Forensic Animation And Forensic Multimedia

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The 'Weiss-McGrath Report' found "a 100 percent increase in juror retention of visual over oral presentations and a 650 percent increase in juror retention of combined visual and oral presentations over oral presentations alone."

The Animation Process - What is it? How do we create a custom animation to fit your needs? What is the process and what are the possibilities?

Process and Possibilities

The Animation Process

Computer animation is a particular kind of animation technology. It is done in a technical manner using computers and not the traditional cell animation method used in cartoons where each image is hand drawn and colored. In computer animation, a model is created within a computer generated 3D space. It is given material characteristics (color, shade / glass / plastic/ metal,

etc), lights are placed in this virtual space and virtual camera are created to view the scene. Usually there is a series of different models created, an environment model and "actors " (characters, text, cars, ...) who will move around within this space. The animator then sets the amount of time that the animation will cover and at certain designated times the "actors" are moved to a new post ion. These positions are called "key frames". The computer then creates the the "in betweens" for the time between the key frames. The computer is then used to "render" each of the frames into image files at 30 images per second and the animation is previewed. Invariably, changes are required and a series of previews are created as the animation is "tweaked" to perfection. When the final preview has been approved, the computer is instructed to create the final animation. It is then "rendered" to a series of final images that are transferred to video either as a stand alone piece or as segment of an edited video. This process is the same for all 3D computer animations whether its used for Forensic animation or to create "Jurassic Park"
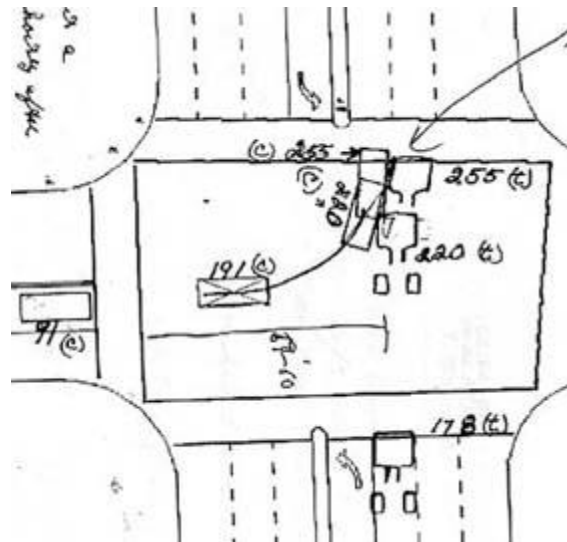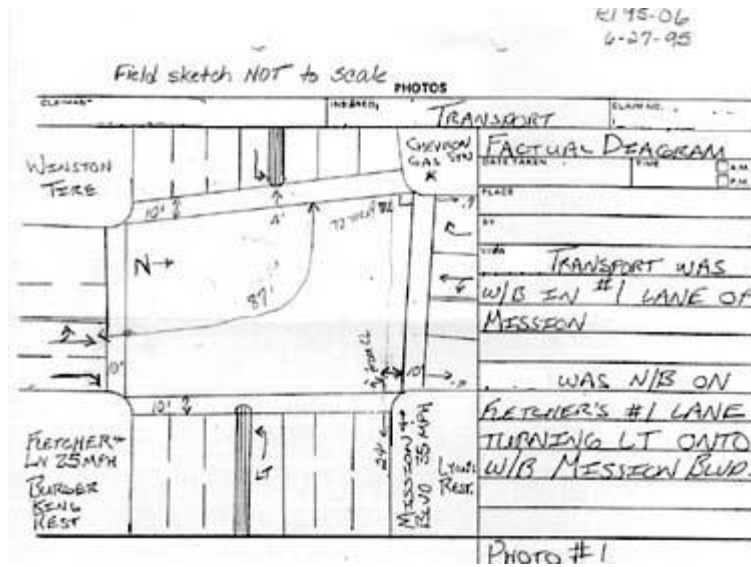
The Forensic Animation Process

What turns an animation into a forensic animation. is the "The forensic Process ". This process depends on accuracy. All objects must obey the laws of physics and conform to a set of facts that are determined by a reconstructionist or forensic expert. The Forensic process for accident reconstruction for example, starts with the accident investigation. This includes all police reports, witness statements, photographs, vehicle inspections, accident scene data, and medical reports if necessary. It is this information which forms the basis on which an accident reconstructionist will recreate the accident.

From this data a recreation is created that fits all the existing facts. A forensic expert will calculate the placement of vehicles before, during, and after an accident and come up with data representing the movement of all the players in the final animation.

Field sketch NOT to scale

TRANSPORT FACTUAL DIAGRAM

WINSTON TIRE

FLETCHER LN 25 MPH
BURGER KING REST

TRANSPORT WAS W/B IN #1 LANE OF MISSION

WAS N/B ON FLETCHER'S #1 LANE TURNING LT ONTO W/B MISSION BLVD.

PHOTO #1

This data is entered into a computer running a motor vehicle accident reconstruction program. The computer generates information for each of the vehicles. This information correlates to each 1/30th of a second (one video frame) for the duration of the animation per vehicle.

In summary this forensic process is:

- See all vehicles involved in an accident, assess their physical condition, and measure impact damage and location
- Do a site survey and complete measurement of the scene.
- View photographs,if available taken at the accident scene and analyze physical evidence if it is still available
- Read police reports and witness statements.
- Review all other data available
- Transform all data into a logical and accurate scenario
- Give Data to the animator.

The animator takes this information, builds models of the environment and vehicles and visually creates an animation conform to the forensic data. The animation is reviewed by the reconstructionsit for accuracy and approved to be used as a corroborative exhibit.

Factors that determine the Cost of Animation

The cost of an animation depends upon five things:

- The amount of preparation necessary by the reconstructionist and animator
- The level of detail in the animation,
- The number of scenarios to be created (different animations).
- The amount of animator time required to complete the animation.
- The total amount of computer time to create the final animations.

Amount of Preparation Time

Once a case is accepted both the forensic expert and animator immediately start researching the details. The forensic expert begins to develop data. based in the accumulated facts and the animator through photographs , police reports and site surveys begins modeling the environment in the computer. If specific vehicles are required, they are either modeled or purchased and the pieces of the puzzle are put together to create an overall picture that is factually accurate.

Level of Necessary Detail

The degree of detail in an animation can impact greatly on its cost. The greater the detail, the more hours it takes to create, the greater the cost. This is true for elements used in creating the environment as will as any of the objects moving within it. There are ways of keeping the cost down such as the use of "generic" objects or vehicles rather then having to purchase or take the time to model more custom ones. Often forensic recreations of accidents use a combination of generic and custom models. Sometimes this works well and sometimes it is important to match the look and feel EXACTLY. We will work closely with you to keep the costs down.

The Animation Process

The creation of Computer Animation, especially forensic animation, takes a great deal of time. This is composed of :

- Re-production time necessary to gather the facts necessary to create a good visualization.
- Modeling of the environment with all the movable objects in place.
- Creating the correct lighting and material for the scene.
- Animation of each of the "objects"
- Preview animation and tweaking.
- Approval and final render.

An Example of Scenarios:

Scenario #1: One truck and one car. The car "jumps" the red light causing the accident.

Scenario #2: One truck, three cars and one van. The car to the right of the blue car, makes a right turn. the blue car "jumps" the red light and turns left into the path of the truck causing the accident. the truck can not avoid the accident due to the van in the net lane.

Scenario #3: One truck, one can. All vehicles away the traffic lights resulting in NO accident.

Examples of Camera Angle Change:

Camera angle #1- Front view

Camera angle #2- Top view

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About the Author: Stuart Gold is the owner and director of Shadow and Light Productions. He currently has more than 12 years of experience in the forensics multimedia industry. For more information, please visit the Shadow and Light web site.