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Technology and the Trial Attorney

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The Impact of Technology on Trial Presentations

Modern technology has had a major impact on the way that we do almost everything. It has changed the way that we entertain ourselves, shop, get information, meet people, socialize, do business, and maintain records. As attorneys, it has changed the way that we develop and present evidence as well as the manner in which we present and argue cases at trial. Attorneys have learned (or are learning) that judges and jurors will more likely remember a vivid visual presentation than a complex and dry presentation of the raw data in documentary or testimonial form. As a result, they have integrated visual presentation techniques into their cases. Such techniques do not replace percipient witness or expert testimony; they augment it. Computer graphics make the testimony more vivid, more interesting, more attention-grabbing, and more easily remembered.

Attorneys have used multimedia presentations in court to enhance witness testimony and argument for many years. The evolution of modern technology has provided new and better tools for use in such presentations and created a universe of judges and jurors who live in a multimedia world, respond favorably to such presentations, and expect to receive information that way. The failure to recognize those facts can put an attorney at a disadvantage.

These new and effective methods of presenting evidence have dropped in price to the point of affordability in most practices. An increasing number of attorneys have acquired and started to make frequent and better use of such technology in the courtroom. In the past, a lawyer might have presented eyewitness testimony about an accident, supplemented by a diagram of the scene. Today, the same lawyer may offer a professionally produced video presentation depicting the accident scene, the vehicles involved in the collision, and the collision itself (including appropriate sound effects). Eyewitness testimony would lay the foundation and authenticate the simulation as an accurate representation of the witness's observations. For an excellent example of how this technology can work in a trial, see D'Angelo, *The Snoop Doggy Dogg Trial: A Look at How Computer Animation Will Impact Litigation in the Next Century*, 32 USF L Rev 561, 564 (Spring 1999).

Studies have shown that many people are visual learners and that most have a visual component to their learning capacity, generally retaining more information when they receive it visually. Most people also absorb information faster when they receive it with a supportive visual component. Accordingly, augmenting oral argument and testimony with visual presentation techniques can facilitate the communication of information, resulting in judges and jurors who better understand the relevant facts in a shorter time period. Visual presentations can vividly show in a few minutes what one or more expert witnesses might require hours to explain (less comprehensibly) through their testimony. Some courts have become so convinced of the value of using such technology to expedite and streamline trial presentation that they have purchased the necessary equipment and make it available for attorneys to use at trial.

No matter what you think about these presentation techniques, anticipate that you will have to deal with them more and more in the near future. You have a simple choice: either learn to use this technology or concede a substantial advantage to opponents who can and do make effective use of it.

The Tools: Hardware

To get into the game, you must acquire some equipment (or at least be able to use the equipment, whether you purchase it, rent it, or the court provides it). The required hardware for an electronically based multimedia presentation making use of current technology generally consists of a computer, a projector, and a screen (or some other means of display). You might also want to have a document camera. It is also possible to use a videotape recorder or DVD player with a projector and screen to display a prepared multimedia presentation.

Computers

Most laptop computers built in the last several years have the capacity to run the required software and the other components necessary for creating and presenting a

multimedia presentation. If you decide to acquire a laptop for this purpose now, you should look for the following minimum specifications:

In the Windows world, you will want at least a Pentium III (or equivalent) processor (Pentium IV is better) running at no less than 1 GHz (you can get by with the 800+ MHz that some of the ultralight computers provide, but a faster processor generally works better). If you decide to opt for a laptop on the Macintosh platform, you will be happier with one of the G4 PowerBook laptops. Although the G3-powered iBooks can handle multimedia presentations, the extra processing power of the G4 will serve you better. No matter what computer you choose, increase the RAM (memory) to at least 500 MB.

Get the largest capacity hard drive you can (minimum 20 GB). Graphic images and particularly video presentations require significant storage space. You can augment the internal hard drive with an external drive. High capacity, light weight, small form hard drives have become readily available at reasonable prices (a few hundred dollars). You will want to get one for backup and emergency purposes anyway.

Get a computer that can read and write to CD ROM disks. A combination CD reader/writer and DVD player offers more flexibility. The new combination drives that read and write both CD ROM disks and DVD disks present the best option.

You will probably find a full-sized keyboard more comfortable than a smaller keyboard. Most full-sized laptops will come with an acceptable keyboard, but some of the super lightweight sub notebooks have reduced-sized keyboards. If you get a laptop that has a small keyboard, you can also get a separate full-sized keyboard to use when it is convenient to do so.

Choose a reasonably large (14" or 15") screen. A 12" screen will do the job, but you will find a larger screen more convenient. Get a laptop with an active as opposed to a passive display; active screens have better resolution and sharper images, making them easier on your eyes and better for viewing video presentations and animations. In terms of screen resolution, you will probably want an XGA monitor (1024 x 768 pixels). With SXGA or UXGA resolution, the characters will appear noticeably smaller, making it more difficult to use. An SVGA (800 x 600 pixels) will cost less and have larger characters, but you may not be satisfied with its resolution and sharpness.

Get a laptop with output ports that will accommodate a projector. Most of the laptops built in the last few years do, but check to be sure, since you may need an adapter. You will also want USB and/or FireWire ports for connectivity of other devices and accessories. Note that in the last several months, USB has upgraded to 2.0 and FireWire has also been released in a newer and faster version. USB 1.1 and FireWire 400 both work, but USB 2.0 and/or FireWire 800 offer significant speed improvements over their predecessors. Finding a laptop with USB 2.0 or FireWire 800 might be difficult in the short term, but they will soon replace their predecessors as standard equipment.

Get a laptop with communications capabilities. Several communications possibilities exist. Most laptops come with a built-in 56K modem, allowing for dial up access to the Internet and telecommunications. Many of the newer laptop computers come with (or can be modified to have) a network connector (usually an Ethernet port) that will let you physically connect to hard-wired networks in and out of your office. You may find wireless connectivity useful as well. An increasing number of laptops come with built-in wireless connectivity, but if the computer you choose doesn't have built-in wireless connectivity, you can usually add it (check before you buy). Some courts already have allowed providers to establish wireless access points in their courthouse and to sell wireless Internet access usable in the courtroom. That could be a definite benefit at trial, because it can establish communications both to your office and to the Internet for research information during the trial proceedings. If you plan to include wireless connectivity in your computer acquisition, the new 802.11(g) standard offers a substantial speed advantage over and backwards compatibility with the older and slower 802.11(b) standard at a nominal cost differential.

Amazing as it may seem, you can find laptops meeting the specifications outlined above for as little as $1200. You can pay over $3000, depending on the package you choose and the extras you desire. Plan on spending in the range of $1800-$2500 for your laptop.

Projectors

You can find very good projectors in the $1600-$3500 range. Projectors use one of two display technologies: DLP or LCD. "DLP" is an acronym for "Digital Light Processing," a data projection technology developed by Texas Instruments using a microprocessor to display bright, colorful images. Used primarily in portable and ultraportable projectors, the DLP chip is the size of a

postage stamp and contains millions of microscopic mirrors—one for each pixel—that flip on an axis, reflecting light through a color wheel to create an image. "LCD" is an acronym for "Liquid Crystal Display." Liquid crystals exist in an intermediate state between liquid and solid, and realign under electrical stimulation. Exceptionally slim and lightweight, they are ideal in word processor, computer, and TV displays.

Projectors using DLP technology generally cost less, weigh less, and have smaller footprints than equivalently powerful LCD projectors. Color purists may claim that LCD projectors deliver better color because traditionally an LCD projector appeared to present a brighter image than a DLP projector of the same lumen rating (lumens are a measurement of the amount of visible light energy that comes from a light source and is perceived by the eye).

Lower resolution (*e.g.*, SVGA (800 x 600 pixels) as compared to XGA (1024 x 768 pixels) projectors generally cost less than higher resolution projectors, and larger (12" x 15" x 4" or bigger compared to 10" x 10" x 2" or smaller) and heavier (5–12 pounds compared to 3–4.5 pounds) projectors generally cost less than smaller and lighter ones.

When choosing a projector, carefully consider the lighting conditions you anticipate encountering. A projector with 2500+ lumens should present well in most situations, including well-lighted courtrooms. Projectors with 1000+ lumens work acceptably in smaller and darkened rooms, but will not work well in a large brightly lighted room. Because one manufacturer's 2000 lumen unit may prove significantly brighter than another's, check out the image a projector displays in a variety of lighting conditions and different sized rooms before you buy the projector. You have an increasingly wide choice of solidly performing projectors from a variety of manufacturers. I have been particularly impressed by well-made, portable, and reasonably priced projector units that I have seen from HP/Compaq, Toshiba, Epson, Sony, BoxLight, and InFocus. I have also heard good reports about projectors by Canon and Texas Instruments.

Document Cameras

A document camera connects to a projector and allows you to project enlarged images of documents, transparencies, and three-dimensional objects from their original form onto a display screen. To project an enlarged image of the item, you place it under the camera lens and appropriately adjust the lens. The camera forms an image of the item and sends a signal to the projector, which, in turn, displays that image on the viewing screen. You can find full-featured excellent document cameras in the $2700 to $3500 range. Samsung, for example, offers a very portable 12-pound document camera in that range, which comes with a case and packs up to about 20" x 20" x 4". Toshiba offers another good choice for portability, a combination projector/document camera. Budget-conscious shoppers can find lower pricing by acquiring more basic units that lack some of the more advanced features (*e.g.,* smaller enlargement ratios, manual as opposed to automatic image focusing, image memory), but function quite adequately for most purposes. Elmo and AverVision have each recently released small, highly portable but quite serviceable, document cameras in the $1000 range. (See my comparative review of the AverVision and Elmo Units (Allen, *A Tale of Two Presenters,* 13 L Off Comp ___ (Aug./Sept. 2003) for more information on these two document cameras. You will also find my reviews of the Samsung and Toshiba units referenced above in the same issue of Law Office Computing.)

Digital Cameras

Digital still cameras record single image photographs that you can upload to the computer and project onto the screen; some of them will also record short video clips (in the range of 30 seconds). Digital video cameras record continuous video images that can be uploaded to and edited in the computer and shown as a movie. Many digital video cameras also can make still digital photographic images.

The convenience of having the ability to take short video clips with a digital still camera or still pictures with a digital movie camera should not induce you to try to meet both still and video needs with a single camera. Although many digital video cameras do a fine job with movies, and an adequate job with still pictures, the digital still cameras offer more and better features and generally produce better results on still images. Moreover, although many digital still image cameras make excellent photographs, when it comes to videos, none of them offer the feature set or the capacity of the movie cameras, even though they can produce a short video clip. Look at these cross-over features as a convenience to use on an occasional basis or in an emergency.

Digital cameras come in an increasingly wide variety of resolutions. In a digital camera, the sensor that receives the image contains photosensitive "pixels" (picture elements). The more pixels a sensor has, the higher the resolution. The higher the sensor's resolution, the higher the image resolution it produces. Higher resolution produces sharper pictures that show more detail and generally result in better projected and printed images. Today's consumer digital cameras go as high as 5 megapixels and professional digital cameras have already breached the 9-megapixel level. Generally, the more megapixels the camera produces, the more it costs.

Cameras over 5 megapixels have remained quite expensive, but the price continues to drop for high quality digital cameras. One manufacturer has already announced a consumer level 6-megapixel camera to be released later this year at a list price under $1000.

When looking at digital still and video cameras, you will want to get a camera with a zoom lens. That will allow you to better and more easily frame your images. Many digital cameras come with one (or both) of two different types of zooms: optical zoom and digital zoom. Optical zooms increase or decrease the size of the entire image through placement of actual lens elements. Optical zooms require additional lens elements, and generally result in a larger and heavier camera (there are some exceptions that are, quite literally, done with mirrors). Digital zooms take a portion of the image "seen" by the optical lens and magnify that portion of the image by expanding the size of the pixels it contains; in the process, they degrade (often significantly) the quality of the image. Digital zooms can offer significant magnification with no noticeable increase in camera size or weight because the process is done by manipulating whatever optical image the camera has acquired. Many of the better digital cameras combine both optical and digital zooms, giving you the flexibility of using greater magnification when you want it, without giving up the ability to get a tightly framed high quality image using only the optical zoom. (For more information on choosing a digital camera, see Allen, *The Road Warrior: Buying a Digital Camera,* 20 GPSolo (ABA Solo and Small Firm Section) (June 2003).

When looking at digital movie cameras, you will also want to look for a camera with an image stabilization system to prevent the shaking that you often see in hand-held videos.

Scanners

Scanners allow you to convert documents and film photographs into electronic images that the computer can use and project. You can find scanners in all sorts of configurations and in a wide array of prices. When it comes to scanners, basic considerations include the resolution (major impact on the quality of the image produced), whether it operates on automatic or manual document feed, whether it's sheet fed or has a flatbed configuration, and the speed and size of accepted documents.

If you work with large quantities of documents, opt for a unit with an automatic document feed ("ADF"). Scanners with automatic document feeds generally offer a significantly higher production speed than single-sheet scanners. Until recently, getting an ADF scanner meant getting a heavy-duty scanner (processing about 20–50 pages per minute) and incurring a cost in the $2500+

range. Within the last few years, some manufacturers have started producing lower-priced, lighter duty ADF scanners. For example, Visioneer, a well-known scanner manufacturer with an excellent reputation for making portable and light to medium duty desktop scanners, has a series of very good, very reasonably priced ($400-$900) lighter duty scanners with a lower speed ADF (8–12 pages per minute). The Visioneer ADF scanners generally have resolutions of 600 x 1200 dpi (dots per inch). Visioneer's new XP 450 PDF unit has a very small footprint, sells for $699, comes with optical character recognition software, and has an ADF that processes documents at up to 20 pages per minute in black and white mode. The XP 450 also has the distinction of being one of the first USB 2.0 scanners to reach the market, allowing for a faster connection between the scanner and the computer.

The Tools: Software

Software packages offer a wide variety of features and capabilities to assist you in preparing multimedia presentations. Your needs, budget, computer skills, and the operating system under which your computer operates (Windows or Macintosh) will dictate the parameters of your options.

Legal-Specific Trial Presentation Software

If you choose to work on the Windows platform and want to use multimedia in large-quantity documents cases or if you want to use video depositions, consider buying a trial presentation program like Trial Director or Sanction II. These programs allow you to synchronize and present video and audio from a videotaped deposition with text from the reporter's transcript appearing on the screen as the picture of the witness appears speaking the words. These programs also allow you to stage documents for presentation and to highlight portions of the documents during the presentation.

Although you may know or learn how to use Trial Director or Sanction II yourself, in a complex matter involving numerous documents that you will need to locate and display, you will want (need) help to ensure that the technological issues do not distract you from the substance of the case. Technology has a tendency to absorb your attention and can distract your concentration and focus from other things. Remember that you function as the trial attorney, not the technology guru! Avoid the tendency of allowing the means to become an end in itself.

We have not located any current versions of legal-specific trial presentation programs on the Macintosh platform, but have learned of some currently under development. Many attorneys using Macintosh computers

have found ways to use those computers to control documents in cases through the use of extremely powerful and flexible database programs such as FileMaker (available for both Macintosh and Windows platforms) and PowerPoint for presentation. Some have used QuickTime to synchronize video depositions for presentation.

Keeping It Simple—Presentation Software

PowerPoint (Macintosh and Windows) is the most commonly used software for multimedia presentations. You can learn to use PowerPoint easily and quickly. It allows you to create simple but impressive presentations and contains enough features to permit you to build more sophisticated presentations that incorporate text, video, still pictures, and other forms of graphics including charts, graphs, timelines, tables, and animations. PowerPoint works extremely well on both the Mac OS and Windows platforms. PowerPoint can be purchased separately, but you will find it more cost-effective to buy it as part of the Microsoft Office suite. Corel's Presentation software (available only on Windows in the WordPerfect Office Suite) offers similar functionality. Although Corel's Presentation nominally has the ability to save to a PowerPoint format, that feature has not proven reliable, posing compatibility issues. A similar, but less-featured program comes as part of the Think Free Office Suite. Apple's newly released Keynote provides a very robust and easy to use presentation program available only on the Macintosh platform. It also will save to a PowerPoint format, but, in the process, you can lose some of the features that Keynote can build into your presentation.

You may want to use PowerPoint (or another similar program) to create slides to show points for use in connection with your opening statements and closing arguments. PowerPoint allows you to use varying degrees of sophistication in the construction of your presentation. The program allows you to add elements to the slide for presentation purposes, so that you can have several points on a slide that display one at a time while you talk; you can set the display changes to occur automatically (in a timed sequence) or manually, at your command.

PowerPoint's versatility allows you to use it as a general presentation system. You can build a simple slide that displays a sentence or a paragraph extracted from a document. You can also build slides containing clip art, photographs, document images, and even video clips. You may find some of your expert witnesses developing PowerPoint presentations to facilitate their testimony. For an excellent education on how to use PowerPoint, see Siemer & Rothschild, *PowerPoint 2002 for Litigators,* Nat'l Inst. for Trial Advocacy (NITA) 2002. One cautionary comment regarding PowerPoint: less beats more. The program makes it easy to incorporate special effects, sound effects, and animations into the presentation slides. Resist the temptation to show off how cleverly you can incorporate such goodies; they often distract to the point that they detract from the presentation's impact.

Other Software

A variety of programs can help you create images to supplement your argument or to help a witness make testimony more easily understood. Some software facilitates making drawings (*e.g.,* of the accident scene), timelines, charts, and computer models of three-dimensional objects.

Programs such as Sketchup, Adobe Illustrator Canvas, and Corel Draw (all available on both the Macintosh and Windows platforms), Carrara Studio and 3D Basics, and a variety of CAD programs give you the ability to create extremely detailed images that you can incorporate into your presentation. These images may show, *e.g.,* the scene of an event, such as an accident or a crime, or the details of the construction of a failed part of a building or an automobile. In short, you can use these programs to depict any scene or object that you wish to display through something other than an actual photograph.

A number of programs also facilitate making computer animations. As a general rule, this work should be done by expert witnesses, not by attorneys; however, attorneys should have some familiarity with such programs to facilitate their understanding of their expert's work and their ability to attack work done by the opposition's experts.

Many programs permit enhancement and improvement of digital photographs. Examples of such software include Adobe Photoshop and Asiva Photo (Macintosh and Windows) and iPhoto (Macintosh only). Some enhancements (such as cropping and enlarging) may be useful and appropriate for trial presentation purposes, but this genre of software includes certain capabilities that also pose potential problems. For example, some of these programs allow modifications of graphic images that can dramatically change the way an image appears, using techniques to achieve results completely acceptable and appropriate (perhaps even desirable) in the worlds of art and photography, but most charitably described as inappropriate in a courtroom.

Now That You've Got It, How Are You Going to Get It In?

Evidence is rule-based, but the rules evolve over time in response to changing practices and technological advances. Often, that evolution occurs when a new technology presents a new challenge and courts extend the pertinent rule by application of its underlying policies

to the new technology. The remainder of this article explores some of the considerations impacting that process.

Electronically Presented Evidence

Virtually any document can be presented electronically by placing the original document under a document camera, which takes a picture of the document and transmits that image to a projector for display on the viewing screen. When a witness produces a document in court in its original form, we have a clear idea of the process to follow in admitting the document into evidence. The fact that that we will place the document under a document camera and present it electronically by projecting it onto a viewing screen does not alter or require any change to the admission process. Because the court clerk will mark the hard copy ("original") of the document and the judge will admit that "original" document into evidence, the analysis with respect to electronically presented documents should not differ from traditional admissibility considerations, *e.g.,* relevance, hearsay (and applicable exceptions), proper authentication and foundation, privilege, and possible prejudicial effect as opposed to probative value.

If the document is a photographic image or a three-dimensional object with direct evidentiary value (*e.g.*, a bullet removed from the victim's body), look closely at the original evidence and at the projected image to determine whether any modification has occurred in the projection process that requires special consideration or even a challenge to the use. In most cases, however, you should not have a problem with such projections.

Electronically Produced Evidence

Electronically produced evidence either originates as digital material (such as a photograph taken with a digital camera and uploaded into a computer) or is produced in court only in a digital format, *e.g.,* a photographic print scanned into a digital image for the computer, when the print itself does not come before the court. Although theoretically the analysis and process for producing such evidence should proceed just as it would for an electronically presented document, additional factors come into play and require consideration. Remember, you can easily compare the electronic image of a document presented in its original form to the original document, but you have nothing to compare to a document produced exclusively in a digital format. Because of that fact, a proper foundation for the introduction of the image should address the integrity of the digital file being presented.

Significantly, in a world in which many (most) businesses keep their accounting (and often other) records on computers, Evid C §255 makes any "printout or other output readable by sight, shown to reflect the data accurately" from an original.

Digital Pictures and Scanned-in Prints

In the case of a digital picture, a complete foundation should include (1) testimony of the file's custodian to the effect that the original file was maintained intact and unaltered and (2) testimony from the photographer or another competent witness that the presented image accurately reflects the original scene that served as the photographer's subject. In the case of a digital image of a text document, the foundation should include testimony about the file's integrity and testimony from the text's author that the file accurately reflects what the author created (or, in the event of a dispute over versions of a document, testimony from the recipient that the file received remained intact and unaltered).

A photographic print scanned into a digital image and then produced in court is evidence that did not originate as digital information, but has been converted to a digital format. Historically, the Best Evidence Rule required the production of the original to prove the content of a writing, recording, or photograph. In 1998, however, California replaced its Best Evidence Rule with language that better reflects technological advances. Under Evid C §260, a photographic or electronic image of a photograph or a document would appear to qualify as a "duplicate."

In reality, however, a scanned image often differs from an original in some respects. The scanning process can result in color shifts or other minor variations (so, for that matter, can the projection or presentation process). If the scanned image is of a black and white text document (such as a contract) offered for the content of the text, a color shift should make no difference. Conversely, a color shift in a scanned image of a color photograph that materially alters the impact or significance of the image could create a completely misleading impression or have a prejudicial effect sufficient to counter its probative value.

Evaluating the Electronic File

Although we employ a fairly traditional analysis to determine the required foundation for electronically produced evidence, we must include the integrity of the electronic file in the authentication process. See Evid C §§1400–1402. The failure to establish the authenticity and integrity of the electronic file presents a potential basis for objection.

In evaluating electronic files, recognize the difference between a scanned image of a text document (a graphic image) and a scanned image converted to a text document through optical character recognition ("OCR"). Through the OCR process, the computer deciphers the graphic

image and converts it to a word-processing format. OCR rarely works with 100-percent accuracy and generally requires human intervention in the form of proofreading and correction. A scanned image processed through OCR demands close scrutiny to ensure that the image accurately replicates the original.

Yet another consideration arises in connection with computer-based recordkeeping systems. Unlike a paper and ink ledger, it may not be possible to see (or even determine) that a record has been modified, but those records will generally come under the business records exception to the hearsay rule. Evid C §§1270–1271. Any printout of a report of those records or a projection from the computer to a viewing screen would constitute an original document. Evid C §255. Accordingly, you should present testimony regarding the integrity of the file and its maintenance.

The Altered Image

Available software makes it easy to modify digital images with relatively little effort or expertise. Although some modifications may appear benign, others can sometimes prove critical. For example, a photograph of a person's face taken at close range with flash often results in a condition called "red-eye"(the reflection of the flash in the subject's eyes makes the subject's eyes glow red in the image). Software can "repair" red-eye easily by changing pixels (picture elements) in the eye from red to another color. Ordinarily that is not a problem. But what if the eye color changes to one different from the subject's true eye color? What if the subject is a criminal defendant and an eyewitness identified (or failed to identify) the defendant's altered photograph?

Some modifications to digital files can prove even more invidious. One can alter a digital image to increase or reduce lighting, *e.g.*, to create the impression of things being easier or more difficult to see, to effectively change night to day, to change the seasons, to add or remove an element of the image, or to change perspective. The existence and easy facility of this technology may not make it more likely that people will alter images offered into evidence, but we must consider that possibility. As greater numbers of our population learn computer skills and experiment with digital photography, the odds increase that, in any given jury, one or more jurors will have a good idea of how easy one can alter digital images. That may cause those jurors to view such images with some suspicion, especially if accompanied by conflicting testimony. When you offer a digital image, make it a point to lay the foundation of the file's integrity; that may affect the weight accorded to a digital image and even affect its admissibility.

Computer-Generated Demonstrative Evidence

When we think of computer-generated evidence, we often think of computer animations and other types of computer-generated graphics, such as charts or diagrams. Graphic experts can use the factual information presented in documentary evidence and testimony to create computer-generated reenactments of accidents, simple graphic reproductions of complicated factual situations, graphic representations to help the fact finder comprehend large quantities of information, and simple presentation outlines that help the fact finder focus during an opening statement or closing argument. A computer-generated animation or a graphic offered to illustrate testimony does not constitute evidence in the traditional sense of the term. Properly created, it derives from direct or hard evidence and helps clarify that evidence. We have come to refer to such offerings as "demonstrative evidence."

Demonstrative evidence differs from direct evidence in that it comes into existence after the fact, through the efforts of attorneys, parties, experts, and consultants. Demonstrative evidence clarifies or illustrates facts otherwise introduced into evidence, but has no independent probative value. Most legal experts appear to agree with the use and the propriety of demonstrative evidence. That comes as no surprise, given that we ask jurors to retain, absorb, and comprehend complex evidence and then apply to it the legal principals announced by the judge. See Sudman, *The Jury Trial: History, Jury Selection and the Use of Demonstrative Evidence,* 1 J Legal Advoc & Prac 172, 178; see also Lovett, *Business Watch in Focus: Juries and Evidence, Demonstrative Evidence Displays a Broader Appeal,* 19 Nat'l LJ 112 (1996).

Properly prepared demonstrative evidence can assist both the judge and the jury to understand the case, keep them focused, and help them reach a correct conclusion, but demonstrative evidence always carries the danger that it may not fairly or accurately represent the facts on which it relies. Issues of perspective in drawings and pictures, and relative size and location in charts and graphs, become important to an attorney's decision about whether to object to a demonstrative offering and to a judge's ruling on that objection. Although judges appear willing to admit demonstrative evidence to supplement direct evidence to clarify information and help the judge or jury comprehend it, they must carefully examine a demonstrative offering to determine whether to sustain an objection under Evid C §352.

Conclusion

Technology has found a home in the courtroom. More and more attorneys will employ it in the presentation of trials and the Rules of Evidence will continue to evolve to

meet the challenges it presents. Attorneys must familiarize themselves with this technology and learn to use and deal with it effectively or concede a substantial advantage to opposing attorneys who have learned to do so.