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Commercials

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Commercials:

HOW THEY CHANGED FILM PRODUCTION FOREVER

Commercials grew from their beginning as annoying viewer interruptions to become a pop culture creative medium all their own

...and changed film forever in the process.

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Steve Wright, author of the book "Digital Compositing for Film & Video," looks at some of his favorite commercials. With more than twenty years experience creating broadcast television commercials and feature films, Steve's opinions may surprise you or help you recall some of your own favorites. Steve's credits include over 70 broadcast commercials and 50 feature films. Steve began his career with the legendary Robert Abel & Associates, pioneers of many techniques that birthed modern effects and production methods. Steve has also served as Technical Director at Kodak's famed Cinesite Hollywood studios.



While digital compositing is what I do, I started out as a CGI artist working on television commercials. For me, it all started on Super Bowl Sunday, 1984 — “Super Sunday,” the showcase for all cool new commercials. A spot came on with a sexy robot pitching the virtues of packaging food in cans for the Canned Food Information Council (a spot entitled “Brilliance,” created by Ketcham Advertising). It blew me away!

Having a nodding acquaintance with CGI at the time, what impressed me was the incredibly svelte motion of the robot. It was smooth, graceful, sensual — and totally beyond the capability of the stiff robotic motion of early CGI key-frame technology.

I suddenly realized that television commercials like this were pushing the envelope of early CGI development, and I just had to be a part of it. Within six months I was working at Robert Abel and Associates in Hollywood, the award-winning television commercial production company that produced Brilliance, the Super Bowl’s first computer-generated 30-second spot.

I then found out the secret to the sexy robot. Remember, this was years before motion capture. They painted some spots on an aspiring actress, sat her on a swivel chair, and filmed her from two angles simultaneously so they could match the robot’s moves to the actress’s from these two views. It was the world’s

first eye-match motion capture!

A small fortune was spent developing this ground-breaking spot, and it played exactly once.

The sexy robot is a perfect example of how television commercials have played a critical early role in propelling CGI technology forward. The brilliant creative director at the Ketcham agency who hired Robert Abel had a grand vision, but not the foggiest idea of how to produce it. However, they did have lots of money — often, the real stuff of progress.

FROM THE GROUND UP

In 1985 you didn’t purchase CGI software, you wrote it. Abel had a software department with some 25 programmers and they pushed the envelope of CGI software for each and every spot they worked on.

Some of his programming team later went on to found Wavefront Technologies, the first company to sell off-the-shelf 3D software for the production world. Wavefront was acquired by Silicon Graphics in 1994, and integrated with code from a former competitor, becoming Alias|Wavefront in the process.

All of the early players in the CGI game were producing spots for broadcast. They offered a unique juxtaposition of forces, as illustrated by the sexy robot story. Television commercials had very high production budgets, as much as a million dollars for a 30 second spot — outrageous at the time — combined

with an insatiable thirst for ever more stunning visuals. CGI was the new thing that could deliver these stunning visuals.

But why would anybody spend \$1 million for a television commercial? Because they are going to spend \$25 million or more on the air time! Who in their right mind would want to lower the commercial’s impact to save a few bucks?

These outrageous costs subsidized a large software development department that wrote the new software required for each commercial. The previously written software was developed just enough to produce the last commercial, so it always needed to be enhanced for the next.

There were two problems with this approach: first, it took months to produce a 30 second spot; second, the software was not general purpose. Software was written specifically for a single commercial, and was therefore limited and incomplete.

These two issues prevented early CGI from being useful for feature films and kept it relegated to the rarified atmosphere of high-end commercials.

SUPERCOMPUTERS

There was another major obstacle to feature film work, and that was the rendering time. At Abel’s, the computer room harbored two “super-mini” computers, each with a 1 Megahertz CPU, with 10 megabytes



Above and below: Images taken from one of the earliest CGI commercials, “Brilliance” by Ketcham Advertising, 1984.



of RAM and a 500 megabyte hard drive. Wow!

The video resolution images were rendered in upwards of one hour per frame. They were then sent to a RasterTech frame buffer over Ethernet for viewing on a monitor.

To lay off to videotape, a 1" reel-to-reel videotape machine was rented for the weekend. It was connected to a Lyon-Lamb animation controller that allowed it to lay down one frame of video at a time.

Since videotape has to be moving to lay down a frame, the Lyon-Lamb controller commanded the tape deck to back up, pre-roll, then do an insert edit for each frame, one frame at a time, for the 900 frames of a 30 second spot. It took almost three hours to lay a 30 second spot off to tape.

Today, of course, the "Brilliance" spot could be done by a part-time high-school student on a desktop computer in a week.

FROM TV COMMERCIALS TO THE MOVIE SCREEN

There were some early efforts to use CGI for feature films, but these were mostly brief "cameo" appearances. One of the earliest was the title sequence for "The Black Hole" (1979, Disney) — done by Robert Abel — featuring a wild ride down the throat of a green wireframe black hole.

Early 3D animations used vectors instead of bit-mapped graphics to save rendering time. The Evans and Sutherland PS-300 vector graphics display could play back a wireframe animation in real time, with one limitation: the monitor was monochrome.

To make *colored* vector graphics, the vectors were separated into color groups — all the red vectors in this file, the green vectors in that file, etc. Then a 35mm camera was parked in front of the PS-300 monitor to film off of it. Add a color wheel with colored gels, and you're ready to go.

Start at the beginning of the shot, put up the vectors that are to be red, rotate the red gel in front of the camera lens, then shoot the entire shot one frame at a time.

When done, back the film up to the first frame, call up the green vectors and the green gel, and repeat.



The Last Starfighter, ©1984 Lorimar Film Entertainment

It worked surprisingly well and several color vector graphic projects were done this way until raster graphics became more practical.

The first major use of CGI in a feature film was "The Last Starfighter" (1984) by Digital Productions. To render the high resolution images required by a feature film in a reasonable amount of time, Digital Productions used a Cray X-MP supercomputer (cost: \$15 million) and used only phong shading — no texture maps. The resulting shiny metal appearance worked well for the shots of spaceships in outer space, which was the only place it was used. It's a marvelous example of working within the limits of the technology.

Other cameos followed. Examples that come to mind are the stained glass knight in "Young Sherlock Holmes" (1985, Lucasfilm), a brief morph shot in "Willow" (1988, Lucasfilm), and the water weenie in "The Abyss" (1989, ILM).

BULLET-TIME: AHEAD OF ITS TIME

Around 1994 I had another "bolt upright" moment. In this spot a man was leisurely hosing off the side of his car, when suddenly the scene froze and the camera whipped around to the front of the car.

What I couldn't figure out was how could the water
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A few of the images and commercials created by Robert Abel and Associates at the dawn of CGI

freeze in mid-air like that? If it was CGI, how could it match the camera move? This was years before motion tracking.

Little did I know it at the time but I had just been dazzled by my first “bullet-time” shot, years before *The Matrix* made it famous.

One thing to keep in mind, however. I was jolted by the mysterious technology used to create the shot due to my background in digital effects, but the average viewer does not know a pixel from a hockey puck. It’s not the dazzling technology that makes great spots, it’s great *design*.

If the sight of the water frozen in mid-air fascinated the viewer, then the design was a success. If the viewer shrugs and moves on, the technology was wasted. Remember: technology alone does not intrigue.

CHEAPER. FASTER. HIGHER RESOLUTION.

Starting in the early ‘90s with “*Terminator 2*” (1991, ILM), “*Jurassic Park*” (1993, ILM) and others, photorealistic CGI was becoming good enough, fast enough, and (relatively) cheap enough to begin to be used in the high resolution long-form of feature films.

At this point the feature film industry took over



Some of Steve’s early 3D CGI imagery

as the driving force advancing CGI development. There were now huge software departments with a hundred programmers to expand the software and support the production of big-budget feature films.

Cheaper and faster computers became available that were hurled at the all-important rendering time problem. Of course, as computer power has expanded logarithmically, the rendering requirements have expanded exponentially — hair, fur, cloth and water sims, global illumination models, high dynamic range images, and massive particle systems.

So we still have rendering times of several hours per frame for feature film, even with these massive increases in computing power. It seems that no matter how advanced the technology becomes, there are always wild-eyed art directors out there with a grand vision and no idea how to do it. Bless them. ■



DISNEY’S “TRON”

Changing effects technology forever, while derailing it — temporarily

Tron was a feature film with 15 *whole* minutes of real CGI. At last, we had made it to the big time! Or so we thought. To produce 15 minutes of feature film resolution CGI in those days, the project was divided between four studios. The forté of **Robert Abel** was color vector animation, so we got all of that. **Triple-I** had the only production-ready polygonal modeler on the planet, so they got the Solar Sailer, Master Control, and his polygon-rich ship. **MAGI** was a whiz at smoothly animating geometric primitives, so they got the Light Cycles, Tanks, and Recognizers, all designed to have simple shapes but snappy animation. Together, Triple-I and MAGI did most of the power-lifting for *Tron*. Digital Effects did their bit by contributing the “bit” character.

What was so exciting back then was that CGI was young, inexperienced, and experimental, and now “our stuff” had made it to the movies. You could see some pretty high quality CGI in high-end television spots, but these were short and tiny — and they only showed on the small screen. The feeling back then was that CGI had finally come of age with *Tron*. But, alas, its 15 minutes

of fame in *Tron* was a herculean effort, a financial over-run, and it returned a disappointing box-office to show for it all. This was a triple-whammy that left Disney feeling burned by the whole process — and it actually set the industry back a few years. It took another decade for CGI to establish itself as the audience pleasing tool for mind-blowing visual effects in major Hollywood films. But hey, there were always more commercials to do in the meantime. Bless them, too!