

# Special Report: Entertainment and Technology -- WSJ Interactive Edition



## Table of Contents



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## Poof! They're Gone!

*It's Boom Time for Special Effects in Movies.  
And Bust Time for the Firms That Create Them.*

By **FREDERICK ROSE**

**HOLLYWOOD CAN'T SEEM** to get enough special effects. Digital pixels brought viewers the dinosaurs of "Lost World" and an out-of-focus Robin Williams in "Deconstructing Harry." Computers helped screen aliens soar and "Titanic" sink.

### Special Report I - Main



So, why are times so hard for the men and women who create these effects? Just ask Richard Edlund, a veteran of the genre. Mr. Edlund, the creator of the special effects on all three "Star Wars" films and a four-time Academy Award winner, closed his privately held effects shop, Boss Films, last August. Other effects houses were shuttered or cut employment at the same time. Even Digital Domain Inc., maker of much of "Titanic's" cinematic magic, reduced its work force by more than 100 people, or about one-third of its permanent staff, not long ago, although it says it will start hiring again soon.

The turmoil in the industry reflects both vast and vastly expensive technological changes in the way movies are being made. Effects that once were "special" are becoming a commodity in film and television production. Meanwhile, exploding costs have put more advanced cinematic magic beyond the reach of all but a few.

[Richard Edlund]



Ann Summa

Major studios including Walt Disney Co. and Sony Pictures Entertainment have jumped into the trade with the kinds of deep pockets most effects houses only **Richard Edlund**

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dream about. Capital requirements have become so high in this business, thanks to the need for ever-faster computers, that if new contracts aren't coming in steadily, a company risks its own ride to disaster, no matter how spectacular its latest thriller.

As a result, special-effects firms created over the past decade or so are starting to go under. Especially endangered are those midsize firms with relatively high costs; smaller companies tend to specialize in the niches for which studios still contract out, mainly digital retouching and the removal of unwanted objects from a scene. Big firms tackle the trickier jobs, such as the invasion of Earth by aliens.

"There will be the big players and the little fry, with not too much in between," Mr. Edlund says.

It was a far cozier special-effects world just a few years ago. More companies were independent, "gatherings of craftspeople around a charismatic leader," says Jim Morris, president of Lucas Digital Ltd., a company controlled by filmmaker George Lucas. The money was rarely big. Profits, Mr. Morris says, averaged about 5% of revenue in a good year-10% in a great year.

"It has been a business driven out of love, not profits," he adds. For insiders, there was a certain stability that today is lacking.

### **Extreme Close-Up**

Few have witnessed these changes more closely than the tall, gray-haired Mr. Edlund, now 57 years old. He has been a major force in the effects world as it has moved from crude clay models to computer tricks so elaborate that they can almost endlessly reproduce the central character of a film, as Mr. Edlund did recently with Michael Keaton in "Multiplicity."

"It's a new era," Mr. Edlund declares, squinting through billows of smoke at a Beverly Hills cigar club, drink in hand. "These are changes as profound as the coming of sound or the use of color film."

Much of the revolution is unknown outside the trade. Indeed, sometimes an effect is noticed only by the producers for the way it helped a movie stay within its budget. Tiny models become full-sized rooms. Small clusters of extras are cloned into crowds. Scenes can be subtly modified in order to suit shifting scripts, or simply to save money. In the recent film "The Postman," a daytime camp scene was turned into night to accommodate a sudden script change. Campfires were built by computer; tents were set aglow, as if lit by lanterns. And in the film "Desperate Measures," Mr. Edlund says the last major effect his company produced portrays a battle on a bridge that was contrived

in a computer and then meshed invisibly to separate, real buildings.

"The boundaries between the 'special-effects' film and the ordinary movie are falling away," says Mr. Edlund, who began his career in the 1960s working on television scenes for the original "Star Trek" series and other shows. Movie studios at that time were closing the doors of their own in-house effects operations, which had grown too expensive and little-used.

The disbanding of the Motion Picture Research Council, a studio-funded technology group, in the mid-1950s had left Hollywood "a technological headless horseman," Mr. Edlund says. An old guard of effects experts was retiring. Tricks-laden films like director Stanley Kubrick's 1968 epic "2001: A Space Odyssey" were rarities.

In tiny specialty shops, however, technicians still played with possibilities. In the mid-1970s at one such small operation, Mr. Edlund worked with owner Robert Abel and others on a system that carefully controlled both camera movements and objects being filmed. That meant a model could keep moving even while the camera shifted angles—a big improvement from the static look of the past.

It was a major advance that opened the door to newer, more convincing effects. By 1975, director George Lucas pounced on the technology, hiring Mr. Edlund to lead effects work on the emerging "Star Wars" movies. "Motion control," as the new technique was called, let "spaceships" fly in convincing arcs as the camera's view also changed.

### **A Star Is Born**

The success of the "Star Wars" films sparked a renaissance of special-effects movies through the 1980s. It also gave Mr. Edlund the push he needed to part company with Mr. Lucas's Industrial Light & Magic. In 1983, he created Boss Film, which took its name from a rare British shotgun in Mr. Edlund's gun collection.

Boss took over the store from another effects company in a former Coca-Cola warehouse in Marina del Rey, a coastal enclave in northern Los Angeles, and soon was crafting effects on such films as "Ghostbusters" and "2010," a sequel to "2001." The horror film "Poltergeist II" followed, along with "Legal Eagles," "Die Hard," and "Ghost." After some years, Boss's annual revenue reached about \$25 million.

At its 60,000-square-foot facility, about 300 Boss employees were manning model shops, paint work and two filming stages. Two machine shops built special equipment for intricate photomechanical

film work. In 1987, Mr. Edlund and Boss received a scientific and technical award from the Motion Picture Academy for designing an elaborate camera that performed unusual zooms, expanding the vocabulary of effects scenes.

Others latched onto the techniques Boss was creating, but top-line work was still mostly in the hands of a very few. "It was arcane and labor-intensive, like seamstresses in China who knew the secret 'forbidden' stitch," Mr. Edlund recalls.

New lenses and high-tech film played their part. But Boss and other houses relied mostly on older gear, such as paper tape with punched holes fed through old telex mechanisms to direct motion patterns. Cameras occasionally dated from the 1920s, Mr. Edlund says.

Another aging tool, the optical printer, was both a central link and a weak one. These long steel devices, used by Industrial Light & Magic to produce scenes for films ranging from "Star Wars" to "Indiana Jones and the Temple of Doom," link projectors and cameras in a line to merge images shot separately. Many were old and inexpensive, though, and they were being asked to do more and more. The printer used for "Star Wars," for example, was built for the 1956 movie "The Ten Commandments." It had been gathering dust for two decades before Mr. Edlund bought it for next to nothing.

Industrial Light & Magic, based in San Rafael, Calif., last used its printer in 1993 for the movie "Death Becomes Her." By then, Mr. Edlund notes, the special-effects world had changed.

Using an optical printer, a moving image of an imperial storm trooper, say, can be merged with a forest scene to look like the soldier is flying through the trees. With two images, that's relatively simple. But, as Mr. Lucas and others strained for increasingly elaborate effects, more and more elements had to be combined. Mr. Edlund recalls assembling 75 separate images to make a space scene of enemy rockets swarming from a giant "death star" in 1983's "The Return of the Jedi." He figures that about a dozen people worked for the equivalent of a year to make the single, eight-second scene.

As more elements were merged for complicated scenes, quality fell. "You had to view your tools as the enemy and subdue them," Mr. Edlund says. And, despite best efforts, he admits, "some amazing stinkers made it to the screen." In the 75-element death-star scene, careful scrutiny shows two rocket ships implausibly passing through the same space unharmed.

Theoretically, computers could do a lot better than cameras. Images could be more easily modified. Elements could be mixed without

degrading the final output. Experiments had begun as early as the 1970s. Mr. Lucas hired researchers at Industrial Light & Magic. But the computers weren't yet fast enough. The images were too crude. And the ability to shuttle pictures between film and digital form was lacking.

Mr. Edlund concluded this early work wasn't ready for prime time. And so Boss stuck mostly with film techniques through the 1980s and into the early 1990s.

### **Rapid Advances**

Even so, strides were being made elsewhere. For the 1985 movie "Young Sherlock Holmes," Industrial Light & Magic created 30 seconds of computer-generated images in which the stained-glass window of a church turned into a murderous knight, a taste of things to come. By 1989, Industrial Light & Magic created a glistening, watery creature in director James Cameron's movie "The Abyss."

Two years later, "Terminator 2" brought amazing images of a silvery android popping up from floors and melting into puddles. By the time computer-generated dinosaurs thundered through "Jurassic Park" in 1993, the digital revolution was clearly under way.

What first seemed a blessing, though, quickly became a curse. Ever-more-elaborate scenes demanded more time, faster computers and bigger budgets. Mr. Morris figures that equipment costs now account for nearly half of Industrial Light & Magic's expenditures, on a par with wages. A decade ago, salaries were eight times greater than equipment costs, he says. Once, the effects houses could easily vary costs by hiring and firing as projects came and went. Now, with equipment payments soaring, he says, "this business is like a 747 taking off -- every seat needs to be full to make money."

Boss Films realized it, too, had to move into the computer world. But for Boss, financing wasn't as readily available. In a 1990 scene for the movie "Ghost," the company had digitally mixed a shimmering video view of actor Patrick Swayze kissing actress Demi Moore, who was on film. But it wasn't until 1993, when it was hired to do digital imaging on an Anheuser-Busch Super Bowl commercial, that Boss raised money for a substantial purchase of equipment. (The \$6 million ad showed bottles of Budweiser clashing in a mock football game.) Within a year, 60 computer workstations and various mainframe computers filled rooms at Boss.

There was also an expensive staff. "It has been an era when, if you could spell 'SGI' [for [Silicon Graphics](#) Inc., maker of many computers used for special effects] you cost \$50,000 a year," says Mr. Edlund.

Salaries for higher skill levels quickly jumped to \$100,000 and more.

With the arrival of computer folk, a cultural divide emerged in the effects world. Once a business of photographic and model-building arts, it has been invaded by "mathheads," Mr. Edlund says. "At first you were lucky if you could find someone who even minored in art," he recalls.

Film-school graduates are arriving with more computer savvy. Yet at Cinesite Digital Studios in Hollywood, tech-minded employees are being asked to learn some basic art skills. Simple charcoal drawings from an in-house art class recently lined a wall.

Ambitious growth and climbing costs weren't a problem as long as business expanded. But a herd of effects-laden box-office duds suddenly put the brakes on demand last summer. "Starship Troopers," with a \$55 million effects budget -- reportedly the largest to that time -- stumbled badly, as did "Speed II" and "Volcano."

"The faucet closed," says Scott Ross, president of Digital Domain, which laid off more than a hundred staffers and many more contract employees as work finished on "Titanic" and other projects failed to materialize. Warner Digital Studios, a unit of [Time Warner Inc.](#) that had recently employed 200 people, was folded. Other shops cut staff sharply.

Boss Films, already close to the edge, had to subcontract out 265 of about 300 scenes in "Air Force One" to Cinesite, a unit of [Eastman Kodak Co.](#) "The weekly nut [fixed costs] at Boss got to be \$200,000," Mr. Edlund recalls, and that was with a skinned-back staff of about 90 people.

Boss's facilities, though assembled in 1983, "were designed for a different era," he says, with model and paint shops and stage areas unneeded for many digital effects. With money in hand from "Air Force One" and work on "Desperate Measures," Mr. Edlund says, he decided to close Boss Films while he still could and avoid the unpleasantness of a bankruptcy filing.

Ironically, special-effects business is now picking up. "We're starting to see scripts approved," says Mr. Ross of Digital Domain, which plans to hire 60 new digital artists, replacing some of those laid off last year. The commercial success of "Titanic" has reinvigorated the effects industry, insiders say, making the film's writer/director and motive force James Cameron something of a saint in the effects business. "God bless Jim for making it work," says Mr. Morris of Lucas Digital.

It's too late for one company, however. The once-busy facilities of

Boss Films are shuttered these days. "Its equipment has exploded into the universe," says Mr. Edlund. "But that was just a means to an end," he adds. "What counts is on film. After all, it was all about making movies."

[Return to top of page](#)

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