

Demonstrative Evidence Evidentiary Issues & Laying a Proper Foundation

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Introduction

Talk of trial preparation conjures up mental images of attorneys working through large stacks of documents late into the night. Specters of tactical meetings, opening statements, rehearsals and a bustle of last minute motions complete the picture. Expert witnesses, such as engineers and architects, are in place and ready to provide foundational testimony for the technical demonstrative exhibits that they have created. But what if the technical exhibits are not prepared directly by your expert and are instead delegated to demonstrative evidence specialists with no formal training in the subject matter at issue? Do you need or require your expert witness to check and authenticate every technical demonstrative exhibit? If not, how can you be certain that your non-expert specialist accurately designs and prepares these exhibits?

Admissibility Issues

Demonstrative evidence is one of those terms that has no hard, fixed definition. The range of applications is rather fluid because it changes as technology advances.

Corresponding to the amorphous definition is the lack of consistency in how these exhibits should be treated.

Anticipating the admissibility of demonstrative evidence for litigation is an inexact science at best. It is a gray area determined by the specific case and the particular judge.

The rules of evidence give the court wide discretion in determining how demonstrative evidence is admitted, by whom and under what circumstances. Generally, “fair and accurate” is the overriding principle used to determine acceptability.

There are, however, four factors that have to be dealt with in order to complete the foundation for an exhibit to be admitted as evidence. They are:

- **Competence** of the witness testifying about the exhibit.
- **Relevance** of the exhibit to an issue in the case.
- **Identification** of the exhibit.
- **Trustworthiness** or authentication of the exhibit.

From a practical standpoint, the courts recognize that not every piece of demonstrative evidence needs to be meticulously defended in order to be accepted. For example, diagrams of accident sites or crime scenes taken directly from police reports are often held to be accurate representations for the purpose of general scene orientation.

However, when casually measured and hastily prepared diagrams are used to pinpoint specific placement of crucial evidence, or to verify eyewitness visibility, they step over the boundary of their original intent and may create a false picture of the evidence.

Let’s examine some common forms of demonstrative evidence.

Charts and Graphs

A chart is a simplified, organized display of numerical information using shapes of various kinds. This includes bar charts and pie charts, which are the two most common forms used in litigation. A graph is a representation of numerical data by positioning a

line or lines. These devices assist a witness in explaining the effect or relationship of data and help the judge or jury understand what the data mean.

Anyone who is familiar with statistics knows how deceptively creative the use of charts and graphs can be. Inflated pie charts, truncated scales, skewed perspective and missing data points are tools of the trade for misleading visual evidence. It is not unusual in high profile, high stakes litigation for opposing counsel to scrutinize every data point of every exhibit. There are certain techniques that can be implemented to assist in getting graphs into evidence, for example, include a table of data points under the graph itself, so that the table's columns are aligned with the data points of the graph.

Scale Diagrams and Models

A scaled diagram, site plan or map is a drawing made to scale showing the location of certain physical features. These types of exhibits can assist in developing an overview or a perspective of the events at issue. If the exhibit is to be offered as evidence, it should be qualified by a surveyor, professional mapmaker or the demonstrative evidence specialist who made all the necessary and relevant measurements.

Everything in a scale diagram must have been documented by the provider and prepared to scale. Perfectly accurate accident site diagrams prepared by experienced civil engineers or accident reconstruction experts have been attacked in court because additional foliage was added in key areas purely for aesthetic reasons. Diagrams have also been attacked because of improperly located signage and light poles. The diagram

must be a fair and accurate representation of what existed at the time of the incident, not of what existed when the diagram was prepared.

A scale model brings three-dimensional assistance to the problem of explaining complicated spatial fact situations.

There are three principal types of models:

- **Exact life-size replicas** – are full size duplicates of the original or real object. It is exact in size, but not necessarily the same weight or built with the same materials that the original object was constructed with. For example; a piece of equipment or a section of a concrete wall with rebar exposed would be too heavy to bring into the courtroom, but could be built the same size as the original and constructed with lighter weight material.
- **Models built to scale** – either smaller or larger than life size – usually prepared for the purpose of recreating an event or occurrence. The proponent must prove that all necessary measurements were taken and that all components were reduced accurately to scale. The model may require land surveys to get exact measurements, photographs to record the scene, or other studies to provide the information for building the model. All maps, surveys, photographs, documents, notes and measurements used to construct the model must be admitted first. The model-maker should photograph the work in progress, which will be helpful when laying the foundation for the care with which the model was built.
- **Cutaway models** - show the interior of structures or equipment – A cutaway model may be built life size or to scale. The model is usually not a full replica of the real object, as a portion of it has been cut away to expose the internal

workings. It should be noted that the legal foundation is the same for life-size, scale, or cutaway models, however, cutaway models require an explanation of what is missing.

When a scaled diagram or model is commissioned, the attorney should request copies of the provider's field notes as well as a simple "foundation declaration" that describes what was done and how they did it. A typical *foundation declaration* addresses all of the variables that might be scrutinized by your opponent if he or she were to examine the provider about how the work product was prepared. The declaration should cover scene documentation tools and methods, the software, materials and general techniques used in preparing the work. It should also include the results of a reasonable investigation conducted to ensure that the exhibit is an accurate representation of the scene at the time of the incident (if applicable).

Computer Animation

A computer animation is produced by linking a series of images, each of which is technically accurate, to show progress or events over time. Animations fall into two categories:

- **Demonstration** – usually designed to show how some physical principle works. For example, consider a case where a Soil Remediation Plant (Incinerator) burns down after five years of operation and a lawsuit is filed against the designer/contractor for poor design and faulty construction. (A soil remediation plant burns soil that has become contaminated with oil, gasoline or some other toxic substance. Contaminates are burned off leaving clean soil). The expert for

the designer/contractor would certainly want the judge and jury to understand how the plant works. A “demonstration” animation could be produced to show an overview of the plant, labeling all components or structures for identification. Next, the animation would zoom in on each piece of equipment, showing how it works by following the animated flow of contaminated soil and flue gases through the plant. This type of animation does not show or indicate the expert’s actual opinion in the case. It is a tutorial that educates the judge and jury as to how the plant works and will enable them to later understand the expert’s opinions.

- **Reconstruction** – Shows how the events at issue occurred sequentially and is the most complicated and controversial type of animation. It usually depicts the expert’s theory of what happened in the case. For example; in the case of the soil remediation plant mentioned previously, a reconstruction animation could be prepared to show why, in the expert’s opinion, the plant burned down. The flow of soil and hot gases, fuel usage, oxygen levels and temperatures could all be included and animated to show fluctuations over time and how all of the readings reached critical levels just before the fire broke out. It could also show where the fire started and how it spread throughout the plant. In short, this type of animation would permit the expert to give his or her theory of what happened, while the jurors watch the story visually unfold in front of them.

In order to use a reconstructive animation at trial, several pieces of information must be disclosed or exchanged with opposing counsel:

- Identity of both the expert who created the animation and the expert who will testify as to the accuracy of the information depicted in the animation.

- Identity of the hardware and software used to construct the animation.
- Documents and other sources of data included in the animation.
- Computer data files that make up the completed animation.

Computer animations are time consuming to create, and at the same time, are time consuming to impeach. It should be noted that sufficient pretrial disclosure is required for opposing counsel to have a fair chance to review the above-mentioned documentation and understand the animation.

The foundation for any computer animation is specific to the exhibit. The foundation for a “demonstration” type animation will be supplied by the expert who can testify that it is a fair and accurate representation of the operation, system, or relevant laws of physics or biology at issue. An animation that is a “reconstruction” will need both the expert whose opinion is being animated and the producer of the animation to lay a proper foundation.

Conclusion

The days are gone when courts took juries on expensive field trips to accident sites, crime scenes or local construction sites. Today, just about anything the judge and jury need to visually witness, can be accomplished in the court room through the use of exhibits, models and computer generated animations. It is essential for today’s litigators to have a clear grasp of demonstrative evidence and the rules of admissibility. An attorney must be prepared to lay adequate foundation for the offered exhibits by establishing their authenticity and relevance. The difference between winning and losing is not only the ability to transpose a complex theory or series of events into a simple visual, but more importantly the skill to ensure that the demonstrative exhibits are admitted as evidence.