

Animation— Not Just Entertainment

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by
Joan Fithian Tatge

We first experienced it through Saturday morning cartoons or perhaps, as an animated feature film. Whether it’s a hand-crafted animated classic Bugs Bunny cartoon or *Snow White and the Seven Dwarfs*, we are all aware of animation’s entertainment value. But what about the value of animation as a scientific tool?

One of the earliest scientific uses of animation was in the design of flight simulators. Today, animation and other visual technologies are used in architectural design, city planning, advertising, medicine and transportation.

“There are few disciplines where visualization technologies couldn’t be applied,” says Terry Larsen, a Texas Transportation Institute research scientist and professor in Texas A & M University’s College of Architecture.

Currently, Larsen is exploring the potential applications for three-dimensional visualization in transportation. He recently completed a project researching the Texas Department of Transportation’s (Tx DOT) need for visualization technologies. The study reinforced Larsen’s belief that the public demands visual messages, and if transportation agencies are to be effective, they’ll have to meet those demands.

VISUALIZATION TECHNOLOGY

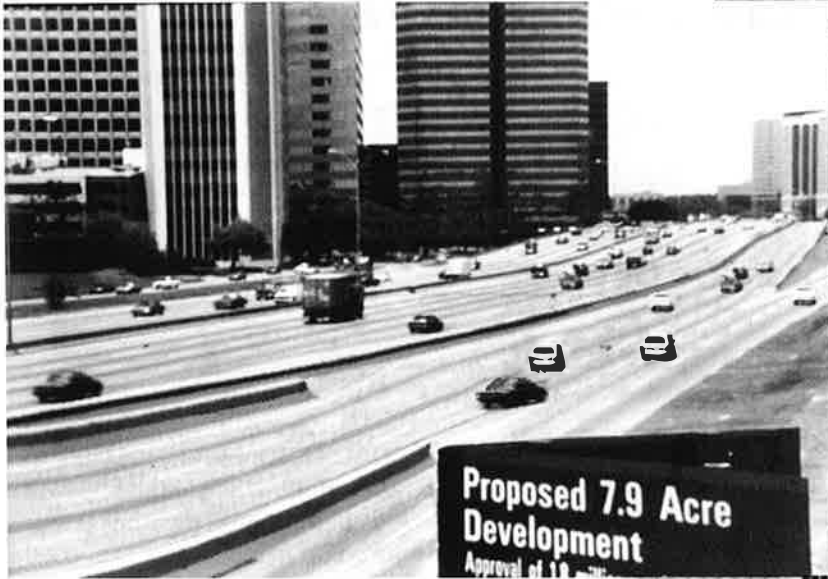
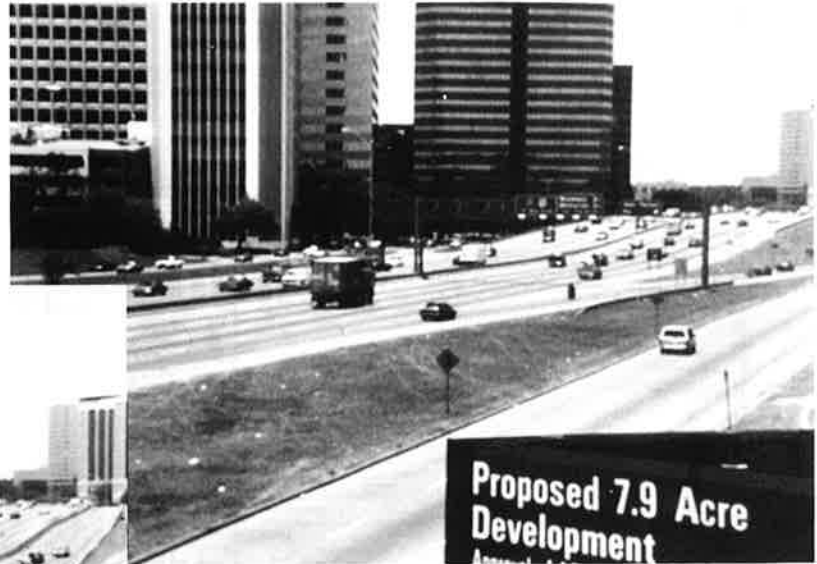
Visualization helps planners view a new idea before implementing it. For transportation, it could be a proposed highway improvement such as a new on-ramp. Visualization can address public concerns and answer transportation planners’ questions before any money is spent to build a new highway or alter a roadway. Video has become a standard medium for recording history. For transportation planners, video records how traffic flows through an intersection or along a section of highway.

Other visual techniques—image paint, video overlay and computer animation—provide a means of developing a view of what an intersection or highway will look like in the future. Image paint provides a single still image that combines proposed design elements with an existing photographic background. Video overlay is similar to image paint except that a moving video sequence is used as the background. Computer animation is a completely synthetic image based on a mathematical description of all components in the scene.

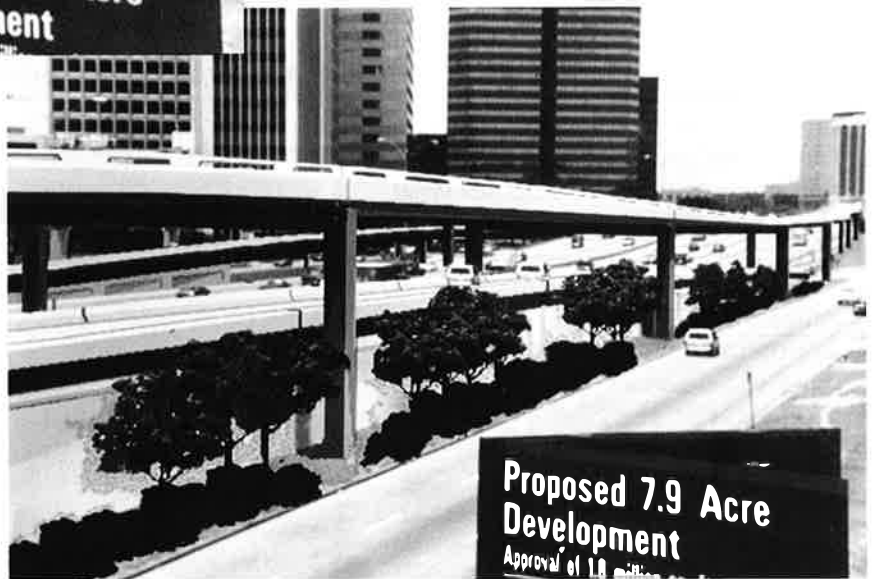
WHICH TECHNIQUE IS BEST?

The needs for visual communication tools in transportation are as varied as the tools themselves. In his

original site without animation ➤



➤ *ramp added using animation technology*



*alternate animated solution:
an elevated ramp* ➤

study, Larsen found image paint to be the simplest and most economical application of visualization, but computer animation has more potential than the other techniques. "The public's visual expectations are based on what they see on television and in movie theaters," Larsen says. "Our credibility relies on our ability to present visual images of the same realistic quality."

That's expensive. Larsen is currently looking for ways to make computer animation more cost-effective for transportation agencies. In the meantime, a combination of animation and the other techniques can be used by transportation agencies for litigation, aesthetics, design and public affairs.

As part of his research, Larsen interviewed TxDOT district engineers to see what they felt were the potential appli-

cations for visualization technologies. He found an increasing public demand for aesthetically pleasing highway changes. More and more, TxDOT and other transportation agencies are being required to present their designs in court before proceeding with construction. TxDOT's public affairs officers need visual tools in order to gain television air time. Highway designers expressed a need to test complicated de-

signs for proper lighting, bridge design or construction routes in a three-dimensional visual format before construction.

"There is a need or desire to see the finished project," Larsen said. "Before visualization you really had to build the highway or bridge to judge whether or not you did it right. Visualization lets us see exactly what the end product will look like." □

Joan Fithian Tatge is a technical writer and publications editor for the Texas Transportation Institute, a transportation research agency based at Texas A & M University.

CASE STUDY: O'KELLEY V. STATE OF TEXAS

The potential for visualization as a communication tool was demonstrated in the condemnation case for the O'Kelley property in Houston, Texas. The state offered Lamar Bernice O'Kelley \$25,000 for the acquisition of her commercial property. O'Kelley rejected that amount arguing that the direct connectors to be constructed would cause loss of visibility of the site, and asked for \$100,000. A judge assigned three commissioners to hear the condemnation case. The commission granted O'Kelley \$65,000.

Texas objected, and the case went to trial by jury. This time, O'Kelley asked for \$150,000, and Texas held tight to their \$25,000 offer.

The state attorney general's office entered the courtroom armed with the power of animation. As one aspect of their case, the state presented an animated video produced by the Texas Transportation Institute. It demonstrated that the proposed freeway changes would not impair visibility of the property from the freeway, the main lanes, the frontage road or the direct connectors. The jury deliberated and came in exactly on the original value, \$25,000.

The animated video helped the jury come to the conclusion that the initial appraisal was indeed valid. And it saved Texas \$125,000.

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