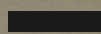


JAMES CAMERON



Teaches Filmmaking



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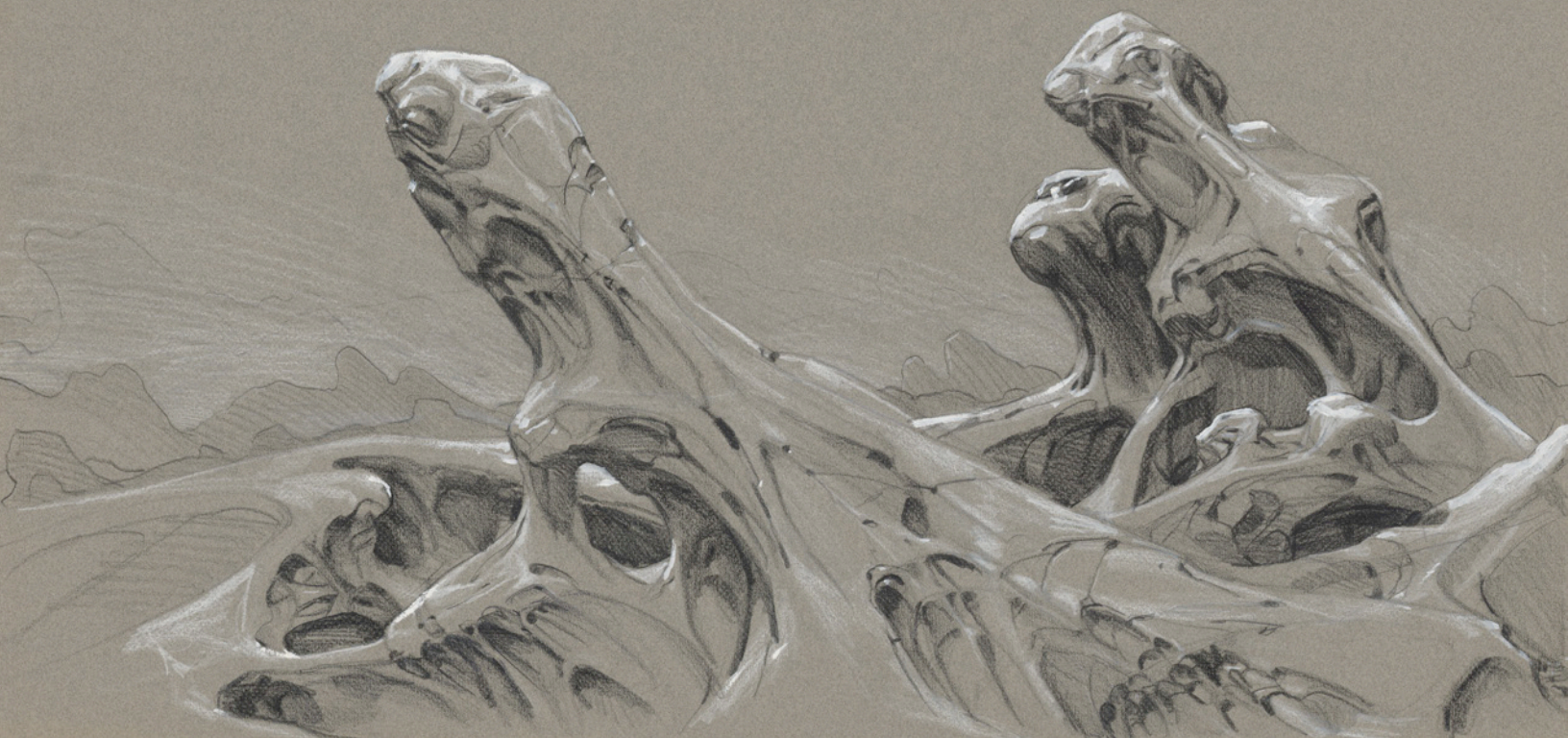
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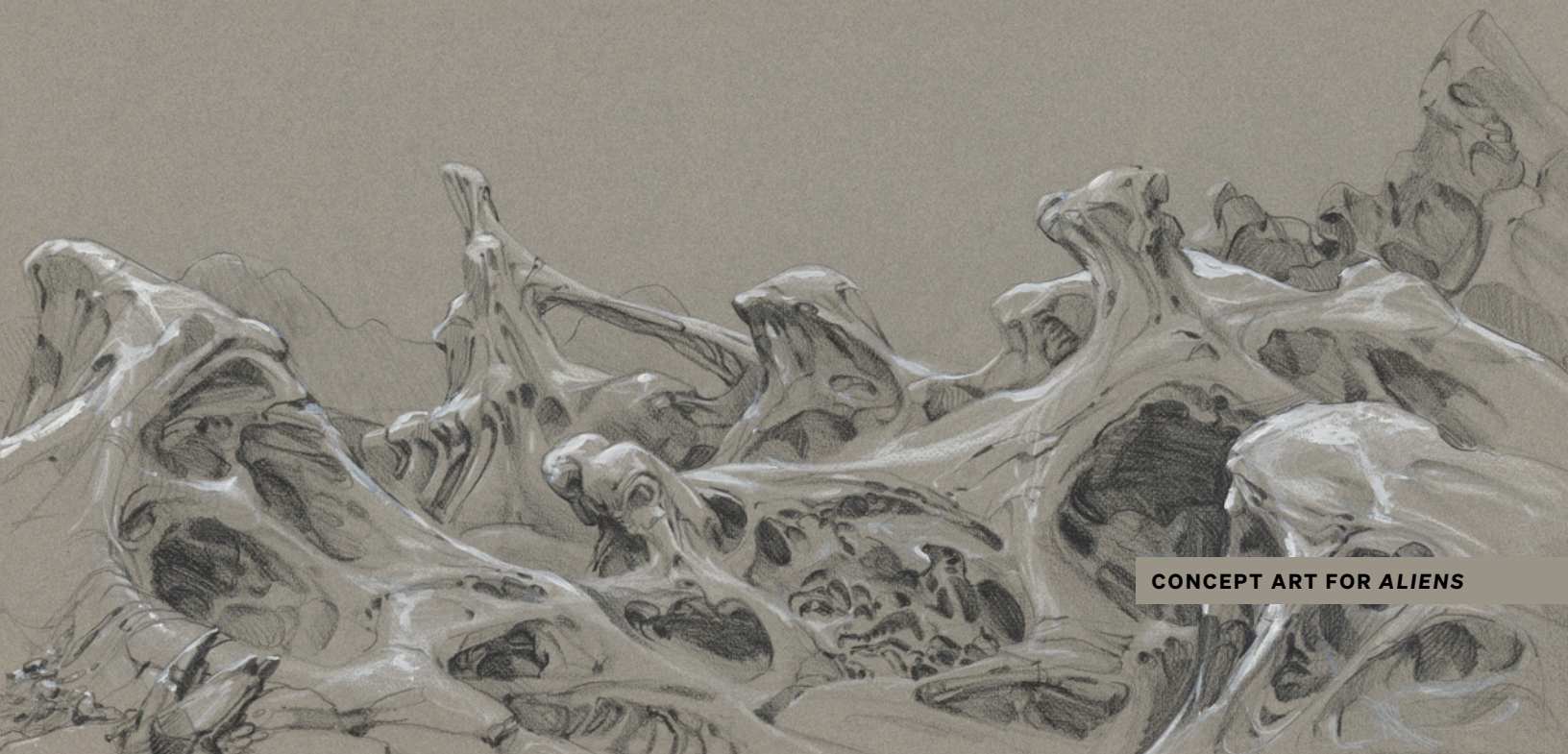
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CONCEPT ART FOR ALIENS

MEET YOUR INSTRUCTOR:

James Cameron

Even after decades of directing epic blockbusters and inventing cutting-edge technology, James Cameron insists that he's still learning



DIRECTOR JAMES CAMERON does not just make successful movies—he makes historic, iconic, record-shattering movies. His are the movies that cost more money than any movies ever made. His are the movies whose dialogue has become interwoven into the very fabric of our popular culture (“Hasta la vista, baby!”; “I will never let go, Jack!”). His are the movies that, through technological innovations spearheaded by James himself, have managed to transform cinema again and again.

Born in Ontario, Canada, in 1954, James was fascinated by science fiction books and movies from a young age (he would read and reread a book on the making of Stanley Kubrick’s *2001: A Space Odyssey*). He moved to the United States at 17 and initially studied physics at Fullerton Junior College, now Fullerton College, before switching to English and eventually dropping out. A trip to the

theater to see George Lucas’s *Star Wars* reignited his interest in filmmaking; the cinematic experience was so moving that he drove a truck to support his fledgling screenwriting career and spent time studying books on visual effects (VFX) at the library. At 24 years old, James directed his first movie with a budget—a \$20,000 sci-fi short called *Xenogenesis*—that he funded thanks to contributions from a consortium of California dentists.

The short opened doors to a number of jobs in the entertainment industry: James worked as a model maker, an art director, a special effects artist, a production designer, and, finally, as the director of the independent horror film *Piranha II: The Spawning*. It was a disastrous production, and while filming in Rome, James came down with a fever that induced nightmares. In one, he saw the figure of a chrome skeleton emerging from flames.





If you want to cut my film you'll have to fire me.” – JAMES

The dream proved to have some legs. It became the genesis of *The Terminator*, a script that James sold to producer Gale Anne Hurd for one dollar—on the condition that he could direct the film. In doing so, he established himself as a creative force: *The Terminator* was a film that, thanks to James’s expertise in special effects, far exceeded the ambitions of its relatively meager \$6.4 million budget (it went on to gross \$78.4 million worldwide and launch a film franchise, a TV show, comic books, and endless merchandising opportunities). But there was more to it than that. *The Terminator* showcased James’s instincts as a director and storyteller—his now-legendary attention to detail, his masterful command of action and suspense, his perceptive ability to make high-concept sci-fi stories driven by human beings.

From *The Terminator* onward, each new project for James represented an escalation of scope and ambition. In 1986, he wrote and directed *Aliens*, the gripping sequel to Ridley Scott’s 1979 *Alien*, which married action and horror in a character-driven story about motherhood. In 1989, he wrote and directed *The Abyss*, an underwater sci-fi thriller that reflected not only James’s growing fascination with deep-sea exploration but also the possibilities of computer-generated imagery. In 1991, those possibilities were fully realized with *Terminator 2: Judgment Day*, whose action sequences and liquid-metal T-1000 character left audiences astonished. The film cost a record-breaking \$100 million to make, and its worldwide box office revenue currently stands at more than \$500 million. Yet those numbers were nothing compared with what was to come.

It’s difficult to believe now, but there was a time when it looked like *Titanic* would sink James’s career. The production, which included a nearly full-size replica of the ill-fated ship, was wildly over budget, and the Hollywood press had little faith in the director of *The Terminator* and *Aliens* telling the story of, in the words of James’s original movie pitch, “Romeo and Juliet on the *Titanic*.” But this was James’s passion project, and he refused to compromise his vision. (At one point, the chairman and CEO of Fox asked him to cut scenes in order to reduce costs. James told him, “If you want to cut my film you’ll have to fire me, and to fire me you’ll have to kill me.”) The director eventually forfeited his own salary in order to free up funding. All told, *Titanic* cost a remarkable \$200 million, which in 1997 made it the

most expensive film ever made. But, it was also the first film to gross over \$1 billion and to date, it has grossed more than \$2 billion worldwide.

The phenomenal success of *Titanic* only pushed James to further explore the depths of the unknown. For years, he’d been keen to develop another project—one that involved photorealistic computer-generated imagery (CGI). But he was told by industry experts that the technology simply didn’t exist.

Cut to the mid-2000s on the set of *Avatar*. Working tirelessly alongside Weta Digital, a leading VFX company based in New Zealand, James essentially willed cinematic history into existence: He pioneered new facial rig technology that could digitally capture the nuances of an actor’s performance; a virtual camera that refined the task of directing CGI-heavy scenes; and the Fusion Camera System, which gave birth to the film’s famous use of 3-D.

When it was released in 2009, *Avatar* was unlike anything anyone had ever seen before. It changed movies overnight. It gave rise to the short-lived 3-D boom. It cost around \$240 million to make. As of 2021, it has made \$2.8 billion—making it the highest-grossing movie of all time. Moreover, the technology James so painstakingly developed has been used to push cinema forward.

And while many of James’s films—with their technological innovation, eye-popping budgets, and phenomenal returns—have put the director in rarefied company, he hasn’t forgotten the tips, tricks, and tools he developed as a young, budget-conscious, aspiring filmmaker. While a great camera or lighting kit can enhance a project, as James shares, the difference between a good film and a great one more often hinges on certain fundamentals: creative casting, a compelling script, thoughtful use of tension and suspense—all of which can be had on almost any budget. Among the most important lessons he hopes to convey is that no matter what stage you find yourself in as a filmmaker, you’ll never stop learning. As he puts it, “You’re constantly humbled before the craft.”



CONCEPT ART FOR THE TERMINATOR

A BRIEF HISTORY OF **Cinematic Technology**

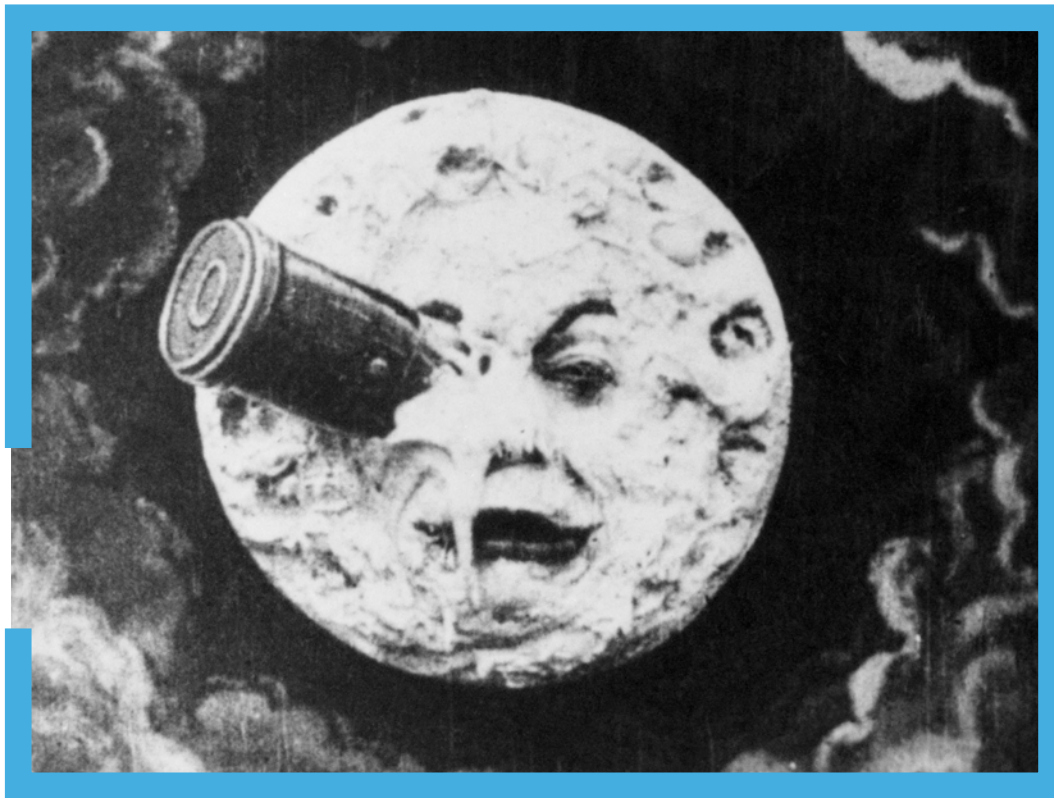
Charting some of the most important innovations in filmmaking—including some of James's own design



1891 Thomas Edison and William Dickson invent the kinetoscope, a device that shows moving pictures and can be viewed as a “peep show” by only one person at a time.

1895 French brothers Auguste and Louis Lumière demonstrate their cinematograph, which is both a camera and a projector. One of the first films they screen is a 45-second short: *Arrival of a Train at La Ciotat*.

1895 The Edison Manufacturing Company-produced short film *The Execution of Mary Stuart* is one of the first films to use special effects, employing the “stop trick”—wherein the camera is stopped, something is added or removed from the scene, and the camera is started again—when Mary, Queen of Scots is beheaded.



1902

French illusionist and filmmaker

Georges Méliès stuns audiences with *A Trip to the Moon*, a special effects landmark that utilizes techniques such as stop-frame animation, transitional dissolves, and multiple exposures.

1922 Harry K. Fairall's silent film *The Power of Love* is the first commercially released movie shown in 3-D. The movie is never preserved, and no copy exists today.

1927 Warner Bros. releases *The Jazz Singer*, the first feature film to use synchronized audio dialogue—a.k.a. the first “talkie.”

1935 RKO releases Rouben Mamoulian's *Becky Sharp*, the first feature-length movie shot entirely in three-strip Technicolor.

1940 The British fantasy film *The Thief of Bagdad* is one of the first films to successfully employ the blue screen process, paving the way for the more commonly used matte technique known as green screen.

1940 Walt Disney's *Fantasia* becomes the first commercial exhibition of stereophonic sound in a movie theater.

1953 *How to Marry a Millionaire*, directed by Jean Negulesco and starring Marilyn Monroe, Lauren Bacall, and Betty Grable, is the first movie to be shot in widescreen CinemaScope. There's a widescreen picture boom for the rest of the decade, led by new technologies like the anamorphic lens series CinemaScope and VistaVision cameras.

1960 New lightweight movie-standard cameras, such as those made by Éclair, become a de-

fining feature of the French new wave movement and are popular with directors like François Truffaut and Jean-Luc Godard.

1972 University of Utah students Ed Catmull and Fred Parke complete the short film *A Computer Animated Hand*, which highlights the early potential of computer animation. The film goes on to inspire future CGI renderings of the human form; Catmull goes on to cofound Pixar Animation Studios.

1973 The American sci-fi flick *Westworld*, directed by Michael Crichton, is the first movie to feature CGI, which is used to animate the point of view of a killer robot.

1974 Garrett Brown applies for a patent for the Steadicam, which allows for a smooth moving shot to be recorded. The 1976 film *Bound for Glory* is the first feature film to use the technology.

1982 *Tron* becomes the first film to make extensive use of CGI, with animators creating more than 15 minutes of digital effects on a computer limited to 2MB of memory.

1985 *Young Sherlock Holmes* introduces audiences to the first fully computer-generated character: a knight made up of parts from a stained-glass window.

1989 James's fourth feature film, *The Abyss*, becomes the first film to digitally animate water and digitally re-create emotional facial expressions.

1991 Building on liquid CGI effects developed for *The Abyss*, James creates the first computer-generated main character in a film: the T-1000 in *Terminator 2*.

1995 Pixar releases *Toy Story*, the first entirely computer-animated feature film.

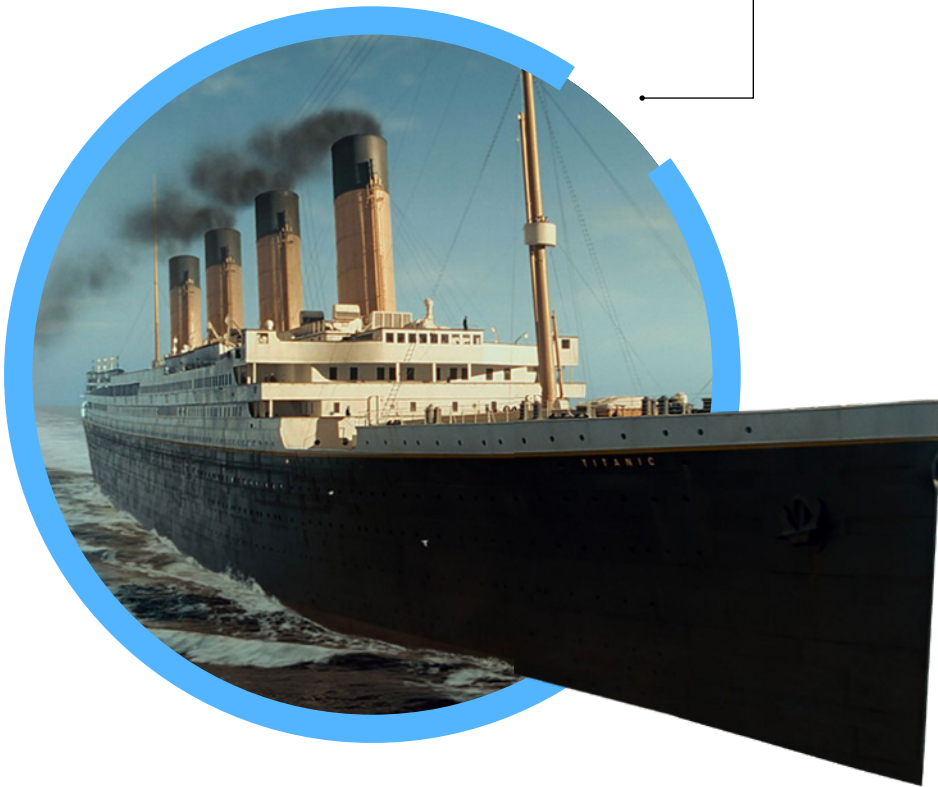
1997 Major advances are made in computer-generated animation of realistic flowing water, thanks to James's *Titanic*.

2002 Motion capture technology enters a new era of sophistication with the character of Gollum in *The Lord of the Rings: The Two Towers*. The CGI creature's nuanced facial performance is achieved by animators who've painstakingly studied the face of actor Andy Serkis.

2009 James's *Avatar* pioneers three groundbreaking technologies: a facial rig that can capture the fine details of an actor's performance; a Simul-Cam, which allows James to direct his actors on a virtual set of pre-visualization CGI; and a modified version of the Fusion Camera System, which he uses to shoot the film in 3-D.

2016 Building on James's Simul-Cam technology, director Jon Favreau shoots the entirety of *The Jungle Book* reboot on a studio lot in Los Angeles.

2019 Industrial Light & Magic, an American special effects house, takes James's Simul-Cam technology even further, developing ILM StageCraft, which allows directors to generate complex digital backdrops in real time. It is primarily used on Disney+'s *The Mandalorian*.

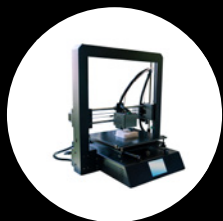


THE FUTURE OF FILM TECHNOLOGY



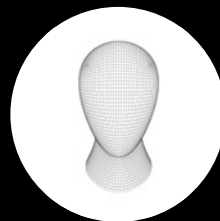
DRONES

Drones are already widely used for filming, but advancements in the technology have the potential to revolutionize the sophistication of tracking and aerial shots. Imagine, for example, the possibilities of autonomous cinematography or the kind of tracking shots you could get from a drone that's been preprogrammed to avoid obstacles.



3-D PRINTERS

3-D printers are currently a hugely expensive and inaccessible technology. But much like how cameras have gradually become smaller, cheaper, and more accessible, the same could soon happen with 3-D printers. This would vastly expand the possibilities of low-budget filmmaking, with directors being able to print the equipment or props they need.



DIGITAL RE-CREATION

The controversial art of digitally re-creating a real-life person is in a relatively early and imperfect stage of its life cycle. As the technology grows more sophisticated, though, so too does the likelihood of actors losing work to digital clones or signing contracts to make sure they cannot be digitally resurrected after they're dead.



VIRTUAL REALITY

For decades, filmmakers and audiences have understood the immense potential of virtual reality and its power to immerse viewers more directly into the stories on the screen. While a number of innovations have brought VR technology to more and more people, the price of VR headsets will need to come down before they're as ubiquitous at the theater as a pair of disposable 3-D glasses.



**JAMES AND ARNOLD SCHWARZENEGGER FILMING
A SCENE FROM *THE TERMINATOR***

FILM SCHOOL 101

From coverage to key grips, the film world often feels like it has a language all its own. Here's a primer of the terms, roles, and techniques you may encounter



Key Terms

THAT EVERY FILMMAKER SHOULD KNOW

Immerse yourself in your craft with this (mostly) comprehensive guide to cinematic jargon

Aspect ratio

The width and height of a screen or image, formatted as two numbers separated by a colon. The first number in an aspect ratio denotes the image's width, and the second number denotes its height. For example, an aspect ratio of 1.33:1 means the image's width is 1.33 times the size of its height. To eliminate decimals in this ratio, you can write it as 4:3 instead.

Automated dialogue replacement (ADR)

The postproduction rerecording of an actor's dialogue.

Call sheet

A call sheet contains important details of a production, like the filming location, the actors' call times, and the daily shooting schedule. This document is created daily by the assistant director and is distributed to all cast and crew before each new day so they know when to be on set and where to go.

Computer-generated imagery (CGI)

The blanket term used to describe digitally created visual effects (VFX) in film and on television. These com-

puter graphics can be 2-D or 3-D, but CGI is generally referenced when talking about 3-D VFX. The most talked-about process in CGI is 3-D modeling, or the creation of a 3-D representation of any object, surface, or living creature.

Cross-cutting

Also known as parallel editing, this editing technique cuts between the action happening in two simultaneous scenes as they progress. Editors use cross-cutting to establish that multiple scenes are occurring at the same time.

Dailies

The unedited footage that is collected at the end of each day for viewing by select members of the film crew. Watching the day's raw footage allows the creative team to assess the progress and quality of the shoot so they can adjust their plans going forward if they need to.

Diegetic sound

Any sound that emanates from the story world of the film. The source of diegetic sound doesn't need to be seen on screen as long as the audience understands that it is coming from something within the film.

Fade-in

A type of dissolve edit, in which a transition fades from a blank screen to a picture.

Fade-out

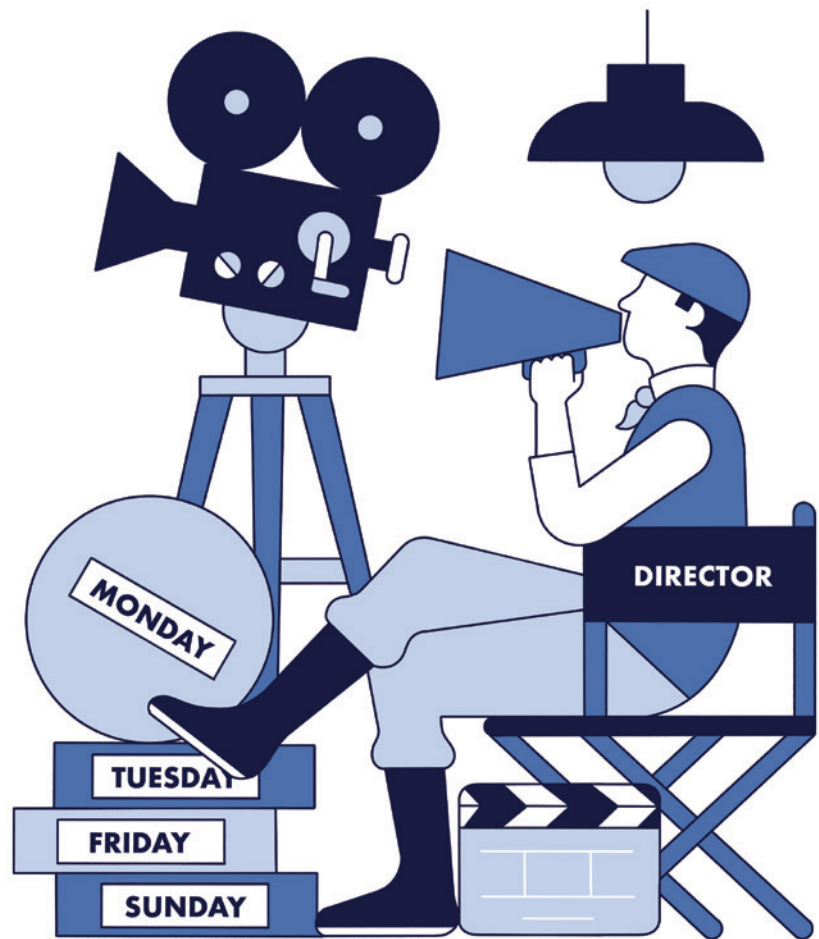
A type of dissolve edit, in which a transition fades from a picture to a blank screen.

Fourth wall

The invisible wall that exists between actors and their audience. When an actor breaks the fourth wall, they acknowledge the existence of the audience and speak to them directly.

Frame rate

The speed at which a sequence of images is displayed on a screen. When cameras record video, they rapidly snap still photos that can be played back in sequence to create the appearance of motion. High frame rates capture more images per second, which makes for smoother video. Low frame rates



capture fewer still images per second, which makes for choppy video. Frame rate is measured by the number of frames per second, commonly abbreviated as fps.

Front-of-the-camera

The performers, setting, or action being filmed in front of the lens.

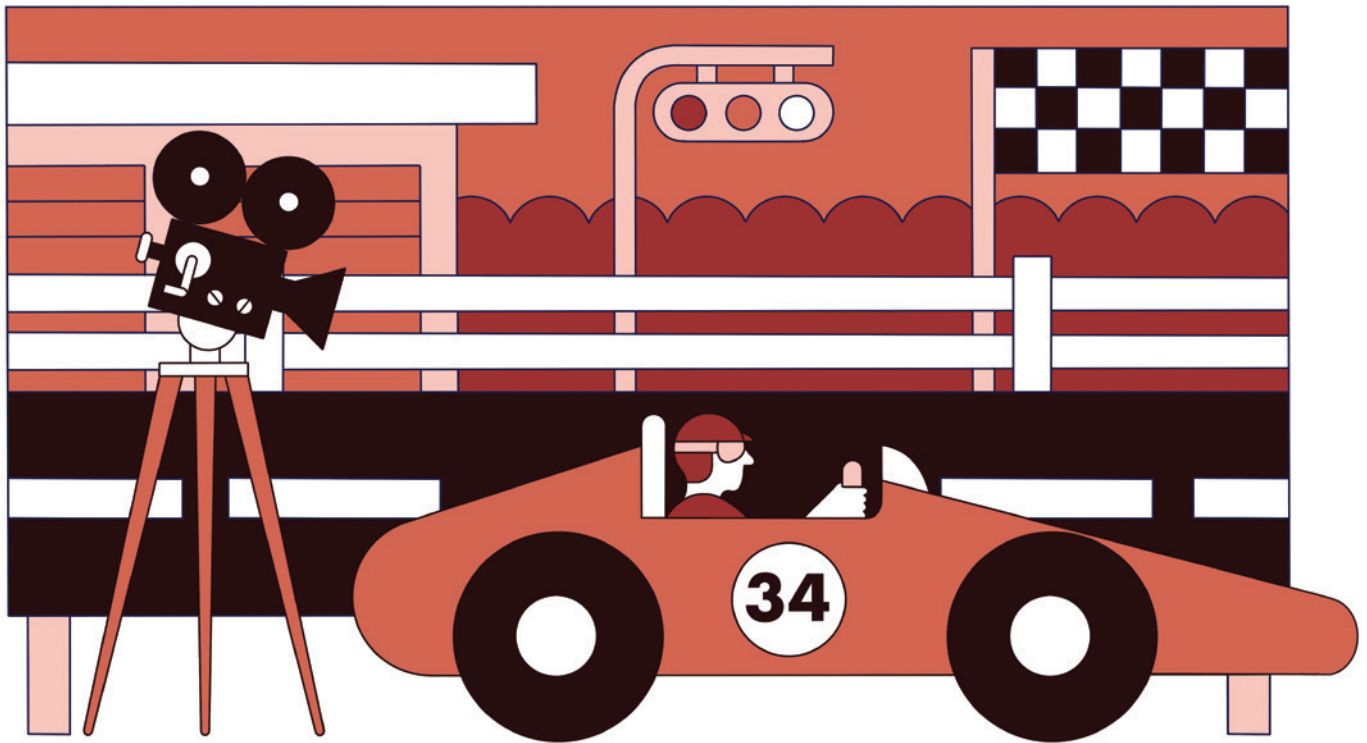
Jump cut

An editing technique that cuts between two sequential shots. In these shots, the camera position doesn't change (or changes only a small amount), but the subjects move,

giving the appearance of jumping around the frame. Jump cuts give the effect of moving forward through time.

Logline

A one-sentence description of the premise of a film, including its conflict and a brief description of its main character. A logline should hook your audience into the story, teasing them to watch your film to find out what happens.



Looping

When a performer dubs new dialogue over the original production track during an ADR session while they watch a looped scene of themselves.

Mise-en-scène

A term used to describe the setting of a scene. It refers to everything in front of the camera (including people).

Matte

The static, painted landscape in the background of a live-action scene that gives the illusion of a sprawling environment. A famous example of a matte painting used as an optical composite is the Emerald City landscape in *The Wizard of Oz* (1939).

Montage

An editing technique that combines a series of short shots or clips into one sequence, often set to music. Montages are typically employed in order to imply the passage of time or multiple simultaneous events.

Off-screen

Abbreviated in scripts as O.S., off-screen refers to any action, dialogue, or sound that takes place outside of the visible scope of the camera.

Pick-ups

Any additional scenes or footage shot after the initial filming of a scene.

Point of view (POV)

The eye through which you tell a story.

Screener

An advance copy of a film that is sent to a variety of industry professionals, such as actors, producers, journalists, and awards panelists.

Screenplay

The script for a film that outlines exactly how the story unfolds, including interior shots, exterior shots, dialogue, character actions, and more.

Shot list

A detailed list of every camera shot that needs to be captured in a scene of a production. The shot list is created by the director and the cinematographer during preproduction and outlines the precise specifics of every shot—such as the camera, shot size, and shot type.

Slate

Also known as a clapperboard or slate board, a slate is a tool used to help synchronize the audio and video in postproduction.

Sound effects

A specific sound added to a moment or a scene to further immerse the audience in a film's manufactured world.

Special effects (SFX)

Special effects are achieved in real time during filming; examples include pyrotechnics, fake rain, animatronics, and prosthetic makeup. This term is not to be confused with visual effects, or VFX, which are added after shooting in postproduction.

Steadicam

A camera-stabilizing system used to capture tracking shots with smooth, controlled motions.

Storyboard

A visual outline of a film or animation.

Take

A single shot within a scene, from action to cut.

Treatment

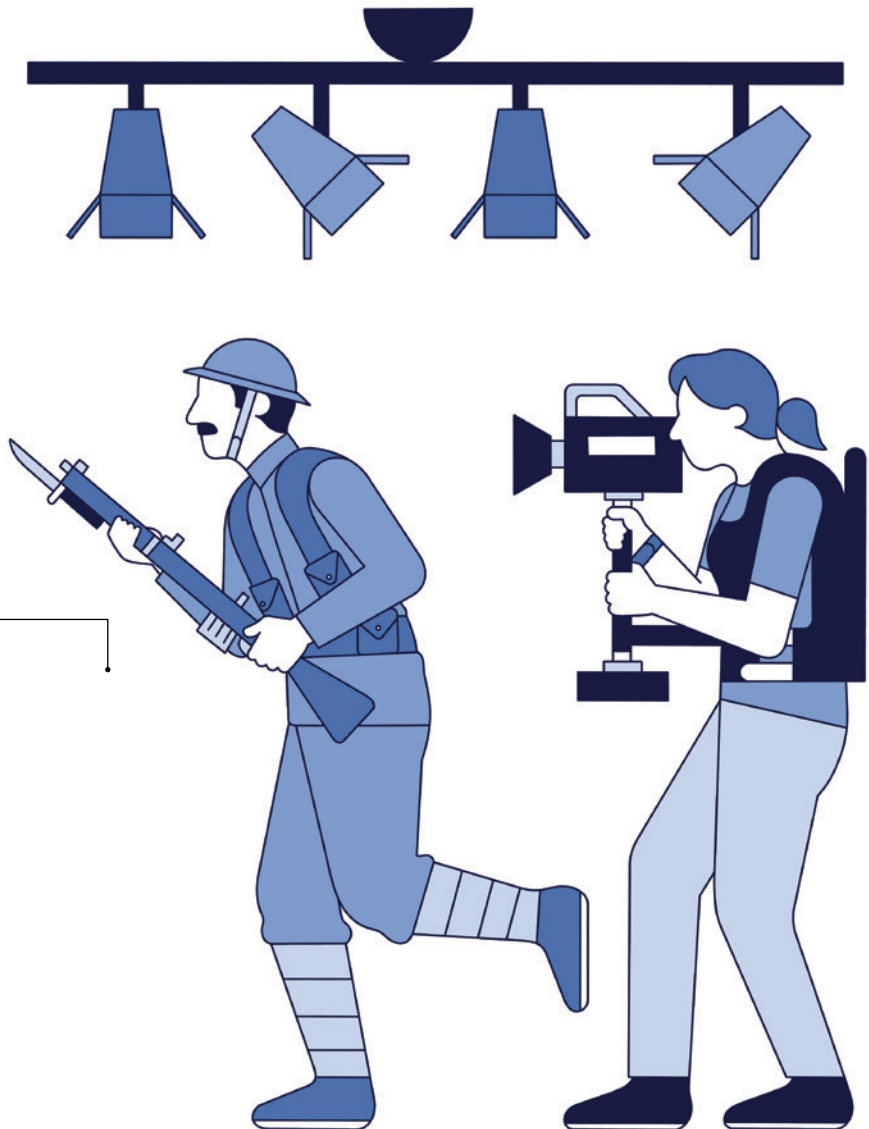
A one-page document that presents the story idea of your film before you write the entire script.

Video village

The area of the set, often a series of monitors hooked up to the camera, where key film crew can view from a distance what is being captured on film.

Visual effects (VFX)

Visual effects allow filmmakers to



create environments, objects, creatures, and even people that would otherwise be impractical or impossible to film in the context of a live-action shot. VFX in film frequently involves the integration of live-action footage with computer-generated imagery (CGI).

Voice-over

A technique during the postproduction process in which an off-camera actor or person records dialogue for use in a film or documentary, on a TV show or commercial, or in an announcement.

So You Want to Make a Movie?

Getting a big idea onto the big screen is no small feat. Here's a quick overview of the people and processes that make it all happen

BEFORE DIVING into a who's who of film production, it's worth familiarizing yourself with (or brushing up on) the five main phases of filmmaking. First there's **development**, during which you'll flesh out your story idea, write a draft of your script, and figure out the financial logistics of your project. Depending on the movie you want to make, this process could take anywhere from months to years—and that's okay. Next up is **preproduction**, where you'll finalize the shooting script, scout filming locations, and determine the production budget. You'll also establish shooting schedules, gather your equipment and gear, cast your actors, and hire key film crew members (see page 18 for more on preproduction roles). Then, the big show: **production**. This is the window during which you'll actually film your movie. You'll hire additional crew (see page 18 for more on production roles) and capture all necessary footage. After that comes **postproduction**, when audio and visual materials are cut together to create a film. An individual or team assembles the footage (see page 19 for more on postproduction roles), adds music, and incorporates other sound and visual effects. Last but not least is **distribution**. Promotional marketing will advertise your movie, and you'll complete any commitments you may have to investors and rights holders. Depending on your distribution deal, your film may be released into theaters, on DVD, or onto a streaming platform—or you might just show it off to family and friends!

If your dream is to sit in the director's chair like James, he suggests familiarizing yourself with the various jobs during each stage of the production process. Remember, he spent time working as a model maker, an art director, a special effects artist, and a production designer before getting behind the camera. "It's really important to understand all the jobs on the set and all the jobs associated with making a film," he says. "When you're coming up and trying to find your place in the ecosystem of filmmaking, try a bit of everything. Be the boom operator for one of your friend's films. Learn how to operate the camera. Get your hands dirty, you know?"

Having that knowledge and experience will be important later on, allowing you to establish greater rapport, respect, and mutual understanding with all of the members on your team. As James puts it, "Everybody fights for quality within their narrow range of responsibility on the film set. And you have to respect that, even if sometimes it inhibits you and slows you down. For instance, the sound man may want to stop the train and put down carpet so that you're getting good sound. You'll thank him or her later if you know why it's important."

Once a film has been greenlit, there are many players who all work in concert to keep the film on track and make it a success. In the following pages you'll find a guide to some of the major roles you're likely to encounter during the various stages of a film's production.

KEY PREPRODUCTION ROLES

▶ The **screenwriter** writes the script using either an original idea or an adaptation of an existing text.

The screenwriting process can carry over into production if the director requests rewrites on set. The **executive producer** sources and secures the financing for a film production, either through an independent financing company, through a studio, or by financing it themselves. They act as the liaison between the film's other financiers and the producers who ultimately run production and oversee post-production. The **casting director** helps the director assemble actors to perform in the movie. The **line producer** is in charge of the physical execution of a film, overseeing the **location manager** as they work to secure filming locations and obtain necessary permits. On a big film, they may have multiple **assistant location managers** and a **location scout**, who do much of the actual research, footwork, and photography to document location possibilities. The **first assistant director** (1st AD) prepares the shooting schedule, and the **production manager** oversees daily production decisions such as budget, scheduling, and staffing. The production manager generally reports to the line producer and supervises the **production coordinator**, who coordinates all logistics involved with the cast, crew, and equipment. **Production assistants** act as utility players on a production. The **production designer** translates the film into visual form (settings, costumes, makeup), working alongside the **art director**, **set designer**, and **costume designer** (see production roles below).

KEY PRODUCTION ROLES

▶ The **director** runs the show—he or she is the boss on set. The **first assistant director** (1st AD) moves on to organizing the crew and ensuring that the film comes in on schedule. A **second assistant director** (2nd AD) helps the 1st AD supervise the set and also manages and hands out important documents such as scripts and call sheets. Depending on the size of the crew, there may even be a 3rd AD. The **visual/special effects supervisor** oversees both creative and technical elements for the special or visual effects on a project. Special effects are practical (i.e., physical) effects created on set—such as fire or puppetry—and captured on camera. Visual

“

It's really important to understand all the jobs on the set.” – JAMES



ON SET DURING FILMING OF THE TERMINATOR

effects are added in postproduction, such as computer-generated imagery. The **script supervisor** keeps track of everything that has been shot, including any deviations from the script. He or she is responsible for matching props, wardrobe, dialogue, blocking, etc. from one shot to the next. The **cinematographer** works closely with the director to determine the look of the film, the lighting, and the framing (this role can also be referred to as a **director of photography**, or DP). The **first assistant camera** (1st AC) ensures that every shot is clear and in focus, while the **second assistant camera** (2nd AC) is in charge of holding the slate in front of the camera to keep track of shots and takes. The **camera operator** does exactly that: They operate the camera at the direction of the DP. The **film loader** handles the film before and after exposure, ensures its se-

cure transport, and keeps track of film stock during production. The **Steadicam operator** is a specially trained camera operator who handles a motion-stabilized camera rig. The **gaffer** is responsible for the design of a production's lighting plan (you might also hear gaffers called **chief lighting technicians**). **Best boys** or **best babes** are the assistants to the gaffer or key grip (see below), responsible for the electric truck, rentals, staffing, and other electrical issues. The **lighting technician** sets up and controls lighting equipment and electrical power on set, while the **key grip** moves and sets up nonelectrical equipment—such as camera and lighting rigs—in coordination with the lighting department. (The key grip is the chief in charge of other grips on set.) An **electrician** stays on hand to deal with lighting loads. The **dolly grip** is responsible for the movement and placement of dollies, cranes, and other heavy equipment on which cameras and camera operators are placed. The **production sound mixer** ensures that the sound is properly recorded and mixed on set; they also select microphones, operate sound-recording devices, and sometimes mix audio signals. The **boom operator** holds the boom microphone and is responsible for mic placement and movement during filming. They also make sure the mic doesn't show up in the shot. The **costume designer** works closely with the director and production designer (and perhaps even the screenwriter) to create appropriate costumes for the actors; the **costume supervisor** works with the costume designer to manage the on-set wardrobe. **Makeup artists** choose and apply appropriate makeup for the actors, and **hairstylists** style the actors' hair. The **stunt coordinator** casts and supervises stunt performers as well as designs and supervises all on-set stunts in collaboration with the director and the DP. The **production manager** works under the line producer and oversees all aspects of physical production; the **assistant production manager** reports to the production manager and assists them with various tasks, particularly when a film has multiple production units working at once. The **production coordinator** works under the line producer and production manager to execute plans involving location rentals, equipment rentals, catering, and calling actors to set. The **production designer** reports directly to the film's director and oversees all visual design elements of a film, from set design to costumes to hair to makeup to props. The **art director** interfaces with the various artisans producing a film's visual design. Acting as the pro-

duction designer's second-in-command, they oversee the art department. The **set designer** works under the production designer and creates a film's sets, and the **set decorator** furnishes the sets created by the set designer. The set decorator oversees a swing crew that includes **set dressers** (who populate the sets with furniture, props, etc.), a **leadman** (the head set dresser), and a **greensman** (in charge of living plant material). Meanwhile the **props master** is in charge of finding and keeping track of all the props that appear on screen to add authenticity, and the **construction coordinator** leads a set construction team of carpenters and painters who execute the vision of the set designer.

KEY POSTPRODUCTION ROLES



The **editor** works closely with the director to assemble and cut principal photography into the finished film. The **sound designer** is in charge of postproduction sound on a film, including sound effects and atmospheric sounds. They work closely with the director and might also be called a **supervising sound editor**. The **sound editor** combines the three sources of audio—dialogue, music, and sound effects—into one multi-channel audio track that accompanies the final film. A **foley artist** creates postproduction sound effects in sync with the final edit of a film. The **visual effects producer** is in charge of adding postproduction visual effects and motion graphics; they oversee a team that includes a **visual effects supervisor** (who manages the VFX process), a **visual effects editor** (who adds postproduction visual effects to final cuts of live-action sequences), and a **compositor** (who constructs a final image out of various special effects, graphics, etc.). The **composer** writes—and often performs—the musical score that is added to the final cut of the film. The **music editor** works with the composer to execute their vision by syncing and editing the music. The **music supervisor** helps choose the music that will accompany the film (he or she might also help find a composer and manage any music licensing). The **postproduction supervisor** functions like a line producer or production coordinator for the myriad tasks that occur during postproduction. The **colorist** performs both color correction and color grading to give the film a professional, artistic veneer, and the **dialogue editor** assembles all the dialogue captured on set.



CONCEPT ART FOR AVATAR

Filming Fundamentals

Ready to start shooting? Make sure to master three basics: your lenses, your lighting, and your camera techniques

1. KNOW YOUR LENSES

A film lens, also known as a cine lens or cinema lens, is a high-end camera lens that filmmakers, cinematographers, and videographers use to make film and digital projects. Film lenses offer better image quality and ease of use than still photography lenses, but ultimately the basic makeup is the same: Like DSLRs and other still photography lenses, a film lens contains a series of glass plates that brings exterior light through the camera's viewfinder to a film strip or digital sensor.

All lenses filter and focus light so that it hits the sensor or film strip correctly, but there are a few other factors that determine the look and quality of an image captured by a film lens:

Focal length

Focal length is the distance, measured in millimeters, between the camera lens and the camera's digital sensor, or film plane, which records the image. Cine lenses with smaller focal lengths have wider angles of view, which is how the human eye perceives the size of the objects in the scene, while larger focal lengths have a narrower angle of view and show less of the scene.

T-stops

The amount of light that passes through the cine lens is measured in increments called transmission stops, or t-stops, which is a more accurate unit of measurement than the f-stop (the camera setting that specifies the aperture of the lens used for still lenses).

Aperture

The aperture, or size of the opening in the lens (or iris), also affects the image that the cine lens can capture. As with focal length, large apertures create a shallow depth of field—otherwise known as the amount of focus in the image—while smaller apertures result in greater depth of field and more focus.

There are two primary types of camera lenses for cinematography and photography:

Prime lenses

Prime lenses have a fixed focal length (FFL). This means filmmakers must physically move the camera closer toward or away from their subject to change the angle of view. This type of lens is also known as a varifocal lens, meaning its focus changes as it zooms. A cine prime lens is typically lighter than a zoom lens but allows for less creative control over zooming.

Zoom lenses

Zoom lenses allow cinematographers to change the focal length and angle of view by zooming in and out with the zoom ring on the lens body. Zooming allows the cinematographer to achieve everything from a wide-angle shot to an extreme close-up. A popular choice for filmmaking is the cine zoom lens, which is a parfocal lens that allows filmmakers to change the zoom range without losing focus or image quality. Zoom lenses typically contain more glass than prime lenses, which makes them heavier but allows for greater versatility.

Prime and zoom lenses come in a variety of types, but the four listed here are relatively common when it comes to most filmmaking:

50mm lens

Known as the “nifty 50,” the 50mm lens can represent how the human eye sees objects and people in a natural setting. These lenses are both affordable and lightweight, making them ideal for handheld filmmaking. However, first-time users should consider using stabilizers or gimbals (pivoting support for camera operators) for greater image stabilization. A 50mm lens can also create the bokeh effect, a soft, attractive, out-of-focus background image, with maximum aperture.

Anamorphic lens

Anamorphic lenses are favorites among filmmakers for their wide aspect ratio (2:39:1) and their ability to produce epic images. These lenses generate a wide field of view (how much of an image the lens can cover) with only slight distortion and plenty of warmth in the frame.

Telephoto lens

The 75mm telephoto (or long) lens has multiple focal points that compress and magnify details in the fore-

ground, middle ground, and background of an image. The telephoto lens is usually reserved for documentaries or other productions with large, extensive sets or locations.

Wide-angle lens

The wide-angle lens’ focal length is typically between 14mm and 20mm, which is ideal for fitting a large object into the frame or drawing attention to an object in the image’s foreground. Wide-angle lenses can show greater movement and scope within a scene and exaggerate and distort the foreground image. Certain lenses can produce an ultrawide-angle or even fish-eye effect if their focal length is larger than the camera’s sensor size.

2. KNOW YOUR SHOTS, ANGLES, AND TECHNIQUES

In one of *Titanic*’s opening sequences, a chauffeured car pulls up to a dock where passengers are boarding a majestic ship, and it’s in this scene that the audience is introduced to the character of Rose DeWitt Bukater. Rather than taking you into the vehicle, though, James decided to have you encounter Rose in stages: first, a peek at her gloved hand; next, the reveal of her delicate, Edwardian-style shoe; last, a look at her parasol and her massive purple hat, the latter of which lifts to finally reveal her face. “I love stylistically interesting cinematic introductions of main characters,” James says when describing this scene. Cinematography, or how a filmmaker chooses to capture a movie’s images—lighting, framing, composition, camera motion, camera angles, film selection, lens choices, depth of field, zoom, focus, color, exposure, and filtration—can be just as vital to the story as what those images are.



SIGOURNEY WEAVER IN *ALIENS* (1986)

WHY IS CINEMATOGRAPHY IMPORTANT?

Cinematography sets and supports the overall look and mood of a film's visual narrative, and, as such, filmmakers often choose to spend the majority of their budget on it to guarantee that the film will look incredible on the big screen.

Cinematographers choose specific camera shots, or how much space the audience sees in a particular frame, to portray things about a character, setting, or theme to the audience. Similarly, cinematographers must decide on the different camera angles being used, or the various ways to position a camera to further emphasize emotions and relationships.

These decisions are collectively known as coverage—or all of the shots that you need to gather during filming in order to edit together a coherent scene during postproduction. For example, when shooting a two-person scene, your coverage may consist of five different shots: a master shot, a pair of over-the-shoulder shots, and a pair of close-ups of each speaker. Determining the coverage for a specific scene is a collaborative process and may involve everyone from the film's writer to the director to the cinematographer.

But what, exactly, *is* a master shot? Or a close-up? Excellent questions. Familiarize yourself with this guide to camera shots, angles, and techniques, all of which you may decide to use with your cinematographer—and that you ought to know before yelling, "Action!"

30 CAMERA SHOTS, ANGLES, AND TECHNIQUES TO KNOW



Establishing shot

A shot at the beginning of a scene that gives context for the setting. It sets the stage for what's to come later on.

Close-up

A shot that tightly crops in on a

character's face or on an object, filling the screen with a particular aspect or detail.

Extreme close-up

A more intense version of a close-up, usually showing only the eyes or another part of the face.

Wide shot

Also called a long shot, a wide shot is filmed from a distant vantage point and shows a character in relation to their surroundings. It is a way to emphasize place and location, setting the subject of the scene in context.

Extreme wide shot

A shot so far away from the character that they are no longer visible in their surroundings.

Medium shot

Somewhere between a close-up and a wide shot, the medium shot is filmed from a vantage point that shows a subject from the waist up while also revealing some of the surrounding environment.

Medium close-up shot

Somewhere between a close-up and a medium shot, the medium close-up shot is filmed from a vantage point that shows a subject from the waist up but does not reveal a lot of the surrounding environment.

Full shot

A subject fills the entire frame in a full shot. It communicates to the audience their appearance, the environment, and how they fit into their surroundings.

Tracking shot

A sideways-moving shot that captures a landscape or follows a character as they move. This term is often used interchangeably with the term *dolly shot* (see below), though the two terms technically refer to different motions.

Dolly shot

A shot where the camera moves toward or away from a character on a dolly track. Technically, a dolly shot refers only to backward and forward camera motion, though the term has come to mean any camera movement that tracks a character.

Dolly zoom shot

An effect where the camera lens zooms while the camera is also dolly-ing toward or away from the subject it's filming. This creates the illusion that the background is moving closer or farther away from the subject while the subject stays still.

Crane shot

An overhead shot where the camera is suspended in the air on a moving crane.

High-angle shot

A shot where the camera is placed higher than a character or object so that it looks down on a subject, giving the audience a sense of superiority.

Low-angle shot

A shot where the camera is placed lower than a character or object so that it looks up at a subject, giving the audience a sense of inferiority.

Bird's-eye view shot

A shot from high in the sky looking down on a subject and/or their surroundings. Also called an overhead shot.

Aerial shot

Shot from even higher than a bird's-eye view shot, an aerial shot is usually captured from a helicopter or a drone. It shows miles of scenery or cityscape from above, and while the subject may not be visible, it communicates to the audience that the subject is somewhere within that world.

Dutch angle

A shot where the camera is tilted to one side. Also called a Dutch tilt or a canted angle, a Dutch angle is meant to disorient the audience or convey chaos in some way.



Point of view shot

A shot that shows the action through the eyes of a specific character, allowing the audience to essentially become that character.

Panning

A shot where the camera turns left or right on its vertical axis.

Tilting

A shot where the camera turns up or down on its horizontal axis.

Master shot

Filmed from a vantage point that encompasses the action of a scene, the master shot keeps all major players in view. It might be a long, medium, or even close-up shot, and the camera might even move throughout the scene. Regardless, the key is to record an uninterrupted take, from the start of the scene to its finish and from an angle that can be edited together easily with additional shots.

Deep focus

Deep focus refers to a technique where all elements of an image—foreground, middle ground, and background—are in sharp focus. This technique helps directors imbue their shots with detail, as with scenes that involve important activity in both the foreground and the background of the picture.

Shallow focus

Images shot in shallow focus tend to feature sharply defined foreground figures and blurry backgrounds, making them perfect for close-ups and brief shots with minimal visual information.



Slow motion

When a scene is shot to appear as if the action is occurring very slowly for dramatic or comedic effect. You can achieve a slow-motion effect by capturing footage at a frame rate higher than the rate you use during playback. For example, shooting a scene at 120 frames per second and then playing it back at the standard movie frame rate of 24 frames per second produces slow motion.

Cutaway shot

A cutaway is a shot of something other than the main subject or action of a scene. It may capture a character's reaction to the action.

Reverse shot

A shot in which one character is speaking to another unseen character.

One shot

Sometimes called a long take or continuous shot, this is a shot where an entire scene or a whole film is filmed at once with no breaks.

Two shot

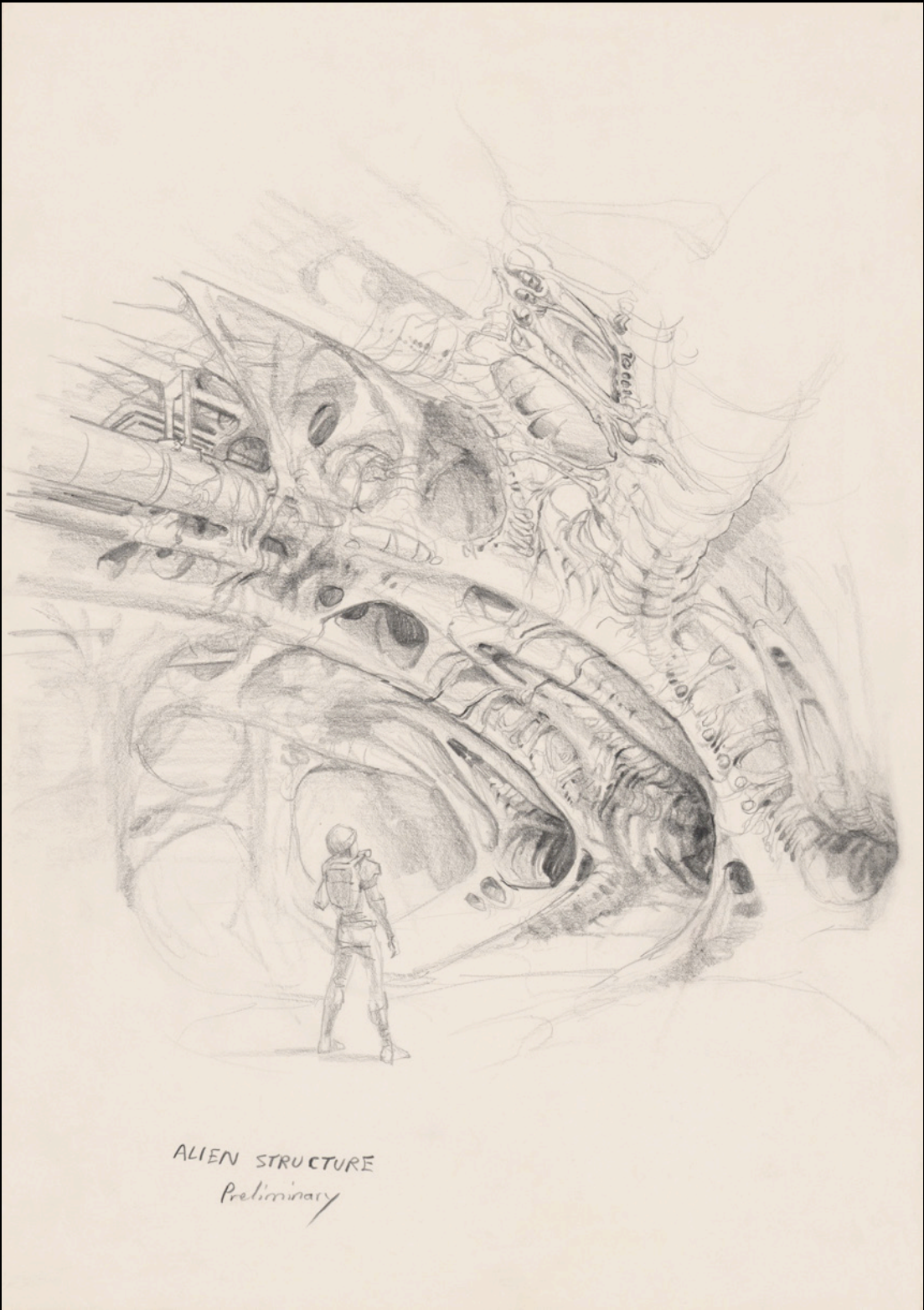
When two subjects appear side by side or facing each other in a single frame.

Bridging shot

A shot that indicates the passage of time between two scenes, like a montage of seasons or newspaper headlines changing.

Over-the-shoulder shot

Another way to capture two subjects in the same frame is with an over-the-shoulder shot, when the camera is positioned behind the shoulder of one subject (with the other subject visible on screen). Often used during conversations and in alternation with a reverse shot from over the other speaker's shoulders, the over-the-shoulder shot emphasizes a connection between characters.



ALIEN STRUCTURE
Preliminary

CONCEPT ART FOR ALIENS

3. KNOW YOUR LIGHTING

You can have a killer script, the fanciest camera on the market, and a cast of A-list actors confirmed. But without effective lighting, your picture won't have the impact you envisioned. Lighting not only enhances the images you're capturing, but it also creates depth, supports the story's overall mood and atmosphere, and conveys a sense of meaning for the audience.

Moreover, lighting fundamentally shows the audience where to look, guiding the eye to a specific actor, prop, or part of a scene. It can reflect the psychology and emotional state of a character, with the size, color, and harshness of the light adjusted to match the character's internal feelings. Lighting is also an effective shorthand to



AN UNDERWATER SCENE IN *THE ABYSS*

indicate and define the movie's genre—film noir, for example, is characterized by stark contrasts between light and dark, dramatically patterned shadows, and unique framing and composition choices.

On set, the director will share visual inspirations and ideas for cinematic lighting, the director of photography or cinematographer will create the lighting plan with the director's input, and the gaffer will design and execute the plan along with overseeing all of the crew members who help bring the plan to life.

YOUR BASIC LIGHTING SETUP

The most basic lighting setup highlights the subject of a scene, making them stand out from the background. Known as a three-point lighting setup, it's broken down into the following steps:

1. Place your main and strongest source of light, called a **key light**, off to one side of the actor to create a slight shadow on the opposite side of their face.
2. Add a second light, called a **fill light**, on the opposite side of the actor to soften any harsh shadows created by the key light.
3. Place a third light, a **back light**, behind the actor to help define and highlight their features and outlines.

Once you master the three-point lighting setup, you can start exploring other cinematic lighting styles to add drama, depth, and atmosphere to your story.

9 MORE LIGHTING TECHNIQUES TO TRY

Side lighting

This lights the actor from the side and focuses on the contours of their face for a high-contrast effect.

Practical lighting

A light source that is visible in the scene, like lamps, light fixtures, candles, and television sets. It's not usually strong enough to light a subject, but it adds to the cinematic ambience of the scene.

Hard lighting

A lighting aesthetic with harsh shadows that draws attention to a specific actor or part of a scene.

Soft lighting

A lighting style with little to no harsh shadows that is bright yet balanced.

High-key lighting

A lighting style characterized by intense brightness, bordering on over-exposure, and no shadows. You'll commonly see high-key lighting on a television sitcom, in a music video, or on a commercial.

Low-key lighting

A lighting aesthetic with a lot of shadows to create a sense of mystery or suspense.

Natural lighting

This uses and modifies the available light at the location of the shoot.

Motivated lighting

A controlled lighting technique meant to imitate natural light sources, like the sun or the moon.

Bounce lighting

A technique where light is bounced from a strong source toward the actor with a reflector, which softens and spreads the light.

Ultimately, lighting a scene requires a lot of trial and error. Take time to experiment with three-point lighting, soft light, hard light, low-key light, high-key light, and other techniques to find the right balance of light and shadows for your shot.

HOW TO LIGHT A SCENE WITHOUT PROFESSIONAL EQUIPMENT

If you're a DIY filmmaker working with a small budget, you can still experiment with a variety of lighting setups by investing in a few items to create your own, more affordable kit:

- Buy inexpensive clamp lights, LED lights, or tripod-mounted work lights from a hardware store.
- Get some basic heat-resistant color filters, such as blue gels to help shift the yellow tint of a halogen bulb to white, and soft filters to reduce harshness.
- Wrap black Cinefoil around the edges of the lamp to help direct and focus the light.

THE WRITING PROCESS:

Breaking Your Movie Into Acts

Analyzing the story structure of *Titanic* and
The Terminator could help you when plotting
out your own script



“ANYONE ASPIRING TO be a filmmaker needs to understand the writing process,” says James. This means, among many other things, understanding the basics of screenwriting story structure, which is principally made up of acts. An act can be defined as the units of a story. Typically, they entail a character pursuing a goal before something major happens to either throw them off course or change the nature of their goal altogether. This is known as an act break, when the story transitions from one act to another. Take the moment John Connor meets the T-800 in *Terminator 2*: It’s a turning point that drags him into a whole new world—and a whole new act.

How Many Acts Should a Screenplay Have?

What constitutes an act (and how many acts should make up a story) are matters up for debate and interpretation. The **three-act structure**—which divides a story into what is essentially a beginning, a middle, and an end—is the

most well-known. But some screenwriters prefer alternative models. The **five-act structure**, for example, is the three-act structure broken down into more detail, offering writers more control over their middle section. All of that said, these two structures are guidelines, not rules. Some writers use more than five acts, while others hardly think about acts at all.

“Thinking in acts is good up to a point,” James says. “It disciplines you to know that you’re coming up to a transition point in the film. And if you think in terms of act breaks, you’ll create transitions that are interesting.”

With that in mind, take a look at the five main plot points, as featured in *Aliens* (see page 30), as well as how two of James’s films—*Titanic* (see page 31) and *The Terminator* (see page 33)—can be broken into three and five acts, respectively. Use these blueprints to guide you with your own screenplay, but remember: There are no set rules. Experiment, and above all, have fun.

PLOT POINT

CASE STUDY: *ALIENS*

Within stories exist acts, and within acts exist a series of plot points. Here are the most important twists and turns in *Aliens*

INCITING INCIDENT

This is the point, early on in the screenplay, when the story kicks into gear and the hero is called to action. In *Aliens*, it is the scene in which Ripley is told of the colony under threat by Xenomorphs. Will she go on the mission?

MIDPOINT

A hugely significant incident, which happens roughly halfway through a story. In *Aliens*, it is the point when the dropship crashes, leaving Ripley and her team stranded on a planet full of Xenomorphs.

CRISIS

Occurring late in the story, this is the moment when all seems lost and the protagonist must make a major decision. In *Aliens*, it is the scene in which Newt is captured by the Xenomorphs. Will Ripley save her?

CLIMAX

This is what the story has all been building to: the final battle. In *Aliens*, it's the big showdown between Ripley and the Xenomorph Queen.

RESOLUTION

The villain has been defeated, the hero has saved the day, Ripley and Newt are safe in their stasis pods. They all live happily ever after. The end.

THREE-ACT STRUCTURE CASE STUDY: *TITANIC*

“I believe in the three-act structure,” says James. “I’ve just never succeeded in doing one.”
Still, the plot of *Titanic* can be analyzed using this traditional storytelling format

ACT 1

An elderly Rose DeWitt Bukater tells us the tale of the ill-fated *RMS Titanic*, and we cut to April 1912. We’re introduced to a younger Rose, a depressed rich girl who is set to sail to America and be wedded off to Cal, a man she doesn’t love. We’re also introduced to Jack, a poor, free-spirited artist who wins his ticket aboard the ship in a game of poker. The two seem destined to meet, and they do when Jack saves Rose from throwing herself off the ship in despair, providing the *inciting incident*.

ACT 2

Our heroes have collided. From here their relationship deepens and their romance grows, although so does the tension between what Rose wants (to love Jack) and what her snobby mother wants (for Rose to marry Cal). Rose conquers this conflict and decides to commit wholeheartedly to Jack; when the *Titanic* arrives in America, Rose is going to disembark with him.

Enter the *midpoint*: The ship hits an iceberg, and Jack is falsely arrested for stealing Cal’s diamond. The latter incident sows doubt in Rose’s mind, but she is convinced of Jack’s innocence following a conversation on deck with Cal and her mother. With the *Ti-*

tanic set to sink within an hour, Rose heads back to rescue Jack and eventually succeeds. After escaping from the treacherous lower deck, she has a decision to make: stay on the sinking ship with Jack or get on a lifeboat and leave him behind.

After Jack persuades her to choose the lifeboat option, it seems as though this is the end of their romance, bringing us to our *crisis*. But surprise! Rose changes her mind and jumps back onto the ship from the lifeboat.

ACT 3

Enraged by Rose’s choice, Cal chases Jack and Rose with a gun into the bowels of the ship, which is now close to being submerged. They escape again, to the top deck, where the other passengers are panicking. They must now survive the sinking of the ship—the *climax* of the story—which has broken in half. Jack and Rose manage to make it off the *Titanic* but find themselves stranded in the freezing ocean. Jack dies. Rose lets him go and is rescued by a returning lifeboat, giving us the *resolution*.

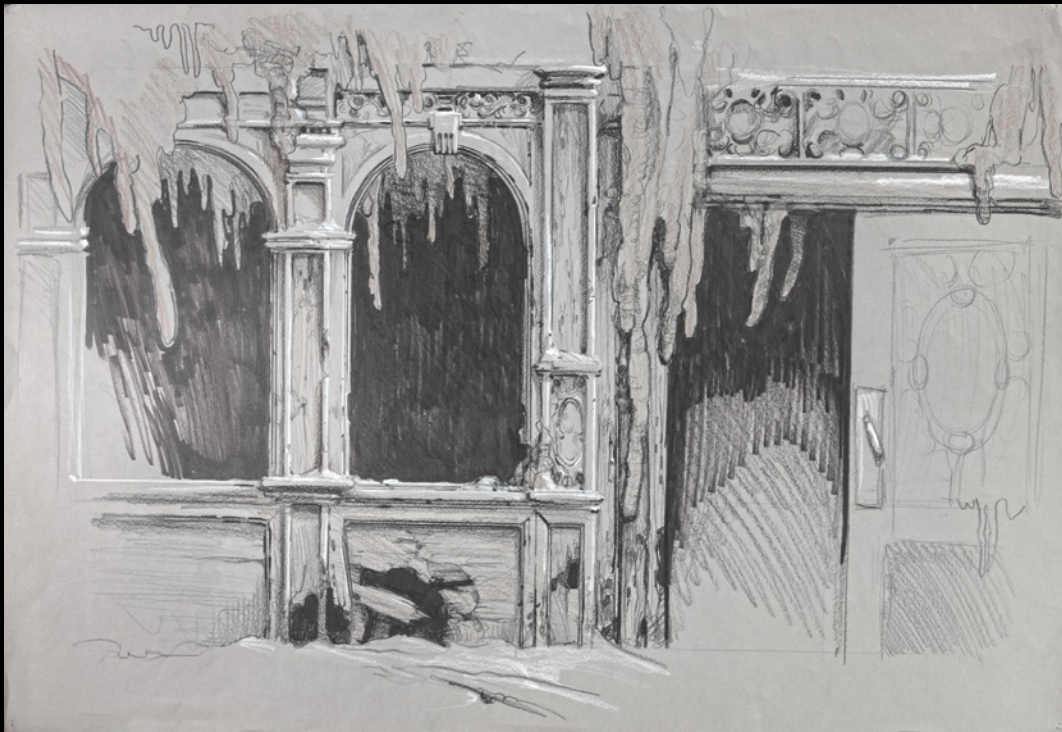
Back in the present day, we see that Rose has lived a full life, just as Jack wanted her to. The film ends with her and Jack reunited in a dream.



JAMES ON SET OF *TITANIC*



CONCEPT ART FOR *TITANIC*



CONCEPT ART FOR *TITANIC*

FIVE-ACT STRUCTURE

CASE STUDY: *THE TERMINATOR*

According to James, *The Terminator* is structured in “five acts with a coda.”

Here is one interpretation of how the story looks when it's broken down

ACT 1

We're introduced to the Terminator, a cyborg assassin that arrives from the future and immediately kills someone. We're then introduced to Kyle Reese, who has also been sent from the future. He gets chased by the police but manages to escape. Finally, we're introduced to Sarah Connor, a seemingly ordinary waitress. It is then revealed that the Terminator is hunting and killing all women named Sarah Connor, marking our *inciting incident*.

ACT 2

Sarah realizes that she may be in danger. Thinking she is being stalked by Kyle, who has actually traveled back in time with a mission to protect her, Sarah slips into a bar. The Terminator tracks down Sarah, but before it can kill her, she is saved by Kyle in a hail of gunfire. The two of them are now on the run.

ACT 3

Kyle tells Sarah that he is from the future; that nuclear Armageddon is coming, and with it the rise of the cyborgs; and that she will eventually give birth to a son, John, who becomes a rebel leader in humanity's war against the cyborgs. The Terminator tracks them down again. In the aftermath of the chase, the story's *midpoint*, both Sarah and Kyle are arrested by the police, who convince her that Kyle is crazy. The Terminator, having repaired itself, enters the police station and slaughters the officers. Sarah and Kyle escape.

ACT 4

While hiding from the Terminator, Sarah and Kyle grow closer as she learns more about him and the future world. She doubts herself. They check into a motel. Sarah calls her mother—who has been killed and is being impersonated by the Terminator—and reveals her location, bringing us to the *crisis*. As the Terminator draws closer, Sarah and Kyle make love.



ON THE SET OF *THE TERMINATOR*

ACT 5

The Terminator tracks down Sarah and Kyle a final time, and a chase ensues, the movie's fast-moving climax. After an explosive crash, it looks as though our heroes have won, but the Terminator rises once again, sans skin. Sarah and Kyle retreat into a factory. Kyle manages to blow up the Terminator with a pipe bomb but kills himself in the process. The Terminator is still not dead, and its remains pursue an injured Sarah, who lures it into a hydraulic press. Finally, she activates the machine and crushes the Terminator into pieces, our dramatic (and satisfying) resolution.

CODA

Months later, a pregnant Sarah is on the road, recording a message for her unborn son. A child takes a picture of her—one that Kyle held in the future world—and says there's a storm coming. She agrees.

ASSIGNMENT



Break It Down

Watch a film that you have seen before, except this time study its structure as you go. How many acts does it have? How accurately does it conform to the five major plot points highlighted on page 30?

Break down your own screenplay into both three and five acts in order to establish a big-picture view of your story. What would you define as your inciting incident? Is your midpoint exciting enough? Does the climax up the stakes?

IDEA TO EXECUTION: JAMES'S MOVIE MUST-HAVES

Five components that are crucial to making a good movie, in James's own words

A GRIPPING OPENING IMAGE

"There's a sacrosanct moment when the studio credits are over, you dip to black, and something's going to appear. The audience is never going to be leaning forward more than they are in those first seconds. What are you going to hit them with?"

COMPELLING CHARACTERS

"You need compelling characters. You need characters that the audience will be fascinated by, that they can either identify with or that they can't identify with initially, but then they get sucked into that character's reality."

AN INTERESTING WORLD

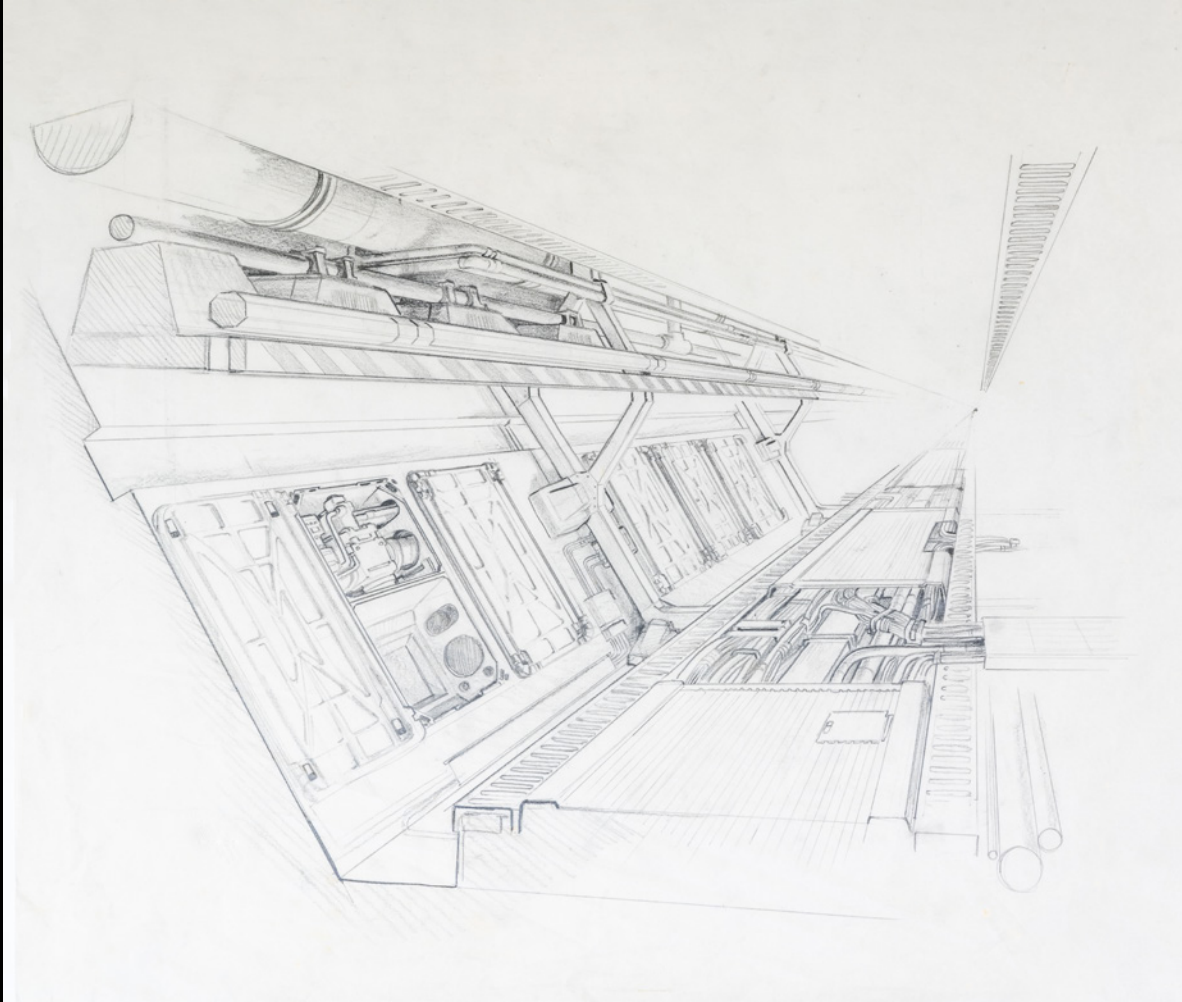
"You need a world in which [your] characters exist. Maybe it's in another time. Maybe it's in another place in our world. I personally have always been fascinated by other times. I love history. And other places: science fiction, the future, other planets."

CONFLICT

"The worst thing you can have is everybody all on the same side of the argument. There has to be conflict because your characters are tested by conflict and by betrayal and by loss. And we want to feel that we're walking that character's life with them, that we're walking with them through their journey."

A SATISFYING ENDING

"There needs to be an end of the journey. I always start with the ending: 'Am I going to be moved by where it all winds up?'"



CONCEPT ART FOR ALIENS

THEME, AESTHETIC, MOTIF: James's Signature Cinematic Style

Breaking down the elements that make a James
Cameron film a James Cameron film



EVERY GREAT DIRECTOR has their own style and aesthetic, their own traits and preferences. James is no different. Beyond technical innovations, his filmmaking trademarks involve making the audience feel every second of tension and suspense. Even within his eclectic oeuvre, some elements remain consistent. Take a moment to review these motifs—and reflect on the type of director you want to be.

Ordinary protagonist vs. impossible foe

Fundamentally, James's movies are successful because they're driven by characters you care about. Consider how much of *Titanic* is devoted to setting up the relationship between Jack and Rose or how thoroughly *The Terminator* establishes Sarah Connor as a humble waitress. The aim is

to use your empathy as a viewer against you, to make you anxious about how these ordinary people can overcome such extraordinary odds—whether those odds take the form of a huge sinking ship or a killer cyborg.

The subjective camera

James places a huge emphasis on how a character perceives a scene. One way he does this is with his use of the subjective camera, which is typically shot from a character's point of view. Consider the scene in *Aliens* in which Ripley and a team of marines first stumble upon Newt, whom we're introduced to through a slightly shaky, enigmatic POV shot. The suggestion to the audience is that someone—or something—is hiding from the marines. It's a technique that can build suspense and curiosity as well as visual empathy.

Slowing down the action

To maximize tension, James likes to prolong suspenseful scenes for as long as possible. He compares this to the real-life experience of being in a traffic accident, when your perception of time slows down. You can see this effect during the bar scene in *The Terminator*, the one in which Sarah Connor finds herself face-to-face with the T-800. As the cyborg walks closer and draws its gun, and Kyle Reese struggles to get into a position to save Sarah, James slows down the scene until it resembles a dream. He maintains this slow-moving pace just long enough for the tension to become unbearable before releasing it in a blast of cathartic action.

A particular shade of blue

Different directors use color and lighting differently (consider the distinct and often candy-colored palette of a Wes Anderson movie or the way Zack Snyder drains color from the screen). James's use of color, tone, and temperature is more subtle and pragmatic, but a consistent trait throughout his movies is a particular hue of icy blue. It's there during the egg chamber scene in *Aliens*, the Cyberdyne sequence in *Terminator 2: Judgment Day*, and the scenes in the freezing water at the end of *Titanic*. All three benefit from the hue's ability to transform night scenes into something heightened and beautiful.

Action sequences that escalate and evolve

Because James's films tend to center around ordinary protagonists, his action sequences are often a desperate fight for survival. What makes these scenes so exciting is how they escalate and evolve through different locations all the while maintaining spatial clarity. Consider the hospital sequence from *Terminator 2: Judgment Day*, which evolves from a corridor to a parking lot to a public road, with the danger steadily intensifying. Think our heroes have narrowly escaped the T-1000 by catching an elevator? It pries open the doors! Think they can make a quick getaway in a car? Nope. This new Terminator is fast enough to catch up.

ASSIGNMENT



Inspiration Archive

Begin to collect and organize stories, themes, films, scenes, filmmakers, TV shows, and visual styles that you like in a notebook, on a vision board, or in a computer doc. Do you notice any patterns? What might this collection indicate about the kinds of genres, narratives and cinematographic techniques you're drawn to?

CASTING CALL:

James on Working With His Stars

Tips for finding the right people to fill the right roles in your own film



FEELING DAUNTED BY the prospect of working with actors? Don't sweat it. James has more than 40 years of experience in getting the best out of what he calls "these exotic creatures." Here are his top tips for landing the talent you want (and need):

Cast an actor who brings you something unexpected

James calls casting a "mystical process" where your characters—who up until now have been alive only in your

mind—come to life all over again. "The actor is going to change that character," he says, "and that change should be positive for you as the filmmaker. In fact, you should cast somebody who brings something you didn't expect—something that not only epitomizes what you imagined but maybe even challenges you a little bit." James adds that he has much more respect for the casting process now than he did when he was starting out. "As I look back over my own movies, I think, 'How could that film ever have worked with anybody else?'"

Hear each actor through their unique frequency

Before making your final decision on an actor, James recommends getting to know them so that you can gauge how well you will work together. “One of the things I look for is, is there a give-and-take?” he says, before explaining that every actor has their own unique frequency. “Some actors are very prepared, some of them come to the set and say, ‘Direct me.’ Some actors need a lot of praise, some actors aren’t interested in that at all.... Most actors have a mixture of confidence and vulnerability. You have to key into: What frequency are they receiving on, and what frequency are they broadcasting on?”

Understand the character, the scene, and what it means to be an actor

James admits that he was “petrified” when he first had to work with actors. “But what I found out very quickly is: Just understand the character and the scene, and help them achieve what they need to achieve.” James also recommends that filmmakers take a walk in an actor’s shoes. “I would encourage any aspiring filmmaker to get in front of a camera,” he says, “to get into an acting workshop, to understand what it feels like to be standing naked in the spotlight in one’s mind in front of millions of people, and to disabuse oneself of the notion that top actors are going to come in and take care of themselves.”

Establish a rapport in rehearsal

James is not a huge fan of rehearsals that crystallize every nuance and beat of a script. Instead, he sees rehearsal as more of a workshop. “I like to have rehearsals so that we can talk through ideas—not lock them in but stand them up. And often I’ll find that dialogue shakes out.” He offers an example from *Titanic*, where Kate Winslet suggested during rehearsals that Rose spit at her fiancé, Cal, rather than, as was written, stab him with a hat pin. “It was so brilliant,” James says, “because it was a callback to a previous scene. Poor Billy Zane didn’t particularly like having a big ol’ loogie shot into his face 50 times, but I think it turned out to be a nice moment.”

Be ready to throw your plans out the window

Sometimes the most difficult task for a director is justifying to an actor why they need to walk from point A to point B. “Actors hate it when directors say, ‘Yes, but the shot only works if you walk from there to there,’” James says. “The actor will then say, ‘Well, why am I walking over there?’ And it’s a legitimate question.” If you have cast correctly, he adds, then the actor’s note will be wise, and it’s your job to either find an answer that works for everyone or to rethink the scene. “You need to be ready to throw out your preconception, to throw out your storyboards, and shoot the most authentic choice.”

Know what to protect and what can change

At the same time, you, the filmmaker, must be able to think dualistically: You must be open to compromise but also be protective of your vision. “Let’s say an actor changes a line,” James says, “but that line has a resonance later where someone repeats that line verbatim. You have to ask the actor, ‘Please say the line the way it’s written, because in act 3 that line is going to resonate a certain way.’ It’s so much more helpful for them if they know why you’re trying to do something.” Ultimately, he adds, it’s about gaining their trust and respect: “And the best way to do that is to listen to them, observe them in character, and speak within the language of their process.”

BEHIND THE SCENES: JAMES'S FAVORITE CASTING STORIES



ARNOLD SCHWARZENEGGER

The Terminator in *The Terminator*

James originally wanted someone nondescript-looking for this iconic role. He abandoned that approach when he met Arnold Schwarzenegger. "Arnold does anything but blend into a crowd," James says. "But he is amazing to watch. The Terminator as a character was elevated twofold in the casting."



SAM WORTHINGTON

Jake in *Avatar*

James wanted to hire Sam Worthington on the strength of his initial screen test with Zoe Saldana. "I wanted him to be young, because I wanted him to be a guy [for whom] the promise of his life had been taken away by his injury," James explains in the documentary *Capturing Avatar*. "And Sam had all the qualities that I was looking for." Yet the studio wasn't convinced—they wanted a major star before committing to the film. So James and producer Jon Landau decided to do a screen test, but this time in 3-D. The studio greenlit *Avatar* soon after.



LEONARDO DICAPRIO

Jack in *Titanic*

Leonardo DiCaprio initially refused to audition for the role of Jack. "He said, 'Oh, I don't read,'" James remembers of DiCaprio's objection to reading the script during an audition. "I said, 'You're 19. You read.'" However, after persuading him to perform a scene with Kate Winslet (on the provision that it not be filmed), James was blown away. "For a split second the clouds parted, the sun shone down, Jack was there, and then it went away and he went back to being Leonardo.... And then I had to explain to 20th Century Fox why they needed to pay him millions of dollars."



KATE WINSLET

Rose in *Titanic*

When James first wrote Rose, he imagined her as a young Audrey Hepburn—deer-like, delicate. "And Kate is not that at all," he says. "Kate is full of life and energy. And I was even a little hesitant to cast her until we did a very in-depth screen test with her, and she was luminous. I actually checked out that screen test recently, and it was amazing."

ASSIGNMENT



Act It Out

In order to better understand your actors, James suggests dipping a toe into the craft yourself. Sign up for a scene study class, which will help you learn the language of acting (and network with potential future collaborators). You can also expose yourself to the anxiety and pressure actors often face by performing a monologue in front of friends or at an open mic. This will give you a source of authentic empathy for what an actor is feeling in a difficult scene you're directing.



“

It's pretty hard to be a filmmaker these days without being conversant with simple visual effects.” – JAMES



CUT, PRINT IT:

The Editing Process

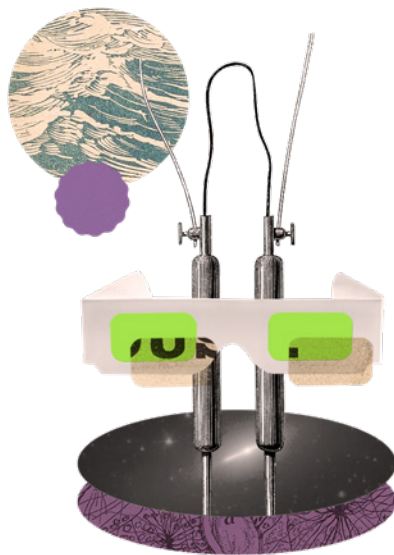
A look at where film editing started and where it has ended up



Postproduction used to be a manual process, where physical film strips were cut and spliced together. Today, most movies and shows are cut on nonlinear digital editing systems. These software programs gained traction in the early 1990s and revolutionized postproduction by making editing faster and easier. Media is uploaded to the computer, saved as digital files, and organized into *bins*, the postproduction term for folders. Editors retrieve a clip by clicking on the file, similar to working with other documents. A film has a track (denoted by a row) for every element, like video, music, or sound effects, allowing editors to adjust the placement and levels of each one individually. There are several editing systems used in postproduction, and it often comes down to which one an editor prefers. The most popular editing software used in postproduction include Avid Media Composer, Final Cut Pro, and Adobe Premiere.

SPECIAL EFFECTS: 5 of James's Most Ingenious Shots

A deep dive into some highlights from *Avatar*,
The Terminator, and other iconic films



“IT’S PRETTY HARD to be a filmmaker these days without being conversant with simple visual effects,” James says. He should know. After all, James is responsible for some of the most groundbreaking special and visual effects in cinema history. From the easily imitable to the fantastically elaborate, here are five of his most important, innovative, and striking effects sequences—and what you can learn from them.

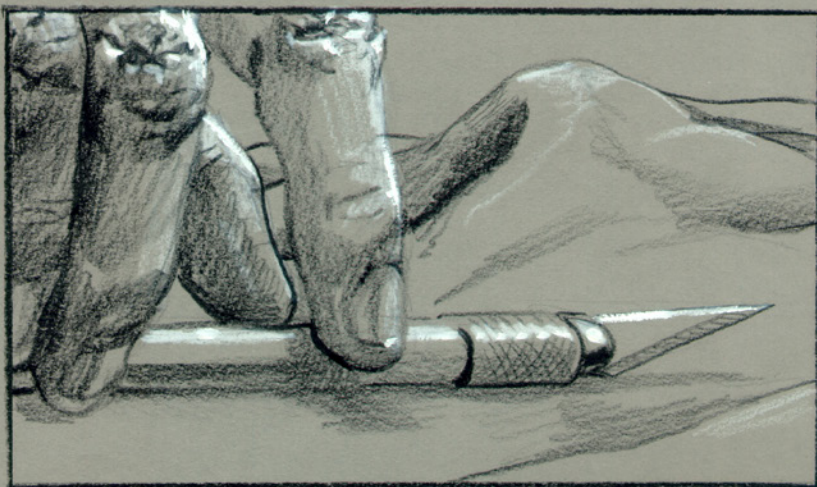
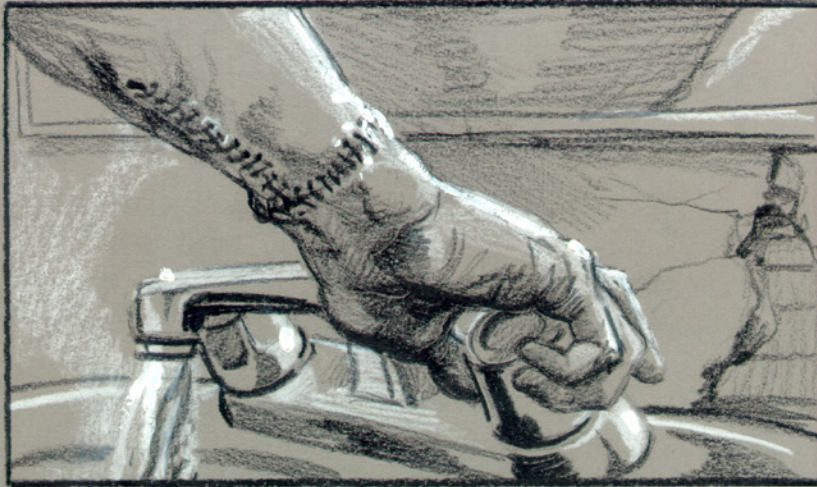
The ship sinking sequence from *Titanic*

Despite costing hundreds of millions of dollars to make, *Titanic* employed effects techniques that ranged from state-of-the-art CGI to what became known as “the toilet paper shot.” To create the famous scene in which the ship

stands tall in the water before sinking, extras passed a roll of toilet paper up an enormous vertical set, where a camera tilted to follow the arc as the toilet paper was dropped from the top. This reference footage was then passed to James’s digital effects company, Digital Domain, which used the toilet paper to trace the trajectory of a fall and replace the roll with a plummeting CGI body.

The lesson:

.....
Sometimes the simplest solutions are the best solutions.



STORYBOARDS FROM THE TERMINATOR

The cyborg hand operation from *The Terminator*

The Terminator was made on a relatively tight budget, which meant that James had to work out the logistics of the effects in advance. Take the scene in which the Terminator repairs its hand: James and his frequent effects collaborator Stan Winston came up with the idea that, between a cutaway of the Terminator picking up a scalpel, Arnold Schwarzenegger's real arm would be replaced by a false one. This meant the prop arm could be cut open to reveal machinery underneath and that its fingers could be operated by a puppeteer underneath a table, whose hand was slotted into the prosthetic like a glove. All of this sleight of hand was incorporated into the storyboard, with an illustrated technical guide to how the sequence would be executed.

The lesson:

Always plan out your special effects shots in advance.

The CGI pseudopod from *The Abyss*

At a time when computer-generated effects were limited and rare, James tapped the American special effects house Industrial Light & Magic to design a floating alien water tentacle, which could imitate people's faces. To succeed, ILM had to create prototype image editing software called Photoshop (yes, *that* Photoshop) along with brand-new computer-animated imaging technology. For the mimicking scenes, actors Ed Harris and Mary Elizabeth Mastrantonio had their faces captured using a Cyberware 3-D scanner. The 75 seconds of footage took six months to create but would go on to revolutionize the effects industry. The technology also provided the basis for what is possibly James's most famous visual effect: *Terminator 2*'s liquid metal T-1000.

The lesson:

Collaborate with people who are smart enough to execute your vision.



ON SET FOR THE TERMINATOR

The future war scene from *Terminator 2*

One of the most underrated scenes is a shot from the future, where the skeletal form of a Terminator blasts its way through a war-torn landscape. The backdrop was accomplished by separately animating and filming two two-foot go-motion puppets on a miniature set. These shots were then projected onto two rear screen projection screens to give the shot depth, with a piece of set dressing hiding the seams between the screens. In the foreground, two full-scale animatronic Terminators operated in real time in front of the projections, with their laser blasts added later by rotoscope artists using cell animation techniques.

The lesson:

Experiment with different visual effects techniques, and don't be afraid to combine them!



SAM WORTHINGTON IN A SCENE FROM AVATAR

The first completed shot from Avatar

James wrote *Avatar* in 1995, but he was told that the technology to animate faces to such a sophisticated degree simply didn't exist yet. A little more than a decade later, he tried again. Working alongside the New Zealand-based VFX company Weta Digital, which developed *The Lord of the Rings'* Gollum, James and his team studied close-ups of the human face—how the eye caught the light, how the mouth interacted with the teeth—and developed facial rig technology that could capture and record the nuances of an actor's facial performance. There was no guarantee it would work. But more than a year after sending his first sequence to Weta Digital, James received the first completed shot of *Avatar*: a close-up of Zoe Saldana's Neytiri, confidently determined, getting ready to fire an arrow.

The lesson:

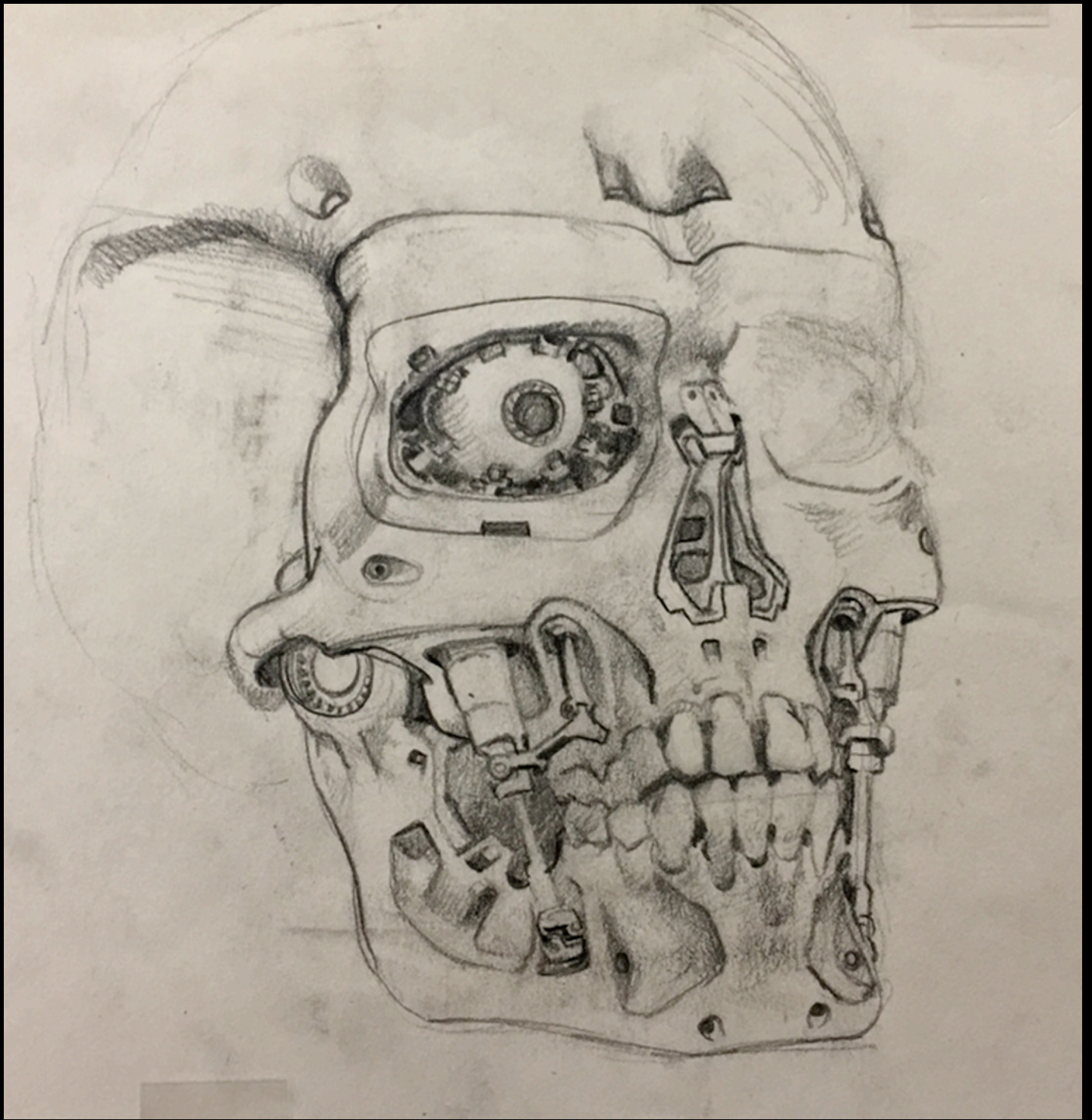
Pay close attention to human faces—they are the bedrock of good visual effects.

ASSIGNMENT



VFX and SFX Close Watch

Rewatch *Terminator 2* and focus on the special and visual effects, bearing in mind that the movie was made in the early 1990s. What solutions did James employ to pull off the most complex sequences? Study shots such as the one where Sarah Connor operates on the T-800's head, with Arnold Schwarzenegger somehow still in the frame, or the scene in which the T-800 walks down a hallway while being pelted with bullets (a clue: It was not done with squibs!). Write down how you think these effects were achieved, and then research further to check if you were right.

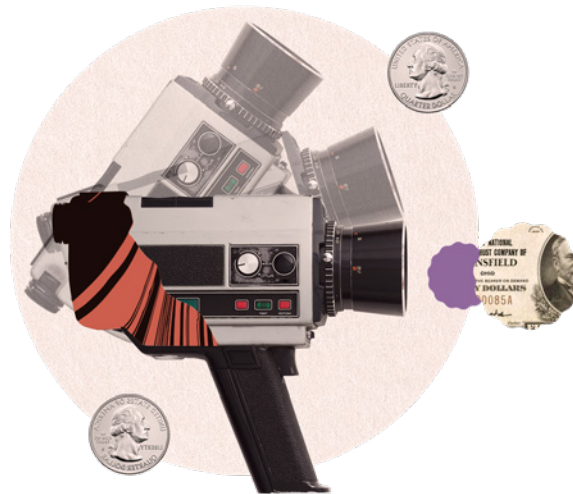


CONCEPT ART FOR THE TERMINATOR

10

Tips for Filming on a Budget

Find a street with car dealerships!



JAMES MAY BE best known for large-scale Hollywood blockbusters, but he cut his teeth by mastering the logistics of low-budget filmmaking. When the scope and imagination of a script far overstretched the budget, James got crafty in order to deliver an immersive experience without breaking the bank. Looking for a few ways to get the biggest bang for your buck? Try these 10 tips.

Make sure the script is tight

Low-budget films live and die on the strength of their story. A sharp screenplay will attract the right crew, the right cast, and, most importantly, the right audience. Then again, don't get carried away—the locations, VFX, and concept should only be as ambitious as you can afford.

Plan, plan, plan

As James says, “The art of low-budget filmmaking is the art of being thoroughly prepared and maximizing what you have.” This means not only planning your storyboard and schedule in advance but being prepared with a plan B (and C) in case shooting is disrupted by weather or other on-set complications.

Rent equipment

An iPhone or a DSLR camera may be enough to learn your craft. But in terms of professional filmmaking, your best bet is to borrow or rent equipment. This can be done through a local film school or websites such as sharegrid.com, which allows you to rent equipment from other filmmakers.



The art of low-budget filmmaking is the art of being thoroughly prepared.”

— JAMES

LIFEBOATS FLEE THE SINKING SHIP IN A SCENE FROM TITANIC

Get some handy friends—and consider getting a library card

Want to utilize skills like animation or techniques like CGI? James recommends making use of “nerdy friends” to show you how it’s done. Filmmaking is about community and cooperation, after all. Otherwise, you can teach yourself by reading books, as James did, or through the internet.

Scout out free lighting

Use natural light as much as possible. This will help you save both time and money on lighting setups. For night shoots, James advises that you seek out stretches of road with car dealerships. “They always have bright lights,” he says. “Just shoot on that street.”

Choose your locations wisely

Sets are expensive, which means that you will have to scout out free or cheap places to film. Stick to as few locations as possible. Also, be aware of your limitations. As James says, “The difference between building a set of a castle and going to a castle is a difference in control. You can stylistically do things in a set that you cannot do on a location.”

Cast up-and-coming actors...

Finding the right actor for a low-budget project can be a long and difficult process, but strong performances are often what make an independent movie stand out. Your search may range from local drama schools to browsing casting directories like Spotlight. Either way, be honest about your schedule and budget before casting anybody in your movie.

...And calculate the actual cost of keeping them happy

A semiprofessional actor may agree to sign on to your shoot if the script is intriguing enough, but they are unlikely to agree to pay for their own lunch and fuel. Factor in additional actor expenses like these when putting together your budget.

Pick the right director of photography

The right DP can make a film look far more expensive than it actually is. “Spend time with [your DP] looking at films and saying what you like,” James says. “Ask them, ‘How do I do that? How have you done that in the past? What will that involve for me technically during the shooting day?’ ”

Plan your postproduction

Employing VFX? Prepare your shots meticulously in the preproduction stage. Hiring an editor? Try to edit the film during production—it will allow you to figure out which additional shots will still be needed. In short: plan, plan, plan. Oh, and don’t forget music. Copyrighted music is expensive, so either make friends with an up-and-coming composer or browse stock music sites, like AudioBlocks or Beatsuite.

ASSIGNMENT



Try Being a Line Producer

Imagine that you have a screenplay, a location, and a small team of crew and actors. Work out how much it would cost for two weeks of filming. How small of a crew could you get away with? What equipment would you need? How much of it could be borrowed versus rented? Have you factored in costs such as food, fuel, and complications like rain?





“

There's a moment when you're just a fan and there's a moment when you're a filmmaker. The one moment can follow the other by about one minute. All you have to do is pick up a camera and start shooting.”

— JAMES

CREDITS

The Persistence of Memory

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The Enchanted Domain

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New York

Footage from *The Terminator*

Courtesy MGM Media Licensing

Footage from *Terminator 2: Judgment Day*

Courtesy StudioCanal



MasterClass