The Tennessee Supreme Court, however, noted its concern with multiple viewings of computer-generated animations. In State v. Farner, a computer-generated animation depicting an automobile collision was played for the jury at three different speeds and from five different viewpoints, for a total of fifteen depictions of the collision. 66 S.W.3d 188, 210 (Tenn. 2001). Noting the substantial impact animations have on jurors, the Court determined that the cumulative viewing of the animation fifteen separate times posed a considerable risk of unduly prejudicing the defendant. Id. Of further concern was the fact that the location of the defendant's automobile at the beginning of the animation was inconsistent with eyewitness testimony and that the accident reconstructionist based the animation on his own assumptions. Id.

In a similar manner, the United States District Court for the Northern District of Illinois recognized the risks associated with the use of computer-generated animation to present evidence to a jury. Van Houten-Maynard v. ANR Pipeline Co., 1995 WL 317056 (N.D. Ill. 1995). Of great concern was the fact that the evidence was in a documentary-type format and was presented in a "television" like medium. Id. at *12. The court held that "computer animation evidence, by reasons of it being in a format that represents the latest rage and wrinkle in video communications and entertainment, may well have an undue detrimental effect on other more reliable and trustworthy direct-type evidence." Id. For this reason, the court held that the computer-generated animation would not be admitted as evidence.

[4] In Georgia, the admission of computer-generated animation as evidence at trial is permitted if it is "a fair and accurate representation of the scene sought to be depicted." Cleveland v. Bryant, 512 S.E.2d 360, 362 (Ga. App., 1999). In Bryant, the court based its decision on the review of photographs, trial testimony, and a videotape contained in the record, which revealed that the animation was sufficiently similar to the evidence introduced at trial and accurately represented the expert's opinion regarding how the collision occurred. Id.

'substantially similar to what it represents.'" Id. at § 10. This means that the evidence "may be excluded if there are substantial dissimilarities between the events it depicts and the actual facts developed in the litigation." Id.; see also Kennedy v. Zavala, 2002 WL 31640639 (Iowa Ct. App. 2002) (excluding a computer animation of a delivery that resulted in a brachial plexus injury to the newborn because the animation did not accurately portray the events of the actual delivery) (citing Hutchison v. American Family Mut. Ins. Co., 514 N.W.2d 882 (Iowa 1994)).[5]

Note, however, that the Iowa Supreme Court has upheld the use of a computer-generated video of "shaken baby syndrome" used by the State in a criminal prosecution even though it was not an accurate portrayal of the facts at bar. In State v. Sayles, the Court permitted the digital video because "[t]he animation was not overly dramatic. It was clinical in nature and the computer-generated infant showed no facial expression and emitted no sound during the shaking." 662 N.W.2d 1, 11 (Iowa 2003). Furthermore, the video was used to

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[5] The South Carolina Supreme Court has held that a computer-generated animation does not need to be exact in every detail, but stressed that important elements must be identical or very similar to the scene as described by the testimony and evidence presented by the proponent of such animation. Clark v. Cantrell, 529 S.E. 2d 528, 537 (S.C. 2000). When reconstructing automobile accidents, such animation must be "technically correct on details such as distance, terrain, relative speed, path of travel, and surroundings." Id. Most importantly, the animation must be a fair and accurate portrayal of the events described by the proponent. Id. Although the Court recognized the value of computer-generated animation, it ultimately determined that when the danger of unfair prejudice and misleading the jury outweighs the probative value provided by the animation, a court may exclude the computer-generated animation as evidence. Id. at 538.

educate the jury about shaken baby syndrome, not to imply wrongful conduct by the defendant. Id.

The same is not true, however, for computer-generated evidence used to reflect or depict an expert opinion. In these situations, the evidence "is not required to be a 'fair and accurate' representation of actual events." 57 Am. Jur. Proof of Facts 3d 455 § 10.[6] Nor must the evidence "posses the high degree of similarity that a [evidence] purporting to show the actual event does." Id. Rather, the evidence, "need only portray the *expert's opinion* accurately." Id. (emphasis added).[7] This is because animation evidence used to illustrate an expert opinion "only go[es] to the weight, and not the admissibility of the testimony." Id.

In addition to meeting the legal standards stated above, to be admissible, a computer animation must meet the following two criteria: (1) it must "fairly and accurately reflect the underlying oral testimony and aid the jury's understanding" and (2) it "must be authenticated by a witness." Id. at § 9 (citations omitted); see

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[6] An expert witness may use computer-generated animation to merely illustrate the events of an accident to the jury, and not specifically simulate the events in accordance to the laws of physics and mathematics. Constans v. Choctaw Trasport, Inc., 712 So. 2d 885, 901 (La. App. 4th Cir. 1997). The expert witness must clearly explain and indicate to the jury, however, that the animation is a labor-saving device and is limited in scope regarding its technical accuracy. Id.

[7] The Court of Appeals of Wisconsin upheld a trial court's decision that computer-animated evidence presented by Honda's experts in Emmerich v. American Honda Motor Co. be admissible at trial. 570 N.W.2d 63 (table), 1997 WL 428495 (Wis. App. 1997). Because Honda's experts candidly explained that the animation was "nothing more than a visual depiction of their opinions" and the trial court limited the number of times the animation could be shown, the Court of Appeals found that no unfair prejudice existed and that their was no basis for exclusion of the animation at trial. Id. Moreover, the Court "precluded Honda from characterizing the animation in such a way that the opinions it illustrated would have been given an aura of scientific reliability." Id.

<u>also</u> Iowa R. Evid.5.901 (requiring "authentication or identification as a condition precedent to admissibility" of evidence).[8]

Computer-generated evidence created in the ordinary course of business, of course, is admissible under Iowa Rule of Evidence 5.803(6). According to the Iowa Code Annotated Rule 5.803, "[t]he expression 'data compilation' is used as broadly descriptive of any means of storing information other than the conventional words and figures in written or documentary form. It includes, but is by no means limited to, electronic computer storage." I.C.A. Rule 5.803, note to paragraph 6.

There is a third kind of animation evidence: evidence associated with or created by an adverse party. 57 Am. Jur. Proof of Facts 3d 455 § 6. This evidence can easily be admitted into evidence. The "proponent must merely demonstrate that [it] falls within the five categories[9] of admissions set forth in [Rule

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[8] In a case of first impression, the Minnesota Supreme Court determined that it would apply the same evidentiary standard to computer-generated animation as it applies to that of demonstrative evidence and visual aids. <u>State v. Stewart</u>, 643 N.W.2d 281, 293 (Minn. 2002). This standard requires evidence to be relevant and accurate, while contributing to the jury's understanding of the testimony provided by the witness. <u>Id.</u> at 296.

The Supreme Court of Wyoming has held that the animated reconstruction of an accident is permissible as long as it does not "offend" the rules of evidence. <u>Mintun v. State</u>, 966 P.2d 954, 959 (Wyo. 1998). Evidence is deemed admissible when it is "authenticated, relevant, and not subject to an exclusionary rule." <u>Id.</u> When the State presented a reconstruction of the car accident using computer animation, the animator testified as to how the animation was created. <u>Id.</u> This testimony was bolstered by the testimony of the Sergeant who investigated the crash and further explained the methodology and intent of the crash reconstruction. <u>Id.</u> The Court found this joint testimony sufficient to authenticate the exhibit and deemed it admissible at trial. <u>Id.</u>

[9] The five categories of admissions established in Rule 5.801(d)(2) include: (A) the party's own statement, in either an individual or a representative capacity, or (B) A statement of which the party has manifested an adoption of belief in its truth, or (C) a statement by a person

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5.801(d)(2) of the Iowa Rules of Evidence]." <u>Id.</u> Those exceptions apply to admissions by a party-opponent. <u>See</u> Iowa R. Evid. 5.801(d)(2).

III. <u>Simulation Evidence</u>

Computer-generated simulation evidence is generally much more difficult to admit into evidence than animation evidence. This is because simulation evidence "generate[s] substantive conclusions from existing evidence, rather than just illustrating testimony." 57 Am. Jur. Proof of Facts 3d 455 § 11. "In a simulation, a computer draws conclusions based on limited facts." <u>Id.</u> Because simulation evidence is admitted to prove a certain point at trial[10], courts have generally considered such evidence substantive, rather than demonstrative. <u>Id.</u> Admission is accomplished through proving certain reliable base information, usually through the testimony of an expert witness.[11]

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authorized by the party to make a statement concerning the subject, or (D) a statement by the party's agent or servant concerning a matter within the scope of the agency or employment, made during the existence of the relationship, or (E) a statement by a coconspirator of a party during the course and in furtherance of the conspiracy.

[10] Evidence presented by an expert witness who confirmed the findings of his opinion by using a computer simulation to test some of his theories was upheld as admissible evidence by the Louisiana Court of Appeals. <u>Lyons v. J.A. Auger, Inc.</u>, 821 So.2d 536, 538 (2nd Cir. 2002). Because the expert witness' opinion was fully derived from his examination of the accident reports, witness statements, photographs, and the positioning of vehicles and yaw marks, and only later confirmed by computer simulation that was never entered into evidence, the trial court did not err in admitting the opinion of the expert witness. <u>Id.</u> at 539.

[11] In <u>Hudson v. City of Chicago</u>, the court held that an expert witness' accident reconstruction, created by means of computer simulation, was admissible because the expert witness utilized both direct testimony and physical evidence to bolster the conclusions he presented. 881 N.E.2d 430, 454 (App. Ill. 1st Dist. 2007). The court found this to be a sufficient factual basis to assist the expert witness in reaching his conclusions. <u>Id.</u>

A Massachusetts Appellate Court also held that where computer-generated evidence is merely cumulative of other evidence presented by the defense, it is not considered prejudicial to

Obtaining an Expert Witness

The first step to admitting substantive simulation evidence is to "have an expert in computer reconstruction or animation testify at trial." Id. at § 12. That expert must meet the requirements of rule 5.702 of the Iowa Rules of Evidence. Id.; see also Iowa R. Evid.5.702. "The expert should be familiar both with how the computer program functions, as well as the underlying data which is being manipulated." 57 Am. Jur. Proof of Facts 3d 455 § 12. Importantly, "if the [simulation evidence] is being admitted to prove the truth of the matter asserted therein, the expert's testimony must indicate that the processes and calculations underlying the reconstruction or simulation are reliable." Id.

Admitting a computer-generated simulation into evidence then requires four steps: (1) a showing of a proper factual foundation; (2) the admissibility of the underlying scientific or technical theory; (3) authentication of the computer hardware, software and inputs; (4) and the appropriateness of the mathematical model." Id. at § 13. The expert testimony is also vital to meeting each of these requirements.[12]

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the plaintiffs. Lally v. Volkswagen Aktiengesellschaft, 698 N.E.2d 28, 40 (Mass. App. 1998). Moreover, admission of the evidence was harmless because the computer-generated evidence was admitted only after the defense's expert witness had testified regarding the results of a previous computer simulation and given his opinion based on these results. Id.

[12] Computer simulations are admissible when an expert witness uses a commonly accepted computer program to generate a simulation, explains the authentication process used with the model, and illuminates that the testimony of an expert witness or driver is weighed against the physical evidence and against the simulation itself. Kudlacek v. Fiat S.p.A., 509 N.W.2d 603, 617-618 (Neb. 1994).

1. Laying a proper foundation. The first of these additional steps, laying

a proper foundation, requires the following: (a) the sufficiency of the factual

foundation must be demonstrated; (b) the information relied upon in creating the

simulation should be admissible or constitute the type of evidence which an expert

would generally rely upon in giving an expert opinion; (c) the simulation must

meet the relevant authentication requirements; and (d) the evidence used in

creating the simulation and the simulation itself must be relevant and non-

prejudicial. 57 Am. Jur. Proof of Facts 3d 455 § 14.

Laying a proper foundation can create some problems for the proponent of

a computer-generated simulation. For example, the party opposing admission of

the evidence "will often argue that the declarant, the person who wrote the

computer program, by entering the data into the computer, has made an assertion

about the truth of a matter in issue." Id. Thus, the proponent of the evidence "may

have to demonstrate that the data and computer software fall under an exception to

the hearsay rule." Id. Two useful exceptions are found in Rule 5.807, the "catch-

all," and Rule 5.703. The "catch-all" exception "is particularly well-suited for the

admission of computer simulations [because] it is intended to make provision for

new and unanticipated situations which were not provided for in the hearsay rules,

but which demonstrate a 'trustworthiness equal to or exceeding the guarantees

reflected by the presently listed exceptions.'" Id. (citing Advisory Committee

Note to former Rule 803(24) of the Federal Rules of Evidence). Rule 5.703 allows

for the admission of facts or data that are otherwise not admissible as evidence, so

long as they are "of a type reasonably relied upon by experts in the particular field in forming opinions or inferences upon the subject." Iowa R. Evid. 5.703. See also 57 Am. Jur. Proof of Facts 3d 455 § 14, pp. 23-26 for additional details regarding laying the proper foundation.

The Iowa Supreme Court has rejected a computer simulation based on a lack of foundation. In Sallis v. Lamansky, a psychologist testified as an expert witness for the Defendants and asserted that the plaintiff's hysterical personality, paired with hypochondriacal tendencies, led him to exaggerate the pain that resulted from an automobile accident. 420 N.W.2d 795, 796 (Iowa 1988). In an effort to bolster this diagnosis, the psychologist cross-checked his conclusions based on a computer analysis of the test results. Id. at 796-797. The Court rejected the computer analysis that formed the basis of the expert's opinion because "there was insufficient evidence in the record to establish the reliability of the computer results." Id. at 797. Unfortunately, the Court did not describe the essential parts of the foundation that were absent from the record. [13]

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[13] An appellate court in Ohio held that computer simulation offered by an expert witness was properly admitted by the trial court since it represented the expert's opinion of how the automobile accident occurred and offered an accurate depiction of the tractor-trailer vehicle involved in the accident. Deffinbaugh v. Ohio Turnpike Commn., 588 N.E.2d 189, 194 (Ohio App. 8th Dist. 1990). The expert witness employed facts including the weight and physical dimensions of the trailer, as well as the surface friction coefficient to produce the computer simulation he presented at trial. Id. Although the exact speed the vehicle was traveling at the time of the accident was unknown, the expert based his estimate on the accident report submitted by the state trooper. Id. Overall, the court determined that the computer simulation aided the trier-of-fact in determining how the accident occurred and was properly admitted as evidence. Id.

2. Proving the admissibility of the underlying scientific or technical

theory. The second of the additional steps, proving the admissibility of the

underlying scientific or technical theory, involves Iowa Rule of Evidence 5.702.

This rule states that an expert witness may testify "[i]f scientific, technical, or

other specialized knowledge will assist the trier of fact to understand the evidence

or to determine a fact in issue[.]" Iowa R. Evid. 5.702. This rule would apply to

accident reconstructions, which are considered computer-generated simulations,

not animations. 57 Am. Jur. Proof of Facts 3d 455 § 16.

3. Authentication of hardware, software and inputs. The third

additional step requiring the authentication of the computer hardware, software

and inputs also requires expert testimony. [14] Under Iowa Rule of Evidence

5.901(b)(9), the expert witness must illustrate "evidence describing a process or

system used to produce a result and showing that the process or system produces

an accurate result." In federal courts, proponents must show "(1) the computer is

functioning properly; (2) the inputs and underlying equations are sufficiently

complete and accurate (and disclosed to the opposing counsel, so that they may

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[14] While computer simulations are generally admissible forms of evidence, their
admissibility depends on satisfying the same foundational requirements as other demonstrative
evidence. Bledsoe v. Salt River Valley Water Users' Assn., 880 P.2d 689, 692 (Ariz. App. 2d
Div. 1994).   At the very least, a computer simulation must be a fair and accurate depiction of
what it seeks to represent and the opposing party must have the opportunity to cross-examine the
proponent. Id. In some cases, the proponent of a computer simulation may also be required to
show that, "(1) the computer is functioning properly; (2) the input and underlying equations are
sufficiently complete and accurate (and disclosed to the opposing party, so that they may
challenge them); and (3) the program is generally accepted by the appropriate community of
scientists." Id.

challenge them); and (3) the program is generally accepted by the appropriate

community of scientists." 57 Am. Jur. Proof of Facts 3d 455 § 16 (citation

omitted). In Iowa, Rule 5.901(b)(9) would come into play as well. That rule

"provides that a process or system may be authenticated by evidence describing

how that process or system produces the result and showing that the result is

accurate." Id.; see also Iowa R. Evid. 5.901(b)(9).

Authenticating the hardware can be easy, depending on its availability. If it

is commercially available and generally accepted in the scientific community, it

will usually be accepted with very little resistance from the court. 57 Am. Jur.

Proof of Facts 3d 455 § 16. However, if it is not commercially available or widely

accepted[15], the opponent "may want to check the accuracy of the software by

looking at the source code or actual program." Id. The proponent of the software

would also be wise to "have the data doubled [sic] checked to ensure that it was

input into the program correctly and accurately." Id.

4. Verifying the trustworthiness of the underlying mathematical codes.

Finally, the fourth additional step, verifying the trustworthiness of

underlying mathematical models, is comprised of three independent steps. First,

the factors selected for inclusion in the computer simulation/model must be

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[15] When the relevant scientific community has not reached a consensus regarding the use of a particular software program, the introduction of such evidence will not be admitted at trial. State v. Sipin, 123 P.3d 862, 871 (Wash. App. Div. 1 2005). Because the computer software program used by the State's expert witness was limited in its ability to produce simulations of the interior movements of multiple victims and there was a lack of consensus regarding the validity of the program, the computer-generated simulation was inadmissible at trial. Id. at 870-872.

accurately and appropriately measured. Id. at § 17. Second, the factors and

information included in the mathematical codes must be relevant and complete. In

particular, they must be sufficiently accurate and cannot be based on assumptions.

Id. Third, "the formulae selected for inclusion into the mathematical model must

constitute an accurate and valid scientific method for simulating the event." Id.

This means that the mathematical equations and formulae should be capable of

accurately and appropriately reproducing the conditions and events they were

designed to simulate. Id.

Additional Considerations

Timely disclosure to opposing counsel of the intended use of simulation

evidence including the expert's qualifications, the hardware, software and math

codes or formulas should assist with admissibility.[16] Courts have and should give

deference to the ability of opposing counsel to expose problems by the vigorous

use of cross-examination, as well as by the employment of their own experts.[17]

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[16] If a party seeks to present a computer simulation to illustrate the theory of an expert witness, it must give the discovering party "access to the data that represents the computer's work product." Bartley v. Isuzu Motors Ltd., 151 F.R.D. 659, 660 (Colo. Dist 1993). In addition, the opposing party must be able to observe the data being entered into the computer, the programs used to manipulate the data and generate the conclusions, and the theory or logic utilized by those who designed and conducted the experiment. Id.

[17] In a case where many of the basic facts used in a computer-generated simulation of an automobile accident were not known or reasonably certain, there was a lack of notice regarding the results of the simulation until the last business day before trial, and the opposing party was limited in its ability to cross-examine, the court did not abuse its discretion in deeming the evidence to be inadmissible at trial. Richardson v. State Hwy. & Transp. Commn., 863 S.W.2d 876, 882 (Mo. 1993).

In the event that a court refuses to admit simulation evidence for its substantive value, the jury can still see the computer simulation as demonstrative evidence so long as an expert testifies. 22 U. Dayton L. Rev at 65. Thus, it pays to have the expert qualified under Iowa Rules of Evidence 5.702 and 5.703. Id.

Final Thoughts

As the integration of computer-generated evidence in the courtroom for evidentiary purposes becomes more widespread, it is important that trial lawyers understand how case law, rules of evidence, and other authority is evolving to respond to this growing presence. With that in mind, it is especially important for trial lawyers to remain up to date of the changes that occur in response to issues associated with the admissibility of computer-generated evidence. This article is intended to serve as not only a reference point for questions regarding the admissibility of computer-generated evidence, but also as a starting point for additional research that may follow an initial inquiry.