

**Second Quarter 1997**



Best Practice

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## How to Manage Creative People

### The Case of Industrial Light and Magic

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By **Lawrence M. Fisher**

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George Lucas' Industrial Light and Magic is the nations premier special effects shop with credits that include "Star Wars." Part of its phenomenal growth and success stems from the innovative management of its employees -- most of whom don't even know they're being managed.

Perhaps one definition of Best Practices is that they can be applied with so light a hand as to seem no more than a part of the natural order of things.

Industrial Light and Magic, the special effects unit of George Lucas's vast film-making empire, has created a set of business practices that is both powerful and nearly invisible. While artistry and technical wizardry made the company, it is the deft management of relationships -- vendor to client, employer to employee -- that has sustained its growth for two decades.

Born as Mr. Lucas's dream team of artists and craftspeople for the production of "Star Wars," Industrial Light and Magic slowly evolved into a freestanding business. And just as "Star Wars" defined the modern "effects" movie, I.L.M., as it is commonly known in the film industry, defined the branded special-effects house. There had always been small production shops for special effects, but they were mostly short-lived labors of love that struggled to break even. I.L.M. made effects a business, and made itself a strategic supplier to film industry clients.

Though burnished with the glamour of Hollywood, special effects is a tough fee-for-service business in which profit margins rarely exceed a razor-thin 5 percent. Capital costs are high and getting higher as computers play an ever-greater role, and skilled artists command high salaries. Industrial Light and Magic claims roughly a 50 percent share of the \$300 million market for feature film effects, and a 20 percent share of the \$150 million market for effects in television commercials.



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As a privately held company, I.L.M. does not publish its financial results, but management says it is consistently profitable, and growing; the head count has gone from 300 in 1994 to 750 today. Industrial Light and Magic has maintained this growth despite a flood of new competition, both from small startup companies, like Digital Domain and Boss Film Studios, and from film studios themselves, including Sony and Disney, which have created or acquired in-house effects teams. In this environment, the company fights to retain customers and talent alike.

Although I.L.M.'s business seems rarefied, the management principles that have allowed it to thrive are transferable to many industries. Film producers say they choose to work with Industrial Light and Magic because of its devotion to total customer satisfaction, namely to delivering a product that always meets or exceeds their expectations, on time and on budget. Employees praise an egalitarian corporate culture, where new hires receive the same deference as five-time Academy Award winners, and where opportunity is boundless. In many ways, the company remains a dream team.

Industrial Light and Magic, together with Skywalker Sound, its sound-effects sister, was spun out of Lucasfilm Ltd. in 1993 to form Lucas Digital Ltd., but the unit had already functioned as a separate business for many years. Mr. Lucas owns Lucasfilm, Lucas Digital and a third unit, LucasArts Entertainment, devoted to videogames and other interactive media, and is chairman of all three. But when he visits I.L.M. it is as a customer, not as a manager.

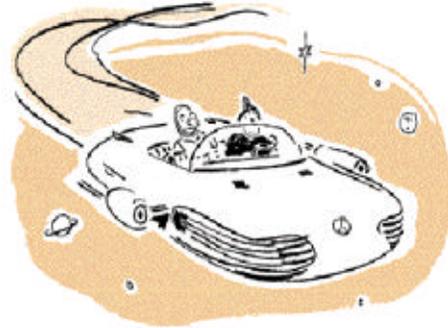
I.L.M. is physically separated from Lucasfilm as well. Most of Mr. Lucas's enterprises occupy Skywalker Ranch, a fantasyland of reproduction farmhouses and barns on a remote spread in northern California's Marin County; I.L.M. inhabits a strip of one-story buildings in a rundown section of San Rafael, about 20 miles north of San Francisco. There is no sign, and even the front door still bears the name of the building's former occupant, and an "employees only" admonition. The anonymity is a calculated part of the company's mystique, but the separation from Lucasfilm, both physical and corporate, is meant to reflect I.L.M.'s charter as a customer-driven enterprise.

"Our isolation up here is melting," Mr. Lucas said in an interview. "As a result, we feel the future will be a lot more competitive." His three companies "were just not fit together in a way that allowed for more growth," he said. "All three companies have a certain synergy, but it seems to work better if the person in charge is in control of their own destiny."

The person in charge of I.L.M. is Jim Morris, a former producer, with "The Abyss" and other effects-driven films to his credit. He joined I.L.M. in 1987, was named general manager in 1991 and president of Lucas Digital in 1993. Mr. Morris said Industrial Light and Magic has been challenged to create a working set of business processes in an industry where many practices are defined by the client.

"The effects business has been a bit of a red-haired stepchild to the movie business, and most studio people, even most directors, never took it upon themselves to understand it," Mr. Morris said in an interview at his office in San Rafael. Studio people distrusted effects houses, and some of that distrust was probably warranted, he said.

"There was never the fiscal and production rigor applied to it that we see in other businesses," Mr. Morris said. In contrast, "this company assigns producers to each project that comes in the door. At the same time, we implemented profit-and-loss responsibility at a department level."



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Feature film projects typically begin with a script submitted by a producer. I.L.M.'s innovative practices begin here as well. Although there is no financial commitment at this point, the company often does substantial development work on a script prospectively, particularly with repeat clients. This process allows I.L.M. to deliver a firm proposal, with suggestions for which scenes can best benefit from special effects, and often a demonstration of what those effects will look like.

"The interesting thing is it's usually without a director attached," said Frank Marshall, a partner in the Kennedy/Marshall Company and co-producer of "Jurassic Park," the megahit directed by Steven Spielberg. "They can come up with their own concepts, and because they have the experience, I know the effects will work."

"Jurassic Park" itself is a good example. Mr. Marshall and Mr. Spielberg had envisioned using puppets and animatronics -- robotic animals -- for the dinosaurs, but Dennis Muren, I.L.M.'s senior visual effects supervisor, took it upon himself to create them using computer-generated images. This made possible velociraptors in far greater numbers than could be managed with puppets, and a tyrannosaurus rex with much more detail and movement than a robot could handle.

"Special effects changed forever when we saw the skeleton of a dinosaur running on a screen," Mr. Marshall said. "That was something we didn't even know about. They had spent their own money developing that capability. My sense is they're doing that all the time."

Currently, Kennedy/Marshall is working with I.L.M. on a script for "The Lion, the Witch and the Wardrobe," based on the C.S. Lewis novel, which will require unprecedented visual effects, including a giant lion carrying child actors across a field of snow and herds of centaurs. "Basically they are up there developing for us for free," Mr. Marshall said.

But this kind of seeming pro bono work is really possible only because of I.L.M.'s confidence that it will win the job. "They are bidding on a different level," said Larry Franco, who produced "Jumanji" and "Mars Attacks" with special effects from I.L.M. "They are bidding to deliver, where the other shops are bidding to win the show," he said. "They also have been doing this such a long time that they can almost 'read' a director in the first meeting, and know whether he will stick to a schedule, and how the studio regards that director."

For each film it commits to, Industrial Light and Magic assigns a dedicated project team. Each team has its own visual effects producer, budget director, effects supervisor, animation director and art director. As the film takes shape on story boards, the budget director breaks each scene down into elements and comes up with a cost for every element in each shot.

The project team "collaborates very, very closely with the external client, and becomes in a way the client's representative to us," said Mr. Morris, I.L.M.'s boss. "That group goes to each department, and in effect, buys services from them. They put together a budget that they're working on and try to come in at that level.

"The department heads run their units as little businesses as well," he added. "We've set up these territories of responsibility that people have to watch closely so there's no place in the company where it's just O.K. to spend money."

This structure gives producers confidence that films will be completed on time and on budget. "The reality for me is if they say they can do it, they can do it; they say what it's going to cost, and it's fairly close," Mr. Franco said. "Other places you can sense the panic, the despair, the overall feeling you're not going to make it."

The structure also gives I.L.M.'s staff a sense of freedom because it separates financial responsibility from artistic creation. "In other companies, the key creator wound up being the head of the business and that seemed to me an inherent conflict of interest," said Mr. Muren, I.L.M.'s senior supervisor, who has received eight Academy Awards for special effects. "I've got an effects producer who is my business counterpart, and it's his responsibility to bring the project in on budget. But I can run amok, and the director can run amok, so he has a tough job."

Indeed, despite the much-publicized \$100 million production costs for some films, there is never an unlimited budget for special effects. Because the multimillion-dollar fees of a Stallone or a Schwarzenegger, plus a star director and multiple script writers, can result in \$50 million in "above-the-line" expenses before one frame is shot, there is instead a constant pressure to keep effects costs down.

Even a director of the stature of Mr. Spielberg, who can work with whatever effects shop he chooses, must keep an eye on the budget. "There's pressure all the time," said Kathy Kennedy, of Kennedy/Marshall, co-producer of "Jurassic Park." "There's no one harder on I.L.M. than Steven when it comes to cost. It is a constant battle."



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Because I.L.M. is typically the highest bidder on a given project, directors with less stature than Mr. Spielberg are often pressured by the studios to take films elsewhere. On "Batman Returns," Mr. Franco, who produced the film for Warner Brothers, had to turn to nine separate effects houses, at a combined bid of \$8.2 million, rather than use just I.L.M., which put in a bid of \$11 million. Nevertheless, he believes that if films were subjected to a post-production cost analysis, which most are not, the true cost of going to Industrial Light and Magic would be comparable.

"The only negative with I.L.M. is the dollar sign," Mr. Franco said. "The work they put out is always extraordinary." While others may submit lower initial bids, they charge extra for changes that I.L.M. would include at no additional cost. "These other shops chip, chip away until, at the end of the day, they cost you more than if you'd trusted I.L.M. with the whole show in the first place."

Producers say one way that I.L.M. helps keep their costs down despite its high prices is by anticipating problems before they arise. This is a function of both the staff's longevity and the substantial early development work I.L.M. does on each script.

"They do a tremendous amount of testing with their 'A-list' directors, people who go back to them time after time," said Ted Gagliano, senior vice president for feature film post-production for 20th Century Fox, which recently completed the reissue of "Star Wars."

"They do so much more in preproduction, in script development, before filming ever starts," he said. "They can point out where there might be problems, and ask the right questions: Are there too many characters? How do we create this world? They know that the earlier they get involved in a project, the more they can correct in advance."



To maintain this degree of control, I.L.M. bids most films as a one-stop shop. Although it has been known to quietly rescue other effects houses on failed projects, it does so without credit. Similarly, on commercials, most houses supply only effects, but I.L.M. produces and directs the entire spot. I.L.M. branched out into commercials to balance out the cyclical nature of the feature film business, but has found that ads also lead to more efficient processes.

Because every film is different, and the effects for each must be more dazzling than the last, I.L.M. has few opportunities to amortize its own costs. One exception is in software development. Writing its own programs gives I.L.M. an edge over shops using off-the-shelf software, and the cost can typically be spread over multiple feature films before filtering down to advertisement work.

"Our goal is to stay two to three years ahead of what can be accomplished with commercial software vendors," said H.B. Siegel, I.L.M.'s chief technology officer. "Our own tools give I.L.M.'s films that special edge, that special look. Our goal is to get the shot onto film the way we like. At that point we can often leverage the investment going forward."

For example, "the hair and fur work we did in 'Jumanji' was leveraged in '101 Dalmatians,'" Mr. Siegel said. "Jumanji," a Robin Williams vehicle, featured a computer-generated lion rampaging down a city street, while in "101 Dalmatians," the recent remake of Disney's animated classic, computer-generated puppies filled out the crowd scenes and performed stunts deemed too dangerous for the dog actors. No one had previously created realistic hair and fur in a computer-generated image.

Much of the software development at I.L.M. is done on the fly, as needed, with little time for prototyping or testing. "It's akin to the Manhattan Project," Mr. Siegel said. "People are being asked to solve these really difficult problems in a production setting."



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Retaining exceptional people has become a greater challenge for Industrial Light and Magic with the proliferation of competitors. Mr. Morris said increased competition has had little effect on revenues, because of the growing use of effects. About 70 percent of the movies made last year used special effects and I.L.M. works on just 10 to 12 films each year, generally the most ambitious ones. But competition has increased I.L.M.'s costs, because newcomers looking to lure talent have offered inflated salaries.

"Between Sony and Disney, they've totally disrupted the marketplace by trying to buy their way in," Mr. Morris said, adding that he believes the studios will find it no more profitable to keep effects artists on retainer than it was to maintain staffs of actors, writers and directors, which no one does anymore.

"The special effects model was already not too profitable, and you don't cut costs by offering people multiples of what they've been paid," he said. "Where the studios blew it was not letting the free enterprise system rise to the occasion."

In any event, the studios have succeeded in hiring away artists and programmers that I.L.M. could ill afford to lose. Others have left to start their own effects shops; Scott Ross, chief executive of Digital Domain, is a former general manager of I.L.M. To prevent a full-blown exodus, I.L.M. has had to respond creatively.

In addition to now offering senior employees long-term contracts -- a rarity in the business -- I.L.M. has worked to create an environment in which people know they have unlimited upward mobility, where advancement can occur rapidly.

"People make transitions here," Mr. Morris said. "Someone with a technical background can move into a project director function. We spend a lot of time dealing with the artists, craftsmen and technicians, trying to make sure they are fitting in, that they're happy, that they see a pathway. We want them to know there is a lot of opportunity here. It's like a frontier town for artists."

Nevertheless, Mr. Morris said managing the creative talent is one of his biggest challenges, and at I.L.M., even computer programmers consider themselves part of the creative talent.

"Creative people have the same mix of characteristics anyone else does, but they tend to have them in greater extremes," Mr. Morris said. "There are some intensely creative people here who are very easy to work with; others are demanding and petulant. We try to maintain a loose and flexible culture that nonetheless has pretty solid rules. You just have to make a judgment about how much pain you can stand."

I.L.M. pays well, but most people are there because they want to be working on movies, and they want to do it at the best shop, Mr. Morris said. "Their motivations are complex; it's not just a job," he said. So one thing I.L.M. does to reward people is to put them in production roles that lead to screen credits, often very early in their careers.

This tactic pleases employees, but requires a balancing act with customers, who may have expected someone more senior as their project leader. I.L.M. finesses this potential conflict by letting junior staff manage big projects, while keeping seasoned veterans like Mr. Muren and Kenneth Ralston, another senior effects supervisor, involved as advisers, even as they manage other films. For the most part, producers say promoting from within this way works well for I.L.M.

"They're good at picking talent," said Marty Cohen, who runs post-production for Dreamworks SKG, the studio created by Mr. Spielberg, Jeffrey Katzenberg and David Geffen. "Their supervisors tend to be two things: very visually oriented and good problem solvers. It has long been like a very big school, and you have to be not afraid to fail."

Mr. Marshall of Kennedy/Marshall said the breadth of talent at I.L.M. and the dedicated team approach give him confidence. He knows that the people attached to his project are capable, and passionate about the job, whether or not they are the most senior.

"I know they're my team," he said. "There's this shorthand that's already there and a trust we have. I don't always have to have Dennis Muren, although he's there if I need him. There's always somebody working their way up as an effects supervisor."



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I.L.M. faces one challenge its competitors would love to have: how to apportion credit at Academy Awards time. Of three movies nominated for Best Visual Effects last year, two were I.L.M. projects, yet there is no way for everyone involved to share in the possible awards.

"There may be 75 to 100 people credited in the movie; how do you boil it down to a couple of names?" Mr. Morris said. "There's always bad feelings, and there's always close calls. You try to create enough opportunity so that people don't see it as their last chance."

One measure of the success of the processes Mr. Morris has put in place is that many creative people at I.L.M. remain only partly aware that a structure exists. They speak with an ironic satisfaction about a consulting firm hired some years back to improve the company's efficiency, only to leave in frustration.

"They gave up, because things are too fluid and dynamic in this industry," Mr. Muren said. "It's like a war, it's so dynamic. Short of being anarchy, there's a lot of freedom here. There's not a lot of committees, not a lot of checks and balances in place.

"If there was too much structure," he added, "one of us would say, 'You can't possibly predict all this.' Movies can't be made that way."

George Lucas has not produced a feature film of his own in many years, but he recently began working with I.L.M. on the first of three movies planned long ago as the prequels to the "Star Wars" trilogy. Although the stakes are high, this is but another vendor/ client relationship to be managed, another project to fit into I.L.M.'s process.

"In fairness, when George Lucas set up the original I.L.M. to do 'Star Wars,' he made all the decisions," Mr. Morris said. "Now George is a client to us like any other, and we put together a project team for the film.

"He doesn't expect to come in and have it be his sandbox," Mr. Morris added. "He expects to be a well-treated client."



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#### **WORKING MAGIC WITH A VENDOR**

Just as Industrial Light and Magic works hard to remain a strategic supplier to the film industry's leading producers and directors, so it carefully manages relationships with its own sources. No vendor is more strategic to I.L.M. than Silicon Graphics Inc., which makes the powerful workstations and servers used to create computer-generated images.

Indeed, the relationship between I.L.M. and S.G.I., which is based in Mountain View, Calif., is a symbiotic one. Silicon Graphics's technology has allowed Industrial Light and Magic to produce memorable special effects, like the liquid metal cyborg in "Terminator 2: Judgment Day" and the tornadoes in "Twister," which could not otherwise have been made. At the same time, I.L.M. has pushed and prodded S.G.I. in ways its traditional customers in aerospace and manufacturing never do.

"We tend to be their lunatic fringe, the place they find out how to do things better," said Jim Morris, I.L.M.'s president. In return, Silicon Graphics has developed a system that uniquely suits I.L.M.'s needs, he said. "We have tried other things over the years and have actually migrated to a greater rather than lesser concentration of S.G.I. machines," he noted.

Industrial Light and Magic's founding in the mid-70's predates that of Silicon Graphics by about five years, and the special effects in "Star Wars," which was released in 1977, were all essentially analog, although a computer was used to control the motion of a camera tracking the physical models. But I.L.M., which was an early customer for S.G.I., in 1982 produced the first completely computer-generated film sequence, for "Star Trek II: The Wrath of Khan." The first completely computer-generated character followed in 1985, with the stained glass man in "Young Sherlock Holmes."

In recognition of the growing importance of their relationship, I.L.M. and S.G.I. formed the Joint Environment for Digital Imaging, or JEDI, in April 1993. Taking its name from the Jedi knights of "Star Wars," JEDI was billed as an alliance to create the largest and most advanced production facility for the use of digital imagery in entertainment. In practice, the alliance is a non-binding, non-exclusive joint development agreement.

"We saw that having a customer/partner like I.L.M. would make a strategic difference to us," said Gary L. Lauer, Silicon Graphics's president for world trade. "A lot of what they wanted to do started having a profound influence on our product. They push us harder and push us faster to the outside of the envelope."

One recent product shows the benefit of the relationship to both parties. I.L.M. engineers had pushed for a machine that would put the power of S.G.I.'s refrigerator-sized \$30,000-and-up servers into a PC-sized and PC-priced workstation. That call was answered in S.G.I.'s new O2, introduced last year at \$7,500, roughly comparable to a fully configured PC for advanced graphics use, but far more powerful. It is now S.G.I.'s best-selling machine.

"All that power ends up back on the desktop," Mr. Morris said. "That gives people who do animation and light the shots the ability to do things in real time."

Silicon Graphics's executives say that their biggest customers, companies like Boeing and Chrysler, are also demanding, but not as intensely and obsessively as I.L.M. While today's personal computers could create the kind of special effects a Silicon Graphics workstation produced a few years ago, nobody wants to make -- or see -- a 1992 effects movie today. The need to constantly do more creates a constant thirst for more technology.

Mr. Morris notes that film equipment from the analog age had a life span of 50 years; indeed, some of the equipment used on "Star Wars" had previously been used on Cecil B. DeMille's "The Ten Commandments." "That model has gone completely," he said. "You are forced to buy the new technology. You can't have people working on workstations that are half the power of your competitors."



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But I.L.M.'s voracious appetite is only one reason the relationship works, managers say. "There are some cultural similarities between our two companies," Mr. Lauer said. "Neither of us feels very obligated to hold on to what worked yesterday or today and assume that it will work tomorrow. When we have a new concept, they can help us through a lot of the trial and error because they know very well what will work."

The JEDI agreement does not prevent I.L.M. from sourcing equipment from S.G.I.'s competitors, although as a practical matter it has not found compelling solutions from other companies. Nor does it prevent S.G.I. from offering products developed at I.L.M.'s suggestion to competing effects houses, which it does often.

Mr. Lauer said the closeness of S.G.I.'s relationship with I.L.M. presents a challenge when marketing to competitors. "There's an incredible desire and urgency in this industry to have what no one else has," he said. "Some people don't understand the relationship and think it's unfair. On the other hand, there's an understanding that the relationship yields better technology sooner."

Nothing about the relationship is etched in stone. I.L.M. may get a new product first, or it may not. It may use a prototype machine in effects production, or it may not.

"It ebbs and flows like any other relationship," said H.B. Siegel, I.L.M.'s chief technology officer, himself a former S.G.I. executive. "Sometimes we're in position to take advantage of a beta test unit; other times we'll let a unit go to full production and then evaluate it. There's no financial investment by either party, so there's no non-free-enterprise reason for anything we do."

This kind of collaborative, but non-exclusive, agreement is a new model for strategic alliances, said Timothy M. Laseter, a partner in Booz-Allen & Hamilton's New York office specializing in sourcing issues. "I.L.M. stays ahead by getting a supplier to customize its solution," he said.

The JEDI agreement is in this way similar to an alliance between Mercedes-Benz and Bosch, in which Bosch creates new automotive subsystems to Mercedes' specifications, but is then free to market them to all comers.

"Because technologies are evolving, the relationship will continue to be valuable over the long term even though the technologies that come out of it are broadly available," Mr. Laseter said of the I.L.M. arrangement with S.G.I. "It is far more than your traditional customer/supplier relationship. It may be a leading indicator of where some of these strategic relationships are going."

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