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Bug Bytes 66

To bring their ambitious adaptation of Robert A. Heinlein's classic *Starship Troopers* to the screen, director Paul Verhoeven and producer Jon Davison turned to animation maestro Phil Tippett for swarms of insect warriors, to Sony Pictures Imageworks for epic-scale space battles, and to special effects coordinator John Richardson for on-set pyrotechnics. Others recruited to support the war effort included Amalgamated Dynamics, Industrial Light & Magic, Boss Film Studios, Banned From the Ranch, Compound Eye, Visual Concept Engineering and Kevin Yagher Productions. *Article by Paul M. Sammon.*

Cloning Aliens 98

For *Alien Resurrection*, the latest offering in the *Alien* franchise, Ellen Ripley and the alien fetus within her are brought back from the dead in a film directed by Jean-Pierre Jeunet. Returning as alien purveyors were Tom Woodruff, Jr. and Alec Gillis of Amalgamated Dynamics Incorporated, whose animatronic and suit-based creatures were augmented by digital warriors created by Blue Sky Studios. Overseeing the visual effects – filmed in Los Angeles, but composited by Duboi in Paris – were effects supervisors Pitof and Erik Henry. *Article by Bill Norton.*

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COVER – Futuristic foot soldiers battle alien hordes in *Starship Troopers*.

BOSS FILM STUDIOS END OF AN ERA

ARTICLE BY MARK COTTA VAZ

The end was foreshadowed—as appropriate in the computer age—by an interoffice e-mail transmission from Richard Edlund, founder and head of Boss Film Studios. The message, announcing a late-afternoon meeting—subject unspecified—took model shop supervisor Dave Jones by surprise. “It made you think, ‘What’s going on here?’” recalled Jones. “I think the worst-case scenario in everybody’s mind was that some of us would be asked to take some time off.”

Right up to that fateful meeting, when Edlund announced the closing of his company, he had been working on deals to save the fourteen-year-old enterprise. “We were trying to put a deal together up until an hour before the announcement was made,” Edlund revealed. “For months we had been talking to the studios, who had all soured on the idea of setting up in-house services. Other possible deals would have linked us with a post facility and kept our 3-D artists at Boss. Several scenarios, involving mergers with other companies, looked good. But all of these various deals had lots of moving parts, which take a long time to put together—and some of the moving parts got sand in the gears.”

The official announcement—released publicly on August 26, 1997—brought the curtain down on one of the oldest and most distinguished of the film industry’s few remaining full-service, independent effects facilities. Edlund had founded his powerhouse company in 1983, charging out of the gate with *Ghostbusters* and *2010*, both of which earned Academy Award nominations in visual effects—the first of seven to be garnered over the years. From that auspicious beginning, Boss had established a high standard for artistic and technical innovation in its film and commercial work, spanning both

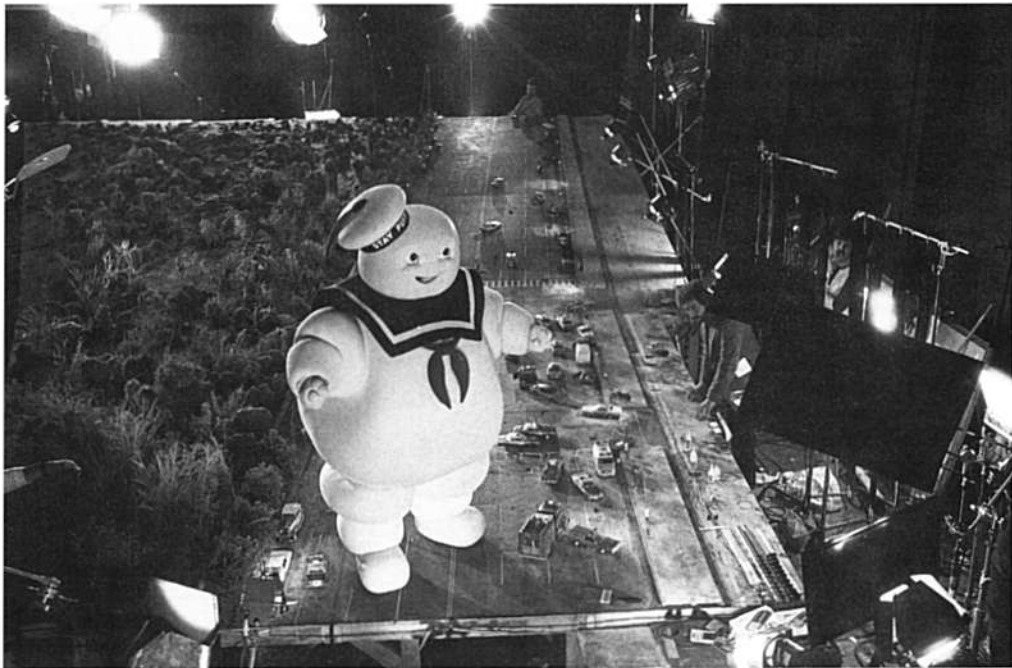
traditional photochemical-based optical effects and the high-tech aesthetic of the digital age.

The Boss closing was not the first casualty in an industry reeling from rapid growth and technological advances. In 1993, Apogee had closed its doors, followed by Stetson Visual Services in 1995. More recently, Warner Brothers pulled the plug on its Warner Digital Studio after a short run, even as the fledgling in-house operation was finishing postproduction work on *Batman & Robin*. Other formidable players—such as Digital Domain, Rhythm & Hues and Sony Pictures Imageworks—reacted to market vicissitudes with significant downsizing.

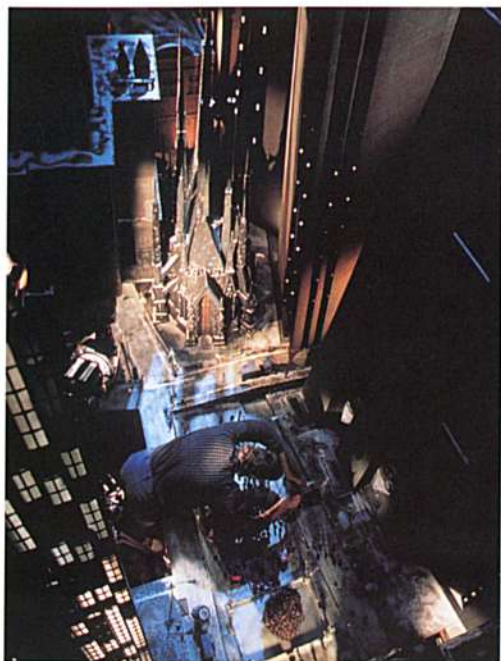
But Boss Film employees could be forgiven for assuming their future was secure. The very day Edlund assembled his staff to deliver the bad news, a

company trailer equipped with electronics and digital compositing gear was on the road to Northern California to shoot plates for Disney’s remake of *The Parent Trap*. “Unfortunately,” said Edlund, “*Parent Trap* wasn’t the high-ticket project we needed to stay afloat. Timing was a critical factor. While we had just finished *Air Force One* and a major sequence for *Starship Troopers*, we had no big follow-up show. We needed a cash flow of \$15 million a year, without breaks. If you have a break, you have to gamble your profit from your last show—however slim it might be—and stretch it out until the next. Meanwhile, with ninety people on staff, the burn rate is around \$40,000 a day. Being an independent is a significant burden; and without a guaranteed income, it’s a crapshoot. Finally, I just decided I wasn’t going to go for the gamble.”

Another squeeze was in the demands of a digital age. But while those costs were considerable—as opined in a September *New York Times* article which speculated that Boss’ fate was sealed in 1993 when it expanded its multi-million-dollar photochemical infrastructure to invest millions more in newfangled digital equipment—the situation was exacerbated by competitive tensions between rival houses. “With the digital revolution came the abil-



Recently disbanded after a fourteen-year run was Boss Film Studios, one of the last of the full-service independent effects houses. On stage at the studio, the Stay-Puft marshmallow man lumbers through New York in Ghostbusters, the first film to feature effects by Boss.



ity to set up a company relatively quickly," Edlund noted. "It became easy to go to Silicon Graphics, plunk down a few million for workstations and software, then hire your guys. In the old days, when we built optical printers and had people adept at using them, the playing field was more level. All of a sudden I was in the position of bidding against companies I'd never heard of—who didn't care if they lost money, and would underbid. On one project, we were underbid a million dollars by a company that had just gone public and could afford to take a million-dollar hit to get something on their reel. But those companies will probably feel the bite of the sword before long, too."

Although Edlund laments the in-fighting that often occurred among rival outfits battling for a bid, Boss veteran Neil Krepela—who is presently supervising the visual effects on Disney's CG/live-action feature *Dinosaur*—does not spare the studios or producers either. "They were pretty vicious about pitting companies against each other," remarked Krepela. "What we tried not to do at Boss was quibble about overages. But in the long run, after you'd bid and rebid and lowered your price, you had to take stuff out. That process was always difficult. I think the smarter studios realized they



could beat down the effects companies to where they were basically asking for no money because they just wanted the work. But if you just made the rent and salaries, you couldn't improve your R&D or your equipment. That caused houses like Apogee to fall by the wayside."

The demise of a company means not just the sundering of a creative community, but the dismantling of a physical plant. Boss' entire history had played itself out in an industrial building in Marina del Rey. Previously, the building had been home to Entertainment Effects Group—founded by Douglas Trumbull and Richard Yuricich—whose credits ranged from the first *Star Trek* feature to *Blade Runner* and Trumbull's own directorial effort, *Brainstorm*. At the time, Edlund had been enjoying an illustrious career at Industrial Light & Magic, tackling supervisory roles on such film classics as *The Empire Strikes Back*, *Return of the Jedi* and *Raiders of the Lost Ark*, and earning four Oscars in the process. But after helping George Lucas relocate his effects facility from Southern California to Marin County after *Star Wars*, Edlund pined for a return to Los Angeles. While Lucas coveted his independence from Hollywood—both spiritually and geographically—Edlund likened his tenure in Marin to a stint

A large-scale miniature of Gotham City was built at Boss as part of the effects assignment for *Batman Returns*./ Boss puppeteers articulate a rod-puppet alien warrior created for *Alien³*.

in the Foreign Legion.

Synchronous with Edlund's decision to leave ILM was Trumbull's own decision to pursue directing and other personal goals. Entering into a pact with the EEG principals to take over their facility, Edlund began organizing his own company under the Boss Film Corporation banner. Krepela, a former ILM matte photographer, would follow him south to head up Boss' matte department. "Richard and I walked through the facility before we'd even landed a film," Krepela recalled. "At the time, half of it was occupied by a dental lab, and the model shop was around the corner in a separate structure. The place was in disarray, plus the roof leaked and one of the stages sat in an inch of water. But we felt we could make it work, and we started mapping out in our minds what the place would be like."

Edlund was no stranger to getting such a venture up and running. Besides helping set up the ILM facility in Marin County, he had earlier played a key role in transforming a 30,000-square-foot Van Nuys warehouse into the effects house responsible for the seminal work on *Star Wars*. In the process, he had also helped resurrect the old wide-screen Vistavision format, which ultimately became a standard throughout the industry following the phenomenal success of that film. Ironically, after scouring the backlots and warehouses of Hollywood for abandoned or unused Vistavision cameras and printers, and championing their use in *Star Wars*, Edlund would adopt EEG's in-house 65mm format for his own company. "Richard thought Vistavision was a great format," Krepela related, "but all the equipment at EEG was geared to shooting elements in 65mm and then producing a 35mm composite negative. With the 65mm format, the film travels vertically through the camera—as opposed to horizontally with Vistavision, which has always been kind of a troublesome format to keep steady. Plus 65mm gives you double the negative area. So while Vistavision was good, with 65mm we had a format that was more stable and provided a larger film space. We ended up using it on just about every film, right up to *Cliffhanger*."

Boss also inherited from Trumbull such unique equipment as a computerized multiplane system—nicknamed Compsy—an animation rig which
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BOSS FILM STUDIOS

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Krepela helped refashion into a matte camera. On *Ghostbusters*, the adopted Compys would come in handy for many of the comedy's ghostly effects—notably scenes featuring the slobbering 'Onion-head' ghost that skittered about frenetically. Compys allowed Krepela to take static Onionhead elements—shot with a suited performer on a black-shrouded stage—and rephotograph them, manipulating the images to provide the frenzied movements that the production desired.

The start-up company wasted no time developing its own prototype cameras and printers as well. For *Ghostbusters*, Boss created its so-called Super Printer—built in a whirlwind seven months—and in 1985, augmented it with the Zoom Aerial Printer, or ZAP. Both 70mm printers—utilized in tandem—boasted the telecentric lenses that Edlund, working with optical engineer David Grafton, had devised for the 'Empire' VistaVision cameras and the Quad optical printer during production on *The Empire Strikes Back*. "Telecentrics was a crucial development in composite photography," Edlund observed. "There had always been a problem with compositing mattes, in that they would enlarge when you went in and out of focus. But I had read a multi-volume series of books on applied optics—written by Rudolph Kingslake, the chief optical designer for Kodak—and in one of those books was something about an optical system developed for submarine periscopes. That was the key."

"Telecentric optics basically keep the optical path coherent so that images travel as a linear bundle instead of coming down to a point of focus and spreading out," explained Krepela. "The advantage of this for our printers was that we could defocus the back printer without changing the image size. Normally, even when you look at an object through a still camera, it'll change size as you go in and out of focus. Telecentric optics enabled our optical department to put a holdout matte in the back head and carry the color separation or interpositive in the front head, and you could soften the matte so

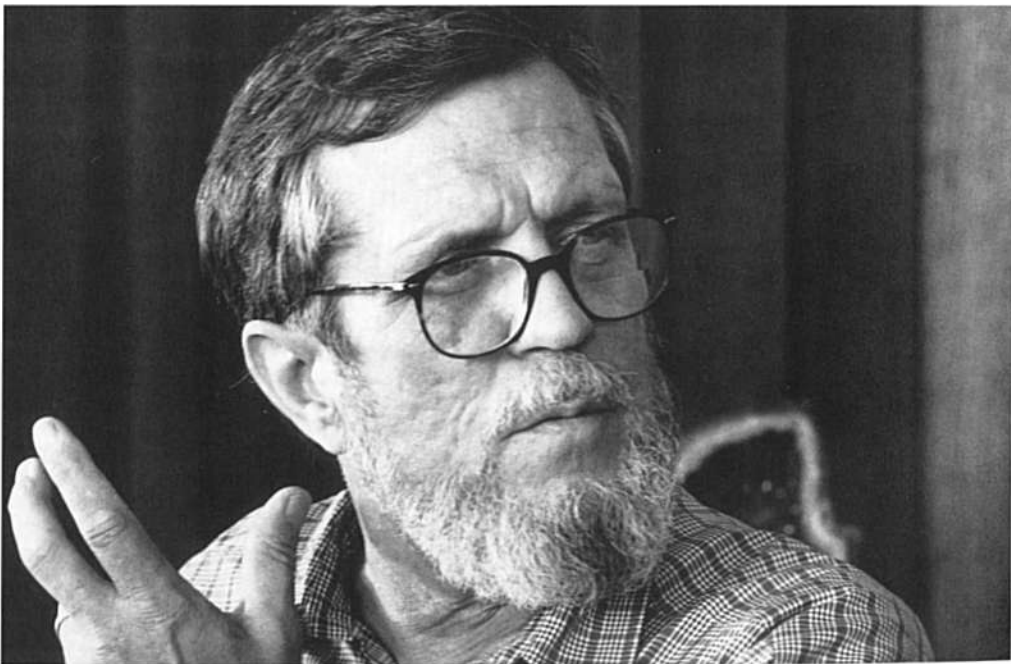
its edges wouldn't give the composite a cut-out quality. It would also reduce the grain in the matte. It was a very powerful tool for visual effects."

From the beginning, Edlund had a clear company philosophy advocating that it was better to focus in on a particular show than a huge slate of movies. "We were big enough that we could handle just about anything, but we tried to keep a small company flavor," remarked Krepela. "We also tried to use the best technique for any given shot. Just because we had incredibly fine optical printers didn't mean we'd do everything bluescreen. We'd shoot miniatures or rear projection or get it all in-camera, if that was the best way to do it."

As the Boss filmography grew—from effects-laden fantasies like *Poltergeist II* to hard-driving action fare such as *Die Hard*—the company continually sought to add new wrinkles to its game. On *Big Trouble in Little China*, Boss showcased unique animation effects in the character of an evil magician and his mystical minions, whose entrances were accompanied by a blast of green vaporous light and whose fingertips shot bolts of crackling electrical energy. Instead of using bottomlit animation, as was typical at the time, Boss animators hand-drew toplit art. And while traditional anima-

tion effects entailed shooting black-and-white art on black-and-white film, with optical departments adding color diffusion when compositing the elements into the scene, the Boss team inked the lightning art using white ink on black, diffused it and added a separate blue airbrush pass.

Boss also won kudos for its commercial work, one highlight being a United Airlines spot featuring killer whales swimming inside a 747 to illustrate the jetliner's wide-body comfort. Aired during the opening ceremonies of the 1992 winter Olympics, it was the kind of quirky assignment that posed unique creative and technological challenges. "I think the other bidding companies suggested shooting the whales separately and compositing them into the plane interior," recalled Dave Jones. "Richard, of course, said, 'No!' That approach wasn't going to look real. You had to physically have the whales in the interior to integrate them into the ship, through subtle things like shadows and ambient light kicking off the seats onto the whales." To accomplish the effect, modelmakers built a third-scale 747 miniature with aisle slots to facilitate mounts for two cable-actuated animatronic whales. The illusion of a watery interior was achieved by employing a traditional dry-for-wet approach with



Boss Film Studios founder Richard Edlund—a four-time Academy Award-winning visual effects artist—on the set of *Multiplicity*, one of the last big projects undertaken by the facility.

smoke effects, enhanced by new CGI technology which added floating particulate matter. "It was a fairly outlandish concept, but visually quite striking—and it looked authentic. People didn't question what they were seeing. Comments received by United ranged from, 'How did you get those real whales to do that?' to 'Does the SPCA know you're doing this?'"

Further Boss innovations were forthcoming on *Alien³*, director David Fincher's 1992 feature debut, in which the quick-striking, on-the-loose predator once again wreaks havoc among its human prey. While alien shots would be created utilizing a third-scale rod puppet, the assignment's compositing challenges were aided by in-house development of a motion control field recorder dolly system, used to shoot live-action plates on set in England. The camera system could record data files for all on-set camera moves—pans, tilts, booms—allowing the Boss team to duplicate those moves, or reprogram and alter them as necessary, scaled to the blue-screen animation of the puppet.

Batman Returns, also released in 1992, proved to be one of the more interesting transitional features headed up by Boss during the twilight era of photochemically-based effects. This second *Batman* installment had its share of innovations, too—notably in the extensive miniatures work requiring the model shop to create Gotham skyline views that matched the skewed perspective of a full-scale set on a Warner Brothers soundstage. For a high-speed vertical rise on a miniature building, Boss crews engineered a vertical motion control rig that Krepela likened to standing a motion control track on its end.

Batman Returns was also a harbinger of things to come, utilizing computer animation to depict swarms of flapping bats and an army of waddling penguins. Within a year, spurred by the release of *Jurassic Park*, the digital age would take hold of the movie-going public's imagination like no other effects innovation. Edlund greeted the dawn of the digital era with something akin to relief. "By the early nineties, I was so frustrated by the limitations of what could be done photochemically that I was thinking of getting out of the business," Edlund admitted. "I had been butting my head up against the wall of what was possible using photochemical techniques for a long time—this rancorous, unwilling technology. You had to trick the photographic process to come up with the shot you needed. Even dealing with matte lines was not a simple thing. There was the utter impossibility of doing anything

with a shot if a composite element was unsteady. Then you'd have to deal with the wedging of images to get color balance of all the elements. Over the years, we had dealt with these and other issues as a matter of course. Our in-house engineering, machinery, electronics and software departments had developed the technology to do these things. We had the best optical printers ever built—and it still wasn't enough."

One project that would help propel Boss into the digital era was *Cliffhanger*, a 1993 mountain-climbing extravaganza. To create daredevil shots of actor Sylvester Stallone navigating sheer cliffs, Edlund again employed the vertical elevator rig camera setup built for *Batman Returns*. However, the *Cliffhanger* sequences would go far beyond mere miniature set work, with a Boss location crew hoisting photographic equipment by helicopter to precarious location sites in the mountain ranges of Italy. "We took seventy feet of our motion control rig," said Krepela, who co-supervised effects on the show with John Bruno, "and hung it from the sides of cliffs 600 to 1000 feet in the air, so we could get vertical moves and later composite Stallone into backgrounds that were far too dangerous for live-action shooting. We had to attach the rig with one-inch steel bolts drilled three feet into solid rock. It took a month to set up and a day to shoot."

In contrast to Boss' perilous plate work, the *Cliffhanger* optical composites were anticipated as photochemical business-as-usual. But digital methodologies—which in the past had been problematic—seemingly overnight had advanced to a level unanticipated mere months before. "On *Batman Returns*, we'd had to persuade Warner Brothers to let us do a digital composite," commented Krepela. "On *Cliffhanger*, we proposed doing about seventy percent of the composites optically, with the remaining thirty percent being done digitally. But between our bid and the time we had to put our shots together, these very powerful computers and off-the-shelf graphics packages had become available. By the time we finished *Cliffhanger*, our composite ratio was exactly the opposite of what we'd proposed. That's how quickly digital technology came into play."

Such rapid advances would take practitioners by surprise. "All of a sudden, it was as if we went from being blacksmiths to neurosurgeons," Edlund recalled. "When you can address every single pixel in an image, you have ultimate control over what you are doing. *Cliffhanger* was the last show for which we did an optical composite—there's been

a coat of dust on our optical printers ever since." In an effort to keep up with the digital revolution, Boss turned to outside revenue sources, bringing in an investor partner and setting up an electronic games division. "However, when you move into digital, you wind up in this morass of getting digital equipment—new hardware and software—and the necessity of amortizing this extremely expensive equipment over a short period of time."

Nonetheless, Boss committed wholeheartedly to the new technology, expanding the boundaries of such fledgling methodologies as motion capture with the development of real-time motion capture puppetry for the alien annihilator in the 1995 science fiction horror movie *Species*. Among Edlund's personal favorites in the digital era was the 1996 comedy *Multiplicity*—the ultimate split-screen endeavor—requiring Boss to make actor Michael Keaton into four cloned characters. Using the field recorder technology developed for *Alien³*, Edlund was able to film live-action moves and repeat them as Keaton played each successive role in a scene. "Multiplicity simply wouldn't have been done during the traditional effects era," observed Edlund. "The restrictions would have been too great. Photochemically, you could not have gotten away with traveling splits going across complex backgrounds. Although it was primarily a digital composite show, it also required a high level of filmmaking trickery. But with the digital tools we had, I felt much more liberated than on any previous movie."

With the closure of Boss Film Studios, ending a fourteen-year run that spanned some thirty-three features, Edlund is experiencing liberation of a different sort. "While there's sadness about closing down the company," noted Edlund, his thoughts turning to former colleagues and employees, now scattered, "at times it was a real cross to bear. But we were lucky over the years. We did a lot of fine work." Survived by only a handful of still-viable, full-service competitors, Edlund predicts a move away from the classic model of an independent effects facility—with permanent address, regular staff and technological infrastructure—to a new order where smaller-scaled, specialized operations spring up for specific projects, where studios rent stage space and equipment, and assemble freelance crews. "Effects work will be set up the same way you set up a movie—you hire a production designer and a cameraman for the duration of a production; and when the picture is done, they're off and on to the next one. I think visual effects have become that flexible."

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