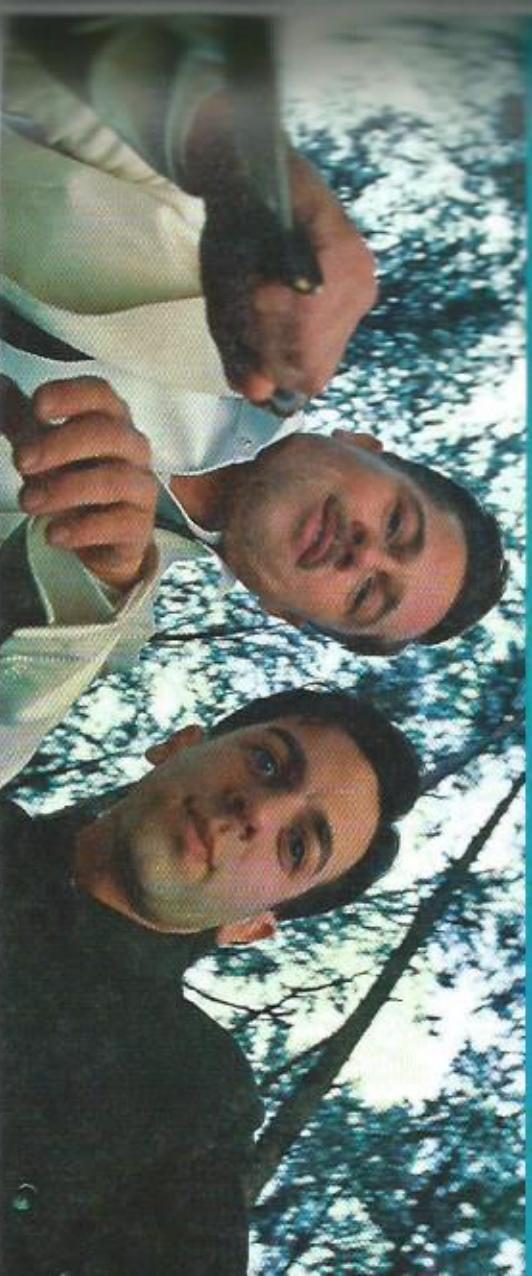


appear in this textbook are frame enlargements. This ensures films under study correspond exactly to the images on screen watching a film. The use of frame enlargements is intended to take advantage over other textbooks that use mainly public domain stills, these are taken by an on-set photographer during a production, and they only *approximate* the actual shots used in this text are identified as such in the captions.

# Film Structure



## OBJECTIVES

*After reading this chapter, you should be able to:*

- explain the nature of film structure and its relation to the ways movies express meaning
- describe the production process and its relation to film structure
- describe the relation between film structure and the cinema's properties of time and space
- distinguish the three basic camera positions and their expressive functions
- describe how camera position can clarify the meaning of an actor's facial expression and gestures

In, Inver Hills Community College  
University of Memphis  
Middlesex Community College  
Lyons University

- describe the relation between the camera's view of things and human perception
- explain how the camera creates images that both correspond with and transform the viewer's visual experience

The shark in *Jaws* (1975) and the digital characters in *The Lord of the Rings: The Return of the King* (2004) thrilled and amused moviegoers throughout the world. Audiences have embraced films as diverse as *Toy Story 3* (2010), *True Grit* (2010), *The Social Network* (2010), and *The Dark Knight* (2008). Each of these pictures provided its viewers with a strong cinematic experience, crafted by filmmakers using the elements of film structure: camerawork, lighting, sound, editing. To understand how movies express meanings and elicit emotions, one must begin by understanding their structural design. This chapter explains the concept of film structure, the camera's role as an element of structure, and the relation between the camera's method of seeing and a viewer's understanding of cinema.

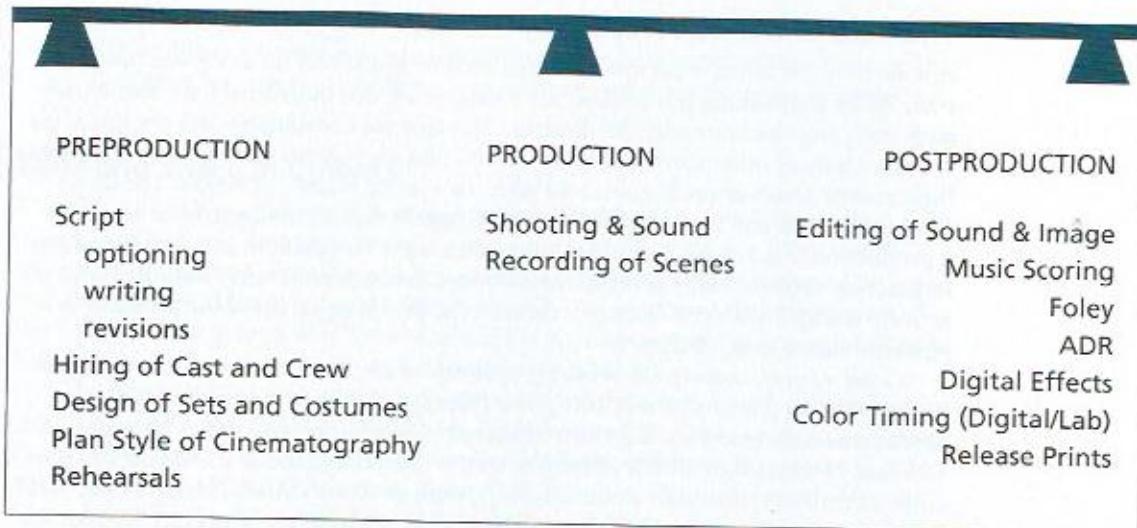
## ELEMENTS OF FILM STRUCTURE

Structure refers to the audiovisual design of a film and the particular tools and techniques used to create that design. (Scholars sometimes refer to this by the term *film form*. Thus, one might speak of formal design or of structural design. The terminology is interchangeable.) A convenient way to illustrate this concept is to make a distinction between structure and content. Consider the average newspaper movie review. It provides a description of a film's story and a paragraph or two about the characters and the actors who play them. In addition, the reviewer might mention the theme or themes of the film. These descriptions of story, character, and theme address the content of the movie.

Now, instead of thinking about content, one could ask about those things that help to create the story, give shape to the characters, and illustrate and visualize the themes. These are questions about the elements of cinema—the camera, lights and color, production design, performance, editing, sound—and their organization in a given film.

### The Production Process

A helpful way of understanding film structure—and the material presented in upcoming chapters—is to map its components according to their place in the production process. When does production design occur? Cinematography? Editing? Filmmaking involves three basic steps or stages. Preproduction designates the planning and preparation stage. It typically involves the writing of a script; hiring of cast and crew; production design of sets, costumes, and locales; and planning the style of cinematography. Set design and camera style are both previsualized using software programs that enable filmmakers to “see” in advance how camera setups and lenses will look on the sets that are planned. Preproduction also sometimes includes a brief period of rehearsal for the actors. Production designates the work of filming the script (cinematography) and sound recording of the action. The director may request a temp track, a temporary musical score that is similar to the one that will be created for the film. Postproduction involves the editing of sound and image, composition and recording of the music score, additional sound recording for effects (*Foley*) and dialogue replacement (ADR), creation of digital visual effects (these also may occur during production), and color timing to achieve proper color balance in the images. This may be

**FIGURE 1.1**

The production process.

done digitally (known as digital grading) or using traditional lab methods. Copies of the film are then made for exhibition, either as prints (on film) or as digital video.

Because filmmakers apply the elements of structure at different points in the production process, these elements can be used to modify or influence one another. A director might realize that a scene as filmed lacks emotional force and may turn to the composer for music to supply the missing emotion or to the editor to sharpen its dramatic focus. A cinematographer in postproduction may alter the image captured on film by using digital grading to adjust color, contrast, and other elements.

**TITANIC (PARAMOUNT/20TH CENTURY FOX, 1997)**

*Titanic's* production design evokes a now-vanished early-twentieth-century world. Meticulously detailed costumes and sets are an essential part of the film's structural design. Frame enlargement.

### The Role of the Director

A wide range of creative personnel design picture and sound on any given production. While filmmaking is a collaborative enterprise, one individual has chief artistic authority, and this is usually the director. The director coordinates and organizes the artistic inputs of other members of the production team, who generally subordinate their artistic tastes or preferences to a director's stated wishes or vision. The director, in turn, answers to the producer, who generally has administrative control over a production (e.g., making sure the production stays on schedule and within budget). In practice, though, many producers hold more than administrative authority and are actively engaged with the director's creative decisions, especially if the producer is a powerful figure in the industry.

Great variety exists in the working methods of directors. Some directors, such as Robert Altman (*Gosford Park*, 2001; *The Player*, 1992), welcome input from other production team members in a spirit of shared collective artistry. Other directors, such as Alfred Hitchcock or Charles Chaplin, tend to be more autocratic and commanding in their creative approaches. Some directors, such as Woody Allen (*Match Point*, 2005; *Deconstructing Harry*, 1997), Steven Spielberg (*The War of the Worlds*, 2005; *Saving Private Ryan*, 1998), and Stanley Kubrick (*Full Metal Jacket*, 1987; *Eyes Wide Shut*, 1999), take an active role in the editing of their pictures. Most directors place special emphasis on the quality of the script, believing a polished script to be essential to making a good film. Clint Eastwood's best films as director, *Million Dollar Baby* (2004), *Mystic River* (2003), and *Unforgiven* (1993), feature exquisitely written scripts.

Most directors maintain enduring relationships with key production personnel. As these relationships deepen over the course of several productions, the creative, collaborative work that results becomes richer. Steven Spielberg, for example, has used cinematographer Janusz Kaminski for *War Horse* (2011), *Munich* (2005), *The War of the Worlds* (2005), *The Terminal* (2004), *Saving Private Ryan* (1998), and others. Clint Eastwood relied on production designer Henry Bumstead for eleven films, including *Million Dollar Baby* (2004), *Mystic River* (2003), and *Unforgiven* (1993). Woody Allen invariably relies on editor Susan E. Morse, as does Martin Scorsese with editor Thelma

#### THE IMMIGRANT (MUTUAL FILM CORP., 1917)

Charles Chaplin was the complete filmmaker. He wrote, directed, performed in, edited, and composed the music for his films. Many said that, were it possible, he'd have played all the characters as well. He rarely worked from a completed script. He preferred to build a set, dress it with props, and then explore its comic possibilities, making up gags as he went along. Performance, not camerawork, was the centerpiece of his films. Here, Charlie and his companion (Edna Purviance) have no cash to pay for the meal they've just eaten. The hulking waiter (Eric Campbell) suspects the worst. Frame enlargement.



Schoonmaker. George Lucas relied on Ben Burtt as the sound designer for all six of the *Star Wars* films. The continuities established by these professional relationships are vitally important to a director's ability to get what he or she wants on the screen.

## Time and Space in Cinema

The elements of cinematic structure, organized by directors and their production teams, help to shape the distinctive properties of time and space in a film. A convenient way of thinking about the arts is to consider the properties of time and/or space that they possess. Music, for example, is primarily an art of time. Its effects arise through the arrangement of tones in a musical composition that has some duration or length. Movies, by contrast, are an art of time as well as space.

The time component of movies has several aspects. **Running time** designates the duration of the film, the amount of time it takes a viewer to watch the film from beginning to end. Most commercially released films are called **feature films**, which means that they typically run from 90 to 120 minutes. Some films, however, are much longer. *The Lord of the Rings: The Return of the King* (2004), in its theatrical release, was 201 minutes long, and the director's extended version on DVD runs even longer, 251 minutes.

**Story time** designates the amount of time covered by the narrative, and this can vary considerably from film to film. In Fred Zinnemann's Western, *High Noon* (1952), the story spans 1.5 hours, roughly equivalent to the running time of the film itself. Story time, on the other hand, can span many epochs and centuries, as in Stanley Kubrick's *2001: A Space Odyssey* (1968), which goes from the dawn of the apes well into the age of space travel. Filmmakers also may organize story time through the use of flashbacks so that it becomes fragmented, doubling back on itself, as in Orson Welles's *Citizen Kane* (1941), in which the story of Charles Foster Kane is told largely through the recollections of friends and associates who knew him.

**Internal structural time**, a third distinct aspect of cinematic time, arises from the structural manipulations of film form or technique. If a filmmaker edits a sequence so that the lengths of shots decrease progressively, or become shorter, the tempo of the sequence will accelerate. A rapid camera movement will accelerate the internal structural time of a shot. Regardless of the shot's actual duration on screen, it will seem to move faster. (The term **shot** designates the basic building block of a film. During production, a director creates a film shot by shot. In this context, a shot corresponds to the amount of film footage exposed by the camera from the time it is turned on until it is turned off. Films are composed of many shots that are joined together in the process of editing. In a completed film, a shot is the interval on screen between edit points.)

In *Open Range* (2003) and *Dances with Wolves* (1990), the editing imposes a slow pace on the story by letting many shots linger on screen for a long time. Director Kevin Costner felt that a slow pace suited those stately epics about an era when horse and wagon were major modes of transportation. By contrast, contemporary action films like the *Mission Impossible* series (1996, 2000, 2006) race at breakneck speed, rarely pausing long enough for an audience to catch its breath.

A film's internal structural time never unfolds at a constant rate. It is a dynamic property, not a fixed one. Filmmakers modulate internal structural time to maintain viewer interest by changing camera positions, the lengths of shots, color and lighting design, and the volume and density of the soundtrack.

Viewers experience internal structural time as a series of story events held in dynamic relations of tension and release. Viewers often describe films as being fast or

## FILMMAKER SPOTLIGHT

## Stanley Kubrick

During his 46-year career, Stanley Kubrick made only 12 feature films. Despite the relatively small body of work that he left, however, he had an extraordinary impact on the medium and is recognized as one of its major filmmakers. A director of legendary stature, he was renowned for spending years planning a film and years more shooting it and working on postproduction. Famous for doing many takes of each shot and for the precision of his visual designs, Kubrick honed a style that is unique and unmistakable, and his films offer bleak but compelling visions of human beings trapped and crushed by the systems—social, military, technological—they have created.

Kubrick's reputation was that of an intellectual director, keenly interested in a range of subjects and whose films explored issues and ideas, yet he never finished high school. At age 17 he dropped out and began work as a photographer, working at *Look* magazine for several years before completing two documentary shorts for the March of Time newsreel company (*Day of the Fight* [1951] and *Flying Padre* [1951]). Borrowing money from family and friends, he then completed his first two features as director, *Fear and Desire* (1953) and *Killer's Kiss* (1955). In a move that announced his conviction that cinema was a medium of personal artistry and that he would control his own work, Kubrick produced, wrote, directed, photographed, and edited these films.

After another crime film, *The Killing* (1956), Kubrick made *Paths of Glory* (1958), a powerful drama of World War I and the first of his films to pursue what would be his great theme, the domination of people by the systems they have created (envisioned in this film as the machinery of war and the pitiless chain of command). Influenced by the moving camera of director Max Ophuls, Kubrick's sustained tracking shots became a signature element of his style.

Kubrick's next film, *Spartacus* (1960), was a production on which he, uncharacteristically, did not have complete authority (the picture belonged to its star-producer Kirk Douglas), and as a result, Kubrick was careful to work as his own producer on



**THE SHINING (WARNER BROS., 1980); A CLOCKWORK ORANGE (WARNER BROS., 1971)**

Kubrick made some of the most imaginative and precisely designed films in cinema history. His passion for design led him to shoot 30 and 40 takes of a shot until he had what he wanted. The results were mysterious, haunting, and poetic and included Jack Nicholson's spectacular madness in *The Shining* and visions of a violent, authoritarian future in *A Clockwork Orange*. Frame enlargements.

all subsequent films. He next went to England to film *Lolita* (1962), from the controversial Vladimir Nabokov novel, and he then settled there, using English production facilities for most of his ensuing films. He was becoming a filmmaker whose work transcended national boundary.

*Dr. Strangelove* (1963) is a modern classic, a shrewd and superb satire of the Cold War and the policy of nuclear deterrence aptly named MAD (Mutual Assured Destruction). Kubrick's startling marriage of baroque imagery and popular music (detonating atom bombs accompanied by the sentimental ballad "We'll Meet Again") became one

of his trademarks, used famously in *2001: A Space Odyssey* (spaceships pirouette to the Blue Danube waltz) and *A Clockwork Orange* (lurid violence set to Beethoven's "Ode to Joy").

With *Strangelove*, these two films solidified Kubrick's reputation as a social and cinematic visionary. *2001* (1968) is a visual feast whose startling effects are married to a mystical and mind-bending narrative that takes humankind on a cosmic journey from the dawn of the apes to the era of space travel. Controversial for its violence, *A Clockwork Orange* (1971) depicted a brutal vision of future society where the state learns to control the violent impulses of its citizens. Kubrick said, "The central idea of the film has to do with the question of free will. Do we lose our humanity if we are deprived of the choice between good and evil?" By making the main character a thug and a menace to society, Kubrick aimed to give the question resonance.

With dazzling Steadicam shots of a labyrinthine hotel, Kubrick explored the effects of space on

the mind in *The Shining* (1980), which depicts the hotel's sinister influence on a mentally unstable caretaker and his family and ends with one of the director's bleakest images of futility and alienation.

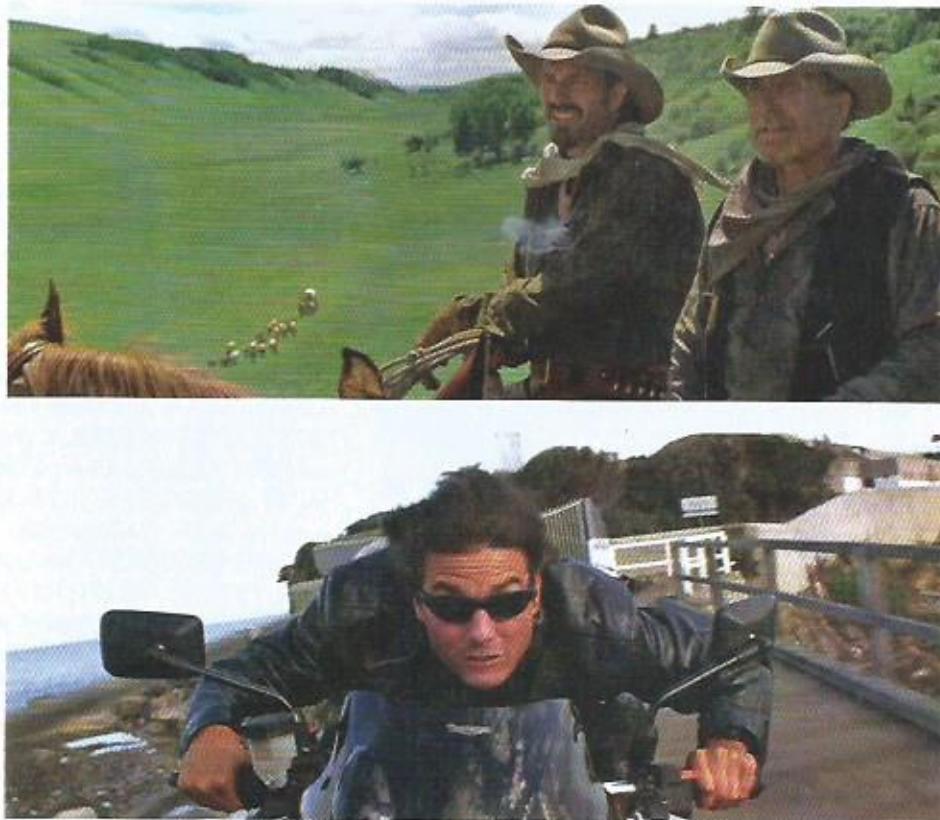
Kubrick extended his pessimistic visions of human failure to eighteenth-century Ireland in *Barry Lyndon* (1975) and the battlefields of Vietnam in *Full Metal Jacket* (1985). His untimely death followed completion of *Eyes Wide Shut* (1999), a haunting and mysterious evocation of erotic fantasy and its emotional consequences.

Kubrick never made the same kind of film twice. Each picture is uniquely different and uniquely resonant and must be seen more than once before it begins to yield up its treasures. Kubrick dedicated his life to making films, and he believed that cinema was an art. Few filmmakers gain the authority to pursue this conviction without compromise. Kubrick's achievements in this regard place him in very select cinematic company. By showing filmmakers what the medium can achieve, Kubrick's work remains a continuing inspiration. ■

slow moving, but in fact, the pacing of any given film typically varies as filmmakers use structure to create narrative rhythms that alternately accelerate and decelerate. While internal structural time results from a filmmaker's manipulations of cinema structure, viewers experience this type of time subjectively, and their responses often vary greatly. One viewer may love the dramatic intensity and emotional lyricism of *The Bridges of Madison County* (1995) or *Monster's Ball* (2001), whereas another may find the overall pacing of these films to be too slow.

Cinema is an art of time *and* space. The spatial properties of cinema have several components. One involves the arrangement of objects within the frame (the dimensions of the projected area on screen; the term also refers to the individual still image on a strip of film). This is the art of framing, or composition, which is discussed in the next chapter because it is a part of the cinematographer's job.

The spatial properties of the cinema, though, go beyond the art of framing. Cinema simulates an illusion of three-dimensional space on a flat screen. To do so, it corresponds in key ways with the viewer's experience of physical space in daily life, and filmmakers create these correspondences in the design of their films. Cinematographers control the distribution of light on the set to accentuate the shape, texture, and positioning of objects and people. Film editors join shots to establish spatial constancies on screen that hold regardless of changes in the camera's position and angle of view. Sound designers use the audio track to convey information about physical space. The spatial properties of cinema are multi-dimensional and can be expressed through many elements of structure. This chapter and succeeding chapters explain these spatial properties and how filmmakers manipulate them.



#### OPEN RANGE (TOUCHSTONE, 2003) AND MISSION: IMPOSSIBLE 2 (PARAMOUNT, 2000)

This Western, directed by Kevin Costner, has a slow pace because he wants to concentrate on the characters and their situation rather than rushing over these for action or special effects. Costner also believes that a slow pace works well in Westerns where characters travel by horse or wagon. Snappy editing and a fast pace would be as ill-suited to this material as a leisurely pace would be for contemporary action films, such as the *Mission: Impossible* series. Frame enlargements.

### STRUCTURE AND THE CAMERA

Let us begin our understanding of film structure by discussing the fundamentals of camera usage. The basic issues of camera position and lenses as discussed in this chapter are actually part of cinematography. But it will be helpful to cover them here separately as an introduction to the camera. These must be grasped before more complex issues of cinematography can be examined in the next chapter. The camera's position, angle, lens, and the camera's movement have a major impact on the visual structure of every film. The reader seeking to understand cinema should begin with a clear sense of the relationship among these characteristics and the differences between them.

## Camera Position

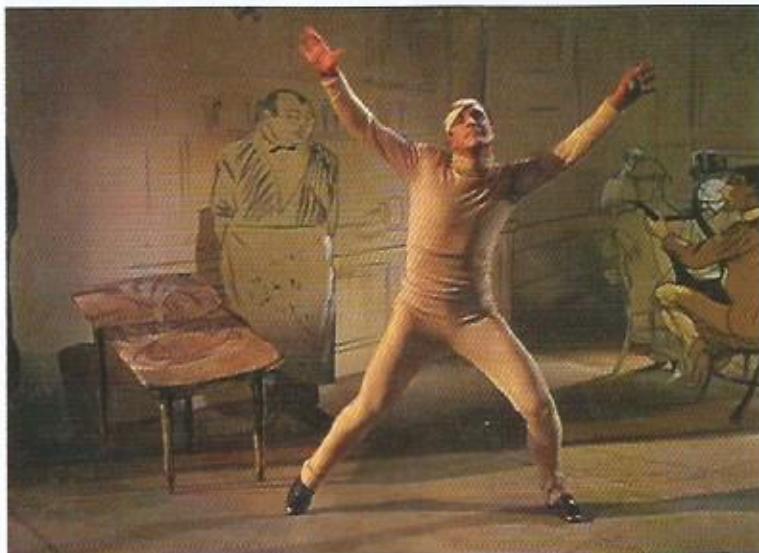
The most basic way of classifying camera usage is in terms of camera position. This refers to the distance between the camera and the subject it is photographing. Obviously, the camera-to-subject distance is a continuum with an infinite series of points from very close to very far. In practice, however, the basic positions usually are classified as variations of three essential camera setups: the long shot, the medium shot, and the close-up. Each of these positions has its own distinct expressive functions in the cinema.

Filmmakers typically use the long shot to stress environment or setting and to show a character's position in relationship to a given environment. In *Titanic* (1997), the majesty of the ship's enormous size is conveyed with a series of long shots that contrast the huge ship with the tiny passengers that crowd its decks. When they are used to open a film or begin a scene, long shots may be referred to as establishing shots. Many detective films, for example, begin with a long shot of the urban environment, often taken from a helicopter.

In contrast to the long shot, the medium shot brings viewers closer to the characters while still showing some of their environment. In *The Phantom of the Opera* (2004), a medium-shot framing shows the Phantom (Gerard Butler) embracing Christine (Emmy Rossum) while revealing details of the Phantom's candlelit lair underneath the opera house. Sometimes medium shots are labeled according to the number of characters who are present within the frame. Accordingly, this shot from *The Phantom of the Opera* would be termed a *two-shot*. A *three-shot* and a *four-shot* would designate medium shots with larger numbers of people.

By contrast with long and medium shots, the close-up stresses characters or objects over the surrounding environment, usually for expressive or dramatic purposes, and it can be an extremely powerful means for guiding and directing a viewer's attention to important features of a scene's action or meaning.

Once the filmmaker chooses a camera position, the camera is typically locked down on a tripod or other type of platform in order to produce a steady image without jitter. Alternatively, rather than locking the camera down, the filmmaker



AN AMERICAN IN PARIS  
(MGM, 1951)

Longer, full-figure framings in the dance sequences of classic Hollywood musicals showcase the beauty of the dance. The longer framing allows the viewer to see the performer's entire body in motion. By contrast, contemporary filmmakers "cheat" when they film dance, using fast editing and close-ups to create the impression of a dance performance without showing the real thing. Here, Gene Kelly dances in an elaborate production number designed around the styles of Impressionist painting. Frame enlargement.

**THERE WILL BE BLOOD (PARAMOUNT, 2007)**

Medium-shot compositions can stress the relationship among characters while integrating them into their environment. This medium shot, in widescreen, preserves the intimacy of this moment between Daniel Plainview (Daniel Day-Lewis) and an orphaned child that he has adopted. The widescreen frame enables the viewer to see a great deal of the train compartment in which they are riding. Frame enlargement.

might work with a **hand-held camera**. In this case, the camera operator physically holds the camera, either on his or her shoulder or on a harness strapped to his or her body. Long shots, medium shots, and close-ups can be filmed in this fashion. Going hand-held enables a filmmaker to cover the action of a scene in a more flexible and spontaneous way, but the challenge is to produce a smooth and steady image. (The Steadicam can help to achieve this—it is discussed in the section on camera movement.) All the shots in *Jaws* (1975), when the characters are at sea, are done with a

**THE LORD OF THE RINGS: THE FELLOWSHIP OF THE RING (NEW LINE, 2001)**

Galadriel (Cate Blanchett) is a strong, spiritual presence as ruler of the domain of Lothlorien, where the film's heroes journey seeking refuge. Note how the close-up framing concentrates attention on her face. The framing is tight, and the focal plane of the shot does not extend beyond her face. This gives the close-up additional punch. The halo of light and Galadriel's glowing, luminescent appearance were created digitally in post-production. Frame enlargement.



### JAWS (UNIVERSAL, 1975)

All the shots in the second half of *Jaws*, once the characters are at sea, are done with a hand-held camera. They look remarkably steady, however, because the camera operator used his body to absorb the rocking of the boat. The camera had to be hand-held because locking it to a tripod or other fixed platform would have induced seasickness in the viewer. The camera operator was Michael Chapman, who went on to become cinematographer of *Raging Bull* and *Taxi Driver*. Frame enlargement.

hand-held camera. It was impossible to do otherwise—locking the camera down on a rocking boat would have made the film's viewers seasick!

The fact that filmmakers can choose among different camera positions illustrates a basic difference between cinema and theater. In theater, the spectator views a play from a single fixed vantage point, a position in the auditorium, usually from a distance. By contrast, in film, viewers watch a shifting series of perspectives on the action, and their ability to understand the story requires synthesizing the shifting points of view as the filmmaker moves from one camera position to another, from shot to shot. How viewers make sense of changing views of a scene supplied by different camera positions is a major issue to be examined in the chapter on editing.

**CAMERA POSITION, GESTURE, AND EXPRESSION** By varying the camera-to-subject distance, the filmmaker can manipulate the viewer's emotional involvement with the material in complex ways. What the camera sees is what the spectator sees. As the camera moves closer to a character, viewers are brought into the character's personal space in ways that can be very expressive and emotional.

People express emotion and intention in ways that go beyond the words they speak. Posture, gesture, facial expression, eye contact, and vocal inflection express feelings and help to define relationships. These signals vary by culture, but all members of a society learn how to read the expressions and gestures of other people as a way of inferring what they are thinking or feeling. By varying camera placement, filmmakers can call attention to significant expressions and gestures and thereby help viewers understand the meaning of the relationships and situations depicted on screen.

When a filmmaker cuts to a close-up, the director can emphasize and clarify a character's reaction, as well as bring viewers into the action and the personal emotional space of the character. Depending on how the viewer feels about that character, this can give rise to either positive emotions (e.g., compassion, empathy) or negative ones (e.g., fear, anxiety).

In George Cukor's *A Star Is Born* (1954), James Mason plays a tragic Hollywood actor, Norman Maine. With his acting career destroyed, the alcoholic Maine collapses into despair and considers suicide. He begins to cry. The camera draws in to a medium close-up, and director Cukor keeps the shot on screen for a surprisingly long time. Cukor said, "To see that man break down was very moving. All the credit for that goes to James [Mason]. He did it all himself. What I did was to let him do it and let it go on and on, let the camera stay on him for an eternity." The shot is designed to elicit the viewer's empathy by revealing an intimate glimpse of a man's private hell.

Facial expressions do not have to be realistic to express emotion or intention. Close-ups of Gollum (Andy Serkis) in *The Lord of the Rings: The Return of the King* (2004) emphasize his semi-human character, rendered with visual effects. These effects transform normal human reality but also correspond with real facial cues. The bulging eyes and open mouth accurately convey the character's anger, but they do so with exaggeration.



**A STAR IS BORN  
(WARNER BROS.,  
1954)**

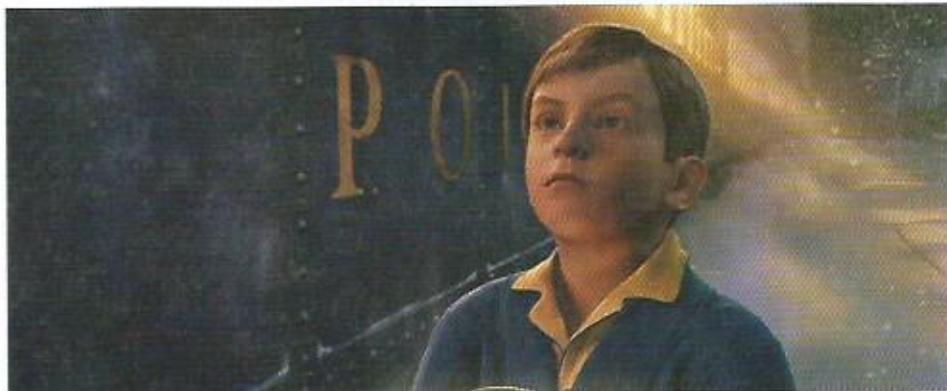
Changing facial expressions in a single, extended shot from *A Star Is Born* convey the despair of Norman Maine (actor James Mason). As a photographic medium, the cinema is especially powerful in its ability to capture and emphasize the smallest details of human facial expression as signs of emotion. The face is one of cinema's most profound channels for emotional expression. Frame enlargements.



#### THE LORD OF THE RINGS: THE RETURN OF THE KING (NEW LINE, 2004)

Unreal faces in fantasy films still can have a special expressive power. Gollum's bulging eyes and snarling mouth accurately convey his greed for the ring and his anger at those who stand in his way, but the emotions are conveyed with some exaggeration. Frame enlargement.

The application of digital tools in filmmaking has made great progress in little over a decade, with digital artists learning to represent a great variety of images and lighting conditions. Breakthroughs in the representation of water, for example, made possible the convincing digital oceans in *Finding Nemo* (2003) and *The Perfect Storm* (2000). (Compare the tidal wave in that film with the one in *The Abyss* (1989), a decade earlier.) But the emotional richness and complexity of facial expression have not yet been among these breakthroughs. The facial reactions of digital characters in *Madagascar* (2005), *Shrek 2* (2004), or *The Incredibles* (2004) are conveyed very effectively as caricature rather than in a photorealist style.



#### THE POLAR EXPRESS (WARNER BROS., 2004)

To date, most digitally created faces have involved cartoon or nonhuman characters because their expressions can be rendered in broader terms. For this film, motion capture techniques converted the performances of live actors (such as Tom Hanks, pictured here) into cartoon figures. The results were disappointing. The faces look stiff and do not show the range of expression of a real person. Frame enlargement.

### Case Study CHARLIE CHAPLIN

Few filmmakers understood the emotional implications of camera position better than Charles Chaplin. Chaplin used a formula to guide his camera placements: long shot for comedy, close-up for tragedy. He understood that the long shot was best suited for comedy because it allowed viewers to see the relationship between Charlie the tramp and his environment, particularly when he was causing chaos and confusion, as he might when tackling a waiter carrying a tray of food or stepping on a board with a brick on one end, causing it to catapult onto the head of a policeman. Laughter depended on seeing these relationships and having sufficient emotional distance from the character. The long shot helped provide viewers with that emotional distance. By contrast, Chaplin knew that the close-up, by emphasizing a character's emotional reaction, could invite tears rather than laughter. Aiming for the heartstrings of his audience, he used his close-ups sparingly so that they would have exceptional dramatic intensity.

The ending of *City Lights* (1931) illustrates this quite well. Charlie has been courting a blind flower girl who believes that he is a millionaire. Charlie happily plays along. At the end of the film, the flower girl regains her eyesight, chances upon Charlie, the disreputable tramp, and realizes with disappointment who he is. At this moment, Chaplin shows Charlie's extraordinary expression in close-up, a mixture of hope, love, fear, embarrassment, and humiliation. This is one of the most perfect close-ups in film history. It emphasizes the complex feelings between the characters, magnifies the emotions on screen, and intensifies them for the film's viewers.

This scene elicits positive emotions from viewers. Obviously, though, many films and genres, like horror, appeal to viewers by eliciting such negative emotions as fear, disgust, and anxiety. Within the safe confines of a fictional film world, these negative emotions can be pleasurable to experience. In this context, a strategically placed close-up can be disturbing and frightening if it brings the viewer into a relationship of proximity



#### CITY LIGHTS (UNITED ARTISTS, 1931)

Chaplin's sublime expression in the final image of *City Lights*. Chaplin intuitively understood the emotional implications of camera position, and he reserved the close-up for special moments of pathos and sentiment. His extraordinary face, the tentative gesture of his hand, the rose it clutches—these emphasize his romantic yearning and his pained embarrassment at being revealed as a tramp and not a millionaire. Frame enlargement.

and spatial intimacy with a terrifying or dangerous character, as in *The Exorcist* (1973).

The effects of camera position, then, are context-dependent, a matter of how a given position is related to the dramatic or emotional content of a shot or scene. By using camera position, filmmakers can enhance or inhibit the viewer's emotional involvement with a character or situation and can elicit both positive and negative emotions. Good filmmakers are intelligent in their choice of camera position, understanding when to cut in to close-up and when to pull back to long shot. Each position gives the viewer a unique perspective on the action, and filmmakers understand that the effects of these positions can be enhanced by a careful choice of camera angle. ■

### Camera Angle

The camera's angle of view typically varies from shot to shot. Camera angles are classified as variations of three essential positions: low, medium (or eye-level), and high. Low- and high-angle positions are usually defined relative to what the camera is filming. A low-angle shot in *Spider-Man 2* (2004) shows Peter Parker (Tobey Maguire)

throwing away his Spider-Man costume, having decided to stop being a superhero. The low-angle framing emphasizes the seriousness and drama of this moment.

Filmmakers use camera angles for a variety of expressive purposes. These include conveying information about a character's view of the world and accompanying emotions. In *Citizen Kane*, director Orson Welles uses camera angle to evoke young Charlie Kane's boyhood feelings of bewilderment and powerlessness in his new foster home. Charlie's imposing guardian gives him a sled for a Christmas present. To magnify Charlie's feelings of helplessness, Welles shoots the man towering above him, from the boy's point of view, using an extremely low camera angle that forces viewers to look up to this figure, much as Charlie has to do.

Camera angle also can complicate emotional responses by playing against the visual relationships viewers want to have with characters, as Hitchcock does in his use of high angles during moments of extreme emotional crisis. In *Psycho* (1960), he used one of these extremely high angles as a way of solving a dramatic and narrative problem and of working at cross-purposes with the viewer's desired response. A first-time viewer believes that the psychopathic killer in the film is the deranged mother of motel owner Norman Bates. In the film's climax, Norman is revealed as the killer. The mother has been dead for many years, and Norman has kept her alive in his mind, keeping her body in the house, even dressing up like her and speaking in her voice. Hitchcock's narrative problem was to keep the audience from realizing midway through the film—when Norman moves her body from the upstairs bedroom to the basement—that the mother was dead.



**THE EXORCIST (WARNER BROS., 1973)**

Facial close-ups can be a very powerful way of eliciting negative emotion from viewers. When the possessed Regan (Linda Blair) stares into the camera, as here, it is difficult to avoid flinching. The camera's proximity to a dangerous or frightening character can generate in viewers a sense of being threatened. Frame enlargement.



**DR. STRANGELOVE (COLUMBIA PICTURES, 1964)**

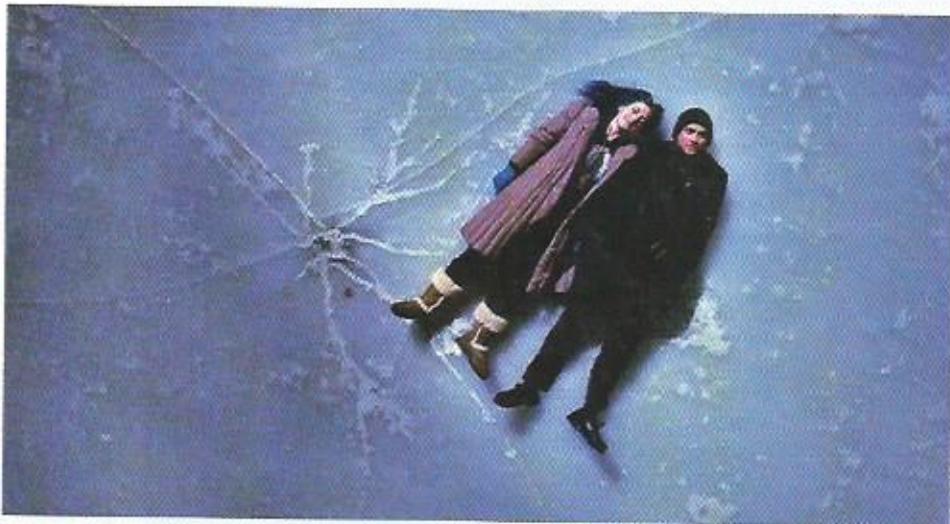
The psychotic General Jack Ripper (Sterling Hayden) launches a nuclear war because he feels his "precious bodily fluids" are being drained by communist spies. The low camera angle emphasizes Ripper's looming presence and his madness. The oversized cigar points to his sexual anxieties. Frame enlargement.



### PSYCHO (PARAMOUNT PICTURES, 1960)

Hitchcock solves a narrative problem in *Psycho* by using this high camera angle. The bizarre, distorting perspective conceals the fact that Norman's mother is dead as he carries her down to the fruit cellar. Frame enlargement.

Hitchcock attached his camera to the ceiling and filmed from directly overhead as Norman carries the corpse down to the cellar. The extremely high angle, coupled with the jostling movement as Norman goes down the stairs, prevents the audience from realizing he is carrying a corpse. The viewer is even fooled into thinking that the mother is kicking in protest.



### ETERNAL SUNSHINE OF THE SPOTLESS MIND (FOCUS FEATURES, 2004)

Camera angle can visualize point of view, even one that cannot literally exist. When Clementine (Kate Winslet) and Joel (Jim Carrey) lie on a frozen pond and look at the stars, the camera looks down on the characters as if from the heavens. The stars cannot be gazing at the characters, but the camera angle creates an effect that suggests something like this idea. The angle adds a moment of visual poetry. Frame enlargement.

Hitchcock's use of the high angle in this scene is an ingenious solution to his narrative problem. It introduces a bizarre, distorting perspective into the scene that plays against the viewer's desired visual relationship with the characters. Because of the questions that the narrative has raised about this mysterious figure, viewers want to see Norman's mother clearly and up close, not from the odd angle Hitchcock provides. But, by delaying the desired response, Hitchcock builds

### FILMMAKER SPOTLIGHT

#### Alfred Hitchcock

Alfred Hitchcock was a consummate showman and entertainer and a serious artist who used film to explore dark currents of human thought and behavior. He thrived in the classical Hollywood studio system because his films were popular with audiences and enjoyed considerable critical respect. As a result, Hitchcock became one of the most powerful Hollywood directors and one of the few known to the public by name.

Born into a Catholic family in the East End of London in 1899, Hitchcock grew into a solitary boy possessed of an active imagination and fascinated by crime. Uncommonly anxious, he believed his many fears motivated his preference for making films about innocent characters suddenly caught up in an unpredictable whirlpool of danger, madness, and intrigue. "I was terrified of the police, of the Jesuit Fathers, of physical punishment, of a lot of things. This is the root of my work."

In 1920, Hitchcock entered the British film industry as a scriptwriter and set and costume designer. In 1924–1925, he worked as an assistant director, and then director, in Germany on several British-German co-productions. He studied and absorbed the style of German Expressionism, and in all his subsequent films he relied on expressionistically distorted images to suggest an unstable world.

Hitchcock rose to the peak of the British industry with a cycle of elegant spy thrillers—*The Man Who Knew Too Much* (1934), *The 39 Steps* (1935), *The Lady Vanishes* (1938). Seeking greater creative freedom and technical resources, Hitchcock left Britain for Hollywood and completed his first U.S. film, *Rebecca*, in 1940. An auspicious debut, it won an Academy Award for Best Picture. In the years that followed,



#### VERTIGO (PARAMOUNT PICTURES, 1958)

James Stewart portrays a detective terrified of heights in *Vertigo*, Hitchcock's most passionate and poetic film. Stewart's pose here is a classic Hitchcock image of the individual haunted by the darkness in his mind and beset by chaos in the outer world. Hitchcock's darkest films offer no places of safety. Frame enlargement.

Hitchcock rapidly consolidated his reputation as a leading director and defined his unique screen world.

Using suspense as his method for drawing the audience into the fictional screen world, Hitchcock concentrated on stories of crime, madness, and espionage in which ostensibly innocent characters confront their guilt and complicity in unsavory or villainous activities. In *Shadow of a Doubt* (1943) a psychopathic serial killer (Joseph Cotton) visits his sister in a small California town, and his idealistic young niece discovers his secret and the many ties that bind her to him. In *Notorious* (1946), two U.S. spies (Cary Grant and Ingrid Bergman) fall in love

(continued)

while manipulating and emotionally betraying one another. In *Strangers on a Train* (1951), a charming psychopath (Robert Walker) proposes an exchange of murders to a celebrity tennis player. "You do mine, I do yours," he tells the shocked but intrigued athlete.

Hitchcock reached the height of his powers, and the zenith of his career, in the 1950s with a series of now-classic films. In *Rear Window* (1954), about a wheelchair-bound photographer intent on proving one of his neighbors is a murderer, Hitchcock explored the theme of voyeurism, applying it both to characters in the narrative and to audiences watching the film.

*To Catch a Thief* (1955) was a classy, witty Technicolor romp on the Riviera, and *The Man Who Knew Too Much* (1956) was a glossy, big-budget remake of his 1934 British hit. *Vertigo* (1958), a complex tale of detection, murder, and madness, was Hitchcock's most intensely personal, romantic, and poetic creation. Widely regarded as his masterpiece, it is hypnotic, dreamlike, with a remarkable depth of feeling and an uncompromisingly bleak ending. Disappointed with *Vertigo*'s commercial performance, Hitchcock made *North by Northwest* (1959), a fast, witty, hugely entertaining summation of the espionage and chase thrillers he had perfected in his 1930s British career.

Hitchcock's next film, *Psycho* (1960), proved to be his most influential. This story of murder, madness, and perversion at a seedy roadside motel was a calculated exercise in audience manipulation in which Hitchcock wanted only to make his viewers scream. He succeeded brilliantly. In its coldness, its savage brutality and violence, and its merciless attitude toward the audience, *Psycho* anticipated, and introduced, the essential characteristics of modern horror.

Hitchcock had one more hit in the 1960s—*The Birds* (1963)—and then began a period of decline. *Marnie* (1964), *Torn Curtain* (1966), and *Topaz* (1969) were critical and commercial disappointments. The industry and the modern audience were changing, and Hitchcock could not adapt. The old studio system was dead, and many of the stars (Grace Kelly, Cary Grant, James Stewart) who were essential to Hitchcock's films had retired or were now too old for the parts he needed to fill. The brutality and cynicism of modern film, which Hitchcock had helped inaugurate with *Psycho*, swept by him. Hitchcock had relied for his best effects on suggestion and implication and felt unable to relate to a world in which, and to a public for whom, extraordinary acts of violence were becoming increasingly commonplace.

Hitchcock achieved a brief popular comeback with *Frenzy* (1972), a hit about a British serial killer. Movie censorship had fallen, and Hitchcock included horrific and distasteful scenes of explicit violence, inadvertently demonstrating how creatively beneficial Hollywood censorship had been for him. His last film, *Family Plot* (1976), was an entertaining but unremarkable thriller. Hitchcock's declining health prevented completion of additional films, and he died on April 29, 1980.

Hitchcock's genius for self-promotion (realized through his cameo appearances in films and his witty introductions on his television show, which ran from 1955–1965), and his brilliance at frightening viewers made him one of the most popular and famous directors in screen history. But he was also a serious and sophisticated artist who made brilliant use of cinema as a vehicle for expressing the forces of darkness and chaos in human life. ■

considerable suspense, and when the payoff finally comes at the end of the film—a close-up of the mother's skeletal face—it is heart-stopping.

**Other Angles** The canted angle, involving a tilted camera leaning to one side or the other, can be an effective way of making the world look off-kilter, often to express a character's anxieties or disoriented, disorganized frame of mind. In *Thirteen* (2003), director Catharine Hardwicke uses a tilted camera to visualize the distress of a mother (Holly Hunter) who learns that her 13-year-old daughter is into drugs. In a similar fashion, the off-kilter angles visualize the disturbed world of *Natural Born Killers*



#### NATURAL BORN KILLERS (WARNER BROS., 1994)

Unstable, tilted camera angles help to establish the nightmarish, off-kilter world of serial killers in Oliver Stone's *Natural Born Killers*. Stone purposely created a wildly chaotic visual design to give the film a psychotic tone. Frame enlargement.

(1994). Tilted camera angles are an excellent means of visualizing emotional or psychological instability.

*Angle in Context* While camera angles are capable of eliciting some of the kinds of emotional responses from viewers described here, it is important to remember that all these responses are context-dependent. The information they convey depends on the emotional content and action of a given scene. They must be carefully matched by filmmakers to the material of the scene. In other contexts, other scenes, low, high, and canted angles may have other effects than those mentioned here.

Japanese director Yasujiro Ozu, for example, used low camera positions and angles extensively, but they are not correlated with any of the effects discussed here. To a large extent, they are motivated by the action of the films, which feature characters sitting on tatami mats while conversing (as is the custom in traditional Japanese homes). The camera gets closer to the ground to film them. One critic has suggested that these low positions and angles work to include the viewer in the world of the film, like a guest sitting on a tatami mat. To assess the function of camera position and angle, then, one must bear in mind their potential for structuring emotional response and also consider the expressive requirements of the scene. What are its dramatic, comedic, emotional, or cultural requirements, and how is their expression facilitated by camera position and angle?

### Camera Lens

Besides position and angle, a third factor defines the relationship between the camera and what it photographs. This is the type of lens used in each shot. The lens is the device that gathers light and brings it into the camera to a focused point on the film, thereby creating an image that is recorded on the light-sensitive surface of the film, called the emulsion. A filmmaker's choice of lens can drastically affect the look of the image in terms of (1) the apparent size of objects on screen and (2) the apparent relationships of depth and distance between near and far objects. Camera positions generally are defined by the amount of distance between the camera and what it is photographing, but without knowing something about the lenses employed, a viewer is liable to misjudge the camera's position. Certain lenses, for example, can make the camera seem much closer to what it is photographing than it really is.



#### INGLORIOUS BASTERDS (UNIVERSAL PICTURES, 2009)

Lt. Aldo Raine (Brad Pitt) admires his handiwork, having just carved a swastika on the forehead of a Nazi colonel. The low camera angle shows Raine from the colonel's point of view, lying on the ground. Although the camera itself is not tilted, the extreme wide angle lens creates parallax distortion, making the characters seem tilted and the tree behind them to lurch at an angle. The tilted composition is achieved with the lens rather than the camera's position. Frame enlargement.

#### FILMMAKER SPOTLIGHT

##### Yasujiro Ozu

Most movies resemble one another because filmmakers use standard methods of setting their cameras, lighting a scene, and editing the shots. Interesting variations on the standard pattern are possible, but it is rare for a filmmaker to define a unique, singular visual style, essentially inventing a novel method of scenic construction.

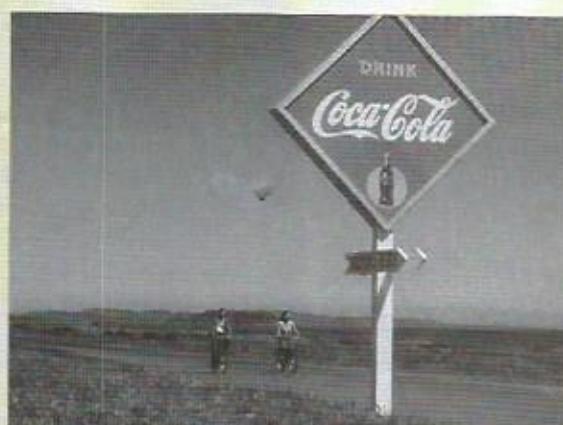
Yasujiro Ozu did just this in a career that lasted from 1927–1963. He made most of his films for Shochiku Studio, and almost all of his films are family dramas that focus on transitional events—children drift away from their parents or marry and start new lives, aging relatives pass away. Ozu was so committed to these portraits of family life that he rarely strayed from the topic, and the titles of his films demonstrate the regularity of the pattern—*Early Spring* (1956), *Late Spring* (1949), *Early Summer* (1951), *The End of Summer* (1961), *Late Autumn* (1960), *An Autumn Afternoon* (1962), *I Graduated, But...* (1929), *I Flunked, But...* (1930), *I Was Born, But...* (1932).

Ozu's films are often very funny, but they are also serene and at times quite melancholy, as he

calmly views the transient nature of life and the disappointments that living inevitably brings. He frequently collaborated with screenwriter Kogo Noda and relied on a stock company of actors that included Chishu Ryu, Setsuko Hara, and Haruko Sugimura.

He disliked melodrama and avoided the heated emotions that movies often portray. He gave his actors meticulous directions about how to hold a pair of chopsticks, how to lift a glass of sake, the angle at which to look right, then left and then down. And he often wanted them to do this without projecting strong emotions. The paradox, though, is that watching an Ozu film can be a very emotional experience. His emphasis on minimalism pays great dividends. Less is more.

Most famously, Ozu's visual style was rigorous and almost unvarying. He set his camera about three feet off the ground, which for many scenes corresponded with the seated position on tatami matting in a traditional Japanese home. But even in outdoor scenes where characters are standing or walking, Ozu's camera often stayed close to the ground.

**EARLY SUMMER (SHOCHIKU, 1951); LATE SPRING (SHOCHIKU, 1949)**

Ozu placed his camera a few feet off the ground, which corresponded with the traditional seating in a Japanese home, but he maintained this practice even with outdoor scenes in which characters are not seated on tatami matting. Frame enlargements.

**LATE SPRING (SHOCHIKU, 1949); EQUINOX FLOWER (SHOCHIKU, 1958)**

Ozu did not use over-the-shoulder framings in dialogue scenes. He preferred the frontal compositions seen here in which characters look almost into the camera lens. The set-ups draw the viewer into the scenes in a singular fashion. Frame enlargements.

He didn't use fades or dissolves but preferred the straight cut to join shots. He rarely moved the camera, and he often cut away from a scene's action to shots of inanimate objects—an umbrella leaning against a doorway, a glowing lantern outside

a restaurant, a lotus flower in bloom. The still-life imagery provided moments of transition within the narrative and also a space in which the viewer might contemplate character behavior and conflict and reach a calm understanding of these.

(continued)

Ozu's camera set-ups did not follow the standard over-the-shoulder style of framing that became so universally accepted among filmmakers. He often filmed his characters in a head-on, frontal fashion, and had them look back at the camera in a way that was just slightly off-angle of its lens. This compositional style draws the viewer inside the scene by making it seem as if the characters are addressing themselves to the camera and the viewer. And he often cut between shots in ways that shifted the line-of-sight by 180 degrees, as

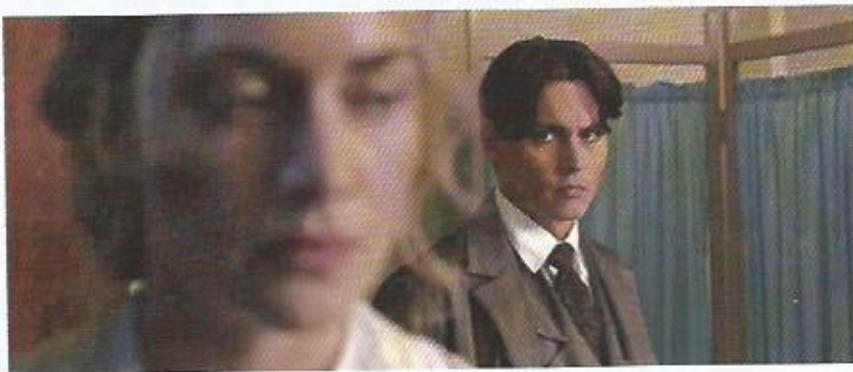
each shot offered a reverse-field view of the scene's playing area.

These stylistic traits emerged early in Ozu's career and he sustained the pattern across the body of his work. They give Ozu's films an unmistakable profile. Ozu's films look like nobody else's movies. But the style was not gratuitous or a meaningless exercise to establish authorship. Ozu was a great artist, and his visual style is precisely calculated. It defines a cinema of great poetry and delicacy and uncommon emotional sensitivity. ■

**FOCAL LENGTH AND DEPTH OF FIELD** When the lens is focused on a distant object, the distance between the film inside the camera and the optical center of the lens is known as the focal length. The properties of different lenses are understood in relation to their respective focal lengths. A focal length of 50 mm conventionally designates a normal lens for 35-mm film, which is the film format used in commercial theaters. Lenses with focal lengths greater than the normal range are telephoto lenses, or long-focal-length lenses. Those with focal lengths less than normal are wide-angle lenses, or short-focal-length lenses.

#### FINDING NEVERLAND (MIRAMAX, 2004)

Changing the lens's focal plane within a shot (a technique called **rack focusing**) can make a dynamic contribution to the composition. It creates a kind of editing within the frame as the filmmaker racks focus instead of cutting to a new shot. In a long, uninterrupted shot, Sylvia Davies (Kate Winslet) and James Barrie (Johnny Depp) talk about her children, and the changes in focal plane bring first one and then the other character into focus. Frame enlargements.

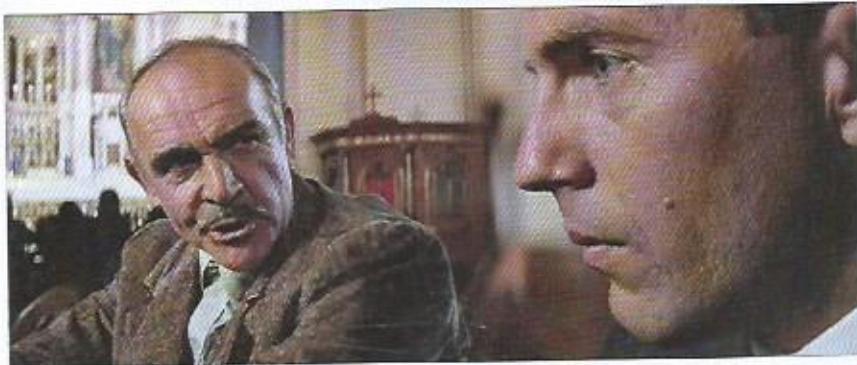
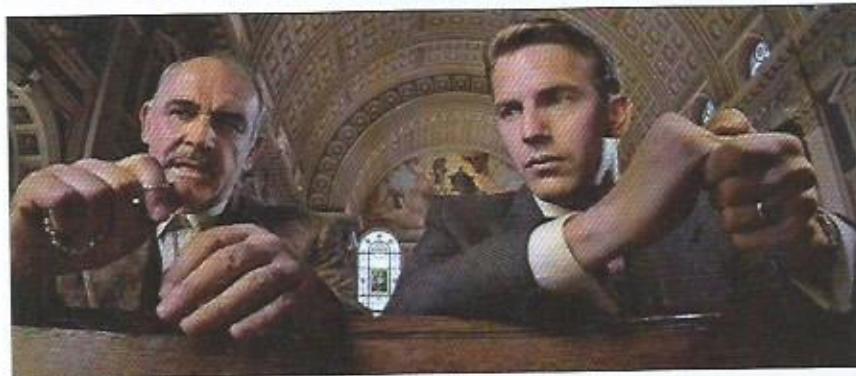


The focal length of a lens is directly related to how much it sees, termed the angle of view. At a shorter focal length, the angle of view increases, allowing filmmakers to film a wider area. At longer focal lengths, the angle of view decreases, limiting filmmakers to photographing a more narrow area.

Also varying with the focal length of the lens is the depth of field, the amount of area from near to far that will remain in focus. A wide-angle lens can capture much greater depth of field than a telephoto lens. With a wide-angle lens, the distance between near objects in focus and distant objects in focus can be very great. By contrast, a telephoto lens will tend to give filmmakers a shallow depth of field, an inability to hold near and far points in focus.

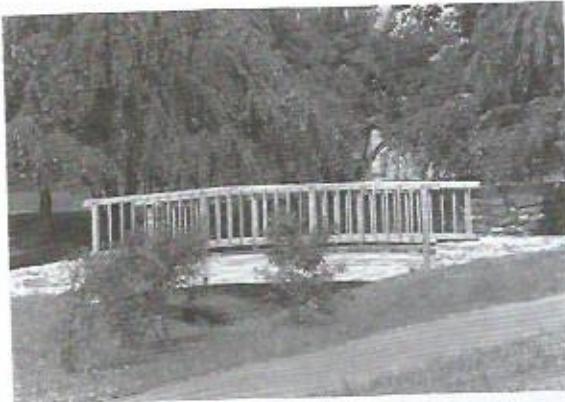
These issues of depth of field are connected to important aesthetic traditions in cinema. Using deep focus, filmmakers like Orson Welles (*Citizen Kane*) and Jacques Tati (*Playtime*, 1967) created complex compositions featuring a rich interplay of foreground and background detail. By shooting in deep focus and extending the duration of their shots, these filmmakers work with an aesthetic that respects the wholeness of time and space; that is, the playing area of each shot is extended in time (the shot's long duration) and space (depth of field). This is a distinct stylistic alternative to the use of editing to carve up space into many brief shots. The deep focus tradition is covered in more detail in the section on Realism in Chapter 11.

Yet another characteristic differentiating wide-angle from telephoto lenses is the ability of telephoto lenses to make distant objects appear much closer than they really are. In this respect, the effects of the telephoto lens can overwhelm the impression of



#### THE UNTOUCHABLES (PARAMOUNT, 1987)

The wide-angle lens gives filmmakers an expansive depth of field. It also can exaggerate depth perspective. Sean Connery and Kevin Costner's hands appear very large, relative to the apparent size of their heads—this is a distortion of depth perspective created by the wide angle lens. In the closer framing, note how close Costner is to the camera, while Connery in the middle distance remains in focus. Wide angle depth of field enables filmmakers to put things right into the face of the camera while retaining the ability to focus on the mid-ground or background. Frame enlargements.



Two portraits of the same subject, one taken a few yards away with a normal (55-mm) lens and the other at a much greater distance using a telephoto (205-mm) lens. Which composition is a function of camera position, and which is a function of lens focal length?

true camera position. What might appear to be a close-up can, in fact, be shot using a telephoto lens with the camera in a long-shot position. In the two portraits of the wooden bridge, the bridge is the same size in each photo, but in one case the size is due to a close camera position, whereas in the other it is due to the magnifying effects of a telephoto lens. Viewers will have developed a sophisticated eye for cinema if they can tell when object size on screen is due more to camera position or to the choice of lens.

In sum, wide-angle lenses have a greater angle of view and depth of field than telephoto lenses. Unlike wide-angle lenses, telephoto lenses will magnify distant objects and make them seem closer than they are.

**Zoom Lenses** In addition to normal, wide-angle, and telephoto lenses, a fourth category of lens is important in the cinema. This is the **zoom lens**. The zoom is a lens with a variable focal length. It can shift from wide-angle to telephoto settings within a single shot. This can create the appearance of camera movement, making it seem as if the camera is moving closer to or farther from its subject. In fact, however, the camera in a zoom shot remains stationary. Viewers with a sophisticated cinematic eye can discriminate zoom shots from true moving-camera shots. In a moving-camera shot, perspective changes; that is, the spatial relationship of the camera to the objects around it shifts because the camera is moving through three-dimensional space.

In a zoom shot, by contrast, perspective does not change because the camera does not move. Zooming in will magnify all objects on screen evenly. Zooming out will shrink all objects evenly. This is what produces the impression of camera movement. As objects in the shot enlarge, the viewer has the impression of moving closer to them. Whereas the zoom shot provides simple magnification, the moving camera provides a series of changing spatial relationships produced by movement and known as **motion parallax** or **motion perspective**. The absence of motion perspective in a shot where the camera seems to be moving is a clear sign that the shot is a zoom and not a true moving camera shot.

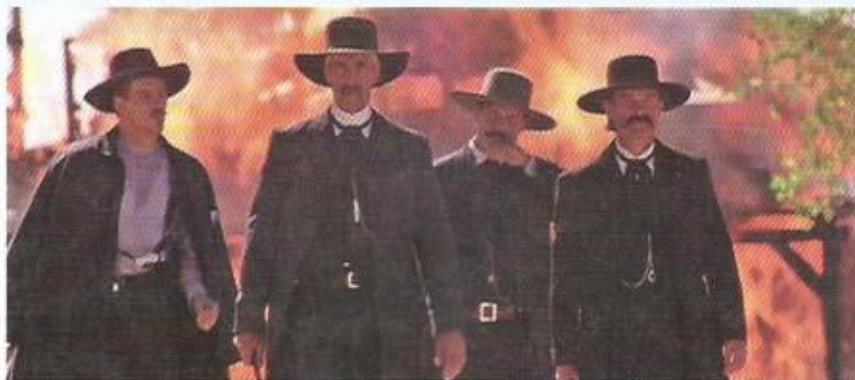
Filmmakers sometimes use zoom lenses as alternatives to camera movement, especially if they are filming on a low budget and a quick schedule. Zoom lenses, though, can be used for sophisticated effects. In *McCabe and Mrs. Miller* (1971), director Robert Altman and cinematographer Vilmos Zsigmond employ a zoom to create a moment of

dramatic emphasis when the hero realizes a gang of gunmen has come to kill him. Altman and Zsigmond rapidly zoom in on the gang, conveying the hero's sense of anxiety and the rush of excitement he feels. The optical effect suggests these emotional reactions.

**USING LENSES** Filmmakers often employ the telephoto lens when they are filming a scene on city streets in which the characters are engaged in conversation and surrounded by real pedestrians. A realistic impression depends on the pedestrians being unaware of the camera and the actors. Filmmakers can hide the camera by placing it at some distance from the action and then use the telephoto lens to bring the characters into the medium shot or close-up framing suitable for the dramatic content of the scene. Telephoto lenses also can facilitate the staging of stunts. When Tom Cruise runs across a busy city street in *The Firm* (1993), viewers jump when a car nearly crashes into him. The car's apparent proximity, though, is an illusion created by a telephoto lens.

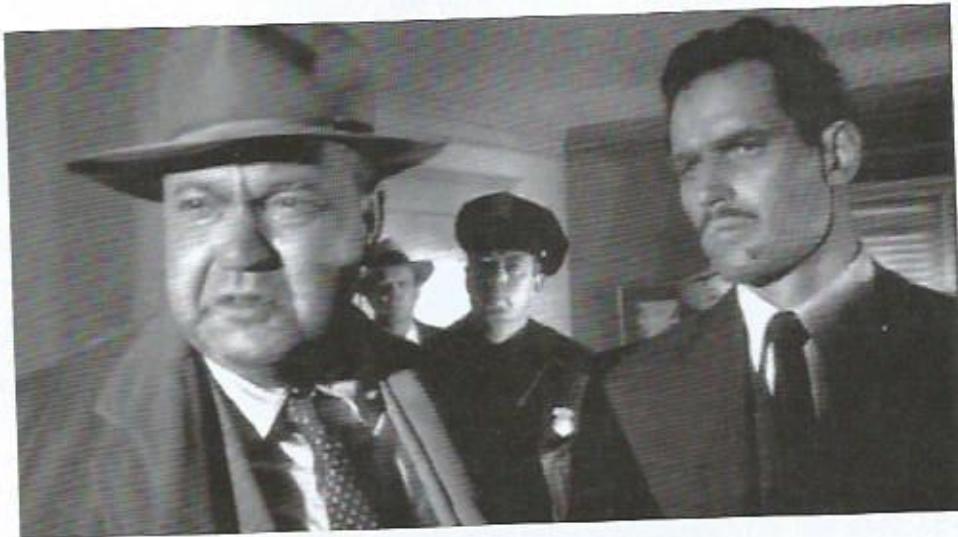
Viewers acquire greater cinematic sophistication when they become sensitive to the effects produced by different lenses used in the shots of a given scene. Just as filmmakers change camera positions and angles throughout a scene, they change lenses as well, fitting these to the unfolding dynamics of the dramatic action. In a shot with extreme depth of field, where near and distant objects are in focus, the lens is likely to be a wide angle. If, on the other hand, depth of field looks very shallow, with a compression of distance so that an object that definitely is very far off looks close, the lens is likely to be a telephoto.

Some filmmakers are closely identified with certain types of lenses. Orson Welles, Martin Scorsese, and Tim Burton tend to favor wide-angle lenses, whereas Akira Kurosawa, Robert Altman, and Sam Peckinpah favor the telephoto. In *Touch of Evil*, his last U.S. picture, made for Universal Studios in 1958, Orson Welles filmed his gargantuan detective hero, Hank Quinlan, with extremely short lenses to exaggerate and enhance his huge and grotesque dimensions. Evaluating a filmmaker's choice of lenses requires that one be sensitive both to structure—in this case, the visual properties of lenses—and the requirements of the scene or shot. Consider the lead-in to the gunfight at the OK Corral in *Tombstone* (1993), when Wyatt Earp, his brothers, and Doc Holiday make their fateful walk down the town's streets toward the corral. A building blazes behind them for dramatic effect. The camera shoots them head-on as they stride toward it. The long lens isolates the heroes in a shallow plane of focus, giving them an unequivocal visual dominance in the frame. By excluding the fire from the plane of focus, the filmmakers ensured that it would not distract unduly from the foreground drama of the heroes' determination. As an out-of-focus object, the fire is



**TOMBSTONE (BUENA VISTA, 1993)**

Telephoto lens perspective used to isolate, emphasize, and intensify a point of dramatic climax. Frame enlargement.



#### TOUCH OF EVIL (UNIVERSAL, 1958)

Orson Welles was the master of wide-angle filmmaking, as practiced in *Citizen Kane* and subsequent films like this one about a corrupt sheriff in a Mexican border town. Filming on a small set during this police interrogation scene, Welles fills the camera's wide angle of view with numerous characters and gives them a dynamic staging in deep focus. Note the strategic positioning of characters at four planes of distance from the camera. Frame enlargement.



#### BEOWULF (PARAMOUNT, 2007)

Digital effects often simulate many features of camera perspective, including camera movement and depth of field. The exaggerated depth perspective seen here mimics what an extreme wide-angle lens might capture. Building virtual camera perspectives into effects shots enables filmmakers to make the effects seem consistent with the way in which a camera might view the world. Frame enlargement.

a subordinate element in the frame, but its presence is nevertheless dramatic, serving to prefigure the violence to come. Assessed in these terms, the telephoto framing is an effective one. By contrast, a wide-angle lens would have increased depth of field and thereby eliminated the concentrated visual focus on the heroes.



### RED BEARD (TOHO, 1965)

Japanese director Akira Kurosawa preferred the telephoto lens. He also liked to film scenes with multiple cameras, creating occasional problems of perspective when he cut between shots. In this case he cuts between two cameras whose lines of sight form a 90-degree angle. The first camera setup uses a telephoto lens and makes the characters seem very close together, whereas the second setup reveals their true positioning. The perspective change between the two shots is very striking. Frame enlargements.

## Camera Movement

The camera's perspective not only changes from shot to shot, but it also can shift and move within the shot. The camera can move in virtually any fashion through space. To simplify things, this discussion will focus on four basic categories of camera movement: (1) pan and tilt, (2) dolly or tracking, (3) boom or crane, and (4) Steadicam. All these types of camera movements shift the boundaries and coordinates of the frame. Moving the camera creates a fluid perspective, unlike a static shot with its fixed framing.

**PAN AND TILT** A pan shot produces lateral movement on screen. The camera head rotates in a horizontal fashion from side to side on top of the tripod, which remains stationary. By contrast, in a tilt, the camera pivots vertically, up or down. If a filmmaker were shooting a skyscraper, she or he could start with a camera focused on the bottom of the building and then tilt slowly up to the top to reveal, perhaps, King Kong swatting at airplanes. The accompanying diagrams illustrate the action of panning and tilting.

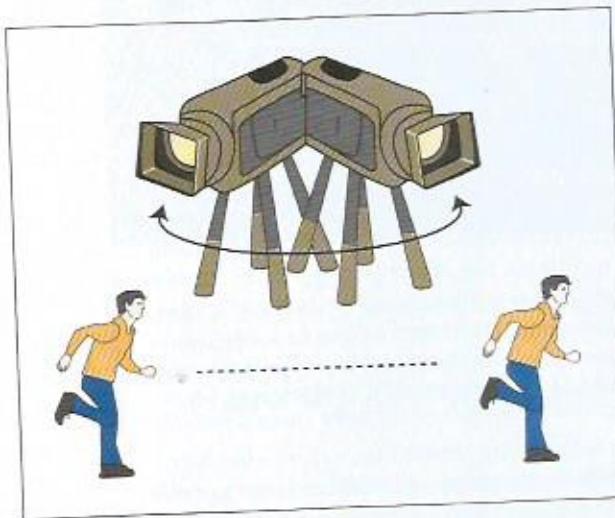
Pans and tilts tend to establish linking movements, which filmmakers often use to connect objects or establish relationships between them or to call attention to new areas of the scene. Pans also may be used to readjust the frame to accommodate character movement. If a character crosses the room to open a door, the camera operator might pan to follow the movement. An early example of this use of the pan occurs in

Edwin S. Porter's *The Great Train Robbery* (1903). When the robbers make their daring escape from the train after holding it up, they go down an embankment and across a stream to get to their horses. As they do this, the camera operator pans left and tilts down to follow them. It is done a bit sloppily, however, because the robbers get almost out of frame at one point before the camera operator picks them back up again.

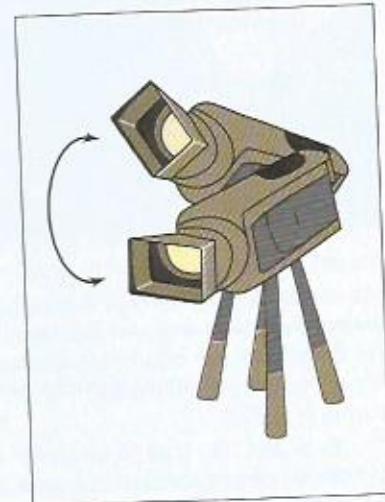
In most instances, pans are brief, with the camera only pivoting a small degree. However, its physical design permits the camera to rotate an entire 360 degrees on the mounting attached to its tripod. Nothing, therefore, except for conventional usage, prevents filmmakers from executing a fully circular, 360-degree panning shot. These tend to be rare, but they do occur. In *Easy Rider* (1969), when the heroes Wyatt (Peter Fonda) and Billy (Dennis Hopper) visit a hippie commune and its members gather in a circle to pray for their harvest, cameraman Haskell Wexler uses a 360-degree pan across the faces of all the characters, who are grouped in a circle. The camera's movement brings each character's face into frame, creating a symbolic image of unity and completeness.

**DOLLY, TRACK, AND BOOM** Unlike the pan and tilt, in dolly, tracking, and boom or crane shots, the camera, along with its tripod or base, physically travels through space. As a result, these shots produce motion perspective, unlike pans and tilts. A dolly is simply a wheeled platform used for mounting the camera in a tracking shot. Sometimes these are called *dolly shots* because of their platform mount. In tracking, or dolly, shots, the camera may move briefly toward or away from an object, such as a character's face, or it may describe more extended and elaborate movements. In the latter case, a tracking shot may follow a character who is moving. As Rocky sprints along the streets of south Philadelphia to train for his big fight, the camera tracks with him. The rapid track helps to visualize Rocky's power and adds energy to the shot.

Tracking, or dolly, shots generally move in a direction parallel to the ground. By contrast, boom, or crane, shots execute elaborate movements up or down through



**FIGURE 1.2**  
Pan.



**FIGURE 1.3**  
Tilt.



### THE GREAT TRAIN ROBBERY (EDISON, 1903)

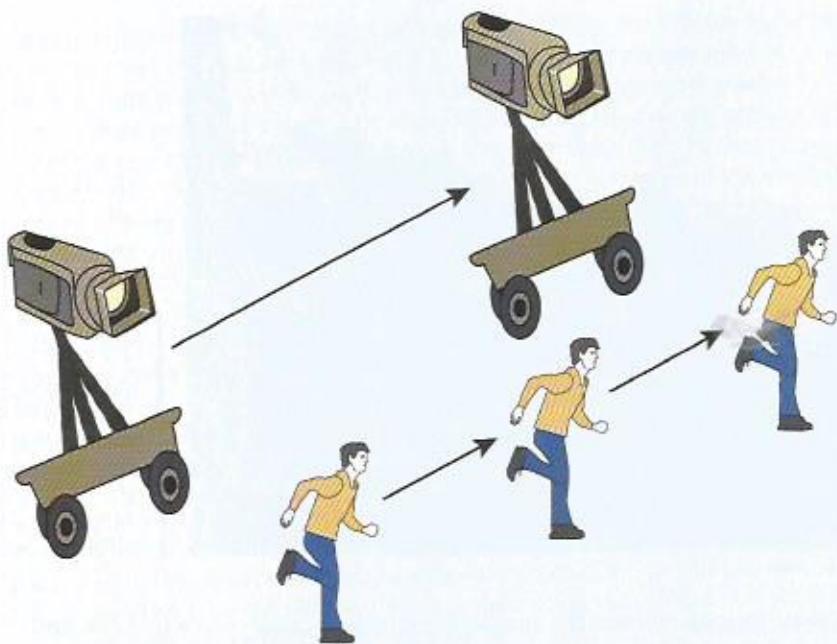
After holding up the train, the robbers run for their horses to escape. In the next moment, as they turn left and run down a hill, the camera operator will pan and tilt to follow the action. Frame enlargement.

space. They take their name from the apparatus—boom or crane—on which the camera is mounted. A famous boom shot occurs in *Gone With the Wind* (1939), during the scene where Scarlet O'Hara visits wounded confederate soldiers at the railroad station. The shot begins with a full-figure framing of Scarlet. The camera then pulls back and booms up to a high angle that shows Scarlet surrounded by a huge field of the dead and dying. This change of perspective creates a powerful dramatic effect by revealing the scale of the carnage surrounding Scarlet, a scale that the initial framing of the shot had concealed.

**STEADICAM** The Steadicam has revolutionized camera movement in contemporary film. It is a mechanical system that produces a very steady, jitter-free image from hand-held camerawork. It consists of a vest worn by the camera operator, a stabilizing support arm connecting the camera to the operator's vest, and a monitor through which the operator views what the camera is seeing. (The Steadicam operator does not look through the camera itself.)

Using Steadicam, the operator can move the camera through space in a completely smooth and fluid way as an extension of his or her own body. The operator extends his or her arm and produces a “dolly” shot. The operator walks or runs along a street and produces a “tracking” shot.

Steadicam was introduced in *Bound for Glory* (1976) and *Rocky* (1976) and was used extensively in Stanley Kubrick's *The Shining* (1980). Today it is used in countless productions and is the means for achieving the restless, continuously moving camera work that is such a feature of contemporary film. A common shooting practice today is to have one or two Steadicam operators following the actors through a scene and providing a full 360 degrees of coverage. *Cinderella Man* (2005) and *Alexander* (2004) exemplify this approach. *Atonement* (2007) features a 5-minute-20-second Steadicam shot that reveals an epic landscape of war, the British retreat at Dunkirk in World War II. It is a single, unbroken shot; no digital effects are used to “glue” several shots together. *Children of Men* (2006) is shot entirely with a hand-held camera, but not a Steadicam. The filmmakers wanted to avoid the



**FIGURE 1.4**  
Tracking shot.

mechanical look that Steadicam sometimes creates. As in *Atonement*, many sequences seem to be composed of a single, lengthy moving camera shot, except that in this case digital effects were used to invisibly join several shots into one.

**FUNCTIONS OF MOVING-CAMERA SHOTS** This is a common and powerful function of camera movement: to reveal dramatic information by enlarging the viewer's field of view. A complementary function is to narrow and focus attention on significant objects or characters. As a director, John Ford rarely moved his camera, but when he did, it had tremendous effect, as in *The Searchers* (1956), where a dolly in to John Wayne's face emphasizes the character's intense and pathological hatred of Indians. Note the difference of emphasis between the opening and closing frames of the dolly as pictured in the frame enlargements as pictured on page 33.

In addition to revealing action or concentrating the viewer's attention, moving-camera shots can serve other purposes. One extremely common function is to express a dynamic sense of movement that makes a shot or scene more sensuous and dramatically exciting. When the Joker hijacks a police car and speeds through Gotham City in *The Dark Knight* (2008), the traveling camera plunges the viewer into the scene's frenzied action. Japanese director Akira Kurosawa is a master of sensuous camera movements that add extraordinary dramatic and visual impact to his scenes. In films such as *Seven Samurai* (1954) and *Throne of Blood* (1957), where characters on foot or horse race through a dense forest, Kurosawa tracks the camera rapidly with them, darting in and out of trees, over streams and under branches, plunging the viewer into dense foliage and expressing in the most visually convincing manner the sensation and experience of flight.

U.S. directors Martin Scorsese (*Shutter Island*, 2009; *Taxi Driver*, 1976) and Brian De Palma (*The Untouchables*, 1987) are masters at using sweeping, sensuous camera movements. In *Goodfellas* (1990), Scorsese uses a hand-held camera in a single shot

to follow the main character, a New York gangster, as he gets out of his car, crosses the street, enters the side door of a night-club, winds through narrow hallways and a crowded kitchen, and walks into a ballroom filled with hundreds of people and a stand-up comic in midroutine. In *Snake Eyes* (1998), De Palma used a hand-held camera to simulate a 20-minute moving-camera shot that follows Nicolas Cage as he walks through a sports arena filled with a capacity crowd. This was a deceptive sequence, however, because it was composed of several shots. These were joined at hard-to-see edit points when a wall or a person passed closely in front of the camera. Another bravura moving-camera shot—9 minutes long—opened Robert Altman's *The Player* (1992) as a way of letting the audience know that this would be a very self-conscious film. In the shot, characters discuss their love for the elaborate opening tracking shot of Orson Welles's *Touch of Evil*, as Altman essentially repeats the famous Welles shot.

Filmmakers also use moving-camera shots to visualize important thematic ideas. In such cases, the camera's movement is metaphoric and symbolic, its motion correlating, as a visual design, with important issues in a film's narrative. In *Seven Samurai* (1954), for example, to suggest the developing friendship and unity between samurai and peasants, Kurosawa groups them in a circle and tracks the camera around its periphery. In *We Were Soldiers* (2002), to suggest the Vietnamese enemy closing in on an army lieutenant colonel (Mel Gibson) and his men, the cinematographer did an inwardly spiraling tracking shot that loops around and in on Gibson. In *The Sea Inside* (2004), a digitally enhanced helicopter shot expresses a paralyzed man's fantasy of flying.

Some of the most unique and carefully conceived moving-camera shots occur in the films of French director Jean-Luc Godard. Godard's structural designs are extremely self-conscious; that is, they call attention to the technique at work. *Weekend* (1967) is Godard's dark, savagely funny satire of the barely repressed violence of an absurd Americanized consumer society. In the film, an amoral couple, Corrine and Roland, travel by car to Oinville, where they plan to murder Corrine's mother so that they might claim the family inheritance. On the way to Oinville, they are caught in a traffic jam. On a narrow country road, a long line of vehicles impedes their progress. Anxious to get past the stalled line, Roland impatiently edges his car along the shoulder of the road, past the other vehicles.

Godard films the sequence in a single, unbroken tracking shot that lasts over 7 minutes. The camera tracks along the road and the line of stalled vehicles, keeping



THE EARRINGS OF MADAME DE...  
(GAUMONT, 1953)

Camera movement in contemporary film often has an unstructured and sometimes sloppy look because the proliferation of lightweight equipment makes cameras very portable and hand-held shots relatively easy to execute. In contrast with this contemporary trend, director Max Ophüls was the master of elaborately choreographed, precisely designed tracking shots. *The Earrings of Madame de...* is composed with the camera in continuous motion. Its movements reveal décor, simulate character perspective, visualize social connections among groups of people, and create a series of fluid framings that are exacting in their focus and design. The film is composed as an elaborate series of dances by the camera. Ophüls' brilliance at choreographing tracking shots and using them as vehicles for narrative and theme has never been equaled. Frame enlargement.



### ATONEMENT (UNIVERSAL, 2007)

Camera movement can work to reveal details and vistas by enlarging perspective. Trying to rejoin British forces at Dunkirk in World War II, Robbie Turner (James McAvoy) finds a group of schoolgirls who have been killed by German soldiers. The camera move reveals the horror gradually. At first, Robbie is framed alone (a). Then the camera pulls away a short distance to reveal a few bodies (b), and then it continues moving to reveal the full scale of the outrage (c). Frame enlargements.



#### THE SEARCHERS (WARNER BROS., 1956)

Camera movement can work to concentrate the viewer's attention on dramatically important objects or details. John Wayne's character in this John Ford Western has an intense racial hatred for the Comanche, and Ford uses a dolly shot to emphasize the depth of this animosity. Pictured here are the beginning and ending frames of the shot. Notice how the dolly brings Wayne's face forward, emphasizing his extraordinary expression. Frame enlargements.

pace with Roland as he inches his way forward. The camera frames the scene slightly to the rear, preventing viewers from seeing what lies ahead. The effect of this maddening and funny sequence depends on the length of the shot—lasting an extremely long time—as well as on the slow, methodical progress of the camera along what seems an endless line of stalled vehicles. The tracking shot becomes a metaphor for the experience of being stalled in traffic and enables the filmmakers to subject the audience to that oppressive experience.

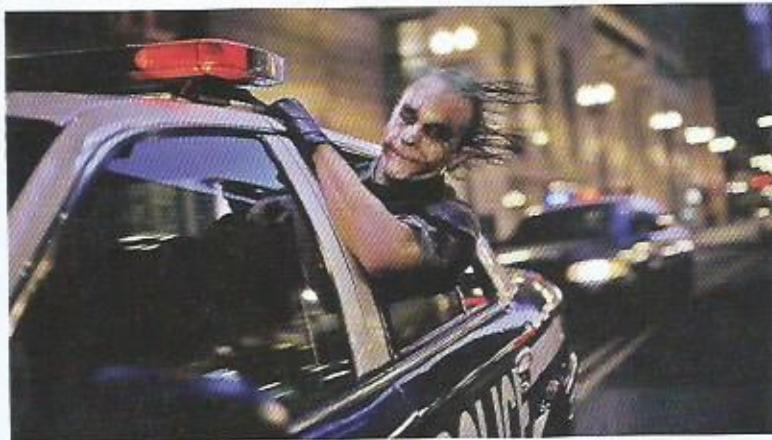
These examples of camera movement point toward an important conclusion. Whether a filmmaker uses it to reveal detail, to convey the sensory experience of motion, or to symbolically express thematic and narrative ideas, camera movement provides filmmakers with an essential means of shaping and organizing the visual space of a scene. Camera movement gives structure and meaning to the composition of a shot.

**TECHNOLOGICAL COMPONENTS OF FILM ART** Technological developments in recent years have made camera movement especially easy to achieve. The elaborate camera moves in *Snake Eyes* and *Goodfellas* were achieved with the Steadicam, as were the sweeping camera moves during the climactic battle in Terrence Malick's *The Thin Red Line* (1998).

Malick's film also benefited from the use of an Akela crane for scenes showing U.S. soldiers hunting their Japanese foes through waist-high grass. These grassy

**THE DARK KNIGHT (WARNER BROS., 2008)**

Rapid movement by objects or by the camera produces motion blur. Even digital effects sequences simulate motion blur because it is so characteristic of the camera's way of seeing. The Joker (Heath Ledger) takes a maniacal ride through Gotham City, and the fast-moving camera makes the background appear blurred. Frame enlargement.



**WEEKEND (NLW YORKER FILMS, 1967)**

Godard's tracking camera slowly travels the length of a line of stalled cars. The framing prevents a view of what lies ahead, deliberately frustrating the viewer. Finally, after several minutes, the camera reveals the cause of the accident. Frame enlargements.

fields on the Australian location (subbing for Guadalcanal in the Solomon Islands, where the story was set) were dense, with rocks and holes underneath, an impossible terrain for a camera operator to move about. But the Akela could be positioned securely on solid ground and the camera extended on its 72-foot arm into the grassy areas that were vital to the story. On the crane, the camera could execute sweeping moves through the fields. In *Ali*, a film biography of boxer Muhammad Ali, Michael Mann used a "lipstick" camera—as tiny as its name implies—that he could hold in his hand as he moved between the boxers in order to film the fight scenes from unconventional angles.

Camera moves also can be simulated digitally today. Computer-effects shots in *Panic Room* (2002) create effortless camera moves through floors in a house, through air vents, and other impossible objects. This is animated footage that imitates the appearance of a camera move. And filming digitally enables a filmmaker to create an endless camera move, or at least one that doesn't, of necessity, end when the camera

runs out of film. Shot on digital video, *Russian Ark* (2002) is composed of a single moving-camera shot that runs the entire length of the film's 96 minutes.

Obviously, filmmakers in earlier decades did not have the luxury of such devices. When viewing older films, therefore, one must be aware of the physical resources available in earlier periods. Sometimes filmmakers had to struggle with clumsy or cumbersome equipment, and it is often their ingenuity at devising solutions to these technical problems that is a mark of their talent.

During production of *The Last Laugh* (1924), for example, F. W. Murnau experimented with many different ways of producing camera movement. The camera was attached to a ladder, to scaffolding, to a rubber-wheeled trolley, and to the stomach of cameraman Carl Freund while he rode a bicycle. So impressed was Hollywood with the work of Murnau and Freund in *The Last Laugh* that it sent a telegram to Ufa, the German studio that produced the film, inquiring about the special camera that had been used to take the shots, adding that in the United States there was apparently no such device. Robert Herlth, the set designer for *The Last Laugh* and several other Murnau films, remarked that what the Americans didn't know was that Murnau and the crew had not used sophisticated equipment but only the most primitive and basic methods to achieve outstanding results.

Technical sophistication, by itself, provides a misleading yardstick for measuring the quality of films. Film equipment is so advanced today that filmmakers of only moderate talent (a category that does *not* include Malick, Mann, Scorsese, or De Palma) can produce images with a sophistication that the early masters—Renoir, Murnau, D. W. Griffith—could only dream of. Technology without intelligence, however, is just mechanics. It must be balanced by artistic vision and ingenuity.

## STRUCTURAL DESIGN AND CREATIVE CHOICE

A film's structural design results from the creative choices made by filmmakers, who confront a range of options as a project moves into production. There is no single, right way to film a scene. Where to position the camera, from what angle, which lens to use, whether to employ camera movement, how to light the set, how to choreograph the actors on screen, how to record the sound and balance dialogue, music, and sound effects, a filmmaker wrestles with all these decisions. How they are resolved defines the style or structure of a given film.

### Case Study SAVING PRIVATE RYAN AND FLAGS OF OUR FATHERS

Two prominent World War II films—Steven Spielberg's *Saving Private Ryan* (1998) and Clint Eastwood's *Flags of Our Fathers* (2006)—include vivid scenes of combat that are accentuated by an intentionally harsh visual design. But the filmmakers on each production used different tools and took different creative approaches in achieving their designs.

*Saving Private Ryan* (1998) begins with a startlingly graphic depiction of the D-Day invasion of the Normandy beaches, a battle that helped turn the tide of World War II in June 1944. In a harrowing 25-minute sequence, Spielberg and cinematographer Janusz Kaminski depict the carnage on Omaha beach, where the Allied forces suffered their greatest casualties

(continued)

under withering fire from German troops barricaded on high ground overlooking the beach.

Spielberg wanted the violence in *Saving Private Ryan* to have a chaotic quality that would correspond to the subjective experience of the men on the beach, knowing that death could come at any time, regardless of how one tried to avoid it.

He and Kaminski used the documentary footage shot by combat cameramen on the Normandy beaches as a model. They aimed to emulate the striking features of this footage, much of which was shot in color and had a flat look, with reduced contrast. Accordingly, they decided to film in color, in contrast to their previous World War II collaboration, *Schindler's List* (1993), shot in black-and-white in order to correspond with much of the historical footage of Nazi atrocities.

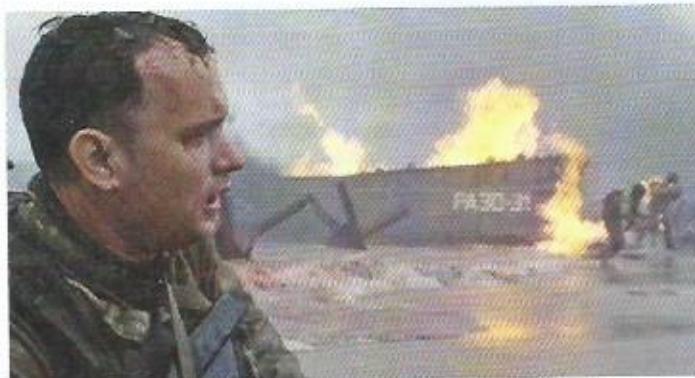
They used two photochemical (non-digital) techniques—flashing and ENR—to render the colors more monochromatic and to reduce contrast. When film is flashed, the negative is exposed to a small amount of light prior to filming. This has the effect of desaturating color and reducing the density of shadows, allowing more detail to come through in shadow areas. ENR (named after the technician, Ernesto N. Rico, who helped develop the process) is a somewhat complementary process and has been used widely in recent films (*Evita*, 1996; *Amistad*, 1998; *Bulworth*, 1998). ENR retains a portion of the silver in film emulsion, which is normally removed during developing. This has the effect of making shadows blacker, de-saturating color, and highlighting the texture and edges of surfaces. As a result of ENR, the patterns on the uniforms in *Saving Private Ryan* grew more vivid, as did the edges of helmets and guns and the reflective surface of the

water, heightening the physical effect Spielberg was after. To darken the blood so it would stand out amid the de-saturated colors, the effects crew added dyes to make it more blue.

Because the lenses used by combat cameramen were inferior to what a modern filmmaker would use, Kaminski and Spielberg ordered that the protective coating be stripped from some of their lenses. This gave the photographed images a sharp but cloudy appearance, with reduced contrast. To heighten the sense of chaos, they shot scenes with cameras using mismatched lenses, with and without the coating, to give the resulting footage a disjointed and disconnected feel.

To accentuate this off-kilter feeling, they manipulated the camera's shutter (a device that regulates how light reaches the unexposed film) to create strange, memorable effects in some shots. They threw the shutter out of sync to create a streaking, teary effect from top to bottom of the image and set the shutter at unusual angles to give the action a stroboscopic appearance. (*Pearl Harbor* (2001) copied this effect.) To create a disturbed, visually unsettled perspective, they used handheld cameras and employed a Clairmont Camera Image Shaker to vibrate camera perspective both horizontally and vertically.

Through all these choices about technique, Spielberg and Kaminski aimed to capture the jarring experience of being inside combat. As Spielberg said, the film's style is hard and rough. He stated that he and his crew were trying to capture fear and chaos. Technical imperfections actually worked to achieve this end. If blood or sand hit the lens, no attempt was made to clean it off. Spielberg wanted the footage



#### SAVING PRIVATE RYAN (DREAMWORKS, 1998)

The ferocious intensity of this film's battlefield sequences resulted from highly stylized manipulations of cinema technique. In cinema, there is no one "right" way to shoot a scene. Structural design results from the creative choices made by filmmakers. Frame enlargement.

to look as if it had been filmed by a combat cameraman. The film's design has its visual point of origin in combat photography, even though many of the techniques they used had no basis in such photography. Their design choices—rendering a monochromatic look, emulating the visual qualities of the documentary footage of the invasion, creating a subjective view of the battle—led them to elaborate technological manipulations to achieve these ends.

*Flags of Our Fathers* depicts the brutal fighting on the Pacific island of Iwo Jima between American troops and Japanese soldiers who were determined to hold the island. Eastwood wanted the battle scenes to have a monochromatic look, but, unlike Spielberg, he achieved this look using digital methods.

Cinematographer Tom Stern and Eastwood had planned to use ENR in order to de-saturate the color, but they ran tests comparing ENR with comparable results that could be achieved digitally. They decided to use digital methods because these allowed results that could not be achieved through traditional photochemical means. Because ENR is applied during the creation of a positive release print, the smallest increment in which it can be used is one lab reel (about 10 minutes of film), and it cannot be varied within that unit. By contrast, working digitally Stern could not only replicate the de-saturated ENR look but he could vary it dynamically within a shot, adjusting individual colors and areas of the frame. Accordingly, the film footage was scanned to digital video where the extensive color manipulations could be carried out. Once these were finished, the results were scanned back to film for distribution to theatres. (This process of scanning to digital video for color correction is known as the digital

intermediate (DI) and is explained in more detail in Chapter 2.)

Eastwood likes rich, deep blacks (shadows and dark areas in the image), and digital color correction enabled him to "crush" the blacks—making them so dark that little or no detail is visible—to a degree that went beyond what he had achieved using photochemical means on films such as *Million Dollar Baby*.

The film has a severely monochromatic look that verges on black-and-white, but individual colors were intensified in portions of the image—blood erupting from soldiers hit by gunfire, the reds on the American flag raised on Mt. Suribachi, skintones on faces and hands. The film was shot in Iceland, and the sandy beaches were digitally darkened to depict the volcanic soil of Iwo Jima.

The de-saturated design of the battle scenes contrasts with other sequences in the film that take place in the United States and that have more vivid colors. The desaturation was meant to evoke the hellish and brutal conditions faced by the soldiers doing battle on the island.

*Flags of Our Fathers* marked the first time that Eastwood had used digital methods of color correction, and he continued to do so on each of his subsequent films.

Structural design results from a filmmaker's inevitable need to choose one or more sets of techniques and tools, based on an organizing design concept. On *Saving Private Ryan*, Spielberg emphasized traditional photochemical methods of achieving his goals, while Eastwood on *Flags of Our Fathers* used a digital approach to achieve his goals. While the imagery of both films is severe looking, de-saturated in color, and heavy in contrast, Spielberg and Eastwood took different



#### FLAGS OF OUR FATHERS (PARAMOUNT PICTURES, 2006)

Clint Eastwood used digital methods of color correction for the first time on this production. The film's severely monochromatic design verges on black-and-white. The film footage was shot and processed normally but then was converted to digital video for manipulation to achieve the extremely de-saturated look that Eastwood wanted. Frame enlargement.

(continued)

routes to achieve these goals. The many potential ways to design a film are narrowed to a single approach as filmmakers decide how to organize the tools of filmmaking. Decisions about where to place the camera, whether to move it, and what type of lenses to use

must be integrated with other decisions about lights, color, sets, costumes, editing, and sound—as well as the relationship between traditional analog methods of production and digital tools—in order to arrive at a coherent and expressive audiovisual design.

## THE CAMERA AND HUMAN PERCEPTION: CINEMA'S DUAL CAPABILITY

The camera records screen action through a changing series of positions, angles, lenses, and movements, and as they make their creative decisions, filmmakers need to anticipate how viewers will see and make sense of their images. To what extent does the camera's way of "seeing" approximate the viewer's customary habits of viewing the world? Is there a relationship between the appearance of images on the movie or television screen and the appearance of real-world objects and things in the viewer's mind's eye? These issues are relevant for comprehending how film structure operates and how viewers understand films.

### Transforming Visual Reality

Obviously, both camera and human eye can see color, texture, movement, and the location of people and things in three-dimensional space. Motion pictures seem very lifelike, and even impossible objects, like Godzilla, can be rendered with apparent photographic realism. The camera, though, can see selectively in ways the human eye cannot. In other words, it has the property of perceptual transformation, the ability to show things in ways that differ from ordinary visual experience. Telephoto and wide-angle lens perspectives have no counterpart in human vision. The eye cannot magnify the size of distant objects, as a telephoto lens can, or increase the apparent distance between near and far objects, as a wide-angle lens can. A cinematographer who cranes up to a high-angle long shot employs a unique cinematic technique that

#### DO THE RIGHT THING (40 ACRES AND A MULE FILMWORKS, 1989)

A wide-angle lens alters normal visual reality by stretching and exaggerating perspective in this shot of Radio Raheem (Bill Nunn). His hands and rings seem unnaturally large compared to the rest of his body, and the lines of perspective in the image are bent. Note the way the roofline on the buildings seems to curve. The optics of the lens have transformed the ordinary appearance of things. Frame enlargement.



the viewer's eye cannot duplicate, as does an editor who cuts among shots taken from different camera positions and angles, and with different lenses, to provide a shifting series of perspectives on the action. Viewers quickly learn that motion picture images and stories can define their own rules of representation. Stylized films like *The Crow* (1994) or *The Matrix* (1999) take viewers on imaginary journeys to screen worlds that differ remarkably from the one they inhabit in daily life. Viewers accept the unusual images, characters, and stories established in these films as a representational reality that is true on its own stylized terms.

### Corresponding with Visual Reality

But the camera and other elements of film structure do not simply alter and transform the viewer's experience of people, places, and physical environments. Cinema also has the capability of **perceptual correspondence**, the ability to show things in ways that reference and correspond with the viewer's visual and social experience. Close-ups, for example, emphasize facial expressions. Social experience has taught viewers how to interpret these as signs of a person's thoughts, feelings, and intentions.

#### CLOSE-UP

##### How Movies Create the Impression of Motion on Screen

Viewers see only *apparent motion* on screen. As a strip of film runs through the projector, each frame is projected individually. Inside the projector is a device called the shutter, which blocks the light for a fraction of a second while the next frame is pulled down into place. The projector thus emits light in a pulsating beam that turns on and off. In the theater, viewers see a series of still frames projected on the screen and sit in alternating periods of light and dark.

The illusions of cinema—the viewer's impressions of movement and of a continuously illuminated screen—are due to several factors of perception. The retina of the eye retains an image for a fraction of a second after the source is gone (a phenomenon called **persistence of vision**). If a light source is switched on and off rapidly enough, a threshold is reached where **flicker fusion** occurs, a blending together of the individual pulses of light. 24 frames per second, the projection speed of sound film, is adequate to sustain retinal after-images and produce flicker fusion. At 24 frames per second, viewers cannot see the pulsing light that the projector

is emitting. (A popular nickname for the movies is *flicks*. This term dates from the silent era when slower projection speeds were used, enabling spectators to see a flicker effect, produced by the pulsing light from the projector. Hence the term *flicks*.)

Retinal after-images and flicker fusion explain why viewers fail to perceive the projector's pulsating light. They do not, however, explain why viewers see moving objects on screen. Motion perception is a complex phenomenon, and under the right conditions spectators will see apparent motion when no real movement has occurred. If a series of closely spaced light bulbs are illuminated in rapid sequence in a darkened room, a spectator will see a single light source moving across the room rather than a series of lights illuminated one after another. This phenomenon has been called **beta movement**. If the intervals between a series of illuminated lights, or the positions of a galloping horse captured in a series of film frames, are small enough, the eye's motion detectors encode this information as movement. The viewer sees a single travelling light or a galloping horse on screen.

(continued)

Many viewers today watch movies on electronic display devices such as computer screens or widescreen monitors and image resolution varies considerably depending on the video source and the display device. Electronic images are scanned as lines of pixels (a pixel is the smallest unit of picture information in an electronic display). A standard DVD outputs  $720 \times 480$  pixels (width by height) to create an interlaced image that is composed of two fields (odd-numbered scan lines are one field, even-numbered lines are the other). A DVD video frame is composed of the two fields, presented in an alternating fashion. Resolution suffers in an interlaced image because it is prone to distortion and noise. HD (high definition) video, as found on Blu-ray offers a resolution of  $1920 \times 1080$  pixels that are progressively scanned, that is, the lines of pixels composing each frame are created in sequence, producing superior resolution and a much cleaner image. In each case, the output of scan lines is above the critical fusion threshold, ensuring that a viewer sees a continuously illuminated image rather than scan lines or individual pixels. In these ways, the most fundamental features of cinema—the appearance of continuous light and motion—are built on shared characteristics of perception common to all viewers. These features are automatic. Viewers



FIGURE 1.5

Intermittent motion at 24 frames per second.

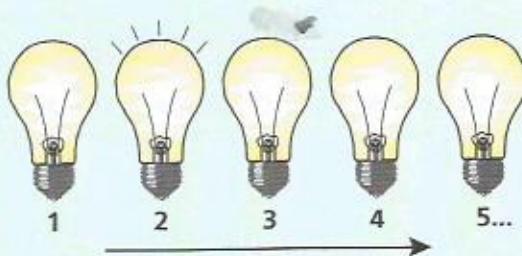


FIGURE 1.6

Successive events perceived as apparent motion.

do not have to make any effort to bring them into play. The cinema activates universal perceptual abilities held by all members of its audiences. This fact underlies the medium's great appeal and accessibility. ■

The Na'vi of planet Pandora in *Avatar* (2009) are tall, blue, cat-people created as digital characters, but their behavior is modeled on the performances by live actors. The animators preserved the actors' distinctive facial features in their Na'vi counterparts so that the characters played by Zoe Saldana, Wes Studi, Sam Worthington, Sigourney Weaver, and others would seem recognizably human. They did this even when it resulted in a 'wrong' face. Sigourney Weaver, for example, has a thin, aquiline nose that is one of her most distinctive features. Na'vi, though, have broad, flat noses consistent with their cat-like appearance. Even so, Weaver's Na'vi character was animated to have the actresses' distinctively thin nose so as to visually connect the digital character with the famous face of the actress playing that character. Throughout the film viewers study the faces of the Na'vi for clues about their feelings, thoughts and motivations. These blue, cat-like faces were built to correspond with a viewer's understanding of human behavior and feeling.

Among the most powerful correspondences that cinema can establish with the viewer's experience are perceptual ones. On the movie screen, the viewer sees depth, distance, and motion in ways that seem remarkably lifelike. A fully three-dimensional world comes to life on the flat two-dimensional screen. When the Na'vi ride atop the giant flying banshees, a viewer experiences the sensation of gliding through space



### AVATAR (TWENTIETH CENTURY FOX, 2009)

Even in highly stylized films, facial expression corresponds with the viewer's understanding of behavior and personality. Zoe Saldana's performance as Neytiri was captured using an innovative camera that focused exclusively upon her face. The facial information captured by this camera, in turn, was used to digitally animate the character. Frame enlargement.

because of the highly detailed and emphatic motion perspective that has been built inside the computer-generated flying shots. But movement and depth on screen are both visual illusions. Neither really exists.

The camera captures the same information about light, shadow, color, texture, motion, and location in space that viewers use in perceiving and responding to the real three-dimensional world. Movies build this information into shots in ways that emphasize the three-dimensionality of the image appearing on the flat screen. This opens the door to tricks of all kinds in cinema. In *The Matrix*, some of the most memorable visual effects are the high-speed moving camera shots that envelop the characters in scenes of fast action. But during production these shots did not involve *any* camera movement. Keanu Reeves and the other performers were photographed by a series of still cameras arranged into the circuit that the nonexistent moving camera would travel. Computer software interpolated the missing pictures to fill out the orbit of a continuous camera move. Moreover, Reeves and the others were photographed against a blank background (a "greenscreen") and were then digitally inserted into computer-animated environments. The filmmakers jokingly referred to their work as "virtual cinematography." Neither the interactions of character and location nor the moving camera that the viewer "sees" in *The Matrix* in fact existed. But because the perceptual cues in the shots about movement and space seemed true, the illusions were credible and compelling.

Cinema, then, has a dual capability: It corresponds with, and also transforms, the viewer's visual and social experience. These functions—correspondence and transformation—establish a very complex relationship between movies and viewers. To understand how filmmakers design their work, one needs to grasp how those structures build on and connect with the viewer's perceptual skills and how they can go beyond these as well. The first condition furnishes the grounds that make film intelligible, while the second underlies much of the delight that the medium provides. We will have more to say about these issues in upcoming chapters.

Hitchcock's *Vertigo* (1958) has a main character who is afraid of heights. To visualize the character's dizziness, Hitchcock films a city street from an extremely high angle and combines a zoom and track in opposite directions to suggest the feeling of falling through space. The resulting image deforms normal visual reality, but viewers readily accept this in the interest of style and for the delight that it provides.



### THE MATRIX (WARNER BROS., 1999)

The illusion of high-speed moving camera shots in *The Matrix* was created without any actual camera movement. Sophisticated digital software supplied the motion perspective that created the effect. Because the 3-D motion cues in the images were realistic, viewers found the effect credible. Frame enlargement.

### SUMMARY

Film structure or style results from the ways a filmmaker chooses to manipulate the camera, editing, light, sound, and color. This chapter has explained the fundamentals of the camera, specifically the factors of position, angle, lens, and movement, and how these factors affect the way a viewer perceives the content of a shot or scene. By understanding the range of creative choices filmmakers confront, and by appreciating their options in resolving those choices, one begins to understand a film's structural design.

Camera positions are variations of three basic set-ups: the long shot, the medium shot, and the close-up. While long shots typically stress landscape or environment over character, close-ups usually privilege character over environment. By varying the camera-to-subject distance, the filmmaker manipulates the viewer's emotional involvement with the scene or character in complex ways. Camera position can emphasize facial expressions as signs of a character's inner emotional life or can even work at cross-purposes to a viewer's desired relationship with a scene or character.

Camera angles are variations of low, medium (or eye-level), or high angles. Like camera position, camera angle can be used to manipulate the viewer's reactions. Camera angles can represent a character's point of view and emphasize a character's strength or, conversely, his or her insignificance. Angles can be consistent with, or play against, a viewer's desired relationship with a scene or character. As with camera position, the effects of camera angle are always dependent on the emotional context and action of a given scene.

Camera lenses supply distinctive optical characteristics to shots. Telephoto lenses reduce depth of field and angle of view, while wide-angle lenses enlarge these. Zoom lenses can substitute for camera movement, although they will not produce motion perspective as does a moving camera.

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Camera movement includes pan and tilt shots, dolly or tracking shots, and boom or crane shots. Pans and tilts create linking movements, connecting objects or establishing relationships between them. Tracking and crane shots can add a dynamic sense of movement to a shot or express thematic ideas.

The camera and the structural designs it helps create both record and transform the outward appearance of things, the way they look. The cinema has a fundamental connection with the viewer's perceptual skills and experience. The viewer's impressions in film of continuous light, apparent motion, and spatial depth all derive from this fundamental connection. What makes the cinema such a rich imaginative experience is the way it builds on and creatively enhances this connection. Style, then, can be understood as a kind of creative response by filmmakers to the tendency of the motion picture camera to reproduce the surface appearance of the objects it photographs. By intervening stylistically—by choosing to use a wide-angle lens or a high camera angle—a filmmaker can creatively shape the material of the shot and the world of the film to the dimensions of the imagination.

## KEY TERMS AND CONCEPTS

angle of view 23	flicker fusion 39	persistence of vision 39
beta movement 39	focal length 22	postproduction 2
boom or crane 27	frame 7	preproduction 2
camera position 8	hand-held camera 10	producer 4
canted angle 18	internal structural time 5	production 2
close-up 9	long shot 8	rack focusing 22
composition 7	medium shot 9	running time 5
deep focus 23	motion parallax 24	shot 5
depth of field 23	motion perspective 24	shutter 39
director 4	normal lens 22	Steadicam 27
dolly or tracking 27	pan and tilt 27	story time 5
emulsion 19	perceptual	structure 2
establishing shots 9	correspondence 39	telephoto lens 22
feature films 5	perceptual	wide-angle lens 22
film form 2	transformation 38	zoom lens 24

## SUGGESTED READINGS

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# 6

## Principles of Sound Design



### OBJECTIVES

*After reading this chapter, you should be able to:*

- describe the development of contemporary multichannel sound
- describe the three basic types of sound in cinema
- explain the uses and functions of dialogue in film
- explain the functions of ADR
- describe sound effects design and Foley techniques
- describe five steps for creating movie music
- explain five basic functions music performs in film
- explain the nature of sound design, its expressive uses, and how it builds on the viewer's real-life acoustical skills and experience
- distinguish between realistic and synthetic sounds
- explain the fundamental differences between sound and image

- explain five codes of sound design and their expressive uses
- differentiate direct sound, reflected sound, and ambient sound
- explain how sound establishes continuity in film as well as intellectual and emotional effects
- explain why switching between on-screen and off-screen sound helps makes camera positions more flexible

Image editing employs standard rules and techniques that (1) provide editors with methods for organizing shots, (2) establish constancies of time and space between the story world on screen and viewers' experiences of their physical environment, and (3) are based on correspondence with the viewer's perceptual experience and have become familiar to viewers through constant repetition over many films. Like image editing, film sound has its own rules (or codes) of structural design. One can speak of sound fades, sound cuts, sound dissolves, and sound perspective. This chapter examines the three categories of sound in film: dialogue, effects, and music. It explains the concept of sound design and examines its rules and techniques.

## SOUND IN CONTEMPORARY FILM

Today, film sound is digitally recorded and edited, and it is often created digitally. Indeed, sound went digital long before images did. As a result, sound is much more complex and expressive than in the films of decades past. As recently as the 1980s, for example, it was common for a film's soundtrack to be put together from 20 tracks of sound elements. Today, a soundtrack of 200 or more tracks is the norm.



### THE SOCIAL NETWORK (COLUMBIA PICTURES, 2010)

Director David Fincher thought of this film as a docudrama and wanted the audio backgrounds to enhance a sense of place and authenticity. The story locations included Boston and Palo Alto in the San Francisco Bay Area, and environmental sounds recorded in these areas were included as ambient information in the sound mix, in order to accurately characterize place using sound. The film dramatizes the creation of Facebook, and to create an audio environment for the Facebook offices in the film, located in Palo Alto, ambient sound was recorded in numerous Silicon Valley and Bay Area offices. The ambient audio environments created in this way are subliminal, enhancing the film's docudrama style in ways an audience feels without consciously noticing. Pictured, Jesse Eisenberg as Facebook founder Mark Zuckerberg, with Justin Timberlake (right) as Sean Parker, co-creator of Napster. Frame enlargement.

Consider what sound accomplishes in contemporary film. Many sound effects are layered; that is, they are composed of numerous sounds blended together. Doc Ock's tentacles in *Spider-Man 2* (2004) were created from a blend of the sounds of a motorcycle chain, piano wire, and a pump-action shotgun. The blend was manipulated in a software program, Pro Tools, to create hundreds of variations, producing whooshes, screeches, ratchety noises, servo-motor sounds, and even vocalizations to give the tentacles personality.

There were so many tentacle variations that they occupied 100 tracks, separated by right tentacle, left tentacle, and upper and lower tentacles. This variety, and the fact that the tentacles are always moving on screen, was perfect for surround sound. A viewer watching the film experiences the tentacle sounds whooshing across all the speakers, front and back. The film's sound designer said that the character was ideal for surround sound because the tentacles were moving in all directions, which multi-channel sound could capture perfectly. Bass or low-frequency sounds are a key part of the contemporary soundtrack, adding power and presence to voices or effects.



#### TOY STORY 3 (PIXAR, 2010)

This was the first film released theatrically in Dolby Surround 7.1, an eight-channel sound system that spreads four channels across the rear to create enhanced directionality within a 360-degree sound field. When Barbie and Ken first meet in the film, Gary Wright's song "Dreamweaver," about the appeal of dreams and fantasy, starts out as a mono (single-channel) recording and then it swells and spreads in audio space, filling all eight channels. The audio change playfully points to the flush of love seizing Barbie and Ken. Frame enlargement.



#### SPIDER-MAN 2 (COLUMBIA, 2004)

Multitrack sound mixing in contemporary film produces richly layered sound effects composed of numerous sound sources blended together. Doc Ock's tentacles take on a personality of their own owing to the many different sounds that they make and the distribution of this sound information in multiple-channel playback. Frame enlargement.



#### THE PASSION OF THE CHRIST (NEWMARKET, 2004)

Sound is a subliminal element of cinema. Often, a viewer feels its contribution without being explicitly conscious of it. The sound mix of *The Passion* did not use the bass channel very often, reserving it for scenes where Christ carried the cross. When the cross thuds against the ground, the bass channel anchored that sound effect and gave it considerable force. Viewers experienced the force of the effect without being aware it was there. Frame enlargement.

The sound design of *The Passion of the Christ* (2004) reserved the subwoofer for the thudding of the cross on the ground, giving this action added power and emotional presence as a metaphor for the sins of the world.

In earlier decades, scenes that had a lot of repetitive sounds—guns firing, for example—often sounded a bit flat because the sound was not varied. The same gunshot, or ricochet effect, might be used throughout the scene or even from film to film. Today, these effects, like Doc Ock's tentacles, are given tremendous variation. Sounds were individually recorded for each of the iron balls and sheep bones of the flagrum used to whip Jesus in *The Passion of the Christ*, and these were then mixed in expressive combinations.

A huge variety of punching sounds was created for the boxing film *Cinderella Man* (2005) to give each of the film's fights a different tone and personality. Two professional boxers sparred with one another over several days, punching in a variety of styles while the sound crew recorded them. These were the sounds heard in the film. Sound also can be used to change an actor's performance. In one scene of *Cinderella Man*, Mae (Renée Zellweger) argues with her husband (Russell Crowe) about his going back in the boxing ring. Afraid he will be killed, she becomes nearly hysterical. During postproduction, the sound crew lowered the pitch of her voice to make it sound less shrill, fearing that otherwise the audience would lose sympathy with her.

Sound also can be subliminal and subjective. At the beginning of *Collateral* (2004), when a hired killer played by Tom Cruise appears in an airport, the sound is nonspecific and diffused, unfocused, until he bumps into his contact man, at which point the sounds of the airport become very clear and defined.

Later in the film, when a cab driver (Jamie Foxx) realizes that Cruise is a hit man, the soundtrack expresses Fox's alarm. The background city noises all convey anxiety—one hears people yelling, the siren of an alarm, car speakers booming rap music. The sound mix weaves a tapestry of urban noises that convey and symbolize the current of emotions that run through the film.

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## EVOLUTION OF FILM SOUND

Of all the components of film structure, sound has shown the greatest improvements in recent decades. Contemporary film uses multiple channels of sound information to envelop viewers in a dynamic, three-dimensional sound field (the acoustical area covered by speaker placement in a surround setup and activated by multichannel sound coming from the speakers). In the 1930s and 1940s, in contrast, film sound was essentially a monaural, single-channel experience, with each speaker in a theater auditorium receiving the same signal. Sound was encoded as an optical track on the strip of film, and directors and sound mixers were invariably disappointed at the loss of volume, limited frequency range, and distortion in the upper register that occurred when they encoded their sound onto the optical track. Low-volume sound effects vanished into the hiss of the track. High volumes produced a different problem. On optical tracks, the louder the sound, the larger its visual encoding (i.e., the more space it occupies on the track). Because the track space available between frame line and sprocket holes is fixed, volume levels that exhaust this space edge into harsh noise, a frequent problem with soundtracks from these years.

To compete with television in the 1950s, Hollywood moved to widescreen film formats, some of which carried multichannel stereo sound, using magnetic stripes to encode the sound signal. To play such soundtracks, projectors had to be outfitted with special playback heads, much like a tape recorder. Widescreen formats such as Cinemascope (35 mm) and Todd-AO (70 mm) carried from four to six channels of sound. (In this regard, film stereo was distinct from home stereo, a two-channel system used for playing music.) Mag-stripe stereo on widescreen film, however, was reserved for special appeal films, and until the mid-1970s, the industry norm remained a single-channel optical track.

Debuting in 1976, Dolby Stereo carried two optical tracks that were encoded with four channels of sound information. These were configured for playback as left, center, right, and rear (surround) channels. With Dolby Stereo, multichannel sound gained widespread acceptance in the film industry. For the consumer market of home video, Dolby Surround debuted in 1982, enabling home viewers to play Dolby Stereo movies as stereo videocassettes. Initially, though, Dolby Surround only decoded the left, right, and surround channels, but Dolby Prologic decoders, marketed in 1987, enabled center channel decoding as well.

Cinema sound became even richer when Dolby moved to a digital six-channel system in 1992. Known as Dolby Digital, the system carried three channels across the front—left, center, right—plus two fully independent rear channels (left and right surrounds) and a dedicated channel for low-frequency (bass) signals. The digital soundtrack data were placed between the sprocket holes on the film, which also carried an analog stereo soundtrack.

Dolby added yet another channel in 1999. Dolby Digital Surround EX is a seven-channel system, adding a third surround channel positioned behind the viewer, in addition to the rear left and rear right split surrounds of the 5.1 system. This extra channel can be used to create flyover effects, useful in films such as *Star Wars Episode III: The Revenge of the Sith*. An eighth channel is now commonly used to increase directionality. *Toy Story 3* (2010) was the first film released theatrically in Dolby Surround 7.1.

Today, the industry uses several competing digital sound formats: Dolby Digital, Digital Theater Systems (DTS, using a CD for the soundtrack synched with time code

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## CLOSE-UP

### High Definition Audio

Blu-ray DVD (BD) offers tremendous improvement in the audio performance of movies viewed in the home. It offers high definition audio in conjunction with high definition video. It can do this because BD can store a greater amount of audio-visual information than standard DVD. A dual-layer BD can hold 50 gigabytes of information as compared with 8.5 gigabytes on a standard DVD. As a result Blu-ray discs have introduced new audio formats that require more disc space than standard DVDs can accommodate and are far more expressive and enveloping.

Dolby Digital 5.1 and DTS Digital Surround (also 5.1) are the audio tracks offered on standard DVD, and they can be found on many Blu-ray discs as well. But BD also may carry the eight-channel extensions—Dolby Digital Plus (DD+) and DTS-HD—of these formats which expand the number of audio channels in playback. Eight-channel formats are configured as 7.1 systems. Relative to 5.1 systems, they have two additional rear channels.

More exciting, however, are the lossless formats that BD can carry. On standard DVD, Dolby Digital and DTS 5.1 compress the audio information by

discarding sections of the soundtrack that are inaudible to human hearing or that tend to be covered by other audio information. By contrast, Dolby TrueHD and DTS HD-MA offer lossless compression and are new formats introduced for high definition DVD. Because there is no loss of audio information, in theory, listening to a Dolby TrueHD or a DTS HD-MA soundtrack is like listening to the original studio master that filmmakers created.

In addition to these lossless compression formats, many Blu-ray discs also carry an LPCM (linear pulse code modulation) soundtrack. LPCM soundtracks are uncompressed and therefore take up even more disc space than Dolby True HD or DTS HD-MA. But, like them, an LPCM track is lossless and is akin to hearing a studio master. Films viewed conventionally, in a standard movie theater, are not capable of delivering this kind of sound quality. Thus, the audio capabilities offered by Blu-ray are superior to what celluloid film can deliver.

Much, though, depends on the technical setup of the home viewing environment. While many BD



### THE SAND PEBBLES (20TH CENTURY FOX, 1966)

This epic adventure starring Steve McQueen was originally released in the era of analog audio. However, because the film was exhibited in 70mm, it carried six channels of sound. These were digitally restored and re-mastered for the Blu-ray release, which features a DTS HD-MA soundtrack, with lossless multichannel audio, as well as a four-channel Dolby Digital soundtrack. Neither format existed at the time of the film's release. The film sounds better on Blu-ray today than it did in conventional theaters in 1966. Many older films released on high definition DVD feature this kind of sound upgrade. Frame enlargement.

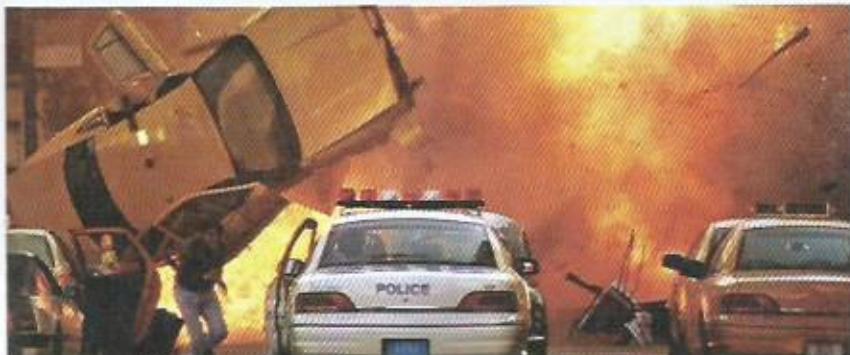
players may be capable of decoding the lossless formats, the best results are obtained by letting a high-end receiver do the decoding while the player merely passes the lossless Dolby, DTS or PCM signal to the receiver. And because the bandwidth of the lossless signal is much higher than is standard Dolby or DTS, HDMI (High Definition Multimedia Interface) cables are needed to connect player and receiver. Viewers watching movies on Blu-ray, then, have more audio options than standard DVD has offered. The

BD of *300* (2007), for example, offers 5.1 channels of sound in uncompressed LPCM, in Dolby TrueHD, and in Dolby Digital. *Pan's Labyrinth* (2007) and *Rush Hour 3* (2007) offer 7.1 channels in DTS-HD MA. *Blade Runner* (1982) carries a Dolby Digital 5.1 track as well as a Dolby TrueHD track, an audio format that did not exist when the film was originally produced and released. Viewed on Blu-ray, *Blade Runner* sounds better than it did upon its initial release nearly 30 years ago. ■

printed on the film), and Sony Dynamic Digital Sound (SDDS). Each film print, however, still carries an optical soundtrack, as a backup in case a problem arises with the digital information and because many theaters are only equipped for optical playback.

Digital playback revolutionized the art of film sound. Filmmakers no longer had to contend with the restrictions imposed by an optical track. Spread across three channels in the front, the soundstage (the acoustical space established by the front speakers) is broad and expansive and is anchored with an impressive bottom register supplied by the dedicated bass channel. The thunderous explosions in contemporary action films illustrate the potential this channel has given cinema. The rear surround channels make the sound field dynamic and three-dimensional, enveloping the viewer in multidirectional sound. Until the 1990s, the surround channels were used infrequently for the occasional sound effect, but they are now used very aggressively, along with all the other channels, to spatialize the sound field (i.e., to render it in highly directional terms) and provide the viewer with an immersive sound experience. The Oscar-winning (for sound-effects editing) *The Ghost and the Darkness* (1996) boasts an exceptionally complex and aggressive six-channel mix.

Cinema is now oddly unbalanced. In sound, it is fully three-dimensional, but its picture remains two-dimensional. Viewers are surrounded by sound but must watch a picture on a flat screen positioned in front of them. It seems likely that the ideal toward which cinema is evolving is a totally 3-D experience, in picture *and* sound. At some future point, cinema viewers will have an immersive visual experience, but so far the medium has achieved this ideal only with sound.



#### ARMAGEDDON (TOUCHSTONE, 1998)

Multi-channel playback of digital film sound routes bass signals to a separate, dedicated channel. This gives the modern film sound stage an impressive acoustic floor and adds tremendous power to special effects imagery. Frame enlargement.

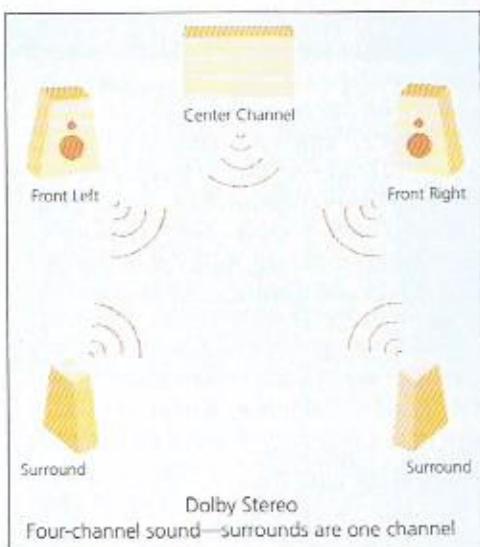


FIGURE 6.1

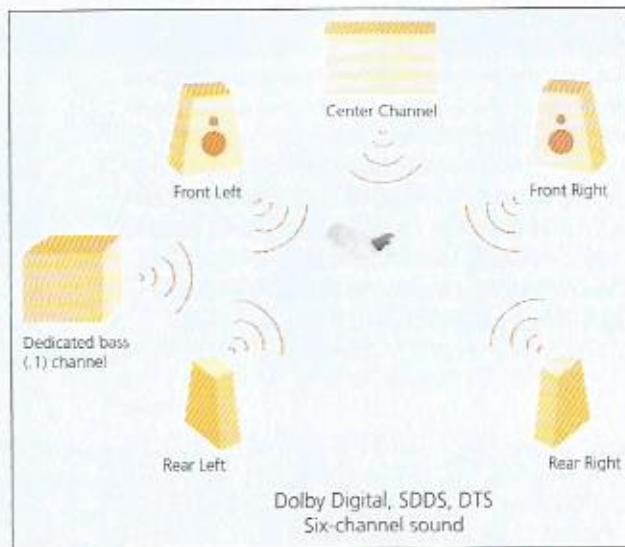


FIGURE 6.2

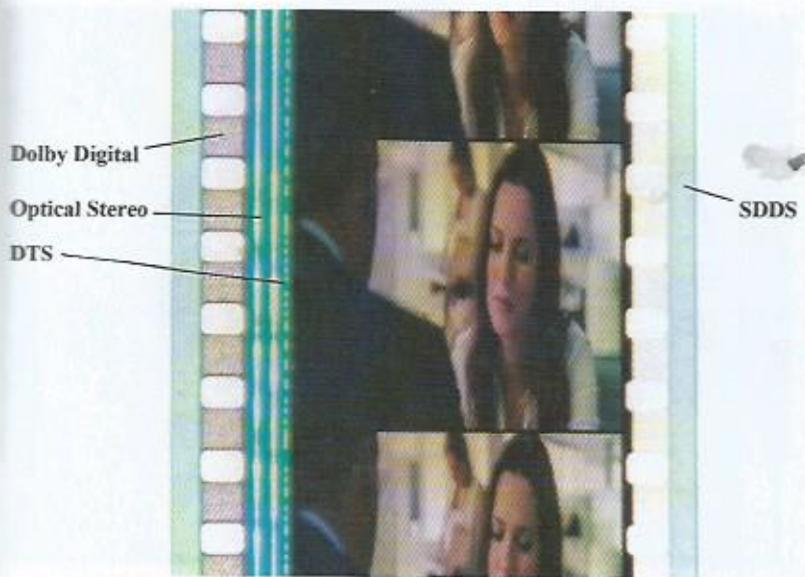
Dolby Digital brought six-channel sound to the home video environment on laser disc in 1995 and on DVD (digital video disc) in 1997. Indeed, the successful launch of DVD has encouraged studios and filmmakers to undertake multi-channel remixes of older film soundtracks for release in this format. Warner Brothers' DVD of *Dirty Harry* (1972) carried an impressive Dolby Digital remix, and director Wolfgang Peterson supervised an outstanding six-channel remix of the track for *Das Boot* (1981) on DVD. The Blu-ray release in 2010 carried an eight-channel digital mix. The film portrays submarine warfare in World War II, and its new soundtrack creates a total sonic environment that places viewers inside a narrow, cramped German submarine deep in the Mediterranean. Other older films given multiple-channel remixes include titles that were restored for theatrical release and subsequent DVD and

#### DAS BOOT (COLUMBIA TRISTAR, 1981)

Digital, multichannel soundtracks create a spatial, three-dimensional sound field by surrounding the viewer with discrete, directional sound. Wolfgang Peterson's film about submarine warfare in World War II is one of the outstanding sonic experiences in contemporary cinema; sound is both the subject and structure of this film. The U-boat captain and his officer listen anxiously for sonar signals warning of the approach of Allied warships.

Frame enlargement.





Celluloid film carries multiple soundtracks positioned in different places around the frames (the picture area on the film strip). The Dolby Digital track is located between the sprocket holes. The optical track is between the sprocket holes and the frames. The DTS track appears as time code between the optical track and the frames. The SDDS track appears outside the sprocket holes along the edge of the film strip. (This is an anamorphic scope film so the frames exhibit the characteristic anamorphic squeeze.) Frame enlargement.

Blu-ray distribution. These include *Gone with the Wind* (1939), *The Wizard of Oz* (1939), Hitchcock's *Vertigo* (1958) and the classic musicals *My Fair Lady* (1964) and *West Side Story* (1961).

Sound in cinema has never been better than in the contemporary period. One cannot make similar claims for cinematography, editing, or many other elements of cinema structure. In this regard, sound is making a uniquely improved aesthetic contribution to cinema. Viewers today are privileged to enjoy a total sonic experience that was not available to moviegoers in earlier periods.

## TYPES OF SOUND

Three basic types of sound figure in cinema. These are dialogue, effects, and music.

### Dialogue

Since the late 1920s when synchronous sound became a permanent feature of the movies, two primary kinds of dialogue have been employed in the cinema. Speech is delivered by characters on screen usually in conversation with one another. **Voice-over narration** accompanies images and scenes but is not delivered by a particular character from within the scene. Voice-over narration typically is provided by an all-seeing, all-knowing, detached narrator or by a character in the story, usually from some time later than the events portrayed on screen.

**SPEECH** Motion pictures use a wide range of dialects and speech types. Shakespearean adaptations faithfully transpose the Bard's language to the screen and frequently employ classically trained actors such as Laurence Olivier, Ralph Richardson, or John Gielgud. Kenneth Branagh's trilogy—*Henry V* (1989), *Much Ado about Nothing* (1993), and *Hamlet* (1996)—are among the most cinematic of

### MUCH ADO ABOUT NOTHING (SAMUEL GOLDWYN, 1993)

Kenneth Branagh and Emma Thompson play bickering lovers in this delightful version of Shakespeare's comedy. Branagh's Shakespeare films respect the Bard's language while giving it a completely cinematic showcase. Frame enlargement.



these adaptations. By contrast, other films adopt a more playful attitude toward Shakespeare. Oliver Parker's *Othello* (1995) successfully casts an actor lacking classical training—Laurence Fishburne—in the title role, and Baz Luhrmann's MTV-style *Romeo and Juliet* (1996) grafted the play's language onto a thoroughly modernist visual style. More recently, *Shakespeare in Love* (1998) used naturalistic, nonpoetic language to portray a fictional episode from the playwright's life.

At the other extreme from the poetry of Shakespeare lies the colloquialism of modern life. The dynamic impact of sound in the late 1920s and early 1930s was due largely to the electrifying presence of a new generation of screen actors. James Cagney, for example, brought his scrappy, high-voltage personality to a series of gritty, tough, urban dramas that allowed him to draw on his boyhood experiences growing up in the slums of New York's Upper East Side. The way Cagney moved and spoke electrified audiences because it was so different from the mannerisms and speech of stage-trained actors. In the Cagney classic *Angels with Dirty Faces* (1938), he plays a good-hearted crook named Rocky who greets his friends with the salutation, "Whadda ya hear? Whadda ya say?" rattled off in rapid-fire delivery. Cagney got this greeting from a pimp he had known when he was a youth.

The screen appeal of many stars, like Cagney, resides partly in their distinctive manner of speaking. Will Smith's lilting voice, often barbed with a wisecrack, and Eddie Murphy's trademark laugh have endeared them to audiences. In *Face/Off* (1997), actors John Travolta and Nicolas Cage swap each other's mannered speaking style in an impressive display of the connection between speech and star charisma.

By speaking to audiences in a colloquial, familiar manner, movies forge a strong rapport and powerful emotional bonds with viewers. In the 1950s, when Marlon Brando, playing an outlaw motorcyclist in *The Wild One* (1953), was asked what he is rebelling against, he replied, "Whadda ya' got?" and a young generation instantly understood his insolence and contempt for established society. In Spike Lee's *Clockers* (1995), the thick street dialects of Brooklyn gangs vividly establish their authority and authenticity.

**VOICE-OVER NARRATION** While rarely used today, voice-over narration in earlier periods was an essential part of certain genres. In the 1940s and 1950s, many films noir—*Out of the Past* (1947), *Criss Cross* (1949), *The Killers* (1946)—told their stories through intricate flashbacks accompanied by voice-over narration. In voice-over, the



**ANGELS WITH DIRTY FACES (WARNER BROS., 1938)**

The electrifying impact of rough, colloquial speech helped propel James Cagney to stardom. Playing a gangster in *Angels with Dirty Faces*, Cagney drew from the vocal patterns of the city streets where he grew up. Holding a priest (Pat O'Brien) hostage, Cagney's gangster snarls his defiance at the police. Frame enlargement.

tough private eye or the world-weary criminal delivered hard-boiled lines of dialogue. At the beginning of *Double Indemnity* (1944), with a bullet wound slowly leaking blood from his shoulder, a cynical insurance agent confesses his crime: he killed a man for money and a woman and, as fate would have it, didn't get either.

Voice-over narration can be used for ironic or playful effects. In one of the most famous films noir, *Sunset Boulevard* (1950), the narrator turns out to be a dead man. The film opens with shots of a man's body floating in a swimming pool. The police arrive and remove the body as the narrator, a screenwriter named Joe Gillis, tells how the murder occurred. It is not until the end of the movie that viewers realize the dead man is Joe Gillis. He talks wistfully about how it feels when the police fish him out of the pool and lay him out "like a harpooned baby whale."



**DOUBLE INDEMNITY (PARAMOUNT, 1944)**

Hard-boiled, tough-guy dialogue, spoken as voice-over narration, coupled with dark, low-key lighting to establish the hardedged, cynical atmosphere of classic film noir. Fred MacMurray, as the doomed Walter Neff, provides the gripping narration about a murder scheme gone awry. Frame enlargement.

Of course, in the case of *Sunset Boulevard*, the narration is unreliable and misleading. Dead men don't talk. Director Billy Wilder plays against an established convention of voice-over narration, which is that the character doing the narration must survive the events of the story. In this case, he doesn't, and it enabled Wilder to pull off one of his darkest jokes. In a similar manner, the narrator of *American History X* (1998) is murdered but continues his narration, commenting on the things that his death has taught him. *American Beauty* (1999) is another film that uses this device.

While voice-over narration is closely identified with U.S. films noir, it also has been used in documentary filmmaking, especially that subcategory of documentaries known as the newsreel. Newsreels routinely accompanied feature films, cartoons, and serials in the nation's movie theaters in earlier decades, and they typically employed the so-called "voice of God" narrator. Such a narrator was male and spoke with a deep, booming, authoritative tone.

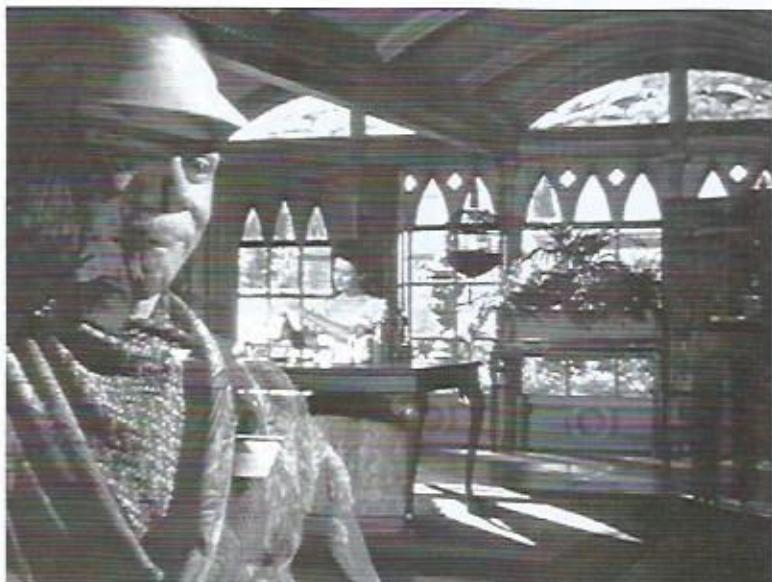
In *Citizen Kane* (1941), director Orson Welles satirized the "voice of God" newsreel narrator. The film tells the life story of Charles Foster Kane, a rich newspaper man who rose from humble beginnings. The film opens with Kane's death; a newsreel follows, viewed by newspaper reporters for background on their stories about Kane's death. The newsreel features a "voice of God" narrator as director Welles expertly mimics the conventions of this kind of documentary.

Beyond the fake newsreel, however, *Citizen Kane* offers a host of other voice-over narrators. *Citizen Kane* is a classic and superlative example of voice-over narration used for complex effect and as an essential ingredient of film structure. The plot of the film is constructed as a series of flashbacks, each one narrated by a different



SUNSET BLVD. (PARAMOUNT, 1950); DAUGHTERS OF THE DUST (AMERICAN PLAYHOUSE, 1991)

Voice-over narration can be quite playful. Joe Gillis (William Holden) narrates *Sunset Blvd.*, despite the fact that he's a murder victim. As the film begins, the police find Joe floating face down in a swimming pool, and he proceeds to tell us how he ended up there. Billy Wilder's film plays with the movie convention that narrators will survive the stories they tell. An unborn child narrates Julie Dash's *Daughters of the Dust* and makes fleeting appearances in the film as a kind of phantom. She tells the film's story about the Gullah people of the Sea Islands and their migration to the U.S. mainland, events that are not yet a part of her own life-to-come. Frame enlargements.



#### CITIZEN KANE (RKO, 1941)

Jed Leland (Joseph Cotton), one of the principal narrators in *Citizen Kane*, explains why Kane's first marriage failed. As he begins his speech, the image dissolves to the past to show the first Mrs. Kane at breakfast. The narrative voices are not easily reconciled. Leland describes events he couldn't possibly have witnessed. Frame enlargement.

character, which makes the emerging portrait of Charles Foster Kane into a kaleidoscope. Characters recollecting Kane include the millionaire banker, Walter P. Thatcher, who was given custody of Kane as a little boy; Susan Alexander, Kane's second wife; Jed Leland, the drama critic who worked briefly on Kane's newspapers; Mr. Bernstein, Kane's chief editor and close friend; and Raymond, Kane's personal valet.

Each of these characters narrates a section of the film, recalling events in ways that clash with the memories of the other narrators. For example, Jed Leland recalls the Charles Foster Kane who betrayed his ideals and principles, whereas Mr. Bernstein emphasizes those principles, remembering how Kane used his newspaper to fight crime and expose official graft and corruption.

The voice-over narration frames the various flashbacks and colors them with a variety of psychological perspectives. *Citizen Kane*, in part, is a mystery film. The mystery is Kane's personality, which ultimately remains unknowable. It is difficult to reconcile the various Kanes disclosed in the narrators' memories because each is so different from the others. In this way, the respective voice-over narrations deepen the emotional and psychological mystery of film, the nature of Kane's personality. Few films in cinema history have used voice-over narration so skillfully and with such profound structural and emotional effects.

**ADR AND DIALOGUE MIXING.** Most of the dialogue heard in the average feature originates from the production track (the soundtrack recorded at the point of filming), but 30 percent or more of a film's dialogue is the result of ADR (automated dialogue replacement). Following shooting, actors recreate portions of a scene's dialogue in a sound studio, and this postproduction sound is mixed in with dialogue from the production track. The mixer must smooth out the audible differences of tone and timbre and make sure that no audio cuts are apparent to the listener. Digital software facilitates the ADR process, alleviating the need for an actor to speak in perfect sync with the picture; the software can match the ADR speech with the lip movements on screen.



(a)

(b)

### PRETTY WOMAN (TOUCHSTONE, 1990)

The blocking of a scene can create opportunities to add new dialogue using ADR. These two frames from a single shot show how changing character positions facilitated the addition in postproduction of the salesman's line of dialogue about helping her use the credit card. The salesman is visible at the rear (a) between Julia Roberts and Richard Gere, but when Roberts walks out of the store, she blocks the salesman from the camera's view (b), at which point the new line of dialogue was inserted. Frame enlargement.

ADR is typically used when portions of the production track are unusable or unsatisfactory, and some films, such as Sergio Leone's *Once upon a Time in America* (1984), have extraordinarily high amounts of ADR. All the dialogue in that picture was done as ADR; none originated from the production track.

Camera placement can facilitate opportunities for using ADR. One of the highlights of *Pretty Woman* (1990) occurs when Julia Roberts goes on a Beverly Hills shopping spree. The ensuing montage is scored to the titular Roy Orbison song, and a dialogue exchange between Richard Gere and the shop clerk (Larry Miller) kicks off the start of the montage. Gere tells the clerk that she has the credit card, and the clerk incautiously replies he'll help her use it. The clerk's dialogue was dropped in as late-in-the-game ADR, an opportunity facilitated by the blocking of the scene, as the accompanying frame enlargements demonstrate.

### Sound Effects

Sound effects are the physical (i.e., nonspeech) sounds heard as part of the action and the physical environments seen on screen. They include ambient sound, which is the naturally occurring, generally low-level sound produced by an environment (wind in the trees, traffic in the city). They also include the sounds produced by specific actions in a scene, such as the rumble of the spaceship Nostromo in *Alien* (1979) as it passes nearby, or the crash of broken glass as Mookie throws a trashcan through the window of Sal's Pizzeria in *Do the Right Thing* (1989). Digital methods of sound recording and mixing enable sound engineers to achieve an impressive aural separation of individual sound elements. This gives the effects in contemporary film a richer texture than in decades past and enables selective emphasis of individual effects without a corresponding loss of the overall sonic context.

Virtually all the sound effects that one hears in contemporary film are the result of postproduction manipulation. Sound effects recorded as part of the production track may be electronically cleaned and optimized, but most are recorded separately and in



places other than the filming environment. Many effects are created using Foley technique. Foley technique refers to the live performance and recording of sound effects in synchronization with the picture. As the film is projected in a sound recording studio, a Foley artist watches the action and performs the necessary effects. A Foley artist might walk across a bare floor using hard shoes in synchronization with a character on-screen to produce the needed effects of footsteps. The Foley artist may open or close a door or drop a tray of glasses on the floor to create these effects as needed in a given scene.

Foley techniques require considerable physical dexterity, often verging on the acrobatic, from the artists creating these live effects. Foley is often needed because many of today's films involve the use of radio microphones that are attached to individual actors in a scene. Unlike mikes on a boom overhead, radio mikes fail to pick up natural sounds in the environment, and these often have to be dubbed using Foley techniques.

Because of the nonspecific nature of sound—taken out of context, many sounds are difficult to identify—Foley often uses objects that are not part of the scene. To create sound effects in *Star Wars Episode 2: Attack of the Clones* for the skin surfaces of alien creatures, when other aliens or objects touch them, the Foley artists used pineapples, coconuts, and cantaloupes. The rough texture of their surfaces proved to be ideally suited to evoking the imaginary sound of alien skin.

Whether or not Foley is employed to create a given effect, digital tools enable sound engineers to electronically enhance effects and introduce changes in the sound-wave characteristics of a given source. The effects track of a film is the highly processed outcome of these electronic methods of sound manipulation. Leading the industry's transition to digital audio in 1984, Lucasfilm had a proprietary digital sound workstation (ASP, Audio Signal Processor) that stored and mixed sound in digital format. For *Indiana Jones and the Temple of Doom* (1984), when Jones is surrounded by a bevy of arrows flying toward him, ASP electronically extended the arrows' whizzing sounds and added Doppler effects (Doppler is a means of spatializing sound by altering its pitch).

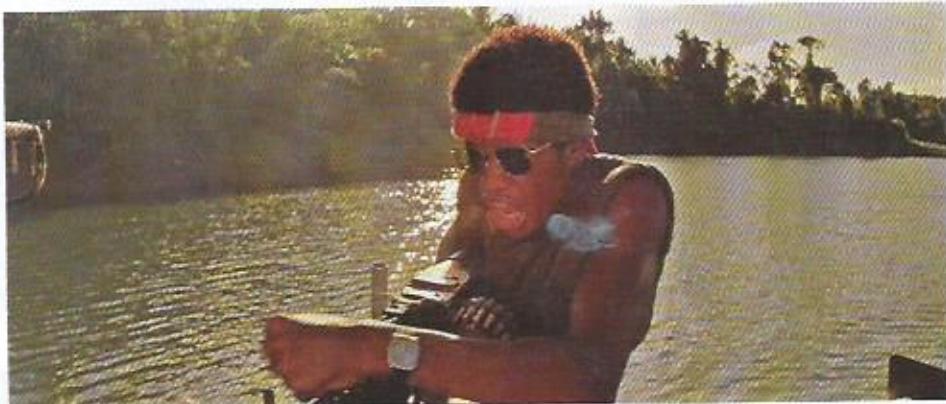
The simple, raw recording of a given effect usually lacks emotional impact, so audio engineers typically manipulate the effect, by layering in other components, to make it suitably expressive. In *Apocalypse Now* (1979), during the scene where panicky Americans machine-gun a group of Vietnamese in their boat, sound designer Walter Murch wanted to affect the viewer's psychological and emotional response to the machine-gun sound. He wanted the viewer to feel that the sound was realistic even though it was not a live recording of a single source but a synthetic blend of multiple, separate recordings.

Murch backed the microphone away from the gun to get a clean recording and then, later, added supplementary elements such as the clank of discharging metallic cartridges and the hiss of hot metal. By layering these additional features over the softer sound of the gun firing, Murch artificially created a convincing realism in ways that were compatible with his recording technology. Doing this involved "disassembling" the sound rather than capturing it live and direct on tape.

In *Terminator 2* (1991), for the gun battle in an underground parking garage, sound designer Gary Rydstrom recorded guns firing in this reverberant space. But to make the sound interesting, he also recorded the sound of two-by-fours slapping together in the garage and layered this echoing sound into the effect to "fatten" it up. In *Backdraft* (1991), Rydstrom gave blazing fires an audio presence and personality by layering in animal growls and monkey screams. Given the film's context—about deadly urban fires—he knew the audience would not hear these sounds as animal noises but as attributes of the fire. For the backdrafts, produced when a huge fire sucks in oxygen before exploding, he used coyote howls, which gave the backdrafts

**APOCALYPSE NOW (UNITED ARTISTS, 1979)**

The sound of the machine gun in *Apocalypse Now* was actually a blend of multiple, separate elements expertly layered together to produce the psychological impression of a single, live source. Frame enlargement.

**BACKDRAFT (UNIVERSAL, 1991)**

Taken out of context, the meaning of an isolated sound can be very fluid and difficult to identify. This enables sound designers to attach sounds to unrelated images to great effect. The fires in *Backdraft* were mixed with animal sounds, although viewers did not identify these sounds as such. This audio design suggested that fire was a kind of living organism, with intelligence and personality. Frame enlargement.

a subliminal personality and intelligence. Expressive sound effects are complex, artificial creations that transcend their live sound components.

### Music

Music has always accompanied the presentation of films for audiences. During the silent period, film music was often drawn from public-domain, noncopyrighted classical selections or from the popular tunes of the era. Numerous catalogues offered filmmakers or musical directors a guide for selecting appropriate music depending on the tempo of the scene and its general emotional content. In addition, some original symphonic scores were composed for silent films.

The original score composed especially for motion pictures became standard practice in the sound period. While many different musical styles can be employed in film scoring—jazz (*Mo' Better Blues*, 1990), rock (*Bill and Ted's Excellent Adventure*, 1989), ragtime (*Ragtime*, 1981), symphonic orchestral (*Star Wars*, 1977)—music is typically used to follow action on-screen and to illustrate a character's emotions.

**CREATING MOVIE MUSIC** The production of movie music involves five distinct steps: spotting, preparation of a cue sheet, composing, performance and recording, and mixing. The first stage is spotting, during which the composer consults with the film's director and producer and views the final cut in order to determine where and when music might be needed. Spotting determines the locations in the film that require musical cues, where and how the music will enter, and its general tempo and emotional color.

Much of this is left up to the composer, although detailed discussions with a film's director are not uncommon, especially when the director has strong preferences as to the style of scoring. Sometimes the director will impose a temp track—a temporary musical track derived from a score the director likes—onto the soundtrack of an edited scene, or even the entire film, and ask that the composer create something like the temp track. Not surprisingly, many composers find this stifling.

After the film has been spotted, the music editor then prepares a cue sheet. The cue sheet contains a detailed description of each scene's action requiring music plus the exact timings to the second of that action. This enables the composer to work knowing the exact timing in minutes, seconds, and frames of each action requiring music. As a result, musical cues can catch the action and enter and end at precisely determined points.

Once the cue sheet has been prepared, the third step is actual composition of the score. This is done by the composer using a video copy of the film. The video contains a digital time code that displays minutes, seconds, and frames for all the action. Using the cue sheet and video, the composer creates the score, carefully fitting the timing of music and action.

Digital programs known as sequencers enable the composer to lock the score onto the video's digital time code. Once this is done, any scene can be played back, and the computer can call up the score, enabling the composer to check timings. Tempo adjustments—speeding up or slowing down the music—also can be made by computer to precisely match music with action. The sequencer also can generate a series of clicks that many composers use to establish a desired tempo for a given scene and that is then used as a guide for composition.

Digital technology also has altered the phase of composition in which the composer demonstrates the score for the director. Digital samplers enable composers to electronically simulate all needed instrumentation in their scores and play the results for the director, who can hear a close approximation of the film's score-in-progress. Before the age of samplers, composers demonstrated their scores on the piano, which required that directors be able to understand how the piano performance would translate into a full-bodied instrumentation. The disadvantage of digital sampling is that demonstrations now give directors more input into scoring—an area most are not qualified to handle—because, using a sampler's keyboard, anyone can easily manipulate the musical characteristics of a composition. Some directors, to their composer's dislike, find this an irresistible temptation.

Once the music has been composed, the next step is performance and recording of the score on a sound stage while a copy of the film is projected on a large screen or video monitor. Timing of music to film action is facilitated by the use of clicks to

**PLATOON (ORION PICTURES, 1986)**

The score for *Platoon* deliberately avoids using conventional war-film music. Instead, composer Georges Delerue employed an already-existing classical composition—Samuel Barber's melancholy "Adagio for Strings"—and used it to emphasize the film's haunted, tragic tone. Frame enlargement.



establish tempo, *streamers*—lines imprinted on the film or video—that travel across the screen and mark the beginning and end of each cue, and a large analog clock with a sweep second hand. The performance of the score is often attended by the director and producer of the film.

The final stage in the creation of movie music is the process of mixing, which is the blending of the various sound tracks, effects, music, and dialogue. The fact that movie music is mixed along with dialogue and effects has influenced the attitude of composers to the kind of music they create. Because dialogue is regarded as the most important sound in a movie, music typically is mixed at a lower volume when it accompanies dialogue. Composers know this and work accordingly.

Hollywood composer Miklos Rosza pointed out that when music accompanies dialogue, it should be simple, without a lot of ornamentation, because this will be lost in the mix when the music is buried beneath the dialogue. He also recommended that music in dialogue passages be scored with strings rather than brass instruments because he felt that strings blend better with the human voice. While there is much variation among composers in their approach to scoring, these remarks indicate something most would agree on—the film score is not autonomous. It should be written with the action in mind and be capable of blending with all other sound sources in the movie.

So much for the technical steps involved in producing movie music. What of its dramatic functions? Why is it used, and what does it accomplish in movies?

**FUNCTIONS OF MOVIE MUSIC** The great U.S. concert hall composer Aaron Copland occasionally ventured into the world of filmmaking to compose scores for such pictures as *Of Mice and Men* (1940), *Our Town* (1940), *The Red Pony* (1949), and *The Heiress* (1949). Copland discussed the functions of movie music as he saw them, emphasizing five basic functions.

**Setting the Scene** Film music creates a convincing atmosphere of time and place. Movie music characterizes the locations, settings, and cultures where the story occurs. Often, this may involve the use of special instrumentation that reflects regional or ethnic musical characteristics. Jerry Goldsmith, who was one of the industry's most prolific and respected composers, employed pan flutes in his score for *Under Fire* (1983), a film dealing with the



### UNDER FIRE (ORION PICTURES, 1983)

Movie music helps establish place and locale, often by employing regional or ethnic musical instruments and traditions. Jerry Goldsmith's score for *Under Fire* used pan flutes, associated with peasant cultures of Central America, to musically characterize the film's Nicaraguan setting and the popular basis of that country's revolution. Frame enlargement.

revolution in Nicaragua in 1979. By using an instrument that was not specifically tied to Nicaragua but was found in many peasant cultures in Central America, Goldsmith was able to create a musical score that tied the Nicaraguan revolution, musically, to its peasant origins, but in a way that included echoes of the peasant cultures of other Central American countries, much as the revolution itself did in the 1980s.

Sometimes the time and place that a composer wishes to create do not exist in reality. For his celebrated score for the science fiction film *Planet of the Apes* (1968), Goldsmith relied on the use of unusual instruments, such as ram's horns and brass slide whistles, and unusual musical techniques, such as clicking the keys of woodwind instruments directly on the microphone. The result was a score that many people thought was electronic, though Goldsmith has pointed out that he did not use any electronic techniques. He used existing instruments in an unusual fashion to enlarge the sound possibilities of the orchestra. These new and unusual sounds perfectly suited the film's futuristic fantasy set in an alien and frightening world.

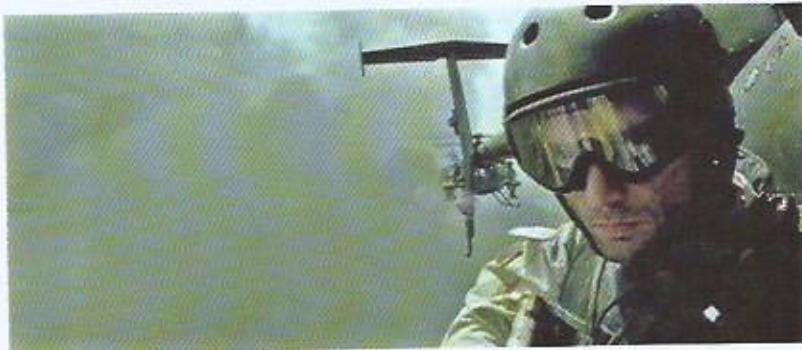
Unfortunately, the scene-setting function of movie music sometimes draws on and fosters cultural stereotypes. Dimitri Tiomkin, who composed the score for Howard Hawks's Western *Red River* (1948), needed music for a scene in which Indians attack a wagon train. He wrote music with a stereotypical tympani beat in order to telegraph the idea that the Indians were about to attack. Tiomkin knew that this Indian music was quite artificial and without any real historical basis, but he believed that authentic tribal music would have been less effective because it was unconventional. Tiomkin elected to use the musical stereotype because the audience was familiar with it.

**Adding Emotional Meaning** All motion picture composers stress the importance of this function. Composer Hugo Friedhofer pointed out that music has the special ability of hinting at the unseen, whereas images can only show what is visible. Music extends an image's range of meaning by adding psychological or emotional qualities not in the picture.

The tonal range of Western music, particularly the highly coloristic rendering used in the Romantic period of the late nineteenth century, has become the model for orchestral movie music because the emotional content of this musical style is extremely familiar to audiences. Think of all the romantic melodramas in which the teary lovers are about to be parted and the violins are sawing away on the soundtrack.

**BLACK HAWK DOWN  
(COLUMBIA PICTURES,  
2001)**

The sound design eliminates realistic sound from portions of the helicopter attack sequence and uses music to quietly imitate the whooshing helicopter blades. The design creates a subjective perspective that portrays the mental concentration of the American soldiers in the helicopters, about to go into combat. Frame enlargement.



or the way the strings in John Williams's soaring score for *E.T.* capture the pathos of Eliot's goodbye to E.T. at the conclusion of that film.

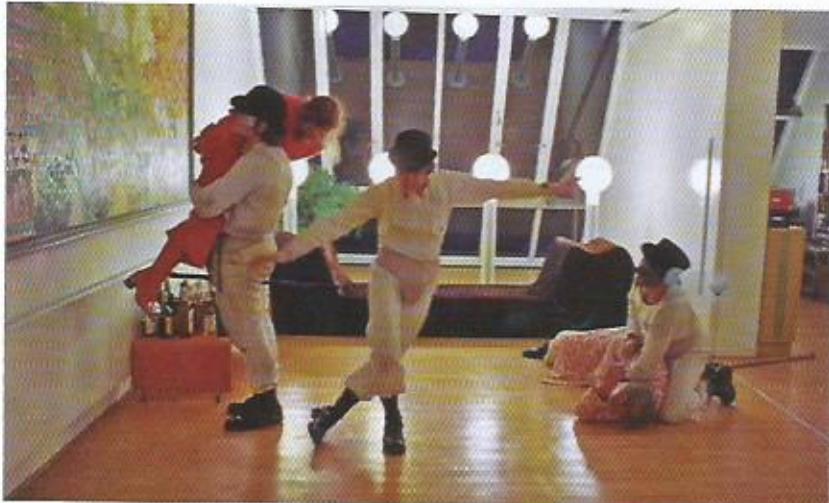
Movie music emphasizes emotional effects most often by direct symbolization: The music embodies and symbolizes an emotion appropriate to the screen action. An alternative approach is to employ a contrast of image and music. Though less common than direct musical symbolization, it can be quite effective.

An especially impressive example occurs during the helicopter attack sequence in Ridley Scott's *Black Hawk Down* (2001). The Black Hawk helicopters in reality are very loud, but the film's sound editor minimized the realistic sound of the engines, sometimes eliminating it entirely. Hans Zimmer's music score substituted for the engine sounds and musically portrayed the whooshing of the helicopter blades. The result was subjective and psychological. The musical evocation of an absent sound effect worked to convey the stress and concentration of American soldiers about to land in a battle zone. Their minds on the upcoming battle, they were not "hearing" the helicopters. The film viewer does, but only indirectly, by way of the music.

Director Stanley Kubrick famously combined picture and music in counterintuitive ways. In *Dr. Strangelove* (1963), the world ends in a nuclear holocaust, which is scored with the lilting 1940s melody "We'll Meet Again." More cruelly, in *A Clockwork Orange* (1971), Kubrick used the exuberant title song from MGM's beloved musical *Singin' in the Rain* (1952) as the accompaniment to a rape scene.

Japanese director Akira Kurosawa loved to contrast music and image. In *Drunken Angel* (1948), the central character of the film, a small-time gangster, loses control of the local neighborhood he dominated. Furthermore, he is dying of tuberculosis. He wanders the streets shunned by shopkeepers, coughing his life out. To emphasize the character's despair, Kurosawa instructed his composer, Fumio Hayasaka, to accompany the action with a silly and mindless cuckoo waltz. Kurosawa knew that the mindless optimism of the waltz, in its extreme contrast with the character's situation, would underline and emphasize the gangster's despair and sadness.

*Serving as Background Filler* This use of movie music was more typical in older films than it is in contemporary filmmaking. During the Hollywood period in the 1930s and 1940s, films were distinguished by so-called wall-to-wall music. Music accompanied almost every scene, and it often assumed a kind of background filler function, just as Copland noted. Contemporary films tend to use music more



### A CLOCKWORK ORANGE (WARNER BROS., 1971)

The thug Alex (Malcolm McDowell, center) dances and sings "Singin' in the Rain" while his gang assaults a husband and wife in their home. Director Stanley Kubrick's appropriation of this cheerful song, best remembered from the classic MGM musical that starred Gene Kelly, was an act of cruel subversion, placing the music in a new, horribly violent context. Frame enlargement.



### LEAVING LAS VEGAS (MGM, 1995)

For this grim story about an alcoholic (Nicolas Cage) and a hooker (Elizabeth Shue) who have a brief affair while he drinks himself to death, the filmmakers used music to counterpoint the bleakness of the story. The main musical theme is the song "My One and Only Love," a tender and sentimental ballad given a lush, sweet orchestration for the film. The song creates a sharp counterpoint to the drama. Frame enlargement.

sparingly, and composers such as Jerry Goldsmith have believed that less music is better because, when used, it becomes more significant.

**Creating Continuity** As with dialogue and effects, music can bridge shots in ways that link and unify them. In montage scenes, for example, where many shots are edited together, music often supplies a unifying structure for the montage. When Julia Roberts goes on her shopping spree in *Pretty Woman*, the Roy Orbison song, from which the film derives its title, accompanies and unifies the montage.

A classic example of music unifying a montage occurs in Bernard Herrmann's score for *Citizen Kane* (1941). A famous sequence in the film shows Charles Foster Kane and his first wife Emily in a series of brief encounters across the breakfast table. The montage telescopes many years of marriage into these breakfasts. Each encounter registers further decay and disintegration in their marriage. Herrmann wrote a little waltz for the montage,

**CITIZEN KANE (RKO, 1941)**

Composer Bernard Herrmann provided a waltz and variations to link musically the different shots of *Citizen Kane's* famous breakfast montage. Frame enlargement.



established it in the first scene, and then used a series of variations for each succeeding scene in the montage, with the music growing colder and more forbidding as the montage progresses in order to capture the deepening alienation between Charles and Emily.

One of the most important ways that film music creates continuity is by using a leitmotif structure. Indeed, this is one of the most common ways of scoring a motion picture. A leitmotif is a kind of musical label that is assigned to a character, a place, an idea, or an emotion. Once assigned, a leitmotif can be repeated each time the character or idea or emotion reappears. This helps to make the music recognizable to an audience, especially after stretches of film where no music has been heard, and it also helps to characterize the character, place, idea, or emotion. The leitmotif can be presented with great invention and variation, restated in differing rhythms and colors. Leitmotif is derived from the operas of Richard Wagner, who used it as a way of helping his audience recognize and understand the characters and their emotional situations.

The Italian composer Ennio Morricone's score for Sergio Leone's *Once upon a Time in the West* (1969) employs a very explicit leitmotif structure. Each of the four major characters in the film has his or her own theme, and the themes reappear as the characters do throughout the film so that one can easily follow the story and its conflicts simply by listening to the music. Almost every motion picture score is structured as a set of themes and variations, and this repetition of familiar musical material is a powerful means of creating continuity.

Music also can establish continuity by creating pacing and tempo within scenes. As soon as music is added to a scene, the images take on a rhythm and pace they did not otherwise possess because relationships are established musically across the shots. Elmer Bernstein, composer of the score for the popular Western *The Magnificent Seven* (1960), has pointed out that his music for this film is actually faster than the action on screen. He wanted the music to help speed along an otherwise slow film. Bernstein's now-classic score adds immeasurably to the pacing of the movie, providing excitement in scenes that would otherwise lack it.

**Emphasizing Climaxes** Movie music emphasizes climaxes and concludes scenes or the end of a film with finality. Music in movies tends to begin and end on specific



**ONCE UPON A TIME IN THE WEST  
(PARAMOUNT PICTURES, 1969)**

Each character in this epic Sergio Leone Western has his or her own highly distinctive musical theme. The leitmotif structure of the score is especially explicit. Frame enlargement.

actions: doors opening and closing, cars pulling away, monsters jumping out of the dark. In these ways, musical cues alert the audience to the climaxes and the emotional high points of scenes. Danny Elfman's score for *Batman* (1989) is exceptionally accomplished in catching action and emphasizing climaxes.

Music need not always be used to heighten action. Sometimes, its absence can be very effective. In *The Silence of the Lambs* (1991), the climactic confrontation in a dark basement between Clarice Starling (Jodie Foster) and serial killer Buffalo Bill features spooky ambient sounds and source music coming from Bill's boom box, but no film score. One had been composed for the scene, but the filmmakers elected to go instead with the ambient sound. In the police thriller *Bullitt* (1968), during the famous car chase, the music ceases early on. As detective Steve McQueen starts his pursuit of a pair of suspected killers, the music begins in a tense and ominous fashion, but then it stops so that sound effects—screaming engines, squealing tires—take over to carry the sequence. Most movies use music to make car chases more exciting, but the chase in *Bullitt* is historically important for avoiding this obvious strategem.

**CONTEMPORARY TRENDS IN FILM SCORING** Although movie music today performs the basic functions noted by Copland, the styles employed and the importance of music for the industry have changed since his era. The use of romantic orchestral



**THE SILENCE OF THE LAMBS (ORION, 1991)**

Sometimes no music at all is more effective than a score. One mark of intelligent scoring is knowing when not to score. Composer Howard Shore wrote music for the climactic scene where an FBI agent (Jodie Foster) confronts a serial killer in a dark basement. On seeing the edited sequence, however, he felt it worked better, with more suspense, without the music. Frame enlargement.

music to score films in the Hollywood period gave way in the 1950s to more modern approaches. Elmer Bernstein composed a jazz-oriented score for *The Man with the Golden Arm* (1955), and Leonard Rosenman composed an atonal, 12-tone serial score for *The Cobweb* (1955). Folk and rock scores in the late 1960s distinguished *The Graduate* (1967) and *Easy Rider* (1969). At this time, the symphonic orchestral score fell out of style, but it made a triumphant comeback in the mid-1970s in the work of John Williams. His scores for the *Star Wars* films and Steven Spielberg's pictures re-established the symphony orchestra as an essential scoring resource.

Today, film music is a key part of the movie business. Studios often market films using contemporary music supplied by popular bands and singers and rely on sales of recorded film music as a supplementary source of income. (The parent corporations that own studios also own music publishing and recording businesses.) Because of this, studios are often interested in scores that can be marketed in the format of popular songs. This trend goes back at least to David Raksin's score for *Laura* (1944) and could be found in the 1950s with films such as *High Noon* (1952) and in the 1960s in *The Magnificent Seven*, *Breakfast at Tiffany's* (1961), and *Dr. Zhivago* (1965). Today, it is firmly established and is extremely common. The soundtrack of *Forrest Gump* (1994) was essentially a collection of popular tunes from the 1960s, whereas *Natural Born Killers* (1994) featured the work of popular 1990s performing groups.

The crafting of movie music as a series of pop hits has become a permanent fixture of the industry and has had a detrimental effect on the art of film scoring. The artistry of film scoring aims to create a fusion of music and image rather than detachable songs that can be marketed on their own and have only a marginal relationship with the images on screen. It was this development that effectively ended the long-time partnership between director Alfred Hitchcock and composer Bernard Herrmann. Herrmann had composed extraordinary music for the Hitchcock films *The Trouble with Harry* (1955), *The Man Who Knew Too Much* (1956), *The Wrong Man* (1956), *Vertigo* (1958), *North by Northwest* (1959), *Psycho* (1960), and *Marnie* (1964) and had served as a musical consultant on *The Birds* (1963). Herrmann composed a score for Hitchcock's next film, *Torn Curtain* (1966), which was grim and foreboding, but the producers at Universal wanted a pop song that could be hummed and played on the radio. Responding to their pressure, Hitchcock threw out Herrmann's score and substituted a more conventional composition in its place. Miffed at this treatment, Herrmann never worked with Hitchcock again.

Like Herrmann, most serious film composers think that the pop song approach compromises the integrity of their scores. Sometimes the application of pop songs

#### PSYCHO (PARAMOUNT PICTURES, 1960)

Bernard Herrmann contributed brilliant scores for Alfred Hitchcock's pictures. The score for *Psycho*, for example, used only string instruments. The shrieking strings heightened the impact of the film's brutal violence. Frame enlargement.





### DR. NO (UNITED ARTISTS, 1962)

Composer John Barry has created some of the best-known scores in contemporary film. In the 1960s, his jazz-styled music for the James Bond series helped to immortalize ultracool Agent 007 (Sean Connery). His sweeping orchestral scores for *Out of Africa* (1985) and *Dances with Wolves* (1990) gave those films a lush, epic tone. Frame enlargement.

is done in an almost schizophrenic fashion. *Robin Hood, Prince of Thieves* (1991), starring Kevin Costner, employed a score that used many period instruments, but at the end of the film, over the final credits, a pop rock love ballad provided the exit music, roughly jolting moviegoers out of the medieval period of the movie.

The cross-marketing of movies and pop songs is now a firmly established feature of the industry. To some extent, film scoring suffers from this emphasis. Many films feature scores that, musically, have little to do with the action or emotions on screen. Despite this, however, the art of film scoring remains very much alive. Exciting, ambitious original scores by Hans Zimmer (*Black Hawk Down*, 2001; *The Thin Red Line*, 1998), James Horner (*A Beautiful Mind*, 2001; *Field of Dreams*, 1989; *Glory*, 1989), John Barry (*Out of Africa*, 1985; *Dances with Wolves*, 1990), Danny Elfman (*Planet of the Apes*, 2001; *Men in Black*, 1997; *Edward Scissorhands*, 1990), and others continue to make a distinguished contribution to modern movies.

#### Case Study NO COUNTRY FOR OLD MEN

Sound design on *No Country for Old Men* (2007), directed by Joel and Ethan Coen, breaks with the tradition in suspense thrillers of using a lot of music and relying on it to create tension and excitement. The Coens' film has very little music, and when it does appear it's in a subliminal fashion, barely heard underneath ambient sounds like prairie wind and the rumble of an automobile engine. Unless really listening for it, a viewer will not hear it consciously. Composer Carter Burwell avoided traditional instrumentation and used, instead, singing bowls, used in Buddhist meditation rituals, that produce a continuous tone. He manipulated the sonic properties of this tone in creative ways. When the hired killer, Chigurh (Javier Bardem), menaces a gas station owner, Burwell

set the frequency of the bowls' tone to be the same as the noise of a refrigerator.

The goal throughout the film was to let silence and ambient noises create the tension that in more traditional films music is expected to produce. As a result, the film's sound effects are precisely crafted and edited. Rather than taking a huge number of effects, laying them on top of one another into a dense mix, and then adding a lot of music, the Coens, Burwell, and sound designer Craig Berkey went in the opposite direction, toward a design that was lean and spare and highly calibrated.

Many scenes in the film are sustained entirely by image and by sonic design and feature no dialogue at all. The best of these occurs in a dark hotel room, as

(continued)

Llewelyn Moss (Josh Brolin), who has stolen a suitcase full of drug money, awaits the approach of Chigurh, who has been hunting him. Moss sits on the edge of the bed, straining to hear noises that shouldn't be there. As in a similar scene in Hitchcock's *Rear Window*, the killer's stealthy approach is betrayed by a few key, muffled sounds—the scrape of a chair in the lobby downstairs, the distant ringing of the desk clerk's phone that goes unanswered, the soft pad of feet on the floorboards in the hallway outside the door, the squeaking of the light-bulb in the hallway as it is unscrewed from its socket, the explosive thump of the door's lock as the unseen Chigurh shoots it out of the door frame. The scene is a pure example of storytelling through sound design.

The sound design that Berkey created for Chigurh's shotgun equipped with a silencer did not include any recording of gun noises. It was a synthetic blend of numerous high-pitched sounds, including screaming, blended with an acoustical thump.

Overall, the creative sound work on *No Country for Old Men* was intended to get the viewer to behave as Moss does in his hotel room, sitting forward a little, listening intently to a sonic landscape that offers clues to the action and that in many contemporary films is buried under too much audio information that is too loud and unrelenting. The film is about letting silences and discrete noises create the tension. ■



#### NO COUNTRY FOR OLD MEN (MIRAMAX, 2007)

This film's sound design is lean and spare but highly controlled. Ambient sounds rather than music predominate in most scenes. The filmmakers elected not to use music to carry the action and comment on it. When it does appear, the music score is muted and subliminal. Frame enlargement.

## SOUND DESIGN

The complexity of modern film sound, and its importance for the artistic design of a film, has brought forth a new creative member of the production team: the sound designer. Walter Murch's brilliant work on *Apocalypse Now* (1979) elicited the credit "sound design" because of Murch's key contributions to the film's total artistic design. On *Apocalypse Now*, Murch and his crew manipulated 160 tracks of recorded sounds. These were mixed together to create the finished soundtrack. Since then, the term has come into general usage.

Sound design goes far beyond the routine technical challenges of getting audible sound and mixing effects and music with dialogue. Sound designers create a total sound environment for the film's images, an environment that not only supports the images but also extends their meaning in dynamic ways. The sound design of a film

builds a mix of realistic and synthetic sounds. Realistic sound matches the properties of a real source. Unlike realistic sounds, synthetic sounds are invented and have no counterpart in actual life, but they bond with the images on screen and extend their meaning. The voice of Steven Spielberg's character E.T. resulted from a mix of human speech and animal sounds, incorporating up to 18 different sound elements. In *Return of the Jedi* (1983), the sounds of the laser guns and the air motorcycles were created by electronically modifying and rerecording a mixture of sound sources.

The modern film audience is privileged to experience film soundtracks of unprecedented complexity and subtlety. Sound designers create highly sophisticated manipulations of sound information. These manipulations are rule-governed and exploit unique properties of sound that differentiate it from a film's image track.

### Differences between Sound and Image

Sound and images uniquely differ from one another. Two kinds of differences exist: (1) what viewers notice about pictures and sound and (2) how pictures and sound structure time.

**PERCEPTION OF IMAGE AND SOUND** Obviously, images are visible and can be seen, and sound cannot. Image edits, whether cuts, fades, or dissolves, can be seen on screen. Sound edits are inaudible. Images can be touched. Sound cannot. As a result, viewers notice images but tend to be less aware of sound design. Viewers tend to think of cinema as an essentially visual medium, with sound as the backup element, there to support the images.

Because of this, viewers think that they interpret sound in reference to images. In most instances, however, sound shapes the image as much as the image shapes the sound. Walter Murch created a memorable image-sound juxtaposition in *Apocalypse Now* (1979) by adding a helicopter sound to a shot of a spinning ceiling fan. Viewers hear a helicopter engine and rotor blades but see the spinning blades of the fan. In this striking contrast, sound and image are equally assertive, equally important. Viewers may think of images as being more important, but in this instance the helicopter sound contextualizes the image as much as it contextualizes the sound.

Sound design is an extremely powerful but nearly subliminal element of film structure. Furthermore, sound has a fluid nature that images do not. Taken out of context, many sounds can be difficult to identify, which enables sound designers to



**APOCALYPSE NOW  
(UNITED ARTISTS, 1979)**

To this shot of a spinning ceiling fan, sound designer Walter Murch added the sound of a helicopter propeller. This audiovisual combination places equal stress on image and sound; each conditions the other. Frame enlargement.



#### THE CONVERSATION (PARAMOUNT, 1974)

Featuring brilliant sound design by Walter Murch, Francis Ford Coppola's *The Conversation* is that rare film that deeply probes the psychological components of sound. Harry Caul (Gene Hackman) is a pathologically withdrawn man who works as a professional wiretapper. As he labors to discover the meaning behind a mysterious conversation he has taped, Murch and Coppola show the subjective nature of sound. Harry psychologically projects a meaning onto the audio information that proves to be tragically incorrect. In this scene, he crouches in a hotel bathroom to tape a conversation in the next room. Frame enlargement.

use them with great freedom, attaching them, for example, to a variety of images, as in the sound effects used in *Terminator 2* and *Backdraft*. Sound can stimulate the imagination in ways images do not. In *The Conversation* (1974), Gene Hackman plays a surveillance expert, Harry Caul. He overhears a murder committed in an adjoining hotel room. The violence of the killing is conveyed in the noises that come through the wall into Harry's room. Sound designer Walter Murch knew that what the audience (and Harry) would imagine based on the sounds would be far worse than what a picture might show.

**STRUCTURING TIME** Unless they contain explicit movement, many images are ambiguous with respect to time. They can be run forward or backward with little noticeable difference. A long shot of a forest or the exterior of a house is ambiguous in this way, but not a shot of traffic or joggers. Viewers can tell if the latter two images were run backwards, but not necessarily the first two.

Sound adds directional time to images. With sound, viewers perceive images as moving forward unambiguously. George Stevens's Western *Shane* (1953) provides an interesting illustration of this principle. Stevens realized that a man dismounting a horse looks more graceful than when climbing into the saddle. Accordingly, when the film's villain climbs into the saddle, the editor used a shot of the character *dismounting* but played it in reverse. The sound in the scene—a gurgling stream, wind, off-screen dialogue from other characters—gives the shot a clear forward momentum. Viewers who are aware of the trick can see that the shot is played backwards, but for most viewers, unaware of the editing magic at work, the sleight-of-hand passes unnoticed because of the way the shot is paired with sound that is clearly directional in time.

Sound gives images forward momentum or adds to the momentum that the shots already possess. Sound temporalizes images. This is the principle that underlies the codes of sound continuity. But creating continuity is only one of the achievements of sophisticated sound design, which, like image editing, is a rule-governed practice. What are the basic rules and procedures for manipulating sounds and for establishing relationships with images?

### The Codes of Sound Design

To construct the finished soundtrack viewers hear when watching a movie, designers employ five essential codes: (1) the sound hierarchy, (2) sound perspective, (3) sound bridges, (4) off-screen sound space, and (5) sound montage.

**THE SOUND HIERARCHY** Because of the variety of sounds in the audio environment and the need to organize them to facilitate the viewer's understanding of story information, sound designers customarily treat them in terms of a hierarchy of importance. When filmmakers manipulate dialogue, sound effects, and music within a scene, the hierarchy of relationships typically emphasizes dialogue. A sound mixer understands that inaudible or unclear dialogue can take a viewer out of the movie and break its spell. If a viewer has to ask someone sitting next to them what a character just said, the viewer is no longer "in" the film. Thus dialogue tends to be the determining element in a sound mix. It is generally the first element to be mixed, and the volume of effects and music is usually kept at a softer level to run underneath the dialogue.

Everyone has seen movies in which an important character dies during a noisy battle. Often, the character makes a little speech before dying. When this occurs, the volume of the battle sounds invariably drops below the dialogue. Once the character has died, the battle sounds rise again to their previous level. Prevailing assumptions stipulate that dialogue always should be clear, crisp, and understandable to the viewer.

Filmmakers do not always construct a standard sound hierarchy; some have deliberately sought to avoid it. In the early 1970s, one major U.S. filmmaker revolutionized sound recording techniques in ways that challenged the dominant place of the actor's voice in the hierarchy of sound. Beginning with *California Split* (1974) and *Nashville* (1975), director Robert Altman pioneered the use of multichannel, multitrack sound recording. Rather than using a boom mike—a microphone hung on a long pole suspended over a scene to record the voices of the actors—Altman employed radio mikes. Each actor was separately miked, their voices transmitted to a recording receiver.

In the sound mix, Altman aimed to produce a profusion of voices, much as one hears in a crowded room. In the crowd scenes in *California Split*, for example, many actors speak at once, and the dialogue is multilayered, full of overlapping speech. In addition, the radio mikes picked up ambient noises, like the rustle of clothing, that are usually not captured by more standard recording techniques. The resulting audio mix was extremely rich and multidimensional, and a single character's voice did not always predominate over other voices in a scene. The mix gave Altman an audio equivalent to what his images were showing, namely, many things happening at once.

Altman's approach frustrated critics because they were used to a more normative sound hierarchy in which all voices were clearly modulated and balanced to give a single speaker primacy of position in the audio mix. His films of the early 1970s were somewhat controversial, but multitrack recording methods are today an industry standard, even though most films do not aim for the audio density of Altman's pictures.



#### ON THE WATERFRONT (COLUMBIA PICTURES, 1954)

Breaking the sound hierarchy can create startling effects. When Terry Malloy (Marlon Brando) tells Edie (Eva Marie Saint) that he was involved in her brother's murder, the sound mix eliminates nearly all of their dialogue, replacing it with loud, harsh sounds from the environment, the New York harbor. These piercing sounds portray the characters' anguish and stand in for the missing dialogue. These sounds are the most important and prominent ones in the scene and carry its emotion, a function more typically performed by dialogue or music. Frame enlargements.

**The Sound Hierarchy in Early Cinema** While contemporary sound design typically features a highly articulated mix of dialogue, effects, and music, films from the early sound period blended fewer elements to create the soundtrack. Rather than working with many tracks each of dialogue, effects, and music, early sound films mixed a couple of dialogue tracks, a mono music track, a few sound effects, and an ambient track. In contrast to the profusion of sound detail in contemporary film, the audio design of early sound films included less information. Occasionally, one finds an incomplete sound hierarchy in these films, a mix of dialogue, effects, and music that runs counter to the practices that would soon become normative in the industry.

In Sergei Eisenstein's first sound film, *Alexander Nevsky* (1938, about a Russian folk hero who repulsed a German invasion in the thirteenth century), music and dialogue tend to predominate in the sound structure of the film, with background ambient sound and sound effects used less extensively. Some scenes or shots completely lack the ambient sound and effects that are clearly denoted by the images and action.

At the beginning of the movie, for example, a group of Mongol warriors visits Alexander Nevsky's fishing village. Viewers hear the sounds of their horses and armor as they arrive, but leaving, they make no sound at all. Their exit is completely silent.



### ALEXANDER NEVSKY (1936)

The soundtrack of many films in the early sound period have a minimal range of effects and ambient noise, even when images, such as these shots showing a screaming child, suggest highly specific sounds. Frame enlargements.

Later in the film, during the visually impressive sequence that details the burning of the city of Pskov and the slaughter of its inhabitants by the invading German army, viewers hear only music and dialogue without any sound effects. Close-ups of screaming, crying children lack these sound effects.

During the climax of the film, the epic battle on a frozen lake between Nevsky's armies and the invading Germans, music and sound effects alternate one at a time. The music plays for a while and then stops, and viewers hear sound effects (swords clashing, men shouting). Then the sound effects stop, and the music begins again. These manipulations of sound may strike a modern moviegoer's ears as rather crude and unrealistic because of the peculiar manner in which effects and music have been edited so that they are never present together and because of the lack of detail in the film's audio space when compared to its often striking images.

While most films establish a clear hierarchy of sound relationships that gives the voice a privileged pride of place and surrounds the voice with music and important sound effects, Altman's work and Eisenstein's *Alexander Nevsky* are significant alternatives to this practice. Their deviant structure demonstrates, by its omission, the prevalence of the conventional hierarchy in which voice, effects, and music are present together but in carefully regulated volumes.

**SOUND PERSPECTIVE** Sound perspective designates the ways that sound conveys properties of the physical spaces seen on screen. Sound perspective in film is based on correspondences with the viewer's acoustic perception of space in everyday life. The sound of an approaching or receding object, for example, changes its pitch in a predictable way depending on its direction of movement, a phenomenon known as the *Doppler effect*. Sound designers routinely use Doppler effects to acoustically convey the movement of a sound-producing object through three-dimensional space. Recall that the sound engineers at Lucasfilm added Doppler effects to the arrows whizzing at Indiana Jones to give them a convincing three-dimensional presence in the scene. In the *Star Wars* films and other science fiction pictures, Doppler spatializes the approach of CGI or miniature-model spacecraft and helps sell these special-effect images to viewers.

## FILMMAKER SPOTLIGHT

### Ben Burtt

Ben Burtt has created some of the most famous sounds in modern movies—the mechanical breathing of Darth Vader, the crack of Indiana Jones’ whip, the voices of E.T. and R2D2, the resonant hum of Luke Skywalker’s lightsaber. His long association with George Lucas and Steven Spielberg helped to change modern movie sound by emphasizing the invention of original sounds for a production.

Before the 1970s, film studios compiled stock libraries of audio effects that they used and re-used in their films. Warner Bros.’ movies sounded different than Paramount’s films because each studio drew from its in-house audio archive. Many of the gunshots heard in years of Warner Bros. gangster movies were created originally for *G-Men* (1935), and the studio recorded numerous bullet ricochets for *The Charge of the Light Brigade* (1936). Audiences continued to hear these ricochets in movies for decades. They even were altered to become the cartoon sound of the Road Runner dashing away. Burtt points out that one ricochet was played backwards to supply the sound of Superman landing on the 1960s-era television show. These practices meant that sound effects often were repetitive, familiar, and unsurprising.

The “Wilhelm scream” is a famous example of recycled audio. The scream—recorded for a scene in *Distant Drums* (1951) where a man is bitten by an alligator—was archived at Warners and used in many of the studio’s films, including *The Charge at Feather River* (1953) where it was used when a character named Wilhelm is shot with an arrow. Researching sound at studio libraries, Burtt noticed this recurring scream and named it “Wilhelm,” after the *Feather*

*River* character. The scream is very distinctive, and Burtt affectionately used it in several *Star Wars* movies. It’s now a kind of legendary audio effect and can be heard in *Inglourious Basterds* (2008), *Monsters vs. Aliens* (2009), and *Iron Man 2* (2010).

When George Lucas hired Burtt to design the sounds of *Star Wars* (1977), he wanted the film to have an original audio profile, not recycled sound effects. He broke with existing studio practices. As a result, *Star Wars* sounded unlike earlier science fiction films. The Federation’s beat-up space ships, for example, sounded like Model T automobiles rather than having the electronic hum so common in 1950s-era sci-fi. Sound was uniquely assertive in defining the experience, emotions, characters, and settings of *Star Wars*. Burtt’s creative sound design on that film helped to usher in a new era of audio invention in motion pictures in which sound was conceived as an active part of the moviegoer’s experience.

Because many of the characters and situations for which Burtt had to invent sound were novel and imaginary, he tried to map them onto sound experiences familiar to viewers, ones they would associate with particular emotions. To create the sounds of large spaceships in the *Star Wars* movies, Burtt blended audio of thunder, animal growls, and jet airplanes. Animal sounds are also part of the mix for the engines on military vehicles appearing in *Raiders of the Lost Ark* (1981).

Because sounds taken in isolation are often hard to identify, sound design is an art of elegant substitution, and a designer needs to be able to



THE EMPIRE STRIKES BACK (20TH CENTURY FOX, 1980)

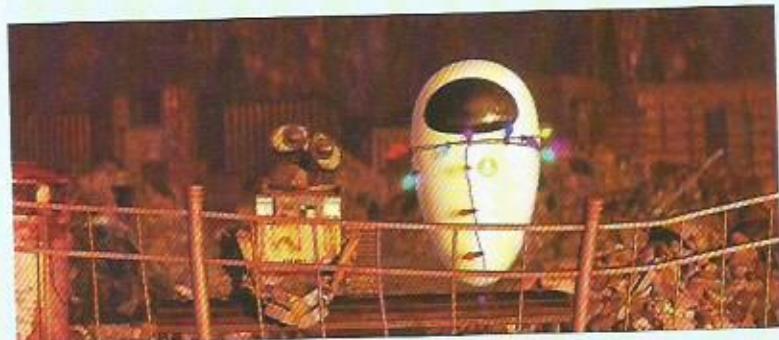
Darth Vader’s lack of humanity was unforgettably characterized by the mechanical sound of his breathing, a sound designed by Ben Burtt to embody the essence of the character. Frame enlargement.

think analytically about sound in order to get the right combinations of elements. Burtt created Darth Vader's heavy breathing by putting a microphone inside a scuba tank regulator. Light-sabers were the combined sounds of Simplex movie projectors, the electric hum of television sets, and a moving microphone re-recording the combined sounds to convey a sense of object movement. Raccoon noises helped supply the voice of E.T. and the skittery sounds of the cockroach that appears in *WALL-E* (2008).

Because *WALL-E* is a computer-animated film, no audio was recorded as part of a production track. All of the images were created without sound, requiring Burtt to invent the mechanical sounds of the robots WALL-E and EVE, their planet and spacecraft. He created more than 2000 individual sounds for the film. The noise of wind, for example, was produced by running audio of Niagara Falls through an echo chamber, and when the wind is heard from inside WALL-E's trailer, the sound is produced by dragging a canvas bag across the floor. Why not

simply record wind? Because literal, realistic sound sources often are insufficiently dramatic. Other sources can be blended and manipulated to evoke the necessary emotional tone or personality. The sound of EVE's laser gun in the film is produced by stretching a slinky out to full length, placing a microphone at one end and tapping the other end. Because of the slinky's length, high-frequency tones reach the microphone first, then the mid-tones, and then the low. The resulting sound is metallic and resembles an explosive discharge, making a good fit with the images of EVE shooting her laser gun.

Burtt's work on the *Star Wars* and *Indiana Jones* films, and Walter Murch's inventive work for Francis Coppola on *Apocalypse Now* (1979), helped to make the 1970s the first great era of sound design in motion pictures. The inventive, singular, and unique audio profiles of these films established the essential role that original sound, expressly designed for a film, would play in the art of cinema. ■



**WALL-E (Pixar, 2008)**

Robots in love—WALL-E and EVE are personified through highly articulated and individuated sounds. A low-tech robot, his sounds are very mechanical, while hers are more electronic and airy. Sound design plays a major role in bringing this sci-fi world to life. Frame enlargement.

Sound perspective also can be created by using reverberance and changes in volume. Direct sound is sound that comes immediately from the source. It is spoken or recorded directly into the microphone, and because of this, it typically carries minimal or no reverberance and conveys little environmental information. By contrast, reflected sound carries reverberance. It reflects off of surrounding surfaces in the environment to produce reverberation. Differing surfaces reflect sounds in differing ways, and these differences convey important information about the kind of physical environment in which the sound is occurring. Hard surfaces such as glass or metal tend to bounce sound very quickly and very efficiently, whereas softer surfaces such as carpeting or cushioned furniture are less reflective. They tend to absorb sound and, in extreme cases, may deaden sound. In *The Conversation* (1974), the noises of the murder that Harry Caul hears through an adjoining hotel room wall are muffled and deadened.

Sound environments, then, can be characterized in terms of their sound-reflective or sound-deadening properties. Sound designers pay close attention to these features so that the audio environments they create for a film match the physical conditions of the scene or shot. Sound needs to reverberate in Edward Scissorhands's huge, vacant castle but not on the western plains in *Dances with Wolves*.

Another, very important characteristic of sound in the audio environment is ambient sound. As explained earlier, this term refers to generalized noises in the recording environment. If shooting takes place out-of-doors, ambient sounds may include the airplane traveling overhead, the cries of children playing in the distance, or the sound of wind in the trees. Ambient sound is found in all recording environments, even in an empty room. When a scene occurs in an empty room, the soundtrack will not be dead or silent. It will carry room tone, the acoustical properties of the room itself, the imperceptible sounds that it makes. Room tone is a very low level of ambient noise, and it indicates that the audio environment created by contemporary sound design is never silent or dead but always conveys some audio information.

Sound perspective often correlates with visual perspective. If the action is presented in long shot, viewers also hear the sound as if in long shot. As the sound source gets more distant from the camera in a reverberant environment, the properties of reflected sound increase. As the sound source comes closer to the camera, the amount of reflected sound decreases. By varying the amount of reflected sound, filmmakers establish the location of a sound source within the visual space on screen.

If the action is presented to the viewer in close-up, direct sound should predominate over reflected sound. The actors' voices should be intimate and sound as if they are spoken closely to the microphone. Sound designer Walter Murch has stated that he records not just sounds in the environment but also the spaces between the listener



#### THE OTHERS (MIRAMAX, 2001)

Digital, multichannel sound can create tremendously vivid sound perspective. When Grace (Nicole Kidman) is terrorized by what she believes are ghosts, disembodied voices fly around the room, jumping from channel to channel, speaker to speaker, across the front soundstage and into the rear surrounds. As the unseen spirits flutter about the character, the sound reproduces this action in three-dimensional audio space. The effect becomes subjective, immersing the film viewer into the character's experience. Frame enlargement.

and those sounds. In actual practice, however, microphone placement does not exactly parallel camera placement. While the difference in camera placement between a close-up and a long shot may be very great, the difference in actual microphone placement may only be a matter of several feet. Moreover, many contemporary films invert visual and sound perspectives by filming actors in long shot and miking them for direct sound. Peter Weir's *Dead Poets' Society* (1989) deals with the relationship between an unconventional English teacher (Robin Williams) and his students in an elite prep school in 1959. One of the boys discusses with his friend his excitement over getting the lead role in the school play. The two boys stand on a pier next to the water and are filmed in extreme long shot. Their voices, however, are miked in intimate terms. The audio space is very close. The visual space is very distant.

**Sound Perspective in Early Cinema** As with other attributes of film structure, filmmakers did not grasp the complexities of sound design all at once. Sound technology came to the movies in the late 1920s, and filmmakers gradually discovered the creative possibilities of sound and how to use it in a rich and naturalistic fashion. As a result, and because early sound technology was quite limiting, the soundtracks in many early films tend to be less detailed and less reflective of the realities of sound space.

French director René Clair's *Under the Roofs of Paris* (1930), for example, is a mixture of pantomime, music, and dialogue. Much of the film was shot silent, with a few talking sequences added later. At the beginning of the film, the camera booms down from the rooftops to the streets of Paris where a song salesman is performing a new tune for a group of onlookers. Viewers hear the song throughout the camera movement, and as the camera draws closer, the song's volume increases. There is, however, no apparent change in reverberation.

At the end of the scene, the camera booms back up to the rooftops. This time the volume of the song does not decrease as much as it should given the amount of physical space the camera crosses. Again, there is no change in reverberation. The perspectives established by visual space and audio space do not correlate very well.



**UNDER THE ROOFS OF PARIS  
(TOBIS, 1930)**

Correct sound perspective is not a feature of every film. The relationship of audio space and camera perspective often proves to be quite flexible. In *Under the Roofs of Paris*, as the camera travels from the rooftops to the street below, the appropriate changes in audio space do not occur. Frame enlargement.

### Case Study JACQUES TATI

As with all rules and conventions of film structure, sound perspective can be satirized and played with by smart filmmakers. French director Jacques Tati was one of the masters of sound cinema. Tati was a pantomime comedian whose films bear some relationships to silent comedies. Dialogue in his films is minimal, and the sound space is dominated by a multitude of carefully organized environmental sounds. Tati postdubbed his soundtracks to achieve a maximum of control over their sound design.

In Tati's masterpiece, *Playtime* (1967), he playfully distorts standard sound perspective. Early in the film, the main character, Mr. Hulot (played by Tati himself), is trying to keep an appointment with an official named Mr. Giffard. When Hulot tries to meet the official, he is instructed by the building's doorman to wait beside a bank of elevators while Mr. Giffard is paged. Hulot waits patiently, framed at screen left, while, onscreen right, a vast, receding hallway extends into the distance. Hulot is seated around the edge of the wall, however, so he cannot look down this hallway. But the viewer can.

As Hulot waits, loud footsteps occur off-screen. Because of their loud volume, the viewer assumes the person these feet belong to must be very near. In the next

moment, however, a tiny figure appears in the distance at the end of the hallway. This is joke number one, reversing the expectation viewers developed based on the probable sound space-image space relation. The glass, metal, and tile hallway conveys the reverberant footsteps very effectively; they remain loud and only grow slightly in volume as the man approaches. This is joke number two. The third joke in the scene occurs as Tati, hearing the man but unable to see him, keeps trying to get up, assuming that he must be close given the loudness of his steps. The doorman, however, who can look down the hallway, keeps gesturing for Hulot to stay seated.

This scene is composed of a single shot, and the three distinct jokes that occur in it are based on Tati's playful manipulation of the sound space-image space relation. In this case, sound perspective is an unreliable indicator of visual space and of the physical relations in the scene. It illustrates the cinema's transformational property, its ability to alter and play with perceptual realities in ways that viewers readily accept. The cinema records and transforms audiovisual information, and filmmakers are constantly negotiating the creative possibilities of these functions. ■



#### PLAYTIME (1967)

Director Jacques Tati satirizes sound perspective by making it an unreliable indicator of visual space. The sound of Mr. Giffard's footsteps remains extremely loud and distinct despite his changing location in a long hallway. Frame enlargement.

Pointing out this feature of *Under the Roofs of Paris* does not imply that René Clair is an inferior filmmaker. Clair, in fact, was one of the most important early practitioners of sound and a filmmaker whose career straddled the silent and sound periods. He devised many inventive gags in his films where the humor depends on a particular manipulation of sound. Moreover, his work was a decided influence on the U.S. master Charlie Chaplin. Clair's film, *À Nous la Liberté* (1931), was the

inspiration for Chaplin's *Modern Times* (1936). The point here is to emphasize that these codes of sound design are learned applications of style that filmmakers gradually discovered as a way of creating credible audiovisual relationships on screen. The design differences between an early film like *Under the Roofs of Paris* and more contemporary films shows the development and maturation of sound aesthetics.

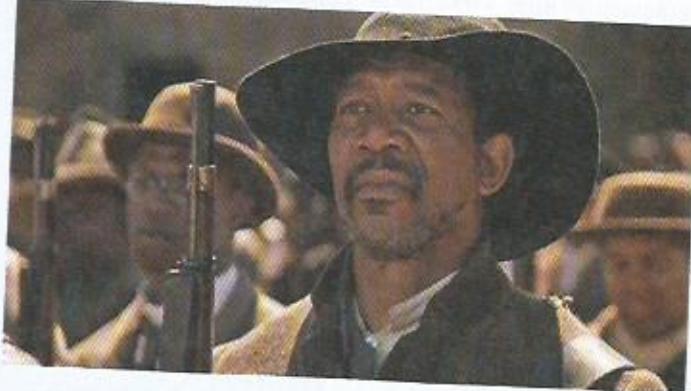
**SOUND BRIDGES** Sound may be connected to a source on screen or disconnected from an on-screen source. In the latter instance, the sound-producing source is off-camera. It is source-disconnected sound because, though viewers hear the sound, they cannot see its source. In any given scene, sound designers employ both categories. Source-connected sound occurs if viewers see Daniel Day-Lewis as Hawkeye in *The Last of the Mohicans* (1993) tell a British officer that he will not serve in the English army. If, by contrast, the camera stays on the British officer while Hawkeye speaks off-screen, the sound is source-disconnected.

Switching between on-screen and off-screen sound gives filmmakers enormous flexibility in the editing of their films. Not everything that is heard needs to be shown. This frees the camera from being a slave to dialogue or other sounds and enables it to reveal aspects of the scene independently of what viewers hear on the soundtrack. All a filmmaker need do is return periodically to source-connected sound in order to sustain the viewer's sense of the important audiovisual relationships. Filmmakers often "cheat" in the editing of dialogue scenes by using reaction shots of a character's face taken from other points in the scene or film. The editing encourages viewers to read the expression as a reaction to the immediate dialogue, which is heard off-camera.

Filmmakers use sound to establish continuity across shots by alternating between on-screen and off-screen sound. Because sound gives images a clear direction and orientation in time—with sound, film images clearly move forward—sound can establish continuity of time across the shot changes in a scene. This often occurs through the use of a sound bridge in which dialogue or effects carry over, or bridge, two or more shots, unifying them in time and/or space. Sound bridges are one of the most powerful and important ways of creating continuity in film. In *Glory* (1989), Col. Robert Shaw (Matthew Broderick) must tell his African-American regiment that the War Department has ordered that black soldiers in the Union army will receive less pay than their white counterparts. As Shaw speaks, the editor cuts to reaction shots of the black soldiers, showing their dismay at this insulting decree. Shaw continues to speak off-screen during these shots, establishing the sound bridge and creating continuity among the shots. The sound information tells viewers that all the shots, which show completely different groups of characters, are part of a common space and within a single moment of time.

In the early German sound film *The Blue Angel* (1930), as the schoolmaster (played by Emil Jannings) removes his handkerchief to blow his nose, the action cuts to a reaction shot of the schoolboys. While looking at them, viewers hear the sound of Jannings blowing his nose. The editing switches from source-connected to source-disconnected sound. Sound flows over the cut, establishing a continuity that links up the different images. In dialogue scenes using the shot-reverse-shot technique, passages of spoken dialogue will flow over the cuts to establish continuity across the shot changes.

In contemporary films, filmmakers often employ a modified sound bridge in which the switch to source-disconnected sound occurs before the cut rather than after it. In other words, the sound cut precedes the visual transition. In Mike Nichols's *The Graduate* (1967), a striking sequence expresses the social and emotional alienation of the young hero, Benjamin (played by Dustin Hoffman), when he dons a scuba suit



#### GLORY (COLUMBIA TRI-STAR, 1989)

The voice of Col. Robert Shaw (Matthew Broderick) provides the sound bridge unifying these reaction shots of African-American soldiers. The sound bridge connects the space and time of these shots, which contain almost no visual elements in common. Frame enlargements.

and seeks refuge at the bottom of his parents' swimming pool. The camera films him alone and isolated in the depths of the pool. As the camera tracks slowly away from him, viewers hear sound from the next scene (which occurs in a phone booth) for 13 seconds before the image cuts to that scene. It is Benjamin talking on the telephone to invite Mrs. Robinson, the family friend, to meet him at a local hotel.

The sound of Benjamin on the phone, asynchronous with the shot of him in the pool, technically violates the time and space of the pool scene, but viewers accept the sound editing as a novel, interesting, and offbeat way of signaling the transition to the



**THE GRADUATE (AVCO-EMBASSY, 1967)**

A creative noncorrespondence between image and sound in *The Graduate*. The sound bridge to the next scene begins well before the end of the final shot in this, the previous scene. As the camera pulls away from Benjamin (Dustin Hoffman) in the swimming pool, viewers hear him talking on the telephone in the next scene. Frame enlargement.

next scene. When *The Graduate* was released in 1967, this was an innovative way of making the transition, but it has become a fairly standard technique today.

**OFF-SCREEN SOUND** Just as the distinction between source-connected and source-disconnected sound is relevant for understanding principles of sound continuity, it also helps to explain how sound can extend the viewer's perception of visual space. Off-screen sound is part of the dramatic action of a scene, but its source is off-camera. This kind of sound enlarges the coordinates of the world represented on screen. That world is not coextensive with the images on screen. Instead, through sound information, it extends into an indefinite, acoustically defined area of off-screen space.

Filmmakers quickly grasped the creative possibilities. Produced only a few years into the sound era, Fritz Lang's classic *M* (1931) brilliantly uses off-screen sound to signal the lurking, unseen presence of a serial killer. The murderer compulsively whistles the theme from the *Peer Gynt* suite, and his rapid, repetitive whistling occurs off-camera in many scenes throughout the film as a means of building suspense, anxiety, and mystery. As a little girl looks in a store window and then runs down the street, the off-screen whistling conveys his stalking presence and desperate hunger for a new victim. Lang had quickly grasped the power of sound to fire the audience's imagination. The unseen, conveyed through sound, is far more frightening than how the killer proves to look when the camera finally shows him. This sonic extension of the frame into off-screen space would become an essential technique in horror films in which monsters lurk just out of sight.

The famous ending of *All Quiet on the Western Front* (1930) shows the hero—a German soldier in the trenches of World War I—killed by a sniper as he reaches tenderly for a butterfly that has alighted on the fields of carnage. In close-up, the viewer sees the hero's hands reaching for the butterfly and then hears an off-screen gunshot and sees the hands drop lifelessly to the ground. At this moment, the ambient (and off-screen) sounds of battle cease, as the soundtrack deadens to convey the hero's passing.

The distinction between diegetic sound and non-diegetic sound can provide a useful way of thinking about relationships between sound-producing sources and the story world represented on screen. Diegetic sound originates within the story world,

**M (1931)**

Director Fritz Lang's classic film vividly demonstrated the power of off-screen sound space. The whistled leitmotif of the serial killer (Peter Lorre) suggests his lurking presence as he stalks his victims from off-screen. Here, frustrated in his hunt, he pauses by a store window. Rows of knives reflected in the glass encircle his body, suggesting that he is a prisoner of his lethal desires. Frame enlargement.



and can include sources, like character dialogue or sound effects, that are on-screen as well as off-screen. Diegetic sound can be heard by characters in the story. Non-diegetic sound originates outside of the story world, and a good example is movie music. If a character plays music within a scene from a radio or a phonograph, that's diegetic sound. When the music is provided by the score composed for the film, that's non-diegetic sound. The terms are helpful in describing situations where the distinctions to be drawn about the use of sound involve being inside or outside of the story world rather than on-screen or off-screen.

**SOUND MONTAGE** Contemporary multitrack sound design is based on montage, the editing of sounds into highly intricate and complex patterns that create meaning and

**ALL QUIET ON THE WESTERN FRONT (UNIVERSAL, 1931)**

As the hero (Lew Ayres) reaches tenderly for a butterfly, a sniper's bullet, fired off-screen, abruptly ends his life. To simulate his passing, the soundtrack goes dead, all ambient noise ceasing. Frame enlargement.





### APOCALYPSE NOW (UNITED ARTISTS, 1979)

The beginning of *Apocalypse Now* shows Captain Willard (Martin Sheen) in a Saigon hotel room. A complex sound montage replaces Saigon's city sounds with jungle sounds to suggest Willard's desire to return to the jungle. Frame enlargement.

emotion. *Apocalypse Now* (1979) features an exceptionally creative sound montage during the opening scene as Captain Willard (Martin Sheen) lies on his bed in a Saigon hotel. Willard longs to be back in the jungle where he can safely satisfy his violent appetites in combat and by working as a paid assassin. As he lies in the hotel, Willard imagines himself in the jungle. The soundtrack carries an audio representation of this inner fantasy. Sound designer Walter Murch systematically replaced city sounds with a series of jungle sounds. Urban noises—a policeman's whistle, the engines of cars and motorcycles—give way on the soundtrack to the squawk of jungle birds, the buzzing of insects, and the cries of monkeys. Murch pointed out that these sound manipulations convey the idea that, although Willard's body is in Saigon, his mind is in the jungle.

Visual montages arrange shots to express meanings not contained in any single shot taken in isolation. This scene from *Apocalypse Now* uses the same principle, transposed to sound. The total arrangement of sounds expresses the reality of Willard's fantasy in a way that the individual sounds, taken in isolation, cannot.

The multi-channel systems used for playback in theater auditoriums and consumer home video have accentuated the montage structure of contemporary sound design. By spatializing sound—sending discrete elements to different speakers positioned about the viewer—multi-channel playback emphasizes the richness and density of sound montages. The expanded dynamic range provided by digital sound has enabled filmmakers to construct ever more complex audio montages and has helped make this an essential feature of contemporary sound aesthetics.

## SUMMARY

Though moviegoers may not be explicitly aware of sound design, its contribution to film cannot be overstated. The next time you watch a favorite movie, turn off the sound and see how impoverished the pictures become. Without sound, a movie loses much of its emotional impact.

Sound design works with the three types of sound—dialogue, music, and effects. Dialogue in film tends to be either voice-over narration or character speech. Sound effects are created using Foley techniques or more elaborate electronic manipulations as part of a comprehensive sound design. Music in film tends to be composed within a late

romantic style, whose musical conventions and range of coloring are familiar to most moviegoers. Movie music helps set the locale and atmosphere of time and place in the story, adds psychological and emotional meaning to a scene, provides background filler, establishes continuity, and calls attention to climaxes and conclusions of scenes.

Sound design creates a complex audio environment to accompany film images, establishing dynamic audiovisual relationships and shaping in subtle and almost subliminal ways the viewer's interpretation of those images. Sound design is orderly and rule-based, following a set of basic codes, some of which establish perceptual correspondences with the viewer's real-world audio experience.

Dialogue, music, and effects are controlled to establish a hierarchy of sound relationships with dialogue being given primary importance. Direct, reflected, and ambient sound levels are carefully related to camera position to create sound perspective. Editors alternate between establishing on-screen and off-screen sound-image relations to keep camera perspective flexible and to maintain continuity. Sound editing establishes continuity across cuts, primarily by allowing sound to flow over the cut, as in the use of sound bridges. Sound is also used to prepare viewers for visual transitions, as when a sound cut precedes a visual cut, and to establish off-screen space that extends the viewer's physical sense of the image. Finally, sound montages may establish intellectual and emotional associations that go beyond the content of the images.

## KEY TERMS AND CONCEPTS

ADR	183	non-diegetic sound	209	sound design
ambient sound	184	off-screen sound	209	(designer)
cue sheet	187	postdub	206	sound field
dialogue	179	production		sound perspective
diegetic sound	209	track	183	speech
direct sound	203	realistic sound	197	spotting
effects	179	reflected sound	203	synthetic sound
Foley technique	184	room tone	204	temp track
leitmotif	192	soundstage	177	voice-over
music	179	sound bridge	207	narration

## SUGGESTED READINGS

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