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King of the World (Again)

The inside story of how *Avatar's* James Cameron became the most powerful commercial force in the movie business—twice

By [Ronald Grover](#), [Tom Lowry](#) and [Michael White](#)

Reasonable people can debate the artistic merits of James Cameron's work. Anyone for whom Arnold Schwarzenegger is a frequent muse is not likely to specialize in observing the human condition, unless it's in the aftermath of an exploding building or a run-in with a mercenary robot from the future.

What's indisputable, however, is that the *Avatar* director's influence extends far beyond his movie credits. More than George Lucas or Steven Spielberg, Michael Bay or Pixar ([DIS](#)), Cameron is the most important commercial force in modern film, and his vision for the future of the movie business is rapidly demolishing anything that gets in its way.

There are 1.64 billion reasons that Cameron is Hollywood's director of the moment—that figure being the mid-January worldwide gross of *Avatar*, the blue-aliened, 3D extravaganza that earned Golden Globes for best director and best dramatic picture. By the time you read this, *Avatar* may have passed the \$1.84 billion mark set by 1997's *Titanic*, Cameron's previous feature and current holder of the title Highest-Grossing Film of All Time.

The money is impressive, but it only hints at Cameron's impact. It took *Titanic* several months to reach \$1 billion worldwide at the box office. *Avatar* hit that milestone in 17 days. How? Because cinema operators say they can charge at least 30% more per ticket if a movie is in 3D. By persuading a huge number of filmgoers to put on the 3D glasses and pay more for the privilege, Cameron has changed the economics of the movie business. "Films can change people's minds, and the aim with *Avatar* was to introduce the industry to the possibilities of 3D," Cameron told *Bloomberg BusinessWeek*. "I decided, let's go make a movie that they can't ignore."

At 55, the man who declared himself king of the world at the 1998 Oscars has mellowed some. Cameron accepted his 2010 Golden Globes with a mix of humility and amazement. No one knows better than he how close *Avatar* came to not being made. Despite Cameron's track record for delivering large profits on big budgets, Twentieth Century Fox ([NWS](#)), which co-financed *Titanic*, hesitated to make an even riskier film that required the creation of a three-dimensional alien world. "I knew that if this failed my name would be dirt, but that's the nature of this

business," says Cameron. "Every director knows that you can flame and burn like the Hindenburg, and do it very publicly."

With the studio balking, Cameron had to turn himself into an inventor-entrepreneur. Using his own funds, he developed the technology to bring *Avatar* to the screen, betting that what he saw in his head would be so visually persuasive that, ultimately, he could sell his souped-up camera rigs back to Hollywood at a potentially considerable profit.

Until *Avatar* came along, 3D movies—even such recent efforts as 2008's *Journey to the Center of the Earth* and 2005's *Chicken Little*—had the stigma of novelty. Now fellow directors, convinced their movies will attract a wider audience in 3D, are willing to pay Cameron to use his gear. *Avatar*'s technological wizardry also coincides with a big push by Sony ([SNE](#)), Panasonic ([PC](#)), and other consumer electronics companies to bring 3D into the home with a new generation of TVs and DVD players. "This is a game-changer," says Rupert Murdoch, chairman and CEO of News Corp. ([NWS](#)), which owns Fox. "If you create a film of this quality and make it an event, it shows that people will pay to come see it. We will see more [3D in] films and TV."

A VISION OF BLUE ALIENS

Cameron wrote the original script for *Avatar* in the mid-1990s. Set 150 years in the future, it told the story of a paraplegic ex-Marine who travels to a moon called Pandora where he inhabits the body of a Na'vi, the 10-foot-tall, blue-hued humanoids who inhabit the world's lush jungles. The marine falls in love with a Na'vi princess (think John Smith and Pocahontas) and ends up defending her people against Earthlings eager to exploit Pandora's resources. Even 15 years ago, Cameron had a fully formed vision of Pandora—right down to the blue aliens, six-legged mammalian predators, and floating mountains. But he put any plans to film his *Avatar* script on indefinite hold, knowing that the existing technology could not do justice to his ambitions.

By 2000 he was growing impatient. So Cameron contacted Vincent Pace, an entrepreneur who helped design and manufacture the underwater lighting system for Cameron's 1989 movie, *The Abyss*. Through his eponymous company, which develops and rents cameras for use in hazardous conditions, Pace agreed to work with Cameron on a camera rig that could capture 2D and 3D images simultaneously. Cameron says the project cost about \$12 million, much of it his money.

It's a rule as old as Hollywood: Never sink your own money into a movie. Ultimately, Cameron felt his investment would be justified not only because it would allow him to make *Avatar* but also because the new technology would accelerate the rollout of 3D, giving theater chains an incentive to upgrade their projectors and screens and moviegoers an incentive to leave their increasingly well-equipped living rooms.

Developing the technology was one massive project. Cameron also had to persuade Fox to finance *Avatar*. Although the studio had backed and distributed several Cameron films, the *Titanic* experience had made Fox executives cautious. Originally budgeted at \$110 million, the film's production costs famously ballooned to \$200 million when special effects and the cost of constructing the ship delayed filming. There were also months of rumors preceding the film's release that it would prove to be one of the worst business decisions in the history of the movies.

Given all that scary background, says Twentieth Century Fox Co-Chairman Tom Rothman, "*Avatar* couldn't be rushed." In 2005 the studio decided to place a small wager on Cameron—\$10 million so he could show proof of concept.

With the Fox money, Cameron repaired to the 280,000-square-foot hangar he leases in Playa Vista, Calif.—where in the 1940s Howard Hughes built the Spruce Goose—and began working on a 3D film clip that he could use to persuade Fox brass to make the movie. Jeffrey Katzenberg, CEO of DreamWorks Animation ([DWA](#)), says he and Cameron were in touch frequently during the experimentation phase and that Cameron visited the DreamWorks facility in Glendale, Calif., to learn more about animation software. "We create our own world in animation," Katzenberg says. "But this was the first time a director could take real characters and put them into a world he had created, in real time."

Katzenberg is one of Hollywood's leading cheerleaders for 3D moviemaking—higher-priced tickets and bigger audiences mean more money for his studio. While entertainment executives often root against rival projects, Katzenberg was hoping Cameron's movie would jump-start the revolution. "Everyone," he says, "was waiting for *Avatar*."

In October 2005, Cameron screened his 3D segment for four Fox executives at the offices of his production company, Lightstorm Entertainment, in Santa Monica, Calif. "Their eyes kind of lit up," Cameron says. "They could see what I had been talking about for months." But *Avatar* producer and Cameron business partner Jon Landau says Fox still wanted a shorter script and a more reasonable budget. In response, says Landau, Cameron combined several characters to trim expenses. Cameron says he also agreed to cut his usual fee in half and take a lower percentage of the film's revenues if *Avatar* wasn't profitable. "Luckily," says Cameron, "we're at such a stratospheric level now that we're not worried about that."

By mid-2006, according to someone involved in the negotiations, Fox was still concerned that making *Avatar* would cost too much money. "They told us in no uncertain terms that they were passing on this film," Cameron says. Cameron decided the best way forward was to try to persuade another studio to get involved. Walt Disney ([DIS](#)) had produced two of the director's 3D underwater documentaries, so Cameron invited Dick Cook, then Disney's studio chief, to watch the clip. "We loved Jim and would have liked to have worked with him," says Cook. "He has an infectious love of 3D that impressed us. Unfortunately, we never got that far." The reason: Fox had the first right of refusal. "We were never going to let this one get away," says Fox Co-Chairman Jim Gianopoulos.

To get the deal done, the studio decided to bring in partners to share the financial burden. Fox already had a deal with Dune Entertainment, part of a New York private equity fund that since 2006 has contributed financing for Fox movies. To further reduce its risk, Fox began talking to London-based Ingenious Media, which since 1998 has raised \$8 billion to invest in such films as *Shaun of the Dead*, *Night at the Museum*, and *Live Free or Die Hard*. Taking a stake in *Avatar*, however, required some persuasion. James Clayton, who oversees Ingenious' movie investments, recalls multiple meetings with Cameron and Landau in Playa Vista before deciding to invest an undisclosed sum. "I was really impressed by their understanding of the business, that there is so much competition these days for people's leisure time that you have to create something you

won't find on TV, on computer games, the Internet, to draw audiences into the theater," Clayton says. "This wasn't purely a creative process for them, like it is with some producers. Jon and Jim absolutely understood the need to cater to audience tastes."

With *Ingenious* on board, Fox had lowered its exposure to less than half of *Avatar*'s \$237 million budget. "We consider all filmmaking a dangerous game," says Murdoch. "And we always lay off [risk] to the film funds when we can. This time we laid off more than usual. But we own much of the distribution and other rights. In the end, we will make much more money than them." In October 2006, Fox agreed to make *Avatar*. Cameron says he still isn't quite sure why Fox finally jumped aboard but recalls studio executives saying: "We don't get the giant blue guys with the tails, but we believe in you and want to do this movie with you." Months earlier, Cameron had put a traffic light outside Landau's office. After Fox said yes, they switched it from amber to green.

Production began, and word soon leaked out that something extraordinary was going on in Cameron's airplane hangar. The director had rigged the ceiling of the cavernous space with cameras that tracked his actors, who were wearing versions of the motion-capture suits made famous by the character Gollum in Peter Jackson's *Lord of the Rings* trilogy. Headsets rigged with tiny cameras captured actors' facial expressions and eye movements, a jolt of reality that Cameron deemed crucial if he was going to make the film. Using software developed in-house, the crew imported the actors into Pandora's digital world while Cameron was shooting.

THE 3D STAMPEDE

Before long, other directors began making pilgrimages to Playa Vista. Landau recalls visits from Spielberg, Ridley Scott, and *Pirates of the Caribbean* director Gore Verbinski. Landau even set up a screening room near the set so visiting filmmakers could watch on a monitor what Cameron was seeing in real time through the lens of his camera. In December producer John Davis (*I, Robot*; *AVP: Alien vs. Predator*) screened *Avatar* at a special VIP showing in Hollywood. "I saw how 3D could improve a film," he says. Davis hopes to persuade Fox to shoot a remake of the 1963 movie *Jason and the Argonauts* in 3D. *Transformers* director Michael Bay and *Star Trek* director J.J. Abrams have said they would like to convert their franchises to 3D, too, though Paramount has not yet agreed.

Not every movie will warrant the investment that 3D demands. For the foreseeable future it will remain a high-risk, high-reward medium that excludes Woody Allen movies, and Sandra Bullock ones, too. But for directors and producers of action and fantasy films, 3D has to be a consideration. "What *Avatar* showed is that there is still a reward in taking the risk to make a large-budget film that will bring people out of their homes," says former Fox studio chief Bill Mechanic, who produced the 3D *Coraline* in 2009.

Vincent Pace has had a steady stream of inquiries since *Avatar* was released. His company rents out its 3D cameras and associated gear to other directors at a rate of \$1.4 million to \$3 million per film, depending on the difficulty of the shoot. Director Joseph Kosinski is using one for *Tron Legacy*, which is due out in December.

Pace says advertising agencies have also expressed interest in using the camera rigs for commercials, and networks are eyeing it for 3D TV sports broadcasts. "The perfect storm has kind of swept by," says Pace. "We're quite excited that what we embarked on 10 years ago is being accepted in a very commercial way." Pace says he and Cameron own the patents on the gear and that, given the buzz generated by *Avatar* and the coming wave of 3D TVs, it won't be long before they recoup their initial investment and start to reap a profit.

As Cameron anticipated, *Avatar* has theater owners rushing to equip more of their cinemas with 3D technology. "*Avatar* has put an exclamation point on what we have done and what we are going to do," says Michael V. Lewis, CEO of RealD, a Los Angeles company that supplies 3D screens, projectors, and glasses to theaters. Of the 38,000 screens in the U.S., only about 3,600 are currently 3D-ready. Lewis says RealD plans to add an additional 5,000 screens in the next 18 months.

The director has emerged from his 12-year odyssey far more powerful than after his previous box-office record-breaker. Even with credit still tight, money almost certainly will flood his way. And like any good businessman, Cameron will put his development costs to work with brand extensions. In other words, look out for that *Avatar* sequel.

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Cameron Redux

James Cameron's exploits have been well documented. Nonetheless, a profile of the director that ran in the Oct. 26 issue of *The New Yorker* is a fascinating read. The finely textured piece by Dana Goodyear traces the arc of Cameron's career from his roots in a small Canadian town to his present role as the king of Hollywood.

To read *The New Yorker* profile, go to <http://bx.businessweek.com/movie-industry/reference/>

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THE NEW YORKER

Profiles

Man of Extremes

The Return of James Cameron.

by [Dana Goodyear](#) October 26, 2009



Cameron on a studio lot in Los Angeles, in the armored suit worn by one of the characters in “Avatar.” He says, “This film integrates my life’s achievements. It’s the most complicated stuff anyone’s ever done.” Photograph by Martin Schoeller.

The director James Cameron is six feet two and fair, with paper-white hair and turbid blue-green eyes. He is a screamer—righteous, withering, aggrieved. “Do you want Paul Verhoeven to finish this motherfucker?” he shouted, an inch from Arnold Schwarzenegger’s face, after the actor went AWOL from the set of “True Lies,” a James Bond spoof that Cameron was shooting in Washington, D.C. (Schwarzenegger had been giving the other actors a tour of the Capitol.) Cameron has mastered every job on set, and has even been known to grab a brush out of a makeup artist’s hand. “I *always* do makeup touch-ups myself, especially for blood, wounds, and dirt,” he says. “It saves so much time.” His evaluations of others’ abilities are colorful riddles. “Hiring you is like firing two good men,” he says, or “Watching him light is like watching two

monkeys fuck a football.” A small, loyal band of cast and crew works with him repeatedly; they call the dark side of his personality Mij—Jim backward.

The pressures on Cameron are extreme, never mind that he has brought them on himself. His movies are among the most expensive ever made. “Terminator 2” was the first film to cost a hundred million dollars, “Titanic” the first to exceed two hundred million. But victory is sweeter after a close brush with defeat. “Terminator 2” earned five hundred and nineteen million around the world, and “Titanic,” which came out in 1997, still holds the record for global box-office: \$1.8 billion.

Cameron is fifty-five. It has been twelve years since he has made a feature film; “Avatar,” his new movie, comes out on December 18th and will have cost more than two hundred and thirty million dollars by the time it’s done. He started working on it full time four years ago, from a script he wrote in 1994. “Avatar” will be the first big-budget action blockbuster in 3-D; Cameron shot it using camera systems that he developed himself. He is a pioneer of special effects: the undulating water column of “The Abyss” and the liquid-silver man of “Terminator 2” helped to inspire the digital revolution that has transformed moviemaking in the past two decades. The digital elements of “Avatar,” he claims, are so believable that, even when they exist alongside human actors, the audience will lose track of what is real and what is not. “This film integrates my life’s achievements,” he told me. “It’s the most complicated stuff anyone’s ever done.” Another time, he said, “If you set your goals ridiculously high and it’s a failure, you will fail above everyone else’s success.”

George Lucas popularized space opera; Steven Spielberg has perfected awe. Cameron’s movies, soaked in sweat and blood and scorched by apocalyptic flames, have romance at their molten cores. Some of his most memorable characters—Sarah Connor, the heroine of the “Terminator” movies; Ellen Ripley, of “Aliens”—are mothers. The writing is a genre of its own: “tech-noir,” Cameron called it after “Terminator”; his late-period style is more like gear-head schmaltz. “IN THE BLACKNESS we hear the lonely ping of a bottom sonar,” the beginning of his treatment for “Titanic” reads. “Then two faint lights appear, close together . . . growing brighter. They each resolve into clusters of lights, which are soon revealed to be two DEEP SUBMERSIBLES, falling toward us. We are somewhere in the ocean deep, looking up at two subs freefalling like express elevators. . . . Soon they are fireflies, then stars. Then gone.” Spielberg says, “He gets a lot of points for being a techno-brat, but he is a very emotional storyteller.”

“With ‘Avatar,’ I thought, Forget all these chick flicks and do a classic guys’ adventure movie, something in the Edgar Rice Burroughs mold, like John Carter of Mars—a soldier goes to Mars,” Cameron told me. The hero of “Avatar,” Jake Sully (Sam Worthington), is a paraplegic ex-marine who travels to Pandora, a moon in the Alpha Centauri star system, where there is a human colony. Humans can’t breathe the air on Pandora; Jake lies in a casket-like vessel, while his consciousness, projected into an “avatar”—Vishnu-blue and nine feet tall, like the native population, the Na’vi—explores Pandora’s rich interior. It is a fantasy about fantasy, about the experience of sitting inert in the dark while your mind enters another world. Set roughly a hundred and twenty-five years in the future, “Avatar” is, like most speculative science fiction, a cautionary tale. Humans have turned Earth into a wasteland and, in their pursuit of a precious superconductor called Unobtainium, are beginning to do the same to Pandora. Jake, through his

avatar, falls in love with a Na'vi princess, who teaches him to live in harmony with nature, and then he leads her people in an insurrection against the colonists. "Of course, the whole movie ends up being about women, how guys relate to their lovers, mothers—there's a large female presence," Cameron said. "I try to do my testosterone movie and it's a chick flick. That's how it is for me." This summer, addressing an auditorium filled with thousands of teen-age boys at Comic-Con, in San Diego—an annual convention of science-fiction, action-adventure, and fantasy fans—he made his identification with the fair sex complete. When someone in the audience asked about his next movie, he replied, "You know, it's not a great time to ask a woman if she wants to have other kids when she's crowning."

Cameron behaves as if he were the embattled protagonist of one of his own films—an ordinary Joe beaten on the anvil of extraordinary trials. "The words 'No' and 'That's impossible' and phrases like 'That can't be done'—that's the stuff that gives him an erection," the actor Bill Paxton, who has worked with Cameron since the early eighties, says. Cameron reserves a special quotient of his anger for suits who get in his way. "Tell your friend he's getting fucked in the ass, and if he would stop squirming it wouldn't hurt so much" was the message he once told a Fox producer to deliver to an executive at the studio. He sees himself as essentially outside and other and alone; he bites the hand that feeds. "Even though he knew I was on his side, nobody's ever on his side," Bill Mechanic, who ran Fox Studios during the making of "Titanic," said. "It's like you're in the trenches and your infantry-mate is shooting at you, even if you're the only one there who can save his life."

There is a chivalric aspect to Cameron's antagonism; he figures his struggles in heroic terms. "I try to live with honor, even if it costs me millions of dollars and takes a long time," he says. "It's very unusual in Hollywood. Few people are trustworthy—a handshake means nothing to them. They feel they're required to keep an agreement with you only if you're successful, or they need you. I've tried not to get sucked into the Hollywood hierarchy system. Personally, I don't like it when people are deferential to me because I'm an established filmmaker. It's a blue-collar sensibility."

Cameron was born in Canada, and grew up in a small town not far from Niagara Falls. (He revoked his application for American citizenship after Bush won the election in 2004.) His father was an engineer for a paper company; his mother brought up five children, and told stories of racing stock cars and joining the women's auxiliary of the Canadian Army. Jim was the oldest, the ringleader of his siblings and the other kids in the neighborhood. "There was always some new thing that absolutely needed to get done, whether it was building a fort or an airplane or launching rockets," he told me. "We made it in the papers once, for a U.F.O. sighting over a hot-air balloon that we built and launched at night that was powered by candles." His hero was Jacques Cousteau, and although he lived four hundred miles from the ocean, he became obsessed with scuba. He learned to dive in Buffalo one February in a Y.M.C.A. pool.

At fourteen, Cameron saw the movie that made him want to make his own: Stanley Kubrick's "2001: A Space Odyssey," the first cinematically exquisite treatment of what had traditionally been B-movie material. "I saw all these cool spacecraft and I wanted to know how the visual effects were done," he said. "I started building my own models of spaceships, from the '2001' model kit and the 'making-of' book, which was quite thick and well researched." After he

finished making “True Lies,” Cameron called Kubrick, by then a recluse, and invited himself over. They spent a day, in the basement of Kubrick’s house in the English countryside, watching “True Lies” at Kubrick’s flatbed editing station. Cameron went over the shots—Schwarzenegger in a Harrier jet firing a missile, with the villain attached to it, through an office building and into a helicopter: *boom!*—so that Kubrick could learn how the effects were done.

When Cameron was seventeen, his father was transferred to Southern California, and the family moved to Brea, a small city in Orange County. He had left Canada without a high-school diploma, and started taking classes at Fullerton Junior College, supporting himself by working as a precision tool-and-die machinist. “My dad was a college graduate,” he said. “But, see, I didn’t want to do the things he thought I should—you know, something good, like engineering.” He dropped out, and, when he was twenty-three, married a woman who worked as a waitress at a Bob’s Big Boy. For a while, he drove a truck for a local school district. In archetypal terms, this was his period of exile and self-denial, the refusal of the call. “I just became this blue-collar guy,” he said. “But I was constantly thinking as an artist, so I’m painting, drawing, writing, thinking about visual effects and filmmaking.”

In Brea, Cameron met William Wisher and Randall Frakes, who also wanted to make movies, and who are still his two best friends. Eventually, they raised the money to make a short film, “Xenogenesis,” starring Wisher as a futuristic man in an orange jumpsuit who battles an armored robot with a metal pincer for a hand. It got Cameron a job sculpting models for Roger Corman in L.A.

Corman’s studio—a training ground for filmmakers like Francis Ford Coppola, Martin Scorsese, and Jonathan Demme—specialized in low-budget genre films. Cameron distinguished himself immediately, and soon he was designing sets. He was focussed—often working through the night—and he was scrappy. “He’d take all these random parts—Winnebago parts, industrial dishwashing racks, Sonotubes, a lot of paint—and turn them into an incredible set,” Paxton, who worked for Corman as a set dresser, recalled. For “Battle Beyond the Stars,” Corman’s takeoff on “Star Wars,” Cameron was asked to design the spaceships. “His sketches were brilliant,” Corman said. “The best of that type of work that I had ever seen.” Each spaceship reflected the character of its pilot, and also Cameron’s instinct for the iconic, literal image; to the mother ship, Nell, he gave a curvaceous shape and a pair of heaving breasts.

James Cameron doesn’t go to the bathroom; he goes to the head. In his universe, there is no front and back, right and left, just fore and aft, starboard and port. He is still an avid scuba diver; when there are sharks in the water, he says, he’s the first one in. Free-diving, he has held his breath for more than three minutes and reached a depth of a hundred and ten feet. (“You feel like a denizen of the deep, if only for a second,” he says. “Plus, diving below the scuba divers, I like just to see the look on their faces.”) He used to have a JetRanger helicopter, and owns a slew of dirt bikes, three Harleys, a Ducati, and a Ford GT—“basically a race car with a license plate”—in classic blue-and-white livery. In Corvettes, he has favored triple black—black body, black interior, black top. For pleasure, he designs submersibles; the one he’s working on now can go to thirty-six thousand feet, and he hopes to use it to explore the Mariana Trench, the deepest spot on earth. He signs his missives “Jim out,” and, when he’s working, a deep mechanical roar, like a Navy

klaxon, summons him to the stage. “Dive! dive! dive!” he said, an intent look in his eyes, when I asked him what the signal meant.

I first met Cameron in April of 2008. “Avatar” was in its third year of production. For much of that time, Cameron had been working out of a couple of hangars in Playa del Rey, south of Los Angeles.* He was sitting in his office, a small room at the edge of one of the hangars, beside a bust of a feline-looking blue alien covered in bioluminescent spots: Neytiri, the Na’vi princess. “Our leading lady,” Cameron called her, or just “the blue chick.” He was wearing a T-shirt that said “Scubapro” and had a pair of earphones around his neck. Despite moviegoers’ associations of 3-D with schlocky horror films and animated stuff for kids, Cameron said he was resolved to work in the medium: “It gives you more of a sense of participation, involvement, and immersion. You feel like you’re bearing witness, and that makes the journey feel more real.” It was also a business decision. Having developed the camera technology, he knew that only a high-profile movie, such as “Avatar” promises to be, would accelerate the conversion of theatres. “I said, ‘They know the product. They better get ready.’ It was a little bit cheeky—a leap of faith that the screens would be there for us.” That spring, there were about fifteen hundred 3-D screens in the United States; by December, there will be three times that many. (“Avatar” will also have a wide release in 2-D.)

There was a knock at the door. “I have to go make a shot,” Cameron said. He walked swiftly toward the floor of the hangar, a vast industrial space that he referred to as “the performance-capture volume.” The stage floor, furnished with just a low riser, had been painted battleship gray. Zoë Saldana, who plays Neytiri, stood among a group of actors wearing black unitards covered with reflective white dots: a retro vision of the computer age, Pilobolus style. The ceiling was studded with black-and-white surveillance cameras that tracked the actors’ movements and positioned their performances inside a digital set—in this case, a Na’vi battle camp deep in the rain forest, where Jake’s avatar is preparing the warriors to fight with bows and arrows against the high-tech human war machines. Saldana wore a special head rig fitted with a tiny camera that floated inches from her face, to capture her expressions in minute detail: the movements of her facial muscles, the contractions of her pupils, the interaction of her teeth, lips, and tongue. The data uploaded to a dozen computers banked around the room, which translated the movements of the actors onto the physiques of their digital characters, and fed the images, along with the digital set design, into the eyepiece of Cameron’s “virtual camera”—essentially, a viewfinder with a monitor. For him, it was like directing a live-action shoot on Pandora. Saldana, who is five feet seven, performed in his eyepiece as a nine-foot alien in a rain forest.

On cue, the actors began to make strange trilling sounds, ejectives and glottal stops and rolled “r”s: Na’vi. Cameron stopped the scene. “When Jake goes”—Cameron uttered a mellifluous sentence in Na’vi—“you go, ‘Whoop! Whoop!’ ”

Back in his office, Cameron played an unfinished scene from “Avatar” on a large screen. The renderings were crude, like paper cutouts: the graphic sophistication of a nineteen-nineties video game. Neytiri—hipless, lean, with proportions to make Barbie look like a Cabbage Patch Kid—crouched on a tree limb high above the forest floor. She spotted Jake’s avatar for the first time, and took aim. The next shot was much more evolved. Neytiri’s skin was tactile and radiant; her eyes were huge and green and flecked with light, like five-dollar marbles from Conran. “This is

ninety or ninety-five per cent done,” Cameron said. “By the way, we didn’t have the equipment when we started this. It took nine months to build the computer model and to get it right. It’s incredibly computationally complex, but now we’re able to replicate the interaction of muscle under skin.” He stopped the footage on a closeup of Neytiri’s face. “She exists only as a big string of ones and zeroes,” he said, as if he could not quite believe it himself. “Computing a single frame of this takes thirty hours.” He paused. “Everybody in this building has had more college than I have.”

All directors have a God complex; Cameron takes his unusually seriously. For “Avatar,” he worked with a linguist to develop the Na’vi language, inspired by fragments of Maori he picked up in New Zealand years ago. He based Pandora, and its myriad flora (spike tears, cliff slouchers, stinger ivy) and fauna (direhorses, banshees, slinths), partly on the creatures of the coral reefs and kelp forests he has seen at the abyssal depths. He hired a team of artists to execute his ideas, but reserved one creature for himself: the thanator, a six-legged black pantherlike beast, twenty-four feet long, covered in plate scales, with a reptilian double set of jaws and a threat display resembling that of a fan lizard. “The thanator is the baddest, meanest predator the planet had to offer,” Neville Page, the lead creature designer, said. “As Jim put it in the treatment, a thanator can eat an Alien for dessert. He wanted to outdo himself, outdo the Alien Queen.”

“Creating a universe is daunting,” George Lucas said. “I’m glad Jim is doing it—there are only a few people in the world who are nuts enough to. I did it with ‘Star Wars,’ and now he’s trying to challenge that. It’s a lot of work. I do believe Jim will take this further out than anyone’s ever conceived of.”

Cameron inserts himself into every aspect of the filmmaking process. With the virtual camera, he is both cinematographer and camera operator, working in his favorite style, handheld, for what he calls “an edgy, subjective quality.” The camera eliminates the need for cable cars, helicopters, or cranes, allowing him to shoot from any vantage point he chooses. “When I say, ‘Make me three to one,’ what I’m saying is ‘Make me eighteen feet tall,’ ” he said. “At that point, I’ve become a techno crane. If I say, ‘Make me twenty to one,’ I’m a helicopter.” The Na’vi, too, are an extension of Cameron. He mentioned that he is a lefty. “Guess what,” he said. “The Na’vi are all left-handed now.” He taught Zoë Saldana how to shoot her bow, as he envisioned it. “It’s a two-fingered inverted draw past the head, like a Samurai,” he said, tracing the shape in the air over his left shoulder. “The archery instructor came and said, ‘Do you want me to teach them archery or do you want me to teach them *this*? This would never work.’ I said, ‘See that bush?’ It was a hundred and fifty feet away. I nailed it.”

The next time I saw Cameron, the lights were low. A year had passed. His hair was longer and whiter, and he had grown a small paunch; later, I learned that he had broken a tooth and hadn’t bothered to fix it. (“I don’t smile that broadly anyway,” he said.) He was alone, moving slowly, grapevining his left foot gingerly over his right leg as he made his way around the performance-capture volume, in soft-soled slip-ons. (“Like a waitress, I have to wear sensible shoes.”) He had the virtual camera in front of him; he was lost, like a gamer in a trance. A large monitor nearby displayed what he saw in his eyepiece: a digital aircraft with a human pilot, crashing through the lush Pandoran jungle.

Cameron was choosing angles for a sequence that had been captured months before. When he finished, he looked up at Jon Landau, his producer, who was standing at the edge of the space. Landau used to work for Fox, where he oversaw the production of “True Lies,” before going to work for Cameron’s production company, Lightstorm, in 1995. His T-shirt said something about Tommy Bahama’s Dive Bar; staying close to Cameron means embracing scuba culture in whatever way you can.

“What’s with the tan?” Cameron asked him. “No one’s supposed to have a tan here. We’re in here fourteen hours a day. We see the sun as we drive to work, and not again till the next morning.”

“I fell asleep by the pool in Vegas yesterday,” Landau said. Cameron looked appalled.

Hours passed; Cameron danced. Eventually, Stephen Lang, who plays the film’s villain, came in, wearing heavy boots and a soiled, bloodstained camouflage jacket. A long, flexible arrow was stuck into his chest.

“Should there be more blood on my shirt?” he asked.

“We’re going to play it that the arrow seals the wound,” Cameron said.

“Thank you, Jim!” Landau said. He is trying to keep the film PG-13.

Most of “Avatar”’s live-action scenes were filmed in New Zealand in 2007, but, the next day, Cameron had to get a few shots of Lang inside an “armored mobility platform,” or AMP suit. The suit, which, in the finished film, will be a combination of digital effects and physical set, is a menacing piece of military hardware, like a personal tank. A prop guy asked if the suit would have any bearing on how Lang’s character reacted when attacked.

“That’s a damn good question,” Cameron said. “We’ve already established the idea that when the suit is grabbed it looks like it’s in agony.” Cameron put on a nasal, whiny voice—his rendition of a fixated fanboy. “‘How come the suit didn’t move the right way? The fourteenth time I saw the film, in my basement, I really questioned the editorial integrity of it.’” He laughed, and then grew suddenly serious, as if aware that he had just said something jinx: he should be so fortunate. “O.K.—shirt with schmutz and sweat,” he said, fingering the fabric around the entry wound. He looked down at his hands, which were now smeared with fake blood. “I have so much blood on my hands, from all the movies, metaphorically and psychically,” he said.

That night at half past eight, Cameron marched upstairs, two at a time, to a mess of cubicles he called “the lab,” where artists and programmers were stationed at computer screens. The lab smelled of coffee. Nearly everyone had chin hair. Cameron headed for a screening room for his nightly video conference with Weta, Peter Jackson’s digital-effects studio, in New Zealand, which was responsible for taking the basic renderings done by Cameron’s team and turning them into photo-realistic images: the bright, sentient eyes; the muscle under skin; the movement of wind, water, hair. Jackson says that “Avatar”’s digital characters are more nuanced and vivid

than any that have come before. “I’ve seen people looking at ‘Avatar’ shots, being convinced they are somehow looking at actors in makeup,” he wrote me in an e-mail.

Cameron, Landau, and several others sat in the dark, facing a large screen. A smaller screen showed six artists from Weta, at a conference table in New Zealand. “Avatar” has nearly three thousand effects shots; Cameron will review some of them as many as twenty times. He is an exacting critic, and an exuberant showoff, and the meetings provide a captive audience. Any disagreement is resolved with the indisputable logic of an older sibling who has invented a game and deigned to let his kid brother play: his universe, he wins. “I hate this fucking thing, but I can be very specific about it,” he said, when an image of a rock arch sacred to the Na’vi came up on the screen. “This looks like petrified wood,” he said, circling the offending part with a red laser pointer. “It has a longitudinal grain structure. It looks very fragile to me. This hard, crystalline structure looks like *barn* wood. We want to say that this arch formed as igneous rock, that it’s a lava formation that got eroded, but it’s fracturing out along the crystal planes of minerals.”

At one point, Landau asked if Jake’s avatar’s ears looked a touch too red in a closeup shot. “When you direct your movie with nine-foot-tall blue people, you can do whatever you want,” Cameron said. “The ears are red when they’re backlit. That’s how they *look*.”

“Agreed,” Landau said cheerfully. He seemed used to it.

The meeting ended on a boisterous note. “That fuckin’ rocks!” Cameron called out in response to an image of a snarling maw of thin blue-veined tissue, the mouth of the pterodactyl-like banshee that Jake’s avatar domesticates for his ride. “Look at the gill-like membrane on the side of the mouth, its transmission of light, all the secondary color saturation on the tongue, and that maxilla bone. I love what you did with the translucence on the teeth, and the way the quadrate bone racks the teeth forward. It’s a sharky thing. As wacky as this creature is, it looks completely real. Maybe I’m getting high on my own supply.” He was practically out of breath. “The banshee lives! He’s a fierce-looking sonuvabitch.”

Home, for Cameron, is a fortress of preparedness. Since 1992, he has lived in Malibu, in a gated community called Serra Retreat, a patch of scrubby hillside across the highway from the beach. Mel Gibson lives in Serra Retreat; Britney Spears used to be Cameron’s neighbor there. Cameron’s place is a custard-colored nineteen-eighties Spanish house, with a red tile roof, in a small cul-de-sac; at the end of his driveway, there is a gate, beyond which stands a red Humvee platform fire truck and a uniformed security guard, with a clipboard and a badge. Ex-military buddies of his younger brother John David, who served as a marine in Iraq during the first Gulf War, sometimes provide additional security.

Cameron’s imagination was shaped by the Cold War; the threat of nuclear annihilation is a recurring theme. But he also admires the military and its accessories. “I suppose you could say I believe in peace through superior firepower,” he told me. “I don’t believe that the human race is going to suddenly evolve to the point that we can all join hands and sing ‘Kumbaya.’ ” He learned to shoot—shotguns, assault rifles, pistols—in the early eighties, when he was writing “The Terminator.” “I didn’t want to write like an idiot, based on some kind of comic-book knowledge,” he said. “I do a lot of things in the pursuit of creating a patina of reality in what is

basically fantasy.” He has continued his education, training with a handgun expert on a course with pop-up targets, and spending a lot of time in the desert with his friends, shooting up watermelons and jalopies with an AK-47.

Five years ago, Cameron bought the house next door, which had belonged to George C. Scott. Same architect, same style. It contains a post-production facility, and has editing rooms and a screening room. One recent morning, a young male assistant was in the kitchen, sorting silverware, while another made coffee. A tiled center island was laden with pudgy chocolate-chip muffins and cannisters of pretzels: suburban-abundance comfort food, for people working around the clock. Cameron came in at nine and poured himself a decaf. (He stopped drinking caffeine after “Terminator 2.”) He was wearing jeans and an Atlantic-blue button-down shirt. He walked out the back door to a large pool and patio. Lawn chairs and chaises and glass-topped tables suggested various forms of leisure. Cameron looked at the furniture uncertainly, as if he had never contemplated using it before. He chose a spot under an umbrella. Belle, one of three black German shepherds Cameron keeps, dropped a slimy tennis ball at his feet.

“We have a big fire problem here,” he said. He mentioned that he has his own pump house. “We take the pool water, mix it with Class A foam, and pump it out over the whole property. Everybody else just runs for the hills.” He threw his hands up and did a squeaky voice. “*Oh, my God!* We sit and wait. Put on our yellow coats and our breathing gear and wait. And, you know what? It’s impressive. When these hills light up with a hundred-foot-tall wall of flames coming over the top of the hill there, you feel like it’s Armageddon.”

Cameron has had five wives (waitress, producer, director, actress, actress). He has four children, ranging in age from sixteen to two, and a nineteen-year-old stepson. Since 2000, he has been married to Suzy Amis, who had a small role in “Titanic.” She no longer acts; several years ago, she founded Muse Elementary, a private school with an emphasis on ecological consciousness, in a setting that is, according to its Web site, a “dye-free, toxin-free, pesticide-free zone.”

Before Amis, Cameron was married to Linda Hamilton, who played Sarah Connor, a woman hunted by unstoppable cyborgs, in the “Terminator” films. As Hamilton recalls it, she and Cameron didn’t get along particularly well during the first shoot. “My joke after that movie was, That man is definitely on the side of the machines,” she said. For the sequel, in which Sarah Connor has become a near-psychotic paramilitary fighter deranged by her foreknowledge of the imminent destruction of the world, Hamilton spent a year on a merciless fat-free diet, and trained with a former Mossad agent, who taught her to strip weapons blindfolded while he threw things at her and asked for her identification number. She got so that she could escape from L.A.P.D. handcuffs using just a paper clip.

Not long after Cameron finished shooting “Terminator 2,” he got divorced from his wife at the time, the director Kathryn Bigelow. (They are still friends: Bigelow says that when she got the finished script for “The Hurt Locker,” her latest film, Cameron was the first person whose opinion she sought out.) He and Hamilton got together, and moved into the house in Serra Retreat. “The very first night, I realized it was a mistake,” she told me. “He was the controlling director. The person I’d seen on set came back to life—we’re in his environment, and I didn’t have much of a say-so.” She found herself on survivalist weekends in the desert, flying kit planes

and shooting fruit, and riding shotgun in Cameron's Corvette. "It was Jimbo who had the love of fast cars, but as the warrior bride I was on the back of the motorcycle," she said. She wanted to get married, but Cameron, she says, was not interested in a conventional domestic life: "He used to say to me, 'Anybody can be a father or a husband. There are only five people in the world who can do what I do, and I'm going for that.'" She got pregnant, and moved out when their daughter, Josephine—Cameron's first child—was nine months old.

Despite living apart, Cameron and Hamilton remained a couple, and he proved to be a devoted father. "We'd have a fight at Geoffrey's"—a surf-and-turf restaurant on the Pacific Coast Highway—"and go our separate ways," she said. "Much alcohol was consumed by Linda Hamilton." After six years, when Cameron was making "Titanic," they married. Hamilton was going to get scuba-certified, but the relationship unravelled too rapidly for that. "In the end, it was an eight-month marriage, and he went off with someone who's much better suited to him," Hamilton said. They divorced, and Cameron and Amis married shortly thereafter.

Wisher, Cameron's old friend, says that strong women are one of the constants in Cameron's life: "He likes to write about 'em and he likes to marry 'em. If there's one or two themes that run through his life and work, that's at the top of the list. That and self-determination. 'There is no fate but what you make'—that line from 'The Terminator.' That's his credo, I'm sure."

Hollywood metonymy for female characters is "handbags," also known as "girlfriend parts"—in other words, incidental sidekicks. Gale Anne Hurd, Cameron's second wife, and the producer of his first three films, says that Cameron always found women more interesting than men as protagonists. "He felt that they were underutilized in sci-fi, action, and fantasy," she said. "And that just about everything you could explore in a male action hero could be explored better with a woman."

In 1981, Cameron had the idea that became his first autonomous movie. It came to him, as he tells it, in the post-Freudian form of divine intercession: a dream. He was in Rome, trying to see a cut of "Piranha 2," a bikinis-and-blood exploitation flick that he had been hired to direct. (He had been fired by the Italian executive producer, and wanted to get his name taken off the film.) He was sick and broke, and staying in a tiny pensione. One night, he said, he dreamed of "a chrome skeleton emerging out of a fire." Then he sketched the figure cut in half and crawling after a woman. He said, "I thought, That was cool. I've never seen *that* in a movie before."

Cameron came home and recruited Wisner and Frakes to help him with a storyline centered on the chrome skeleton he had begun to think of as the terminator. He analyzed the common traits of the ten most successful movies of all time: an average person in extraordinary jeopardy was a major trope. His story posited a future when much of Earth has been destroyed in a catastrophic nuclear war; out of the rubble, a race of machines rises up and tries to eliminate the few remaining human beings. To win the war for good, the machines send a cyborg terminator back in time, to 1984 Los Angeles, to kill the woman, Sarah Connor, a waitress at a burger joint who will later give birth to the leader of the human resistance.

"My tether to directing was effects, but effects are expensive," Cameron says. "I said, It's gotta have a fantastic element, but we'll shoot on locations—it'll be something set on Earth but with a

few scenes in the future.” The script caused a stir in Hollywood. It went out to Arnold Schwarzenegger, the bodybuilder best known for playing the title role in “Conan the Barbarian”; he was asked to consider playing Kyle Reese, a human from the future charged with protecting Sarah Connor from the cyborg. (O. J. Simpson was being talked about for the terminator.) Schwarzenegger says that, reading the script, he considered everything that the terminator would have to do: repress all emotion, shoot without blinking, speak like a recording from a Dictaphone. Over lunch with Cameron, he said how excited he was to play Reese, but also shared his ideas for the cyborg. At the end of the meal, Schwarzenegger picked up the check. Cameron, who was sharing an apartment in Tarzana with Wisner, and driving a beat-up two-door Chevrolet, had no money.

Cameron persuaded Schwarzenegger that he was much better suited to the terminator role. Schwarzenegger recalls, “He starts almost talking like a psychiatrist, and telling me the reasons why I’m not interested in it, because I come from an Austrian background, and maybe someone would give me less dialogue because I’m not as understandable. But, he says, ‘Don’t worry about the amount of dialogue. It will be one of the most memorable characters of the year, maybe even of the decade.’ ”

“The Terminator,” a six-million-dollar movie, made eighty. Schwarzenegger’s lines in that film and its sequel, where he plays a good cyborg fighting an evil liquid-silver one, were so memorable—“*Hasta la vista, baby*”; “I’ll be back”—that Schwarzenegger, now the governor of California, has made them part of his political career. “We’re going to terminate global warming,” he said, announcing a new environmental initiative, and “We’re going to say ‘*Hasta la vista*’ to crime.” People around the world know him as the Governator. But it is Sarah Connor who has emerged as the cult figure of the “Terminator” films: a full-bore female action hero, the mother of a generation of Xenas, Buffys, and Lara Crofts.

As a young writer, Cameron borrowed a trick from Walter Hill, who, working on the outer-space horror movie “Alien,” took a character (a young ensign named Ripley) that was originally male and, with minimal revision, made the character female. (Sigourney Weaver played the role, Ellen Ripley.) As Cameron described the technique, “You write dialogue for a guy and then change the name.” After “The Terminator,” Cameron was hired to write and direct the sequel to “Alien.” His movie, “Aliens,” intensified Ripley’s machismo, and gave her an important new motivation: to save a little girl whose parents have been killed by aliens. Weaver says that she was shocked when she showed up for work, not having read the script’s stage directions carefully. “I had been working for gun control since college,” she said. “I get to the set and, I’m telling you, I had never seen so many guns, all designed by Jim. And then there was my weapon, this super-weapon—a machine-gun-bazooka-flame-thrower all in one.” Her performance was nominated for an Academy Award, a rare recognition for the star of a sci-fi action film.

In the pièce de résistance, Weaver, who also has a large role in “Avatar,” dons a metal-plated hydraulic suit and confronts the Alien Queen, a bony black monster with dripping translucent fangs, like a T. Rex skeleton exhibit come to life, whose goo-encrusted ovipositor is a Satanic vision of the procreative principle. As an instance of feminist iconography it perhaps leaves something to be desired. “Get away from her, you *bitch!*” Weaver spits when the Queen goes for

the little girl, invoking an archetype that is more catfight than warrior goddess, before she engages her in hand-to-hand combat and takes the old girl down.

To Cameron, making a movie is going to war, and he is a Spartan general: he comes home carrying his shield or on it. It is a posture that requires a good deal of self-parody. Before beginning production on “The Abyss” (1989), the most ambitious underwater movie ever attempted, he went to see Leonard Goldberg, then the president of Fox, which was financing the film. “He said, ‘I want you to know one thing—once we embark on this adventure and I start to make this movie, the only way you’ll be able to stop me is to kill me.’ ” Goldberg told me. “You looked into those eyes and you knew he meant it.”

Making “The Abyss” was brutal. “It was a battle fought underwater,” one crew member said—and it was over budget and behind schedule before shooting even began. The story, about a deep-ocean oil-drilling crew called upon to prevent a nuclear catastrophe, while dealing with a hostile Navy SEALs unit and visitations from a marine alien, takes place almost entirely at the bottom of the sea. Cameron built the set in Gaffney, South Carolina, in the containment vessel of an abandoned (and never activated) nuclear-power facility, which he filled with eight million gallons of water. The principal actors and much of the crew had to be scuba-certified. As part of the production design, the actors wore helmets that were lit from within. Cameron wore a similar helmet, but his contained a one-way communications device that broadcast his every grunt and breath through underwater speakers all over the set. “He *loved* it,” Al Giddings, the underwater D.P., who designed the system, said. None of the crew members could talk back, or to one another, and some of them came up with their own sign language. Thumbs up meant “We’re fucked.” Thumb and forefinger up meant “We’re double-fucked.”

The crew was in the water ten hours a day; in ten weeks, the production went through ten thousand five hundred air tanks. “When I first got there, it was, like, ‘Put me in the water! Put me in the water!’ ” Vince Pace, who built the underwater lighting, said. “About four weeks into it I was, like, ‘Listen, I’ve been in the water. Put Jack in the water.’ Two, three months into it you’re saying, ‘If you put me in the water, I’m going to kill you.’ ” To break up the water surface and minimize reflection, the tank was filled with tiny black polypropylene beads, which made their way into noses, ears, and mouths. Infections were rampant, even though the water had enough chlorine in it to turn an electric-blue dive suit gray in a day or two, and bleach the hair and eyebrows of the crew albino-white. Leonard Goldberg got pneumonia after visiting for an afternoon.

The weather turned cold, and a black tarp that had covered the tank, blocking out unwanted light, tore. They started shooting nights. They would surface for lunch at 2 A.M., and their fragile white hair would freeze and break off. Cameron took to wearing a T-shirt—it reappeared during the “Titanic” shoot—that said “Time Means Nothing in the Face of Creativity.” Fox, worried that it had a runaway production on its hands, sent a veteran producer to the set. He arrived in a rented Cadillac, wearing a suit, to tell Cameron and Hurd that they had to scale back the shooting schedule and the budget. It didn’t go well. “There are two things about Jim,” Mikael Salomon, the cinematographer on “The Abyss,” told me. “You shouldn’t call him Jimmy, and you shouldn’t touch him if you don’t know him very well. He did both.”

The subplot of “The Abyss” (or “The Abuse,” as the crew came to call it) is that Bud Brigman (Ed Harris), the leader of the drilling crew—Cameron’s treatment describes him as “a peculiar mixture of intelligence and hard-headedness, built-in leadership qualities and laid-back casualness, with a good dose of disregard for authority thrown in”—is getting divorced from his wife, Lindsey (Mary Elizabeth Mastrantonio), an aggressive, no-nonsense engineer. Despite their wretched situation, they are forced to work together. As it happened, Cameron and Hurd were also in the midst of a divorce. Her T-shirt said “Life’s Abyss and Then You Dive.”

Cameron has an uncanny ability to make people want to see him fail. This is an unheroic characteristic, but sometimes it serves the storyline. In the mid-nineties, he sold Fox on “Titanic,” a tale of forbidden love between an upper-crust girl and a steerage-class boy, set on board a sinking ship. To many in Hollywood, the project seemed ridiculous—didn’t everybody already know the end?—and more so as it became clear just how big the undertaking was.

Cameron didn’t care. He designed a seven-hundred-and-seventy-five-foot-long set—a seven-eighths-scale replica of the “Titanic,” which could tilt on hydraulics and be flooded at will. There was no tank big enough to contain it, so Fox, for the first time in its history, built a studio from the ground up, in Rosarito, Mexico. There were thousands of actors; Cameron directed, over a loudspeaker, while sitting on top of a tower crane. A few weeks into the shoot, Bill Mechanic, who had recently become the chairman and C.E.O. of Fox Studios, and who was therefore the first in line to lose his job should “Titanic” fall apart, drove down to Rosarito for what he thought was a friendly visit. There he discovered a production in chaos: no one knew how much money had been spent, and there were stacks of unpaid bills. “We were losing three out of every five shooting days,” Mechanic said. “Why? Because of Jim not compromising. There were problems due to water. They had to wait for the costumes to dry, wait for complex riggings. That’s where it started becoming a battlefield.”

Mechanic brought on a producer, Marty Katz, to sort it out; Katz says he found that the production was already tens of millions of dollars over budget. Trying to be conciliatory, Katz asked Cameron to consider him a friend. Katz told me, “He says, ‘Friends? Friends? I don’t need friends. You’re not my friend.’ I say, ‘I’m the only friend this production has at the studio. We’re in trouble. They don’t know when the bleeding’s going to stop.’ He looks at me with a twinkle in his eye, and says, ‘Friend of the picture is good. But, by the way, our little conversation here just cost a hundred and fifty thousand dollars.’ ” And he turned around and went back to work.

Cameron gave up his directing and producing fees—worth roughly ten million dollars—keeping only about a million, his payment for the script. He says that he also offered to relinquish his profit participation in the film, but the studio, believing that it would still lose money on “Titanic,” demanded points on his next film, too. (He claims that he told Mechanic, “You may fuck yourself”; Mechanic remembers a more amenable Cameron. In any case, after “Titanic” ’s success, Fox restored what Cameron had forfeited.)

The media delighted in “Titanic” ’s troubles. *Time* ran a story with the title “Glub, Glub Glub . . . Can James Cameron’s extravagant ‘Titanic’ avoid disaster?” While the movie’s early scenes were being filmed, in Halifax, Nova Scotia, someone sprinkled PCP in the chowder; the perpetrator was never caught but was thought to be a disgruntled crew member. Cameron had the

presence of mind to stick his finger down his throat, and was one of the few who didn't spend the night in the emergency room. Reports came from the Rosarito set of gruelling night shoots and dangerous working conditions. (The Screen Actors Guild investigated but did not find any violations.) Crew members slept on their feet, leaning against walls. Before the movie came out, Kate Winslet told the *L.A. Times* that she'd chipped an elbow bone, and that she'd nearly drowned.

"There were a lot of stories swirling around 'Titanic' that had no foundation whatsoever," Cameron said recently. "All that stuff where they're freezing to death at the end was shot in eighty-two-degree water—a bath, basically. The biggest problem we had was that the steam coming off the water was stopping us from shooting. The breath was added in later—sometimes breath is even put in to hide steam in the background that's coming off the water." He caught himself. "It's not steam, it's water vapor—my father would correct me on that."

"Titanic" missed its release date, in July, 1997, and the budget, originally set at a hundred and ten million dollars, swelled to two hundred, the largest in Hollywood history. Cameron was miserable, convinced that he had ruined his career. "There was such a sense of gloom and doom and catastrophe around the whole production," he said. A very favorable response from a test audience in Minneapolis—in well over three hours, only three people got up to use the bathroom—did not allay the fear. Fox calculated that even if "Titanic" outperformed the most successful three-hour movie in memory—"Dances with Wolves," which won the Academy Award—the studio would still lose seventy million dollars.

The movie came out just before Christmas. Kenneth Turan, the film critic for the *L.A. Times*, gave "Titanic" a scathing review. "Just as the hubris of headstrong shipbuilders who insisted that the Titanic was unsinkable led to an unparalleled maritime disaster, so Cameron's overweening pride has come unnecessarily close to capsizing this project," he wrote, calling it "a hackneyed, completely derivative copy of old Hollywood romances." Turan, who continued to write critically of the film even as it became a box-office phenomenon, was besieged with hate mail. One correspondent, a teen-age girl, sent him a letter to which she'd stapled her multiple "Titanic" ticket stubs. In March, Cameron delivered his own rebuttal, which was published in the arts section of the *L.A. Times*. It was incisive, and maybe more revealing than he knew. "Poor Kenny. He sees himself as the lone voice crying in the wilderness, righteous but not heeded by the blind and dumb 'great unwashed' around him. It must be a great burden to be cursed with such clear vision when your misguided flock bray past you, like lemmings, unmindful." Even now, Cameron resents the media's treatment of the film. "We were branded as the biggest idiots in movie history," he told me. "They were just sharpening their knives so they could really take the film apart. Then they couldn't. So, fuck them. Fuck 'em all."

"Titanic" won eleven Academy Awards, including Best Picture and Best Director, tying the previous record-holder, "Ben-Hur." Accepting the directing award, Cameron, in a long tailcoat and a gingery-blond goatee, quoted a line from the movie, uttered by Jack Dawson, the steerage-class boy astounded by his good fortune. "I'm the king of the world!" he crowed to the audience, brandishing his statue overhead. It was Cameron at his most vulnerable, exulting in his character's improbable arc from truck driver to Oscar winner, and it just made everybody hate him more.

“Mars is one of your better planets,” Cameron says. “Because you could actually land there, and it’s close enough to get to, and it’s close enough to the sun that it’s not a big ball of ice.” He is a member in good standing of the Mars Society, a private organization whose membership includes science-fiction writers and astronauts (Gregory Benford, Buzz Aldrin), and whose purpose is to advocate for the human exploration and settlement of that planet. “We should ultimately have colonies on Mars, for purposes of expanding the footprint of the human race,” Cameron says. He shares with the Mars Society the opinion that NASA—on whose advisory council he sat for three years—has become too risk-averse. “We’ve become cowards, basically,” he says. “As a society, we’re just fat and happy and comfortable and we’ve lost the edge.”

Ten years ago, with Vince Pace, who had worked on “The Abyss,” Cameron started to develop a 3-D camera. He wanted to use it to shoot a dramatic, gritty, realistic Mars movie that would present a compelling case for planetary exploration. At the time, stereoscopic cameras weighed four hundred and fifty pounds and were the size of washing machines—so cumbersome that when Cameron shot a 3-D short for a “Terminator” ride at the Universal theme park the stuntmen had to run at half speed for the camera to keep up with them. Cameron challenged Pace to come up with what he called a “holy-grail camera”: lightweight, quiet, and capable of shooting in 2-D and 3-D simultaneously.

While researching his Mars movie, Cameron made friends with a number of astronauts. In 2000, he went to Russia to train for a flight aboard the Soviet-era spacecraft Soyuz; the idea was that he would spend thirty days at the International Space Station, do a space walk, and film the whole thing in 3-D. He’d catch a ride home on the NASA space shuttle. It would be like living inside Kubrick’s “2001.”

But, before bringing a camera into space, Cameron had to prove it safe. He decided that the best way to test the camera’s worthiness was “combat at sea,” and he took it to the site of the Titanic wreck. His brother Mike, an engineer (and once his fort-building and rocket-launching accomplice), designed two remote-operated vehicles, each equipped with an early prototype of the 3-D camera that Cameron and Pace were developing, and nimble enough to explore the ship’s interior. Late in the summer of 2001, with Vince Pace as D.P., Jim and Mike spent several weeks diving the wreck in submersibles launched from a Russian research vessel, recording images of places that only the ship’s passengers had ever seen. In the middle of the expedition, the World Trade Center and the Pentagon were attacked, and the trip was cut short. The mission to the space station was put on hold, but the footage from the dive was released as “Ghosts of the Abyss,” a 3-D documentary.

Cameron also made an underwater filmmaking expedition to the hydrothermal vents, home to extremophiles, organisms that thrive in environments toxic to most life forms. Conditions at the vents are thought to resemble those elsewhere in the solar system, so Cameron invited astrobiologists and an astronaut from NASA and the Jet Propulsion Lab, and a scientist affiliated with the Search for Extraterrestrial Intelligence Institute, to accompany him. Over sixteen months, Cameron and his team made forty dives at ten sites in the Atlantic and the Pacific. One of the NASA scientists kept a sleep log: three hours a night. “If OSHA were there, the conditions wouldn’t necessarily be condoned,” she said. People were tired and stressed and sometimes afraid. It was Cameron’s idea of fun.

The third act of “Avatar” contains what Jon Landau, the producer, calls “the mother of all movie battles.” In May, Cameron was shooting a few last live-action battle scenes. Time was running out. I met him in the performance-capture volume, where he was reviewing the primitive digital renderings; it was the last day to get them to Weta, if they were to be included in the film. “I’m like a Gatling gunner,” he said, swivelling among computer stations and firing off critiques. On one hip he wore a walkie-talkie labelled “Jim”; when word came over it that the crew was ready for him in the hangar where the live-action filming took place, he began to move so quickly I had to jog to keep up. Outside was a white golf cart with a sign on it that read “Director Only”; the other hangar was across the street. He climbed into the front seat. “I’m always reluctant to drive around in this,” he said. “It’s such a dorky *director* thing to do.” He stepped on it, and, as we chugged along, the pavement gave way to dirt. “Off-roading,” he said sardonically.

As we entered the hangar, a crew member handed us goggles and earplugs. Cameron walked toward a bunker, backed by a green screen and surrounded by a berm of sandbags covered in netting, where six muscular actors, with shaved heads and tattoos and beat-up camouflage clothing, were huddled uncertainly around several machine guns on turrets. Cameron climbed the berm, pulled himself into the bunker, and picked up an enormous gun. He crouched low and pointed, sweeping imaginary bullets across the room. “The fire’s moving across from front to back: *cho-cho-cho-cho-chooo*”—he imitated machine-gun fire. “Like that.” He hefted himself out and slid down the sandbags, to the ground.

Cameron stationed himself in front of the bunker, at a cart with two steering wheels to control the pan and tilt of the 3-D camera, which was on a crane overhead. A screen mounted on a nearby dolly showed the virtual world into which the day’s performances would be layered: digital banshees attacking a bunker.

“Fire in the hole!” the first A.D. yelled.

Cameron looked around excitedly as the machine guns started to rattle and shells popped off in every direction. He snapped his fingers nervously. The acrid smell of gun smoke filled the air. Pointing to his left forearm, he said, “I have a piece of shrapnel right here from ‘Terminator 2’ that never came out.” Tiny, tight smile. “We made up the three barrel guns,” he said. “The two waist guns are .30-calibre machine guns modified for the movie. It’s an older model, a Vietnam-era M60. The idea is that Pandora has such a hot, humid climate, with incredibly powerful magnetic fields, that they can’t use sophisticated energy weapons. A lot of the equipment is retrofitted, from their perspective, because it works on Pandora. So you’ve got vehicles that are more consistent with twentieth-century warfare.” His face was flushed and happy. “It’s all just an excuse to do helicopters versus pterodactyls,” he said.

Cameron called “Action!” and stood, his feet two feet apart, spinning the pan-and-tilt wheels rapidly, like a captain on the ship’s bridge, as the soldiers in the bunker fired at nothing, and, in the composite shot in Cameron’s monitor, dive-bombing banshees were picked off one by one.

One morning in late July, Cameron was at Fox mixing a twenty-five-minute excerpt of “Avatar,” which he was going to present at Comic-Con the following week. He had given the engineers a temporary sound-effects score to work from, and he was dissatisfied with the results.

“If we had to ship this thing in, like, two hours I’d send the fucking temp,” Cameron hissed. “*It* was built with a real opinion. And that opinion is not gonna change, ’cause I *personally* cut it *myself*. My advice to you: Listen to it, study it, match what’s there. Your principle, like a surgeon with the Hippocratic Oath, should be, Do no harm.” The room was quiet. The sound engineer gathered his courage, and, like a hostage trying to appease a crazy person with a knife, began to repeat back Cameron’s words slowly. “Let me start by trying to apply the physician’s model to this, so that we can start working together,” he said, and they began again, matching banshee wing flaps to banshee-wing-flap sounds.

“This is going to be a long day,” one of the engineers said, when Cameron left the room.

“He gave us the same thing on ‘Terminator’—‘Go back to my temp,’ ” another replied. “But he was much nicer about it then.”

At Comic-Con, “Avatar” was shown in Hall H, which seats more than six thousand. The room was full. The audience put on 3-D glasses that had been handed out at the door—black plastic frames, somewhat reminiscent of Ray-Ban Wayfarers—and the lights went down.

Jake’s avatar—wasp-waisted, nine feet tall, blue—walked through a dusky forest thick with purple, green, pink, and cyan plants that pushed past the boundary of the screen and gently grazed the air, like plastic foliage poking out from a busted terrarium. Night fell, and a pride of slinking, starved, oil-black beasts attacked; he parried and lunged with a torch before Neytiri appeared, a skimpy feather necklace, like a primitive bikini, draped across her chest. She killed the beasts in a series of gravity-defying martial-arts moves, then ran away. He gave chase through a forest now aglow with stands of pink man-o’-war-like plants, and over lichen that lit up spearmint green under his feet. As she was just about to disappear again, a cloud of milky spores surrounded him, alighting delicately on his shoulders, head, and hands, and dangling like dust motes in midair. When Neytiri spoke in Na’vi, subtitles appeared, layered unobtrusively in the 3-D space.

For an action sequence, it was subtle, romantic, trippy—like a slightly cartoonish version of a David Attenborough documentary. (The host of a later panel suggested to Cameron that “Avatar,” with its phosphorescent, psychedelic look, might make for good “Stonervision.”) The audience streamed out into the sunlight seeming pleasantly dazed. “The chick was in front of the subtitles,” one kid, in big sneakers and skinny jeans, said to his friend. “Yeah,” the friend said. “That was really rad.”

The camera that Cameron and Pace developed allows a director to more finely control the aesthetics of the stereo-space, and, to a great extent, the expectations of the 3-D industry ride on “Avatar.” “When you look at the history of film, there have been to date two great revolutions—sound and color,” Jeffrey Katzenberg, the head of Dreamworks Animation and a tireless promoter of 3-D, told me. “This will be the third great revolution. People are still somewhat skeptical and wonder if it’s a gimmick and if it is better suited to cartoons. I don’t believe that for a second. I think the day after Jim Cameron’s movie comes out, it’s a new world.” Michael Lewis, the C.E.O. of RealD, the leading 3-D projection company, says, “The industry is looking for its ‘Citizen Kane,’ its definitive work of 3-D, and ‘Avatar’ may be that film.”

“Citizen Kane” was rejected by audiences of its day; a month after Comic-Con, it seemed to be an unfortunately apt analogy. In what Cameron called a “social-marketing experiment,” Fox had declared August 21st “Avatar” Day, and showed sixteen minutes of the movie free in 3-D theatres around the world. It also released a trailer on Apple.com, which some four million people watched—more than twice as many viewings as a trailer on the site had ever had. The citizen critics were not, in large part, kind. Dances with Wolves in Space, they said. Smurf-porn. Pocahontas meets Halo. Some drew unflattering comparisons to Thundercats, and made reference to Jar Jar Binks, the most hated of all digital characters. (Notably, members of the print media, who got it so wrong on “Titanic,” mostly held their fire.) The message boards on Ain’t It Cool News, a fanboy site that started tracking “Avatar” a decade ago, logged bitter disappointment. The fans there had anticipated “eyeball rape.” One wrote, “My eyeballs were merely fondled without permission.”

September: Cameron sat in his chair twelve hours a day, looking at effects shots—exhausted, exhilarated, the target now in his sights. “We counted, and there are fifteen shots that are *not* effects shots,” he said. “Then we see Sam has a pimple and—whoops—that’s an effects shot, too.” One day, he left Malibu in his favorite blue button-down and drove his everyday car, a silver Toyota Highlander hybrid, to Fox to listen to some new spots of dialogue that had been added to the film, and to hear a live orchestra perform the music that James Horner had composed for it.

He entered the control booth. Behind a glass partition a hundred and five musicians played along to the movie’s opening images, projected on a large screen: a first-person flying rush over misty, lush Pandora, Jake’s eye opening (*duhduhduhduh*), an architectural, Erector-set-like spaceship (woodwinds!), images of planets accompanied by a high sweet trumpet. Cameron nodded along.

At the end of the cue, Horner, who scored “Aliens” and won two Oscars for the music in “Titanic,” came into the control booth. “How did we do?” he asked Cameron anxiously. He felt nervous even being there, with just a month to go and forty minutes of music left to write.

“Great,” Cameron said. He was very pleased. The music, to his mind, would help correct misconceptions about “Avatar.” This was a movie with a heart, a movie for women who like romance as much as for adolescent boys. “Too much is being said about the technology of this film. Quite frankly, I don’t give a rat’s ass how a film is made. It’s an *emotional* story. It’s a *love* story. They’re not expecting that. The sci-fi/fantasy fans see the trailer and they think, Cool—battles, robots. What you really need to get to is, Oh, it’s *that*, too.”

A music editor was asked to walk Cameron to the mixing stage, in the next building over. As he started to lead Cameron from the control room, Cameron said, wryly, “It’s pretty hard for a wreck diver to get lost.” He turned into a hallway, rapped his knuckles on a big harp case—“*There’s* a landmark”—and charged off down the hall, past the exit, into the mazy, dark interior. It was a moment before he sensed he was alone. “Whoops,” he said, and turned back, to where the editor was waiting patiently.

Cameron is in his element in post—fine-tuning, needling, nitpicking, expounding, and finally convinced that the movie will come out. When he arrived at the mixing stage, the engineers cued

up a scene: Jake's avatar squaring off against a big, rhinolike creature with the facial structure of a hammerhead shark. "You bitch," Jake said, quoting Ripley.

"What he'd probably say is 'You punk-ass bitch,' " Cameron said. "But that probably won't fit. That's what I'd be yelling. 'Get back here! I'm not done with you!' Right up till the moment it killed me." ♦

*Correction, December 1, 2009: Hughes Aircraft did not manufacture fighter jets in Playa del Rey during the Second World War, as originally stated.

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