## SOCIAL FACTORS IN FILM PRODUCTION

Machines don't make movies by themselves. Film production transforms raw materials into a product through the application of machinery *and* human labor. But human labor may be utilized in different ways, and the options are affected by economic and social factors.

Most films go through three general phases of production.

1. *Preparation.* The idea for the film is developed and usually committed to paper in some form. At this phase, the filmmaker or filmmakers begin to acquire funds to make, publicize, and distribute the film.

2. *Shooting.* At this stage, images and sounds are created on the film strip. More specifically, the filmmaker produces **shots** and discrete sounds (dialogue, noises, or whatever). A shot is a series of frames produced by the camera in an uninterrupted operation. In shooting, the separate shots are often filmed "out of continuity"—that is, in the most convenient order for production. They will be assembled in proper order later.

3. *Assembly.* At this stage, which may overlap with the shooting phase, the images and sounds are put together in their final form.

Not every film goes through every step. A home movie might involve very little preparation and might never undergo any final assembly. A compilation documentary might not require the shooting of any new footage, only the assembly of existing clips from libraries and archives. On the whole, though, most films go through these production phases.

The organization of production tasks at each phase can vary significantly. It is possible for one person to do everything: plan the film, finance it, perform in it, run the camera, record the sound, and put it all together. More commonly, though, different tasks are assigned to different people, making each job more or less specialized. This is the phenomenon of *division of labor*, a process that occurs in most of the tasks any society undertakes. Various jobs are assigned to different individuals. Even a single job may be broken down into smaller tasks, which then may be assigned to specialists. In the framework of filmmaking, the principle of division of labor yields different *modes*, or social organizations, of film production and different *roles* for individuals within those modes. The overall preparation, shooting, and assembly stages remain, but they take place within different social contexts.

### MODES OF PRODUCTION: THE STUDIO PROCESS

We can conveniently start by looking at the most detailed and specialized division of labor—that present in the *studio* mode of production. This will allow us to trace the amazing variety of tasks that a film can require. We will then be in a better position to understand how those tasks can be accomplished in other modes of production.

A studio is a company in the business of manufacturing films. The most famous examples are the studios that flourished in Hollywood between

the 1920s and the 1960s—Paramount, Warner Bros., Columbia, and so on. Under the classic studio system, the company owned its own filmmaking equipment and an extensive physical plant, and it retained most of its workers on long-term contract. (In Fig. 1.11, a World War II–era publicity photo, MGM studio head Louis B. Mayer, front row center, shows off his stable of contract stars.) The studio central management planned the projects, then delegated authority to individual supervisors, who in turn assembled casts and crews from the studio's pool of workers.

The classic studio system has frequently been compared to industrial assembly line manufacture, in which a manager supervises a number of workers, each repeating a particular task at a rigid rate and in fixed order. The analogy suggests that the Hollywood studios of the 1930s cranked out films the way that General Motors turned out cars. But the analogy is not exact, since each film is different, not a replica of a prototype. A better term for studio mass-production filmmaking is probably *serial manufacture*. Here skilled specialists collaborate to create a unique product while still adhering to a blueprint prepared by management.

The centralized studio production system remains viable in some parts of the world (such as China and Hong Kong) and for some types of film (especially animated films). But the American production companies of today do not manufacture films so much as acquire them. Each film is planned as a unique "package," with director, actors, staff, and technicians gathered specifically for this project. The studio may have contractual relations with a prized director, star, or producer, but any particular film starts with the creating of a particular package around free-lance workers. The production

company may own a physical plant which can be used for the project, as some of the surviving studios do, but in most cases the producer rents or acquires facilities for the project. The producer will also subcontract particular tasks to other firms, such as special-effects companies.

Despite the growth of the package system, however, the specific production stages and the assignment of roles remain similar to what they were in the heyday of more centralized studio production.

## ■ THE PREPRODUCTION PHASE

In studio filmmaking, the preparation phase is known as *preproduction*. At this point, two roles emerge as most critical: that of producer and that of writer.

The role of the *producer* is chiefly financial and organizational. She or he may be an "independent" producer, unearthing film projects and trying to convince production companies or distributors to finance the film. Or the producer may work for a studio and generate ideas for films. A studio may also hire a producer to put together a particular package.

The producer's job is to develop the project through the script process, to obtain financial support, and to arrange for the personnel who will work on the film. During shooting and assembly, the producer usually acts as the liaison between the writer or director and the production company that is financing the film. After the film is completed, the producer will often have the task of arranging the distribution, promotion, and marketing of the film and of monitoring the paying back of the funds that underwrite the production.

Outside Hollywood, a single producer may take on all these tasks, but in the contemporary American film industry the producer's work is further subdivided. The *executive producer* is usually remote from the day-to-day process, being the individual who arranged the financing for the project or obtained the literary property. Subordinate to the executive producer is the *line producer*. She or he is the actual organizer of the film, monitoring phases of production. The line producer is assisted by an *associate producer*, who acts as a liaison with laboratories or technical personnel.

The chief task of the *writer* is to prepare the script. Sometimes the writer will set the process in motion by sending a script to his or her agent, who submits it to an independent producer or a production company for consideration. Alternatively, an experienced screenwriter meets with a producer in a "pitch session," where the writer can propose several ideas that might become scripts. And sometimes the producer has an idea for a film and hires a script writer to work it up. The latter course of action is particularly common if the producer, ever on the lookout for ideas, has bought the rights to a novel or play and wants it *adapted* into a film.

In mass-production filmmaking, the script writer is expected to follow traditional storytelling patterns. For several decades, Hollywood filmmaking has called for scripts about strong central characters who struggle to achieve well-defined goals. It is also generally believed that a script ought to have a "three-act" structure, with the climax of the first act coming about a quarter of the way into the film, the climax of the second act appearing about two-thirds of the way through, and the climax of the final act bringing

about the resolution of the protagonist's problem. Writers will also be expected to include *plot points*, twists that intensify the action.

The script will go through several stages. These stages include a *treatment*, a synopsis of the action; one or more full-length scripts; and a final version, the *shooting script*. Extensive rewriting is common. Often the director will want to reshape the script. For example, the protagonist of the original script of *Witness* was Rachel, the Amish widow with whom John Book falls in love. The romance, and Rachel's confused feelings about Book, formed the central plot line. But the director, Peter Weir, wanted to emphasize the clash between pacifism and violence. So William Kelley and Earl Wallace revised their script to emphasize the mystery plot line and to center the action on Book, who brings urban crime into the peaceful Amish community.

Even the shooting script is not sacrosanct. It is often altered during the shooting phase. During the filming of the 1954 *A Star Is Born*, the scene in which Judy Garland sings "The Man That Got Away" was reshot at several points in the production, each time with different dialogue supplied by the script writer, Moss Hart. Script scenes that have been shot may also be condensed, rearranged, or dropped entirely in the assembly stage. Figure 1.12 is a publicity still for Alfred Hitchcock's *Notorious*, showing a scene which was eliminated from the final film. (Indeed, the actress sitting next to Cary Grant does not appear in the film at all.)

If the producer or director finds one writer's script unsatisfactory, other writers may be hired to revise it. As you may imagine, this often leads to conflicts about which writer or writers deserve screen credit for the film. In the American film industry, these disputes are adjudicated by the Screen Writers' Guild.

When the script reaches its final state, the producer starts planning the film's finances. He or she has sought out a director and perhaps also stars to make the package a promising investment. The producer must now prepare a budget spelling out *above-the-line costs* (the costs of literary property, script writer, director, and cast) and *below-the-line costs* (the expenses allocated for the crew, the shooting and assembly phases, insurance, and publicity). The sum of above- and below-the-line costs is called the *negative cost* (that is, the total cost of producing the film's master negative). In 1991, the average Hollywood negative cost ran to about $20 million, with advertising and print costs adding $7 to $10 million more per picture.

The producer must also prepare a daily schedule for shooting and assembling the film. This will be done with an eye on the budget. For example, since the film will be shot out of continuity, all shots using a certain setting or certain personnel can be filmed during one stretch of time. If a star is forced to join the production late or leave it at intervals, the producer must plan to "shoot around" the performer. Keeping all such contingencies in mind, the producer and his or her staff are expected to come up with a schedule of several weeks or months that juggles cast, crew, locations, and even seasons and geography for the most efficient use of resources.

## ■ THE PRODUCTION PHASE

In Hollywood parlance, the shooting phase is frequently called **production,** even though "production" is also the term for the entire process of making a film.

Although the *director* is often involved at various stages of preproduction, he or she is primarily responsible for overseeing the shooting and assembly phases. Traditionally, the director puts the script on film by coordinating the various aspects of the film medium. Within most film industries, the director is considered the single person most responsible for the look and sound of the finished film.

Because of the specialized division of labor in large-scale production, many aspects of the task of shooting the film must be delegated to other workers who will consult with the director.

1. In the preparation phase, the director has already begun work with the *set* unit, or *production design* unit. This is headed by a *production designer.* The production designer is in charge of visualizing the film's settings. This unit creates drawings and plans that determine the architecture and the color schemes of the sets. Under the production designer's supervision, an *art director* supervises the construction and painting of the sets. The *set decorator,* often someone with experience in interior decoration, modifies the sets for specific filming purposes, supervising a staff who finds props and a *set dresser* who arranges things on the set during shooting. The *costume designer* is in charge of planning and executing the wardrobe for the production.

Working with the production designer, a graphic artist may be assigned to produce a **storyboard,** a series of comic-strip-like sketches of the shots

in each scene, including notations about costume, lighting, camera work, and other matters. Figure 1.13 is taken from the storyboard for Hitchcock's film *The Birds*. Most filmmakers do not storyboard every scene, but action sequences and shots using special effects and complicated camera work tend to be storyboarded in detail. In such instances, the storyboard gives the cinematography unit and the special-effects unit a preliminary sense of what the finished shots should look like.

2. During the shooting, the director will rely on what is called the *director's crew*. This includes:

a. The *script supervisor*, known in the classic studio era as a "script girl." (Today one-fifth of Hollywood script supervisors are male.) The script supervisor is in charge of all details of *continuity* from shot to shot. The script supervisor keeps track of details of performers' appearance (in the last scene, was the carnation in the left or right buttonhole?), props, lighting, movement, camera position, and the running time of each scene.

b. The *first assistant director*, who, with the director, plans out each day's shooting schedule and sets up each shot for the director's approval.

c. The *second assistant director*, who is the liaison among the first assistant director, the camera crew, and the electricians' crew.

d. The *third assistant director*, who serves as messenger for director and staff.

e. The *dialogue coach*, who feeds performers their lines and speaks the lines of offscreen characters during shots of other performers.

f. The *second unit director*, who films stunts, location footage, action scenes, and the like, at a distance from where principal shooting is taking place.

3. The most publicly visible group of workers is the *cast*. The cast will likely include *stars*, well-known players assigned to major roles and likely to attract audiences. Figure 1.14 shows 1930s star Greta Garbo in a *screen test*, a procedure used to determine casting and to try out lighting, costume, make-up, and camera positions in relation to the actor. The cast also includes *supporting players*, or performers in secondary roles; *minor players;* and *extras*, those anonymous persons who pass by in the street, come together for crowd scenes, and fill distant desks in large office sets. One of the director's major jobs is to shape the performances of the cast. Most directors will spend a good deal of time explaining how a line or gesture should be rendered, reminding the actor of the place of this scene in the overall film, and helping the actor create a coherent performance. The first assistant director usually works with the extras and takes charge of arranging crowd scenes.

On some productions, more specialized cast members require particular coordination. *Stunt persons* will probably be supervised by a *stunt coordinator;* professional dancers will work with a *choreographer*. If animals join the cast, they will be handled by a *wrangler*. (*Mad Max beyond Thunderdome* carries the memorable credit line "Pig Wrangler.")

4. Another unit of specialized labor is the *photography unit*. The leader here is the *cinematographer*, also known as the *director of photography* or *DP*. The cinematographer is an expert on photographic processes, lighting,

and manipulation of the camera. The cinematographer consults with the director on how each scene will be lit and filmed. In Figure 1.15, on the set of *Citizen Kane*, Orson Welles directs from his wheelchair on the far right, cinematographer Gregg Toland crouches below the camera, and actress Dorothy Comingore kneels at the left. (The female script supervisor can be seen in the background left.)

The cinematographer supervises:

a. The *camera operator*, who runs the machine and who may also have assistants to load the camera, adjust and follow focus, push a dolly, and so on.

b. The *key grip*, the person who supervises the *grips*. These workers carry and arrange equipment, props, and elements of the setting and lighting.

c. The *gaffer*, the head electrician who supervises the placement and rigging of the lights. In Hollywood production the gaffer's assistant is called the *best boy*.

5. Parallel to the photography unit is the *sound unit*. This is headed by the *production recordist* (also called the *sound mixer*). The recordist's principal responsibility is to record dialogue during shooting. Typically the recordist will use a portable tape recorder, several sorts of microphones, and a console to balance and combine the inputs from various microphones. The recordist will also attempt to tape some ambient sound when no actors are speaking. These bits of "room tone" will later be inserted to fill pauses in the dialogue.

The recordist's staff includes:

a. The *boom operator*, who manipulates the boom microphone and conceals radio microphones on the actors.

b. The *"third man,"* who places other microphones, lays sound cables, and is in charge of controlling ambient sound.

Some productions have a "sound designer" who enters the process during the preparation phase and who, like the production designer, plans a "sonic style" appropriate for the entire film.

6. A *special-effects* unit is charged with preparing and executing process shots, miniatures, matte work, computer-generated graphics, and other technical shots. Figure 1.16 shows a miniature used in the making of *The Comedians*. During the planning phase, the director and the production designer will have determined what effects will be needed, and the special-effects unit consults with the director and the cinematographer on an ongoing basis.

7. A miscellaneous unit includes a *make-up staff*, a *costume staff*, *hairdressers*, and *drivers* (who transport cast and crew).

8. During shooting, the producer is represented by a unit often called the *producer's crew*. This consists of the *production manager*, also known as the *production coordinator* or the *associate producer*. This person will manage daily organizational business, such as arranging for meals and accommodations. A *production accountant* (or *production auditor*) monitors expenditures, a *production secretary* coordinates telephone communication among units and with the producer, and *production assistants* (PAs) run errands. Newcomers to the film industry often start out working as production assistants.

All this coordinated effort, involving perhaps hundreds of workers, results in many thousands of feet of exposed film and recorded sound-on-tape. Every shot called for in the script or storyboard or decided on by the director usually has several **takes,** or unique versions, of that shot. For instance, if the finished film requires one shot of an actor saying a line, the director may make several takes of the speech, each time asking the actor to vary the expression or posture. Not all takes are printed, and probably only one of those becomes the shot included in the finished film.

Because shooting usually proceeds out of continuity, the director and crew must have some way of labeling each take. During filming, one of the

cinematographer's staff holds a *clapboard* up before the camera at the start of each shot. The clapboard records the production, scene, shot, and take. The clapboard's hinged arm makes a cracking sound that helps the editor to synchronize sound and picture later. (See Fig. 1.17, from Jean-Luc Godard's *La Chinoise*. The white "X" marks this as the exact frame with which the cracking sound should synchronize.) Thus every take is identified for future reference.

In the course of filming, most directors and technicians follow an organized approach. Assume that a scene is to be filmed. While crews set up the lighting and test the sound recording, the director rehearses the actors and instructs the cinematographer. The director then supervises the filming of a *master shot*. The master shot records the entire action and dialogue of the scene. There may be several takes of the master shot. Then portions of the scene are restaged and shot in closer views or from different angles. These other shots are called *coverage*, and each of them may require many takes. Contemporary practice is to shoot a great deal of coverage, occasionally by using two or more cameras filming at the same time. The script supervisor checks to ensure that continuity details are consistent within coverage shots.

## POSTPRODUCTION

Members of the film industry today call the assembly phase of filmmaking *postproduction*. Yet this phase does not begin simply when shooting is completed. Postproduction staff members work steadily, if sometimes behind the scenes, throughout shooting.

Before the shooting has begun, the director or producer has probably hired an *editor* (also known as the *supervising editor*). This person has the responsibility of cataloguing and assembling the various takes produced during shooting.

Because each shot usually exists in several takes, because the film is shot out of continuity, and because the master-shot/coverage approach yields so much footage, the editor's job can be a vast one. A 90-minute 35mm feature, which comprises about 8000 feet of film, may have been carved out of 500,000 feet of exposed footage. For this reason, postproduction on major Hollywood pictures has become a lengthy process. Sometimes several editors and assistants will be brought in.

Typically, the editor receives the processed footage from the laboratory as quickly as possible. This footage is known as the *dailies*, or the *rushes*. The editor inspects the dailies, leaving it to the *assistant editor* to synchronize image and sound and to sort the takes by scene. The editor will meet with the director to examine the dailies or, if the production is filming far away, the editor will call to inform the director of how the footage looks. Since retaking shots is costly and troublesome, constant checking of the dailies is important for spotting any problems with focus, exposure, framing, or other visual factors.

As the footage accumulates, the editor assembles the shots into a *rough cut*—the film loosely strung in sequence, without sound effects or music. Some films are notorious for having gargantuan rough cuts: That of *Heaven's*

*Gate* ran over six hours, that of *Apocalypse Now* seven and a half. Still, even the average rough cut is significantly longer than the finished film. From this the editor, in consultation with the director, builds toward a *fine cut*, or *final cut*. The material not used comprises the *outtakes*. At the same time, a *second unit* may be shooting footage to fill in at certain places, titles will be prepared, and further laboratory work or special-effects work may be done.

Once the shots are arranged in something approaching final form, the *sound editor*, also known as the *sound effects editor*, takes charge of building up the sound track. With the editor, the director, and the composer, the sound editor goes through the film and chooses where music and effects will be placed, a process known as *spotting*. The sound editor may have a staff whose members specialize in recording or cutting dialogue, music, or sound effects.

One of the sound editor's principal duties is supervising the rerecording of dialogue after filming. This has become known as *automated dialogue replacement* (ADR for short). Although dialogue is recorded on the set, this may serve only as a guide track. Then the actors are brought into the sound studio to rerecord their lines (a process called **dubbing**, or *looping*). In addition, if there is a recording error or muffled line in the original recording, dubbing is used to replace it. Nonsynchronized dialogue, such as the babble of a crowd, will also be added. In addition, the sound editor will loop alternative lines of dialogue that eliminate phrases that may be found offensive; this sanitized track will be used in broadcast television and airline versions of the film.

The sound editor also adds sound effects. Most of the sound effects the audience hears in a studio-produced film are not recorded at the moment the image is shot. The sound editor may draw on a library of stock sounds, utilize effects recorded "wild" on location, or create particular effects for this film. Sound editors routinely manufacture footsteps, cars crashing, doors closing, pistol shots, a fist thudding into flesh (often produced by whacking a watermelon with an axe).

During the "spotting" of the sound track, the film's *composer* has entered the assembly phase as well. Reviewing a fairly advanced cut of the film, the composer decides, along with the director and sound editor, where music should be inserted. The composer then compiles cue sheets that list exactly where the music will go and how long it should run. The composer proceeds to write the score, although she or he will probably not orchestrate it personally. While the composer is working, the rough cut will be synchronized with a "temp dub," musical accompaniment from preexisting sources that approximates the sort of music that will eventually be written. With the aid of a "click track," which synchronizes the beat of the music to the finished film, the score will be recorded and form part of the sound editor's material.

All these sounds are recorded on different pieces of magnetic tape. Each person's voice, each musical passage, and each sound effect may occupy a separate track. At a final mixing session, the director, editor, and sound-effects editor put dozens of such separate tracks together into a single master track on 35mm magnetic film. The sound specialist who performs

the task is the *rerecording mixer*. Often the dialogue track is organized first, then sound effects are balanced with that, and finally music is added to create the final mix. Often there will need to be equalization, filtering, and other adjustments to the track. Once fully mixed, the master track is transferred onto sound recording film, which encodes the magnetic sound as optical sound.

The film's *camera negative*, which was used to make the dailies and the work print, is normally too precious to serve as the source for final prints. Instead, from the relevant camera negative footage the laboratory draws an *interpositive*, which in turn furnishes an *internegative*. It is this which is assembled in accordance with the final cut and which will be the primary source for future prints. Then the master sound track is synchronized with it.

The first positive print, complete with picture and sound, is called the *answer print*. Once an answer print has been approved, *release prints* are made for distribution. These are the copies shown in theaters.

In contemporary Hollywood practice, the work of production does not end with the final theatrical version. In consultation with the producer and director, the postproduction staffs prepare airline and broadcast television versions of the film. In some cases, particular versions may be prepared for different countries. The European version of David Lynch's *Wild at Heart* contained footage that was not in the American print, and Sergio Leone's *Once Upon a Time in America* was completely recut and rearranged for its American release. At the same time, laboratory personnel, often working with the director and the cinematographer, transfer the film to a master videotape, which will form the basis of videocassette and laserdisc versions. This video transfer process often involves new judgments about color quality and sound balance.

Many fictional films, such as *Singin' in the Rain*, have been made about the studio mode of production. Some films set their action at particular phases of the process. Federico Fellini's *8 1/2* concerns itself with the preparation, or preproduction, stage of a film that is abandoned before shooting starts. François Truffaut's *Day for Night* takes place during the shooting phase of a production marred by the death of one of the cast. The action of Brian De Palma's *Blow Out* occurs during the sound editing process of a low-budget slasher movie.

The studio mode of production is characterized by a minute breakdown of labor. With this comes an attempt to control every aspect of the filmmaking process by means of paper records. At the start there will be versions of the script; during shooting reports will be written on camera footage, sound recording, special-effects work, and laboratory results; in the assembly phase there will be logs of shots catalogued in editing, and a variety of cue sheets for music, mixing, looping, and title layout. Once planning and execution are committed to paper, the production workers can control, or at least adjust to, unplanned events.

This is never wholly successful. Every case study of a large-scale studio production will attest to the compromises, accidents, and foul-ups that plague the process. Weather may throw the shooting off schedule. Disagreements about the script may result in a director's being fired. Last-

minute changes demanded by the producer or director may require that some scenes be reshot. Studio production is a constant struggle between the desire to plan the film completely and the inevitable "noise" created by the sheer complexity of such a detailed division of labor.

Not all films that use the studio mode of production are large-budget projects financed by major companies. Many so-called independent films are made in similar ways, though on a smaller scale. For example, very low-budget "exploitation" filmmaking tailors its product to a particular market—in earlier decades, fringe theaters and drive-ins; now, home videocassette rentals. The independent exploitation film, often a horror film or teenage sex comedy, may have a budget as low as $100,000. But such a production continues to divide the labor along studio lines. There is the producer's role, the director's role, and so on, and the production tasks are parceled out in ways which roughly conform to mass-production practices. Because of cost constraints, however, many functions of the studio mode of production are carried out here by amateurs, friends, or relatives. And in such circumstances people often double up on jobs: The director might produce the film and write the script as well; the picture editor might cut sound as well.

The rubric of independent production also includes projects that seek to go beyond the exploitation market, even though their budgets are comparably miniscule. Often regionally based, these projects may find success with wide audiences, as did Robert Townsend's *Hollywood Shuffle* and Joel and Ethan Coen's *Blood Simple*. In these more ambitious small-budget efforts, production functions of the studio model are approximated by a small staff and crew.

There are also more prominent Hollywood-financed filmmakers who are considered "independent" because they work at budgets significantly below the industry norm. Oliver Stone's *Platoon* or Spike Lee's *School Daze* (each of which cost $6 million) would exemplify this sort of filmmaking. In Chapter 10, we will analyze one such project, Susan Seidelman's *Desperately Seeking Susan*.

In this type of independent production, the director usually initiates the project and works with a producer to get it realized. As we would expect, these industry-based independents organize production in ways very close to the full-fledged studio mode. Nonetheless, because they require less financing, such independents can demand more flexibility and control in the production process. Woody Allen, for instance, is allowed by his contract to rewrite and reshoot extensive portions of his film after he has assembled an initial rough cut. In shooting *School Daze*, Lee was able to create an off-camera tension between performers portraying conflicting factions of African-American college students. Lee assigned each group's cast to separate living quarters, different meals, and different hairstyling treatments. "It's a very sensitive subject, class and color," reflected one actor. "And I think the majority of the people on the shoot thought they were beyond it. They were forced to examine it, though, and many realized they weren't as far removed from the subject as they thought." Lee's status as an independent allowed him to control the production circumstances in ways that he believed would benefit both the film and its personnel.

## ■ MODES OF PRODUCTION: INDIVIDUAL AND COLLECTIVE

Our survey of the studio mode of production demonstrates how precisely production tasks can be broken down. But not all filmmaking demands such a detailed division of labor. In general, two alternative modes of production treat the preparation, shooting, and assembly phases differently.

In *individual* film production the filmmaker functions as an artisan. He or she may own or rent the necessary equipment. Financial backing can be obtained on a film-by-film basis, and the production is generally on a small scale. The preferred format is 16mm. There is very little division of labor: The filmmaker oversees every production task, from obtaining financing to final editing, and will actually perform many of them. Although technicians or performers may make distinct contributions, the principal creative decisions rest with the filmmaker.

Documentary production offers many examples of the individual mode. Jean Rouch, a French anthropologist, has made several films alone or with a small crew in his efforts to document the lives of marginal people, often members of minorities, living in an alien culture. Rouch wrote, directed, and photographed *Les Maîtres fous* (1955), his first widely seen film. Here he examined the ceremonies of a Ghanian cult whose members lived a double life: Most of the time they worked as low-paid laborers, but in their rituals they passed into a frenzied trance and assumed the identities of their colonial rulers. Other documentary filmmakers will work on a scale only somewhat larger than that of Rouch. Frederick Wiseman, whose *High School* we examine in Chapter 10, produces, plans, and distributes his own films. During filmmaking he often serves as sound recordist while a cinematographer runs the camera.

Politically activist documentary offers another example of individual film production. Barbara Koppel devoted four years to the production stages of *Harlan County, U.S.A.*, a record of Kentucky coal miners' struggles for union representation. After eventually obtaining funding from foundations, she and a very small crew spent thirteen months living with miners during the workers' strike. A large crew was ruled out not only by Koppel's budget but also by the need to be absorbed as naturally as possible into the community. During filming Koppel acted as sound recordist, working with cameraman Hart Perry and sometimes also a lighting person. Like the miners, the filmmakers were constantly threatened with violence from strikebreakers. Some of these incidents were recorded on film, as when the driver of a passing truck fired a gun at the crew (Fig. 1.18).

The individual mode of film production is also exemplified by the work of many experimental filmmakers. Maya Deren, one of the most important American experimentalists, made several films in the 1940s (*Meshes of the Afternoon, Choreography for Camera, Ritual in Transfigured Time*) which she scripted, directed, performed in, and edited. In some cases the shooting was done by her husband, Alexander Hammid.

A comparable example is the work of Stan Brakhage, whose films are among the most directly personal ever made. Some, like *Window Water Baby Moving* and *Scenes from under Childhood*, are lyrical studies of his family life; others, such as *Dog Star Man*, are mythic treatments of nature; still others, such as *23rd Psalm Branch* and *The Act of Seeing with One's*

*Own Eyes*, are quasi-documentary studies of war and death. Funded by grants and his personal finances, Brakhage prepares, shoots, and edits his films virtually unaided. For a time, while he was working in a film laboratory, he also personally developed and printed his footage. The work of Brakhage, which now comprises over 150 films, demonstrates that in the individual mode of production the filmmaker can become an artisan, a solitary worker executing all the basic production tasks. In later chapters, we will be examining films by other experimental directors, such as Bruce Conner, Michael Snow, Robert Breer, and Ernie Gehr, who have likewise fulfilled several production roles in the making of their films.

In *collective* film production several film workers participate equally in the project. Like individual filmmakers, the group may own or rent its equipment. The production is on a small scale, and financing may come from foundations or members' personal resources. But although there may be a detailed division of labor, the group shares common goals and makes production decisions collectively. Roles may also be rotated: the sound recordist one day may serve as cinematographer on the next. The collective mode of production attempts to replace the authority vested in the producer and director with a more broadly distributed responsibility for the film.

Not surprisingly, the political movements of the late 1960s fostered many efforts toward collective film production. In France, several such groups were formed, the most noteworthy being SLON (an acronym for a name that translates as Society for the Launching of New Works). SLON was a cooperative that sought to make films about contemporary political struggles around the world. Financed chiefly by television companies, SLON filmmakers often collaborated with factory workers in documenting strikes and union activities.

In the United States, the most famous and long-lived collective unit has been the Newsreel group, which was founded in 1967 as an effort to document the student protest movement. Newsreel attempted to create not only a collective production situation, with a central coordinating committee answerable to the complete membership, but also a community distribution network that would make Newsreel films available for local activists around the country. During the late 1960s and early 1970s, the collective produced dozens of works, including *Finally Got the News* and *The Woman's Film*. Newsreel branches sprang up in many cities, with those in San Francisco (now known as California Newsreel) and in New York (known as Third World Newsreel) surviving into the 1980s. After the mid-1970s, Newsreel moved somewhat away from purely collective production, but it retained certain policies characteristic of the collective mode, such as equal pay for all participants in a film. Important Newsreel films of recent years are *Controlling Interests, The Business of America . . .* (funded largely by American public television), and *Chronicle of Hope: Nicaragua*. Members of Newsreel such as Robert Kramer, Barbara Koppel, and Christine Choy have gone on to work as individual filmmakers.

The catchall label of "independent filmmaking" thus includes not only small-budget filmmaking modeled on the studio mode but also individual production and collective production. The drawbacks of independent production consist, chiefly, in financing, distribution, and exhibition. Studios

and large distribution firms have ready access to large amounts of capital and usually can ensure the distribution and exhibition of the films they decide to back. The independent filmmaker or group has trouble gaining access to money and to audiences.

But many filmmakers believe the advantages of independence outweigh the drawbacks. Independent production can treat subjects that large-scale studio production ignores. Few film studios would have initiated Sayles's *Matewan*, and no film studio would have made Jim Jarmusch's *Stranger than Paradise* or Spike Lee's *She's Gotta Have It*. Because the independent film does not need as large an audience to repay its costs, it can be more personal, more unusual, and perhaps more controversial. The filmmaker need not tailor the script to the Hollywood three-act, plot-point pattern. (Indeed, the independent filmmaker may not use a script at all.) Independent filmmaking is thus often on the cutting edge of exploring new possibilities of the film medium.

Film production requires some division of labor, but how that division is carried out, and how power is allocated to various roles, differs from project to project. The process of film production thus reflects different conceptions of what a film is, and the finished film inevitably bears traces of the mode of production within which it was created.

## AFTER PRODUCTION: DISTRIBUTION AND EXHIBITION

Film production has been our principal concern, but the social institution of cinema also depends on distribution and exhibition. Feature films are distributed through companies set up for this purpose, and most exhibition occurs within theater circuits. When a firm owns the production facility, a distribution company, and exhibition outlets, it is said to be *vertically integrated*. Vertical integration is a common business practice in most film-producing countries. In the 1920s, for example, Paramount already consisted of production and distribution branches, and it went on to buy and build hundreds of theaters, thus guaranteeing itself a market for its products. In 1948, United States courts declared vertical integration monopolistic, but in this country the major production firms have remained the most important distributors. Recently some theater chains, such as Cineplex Odeon, have become involved in distribution.

Production has always affected exhibition and distribution. In the heyday of Hollywood, studios produced a variety of films (cartoons, comedy shorts, newsreels) which accompanied the feature film and made up a package with specific exhibition appeal. Nowadays the extra material on a cinema program is more likely to include advertisements, movie previews, announcements of no-smoking laws, and pleas for patrons not to litter the theater or to talk during the film.

The way in which a theater exhibits a film can have a profound effect on our movie-going experience. Most patrons are aware that it is more rewarding to see a film made with a stereophonic sound track in a theater equipped with a stereophonic sound system, and so theaters add "in stereo"

to their advertisements. Throughout cinema history, the individual exhibitor has controlled how the patrons see films. In the earliest days of the cinema, when films were only a few minutes long, the exhibitor could arrange a program in a certain order and might even lecture during some of the films. With the move to longer and longer features in the 1910s and 1920s, some exhibitors found ways to shorten their programs to squeeze in an extra show or two a day—by having the projectionist either cut out portions of the print or run the hand-cranked projector a bit faster than standard speed.

The introduction of sound discouraged such practices, but we should not assume that today we always see the film exactly as its makers intended. For one thing, since the 1950s, films have been shot in a variety of shapes, or **aspect ratios.** Some are very wide rectangles, others slightly narrower, and some are closer to the shape of a television screen. Theater projectors are equipped with a variety of *aperture plates*, whose rectangular slots enable the film to be projected in various proportions. The screen is also usually framed by a dark masking, which can be adjusted to match the shape of the image. In many cases, however, projectionists do not bother to change their projector's plates or move the masking to suit the film. If you see a film that, say, cuts off the tops of the actors' heads, the problem is most likely in the projection, not in the original cinematographer's work.

One reason why such mistakes occur is that in recent years theaters have tried to cut expenses by redefining the projectionist's job. In a "multiplex" cinema complex, a single projectionist might be responsible for supervising a half dozen films running simultaneously, from one central booth or from several. This works well as long as nothing goes wrong, but if the film goes out of focus, there may be no one in the projection booth to notice the problem for minutes on end. On the other hand, more and more theater chains are striving to improve the quality of their screenings, and many projectionists take immense pride in smoothly run shows. It is worth noticing which theaters provide the best presentation of films and trying to patronize them whenever possible.

Broadly speaking, there are three types of exhibition of new films in the United States. Mainstream commercial cinemas are the most common, showing popularly oriented feature films. Films with a more limited appeal are more likely to show in "art houses," which cater to those interested in foreign-language films, feature-length documentaries, festivals of animation, independently produced films, and the like. Like mainstream commercial theaters, art theaters are oriented toward making a profit, and they do so by appealing to a steady, loyal audience in such places as large cities and college towns. Finally, experimental films are shown in very specialized exhibition situations. Museums and archives often sponsor film series, as do local filmmaking cooperatives. There are a few theaters devoted exclusively to showing experimental films, though these can survive only in the largest cities. Virtually all exhibition of experimental films receives some sort of outside support to supplement ticket sales—from grants, foundations, corporate sponsors, and so on.

A comparable division exists among the distributors that supply such exhibitors. Typically the large national distribution firms cater to the commercial cinemas, often having standing contracts with a certain theater

chain in each given area. Smaller distributors may pick up independent productions or imported films for the art-house market. Experimental films also have their own alternative distribution system, consisting of outlets such as the Film-Makers' Cooperative in New York and Canyon Cinema Cooperative in San Francisco.

These distinctions among types of exhibition and distribution are not hard and fast. Some art cinemas show experimental films as shorts before their features. Independent filmmakers may try to break into the studio distribution and exhibition structure (as Emile de Antonio did with *Millhouse* and Andy Warhol did with several films he produced). In recent years there has been a trend toward taking foreign films that are initially very successful in an art-house context and moving them into mainstream commercial cinemas for a second run; this has happened, for example, with the Swedish film *My Life as a Dog* and the English import *Hope and Glory*. Italian director Bernardo Bertolucci's *The Last Emperor* ordinarily might have played in art cinemas, but its spectacular sets and costumes helped it get a wide release in commercial cinemas instead, and its subsequent sweep of the Oscar awards made it a considerable popular success.

Mainstream theaters, art houses, and venues for experimental cinema are all instances of *theatrical* exhibition. *Nontheatrical* exhibition includes screenings in viewers' homes, classrooms, hospitals, military institutions, public libraries, and similar circumstances.

## ■ FILM AND VIDEO

By far the most significant nontheatrical means of exhibition is video, in the form of broadcast, cable or satellite transmission, or home formats like videocassette and laserdisc. Since the mid-1970s the number of films seen on video has steadily increased. By 1988, the American film industry garnered twice as much income from nontheatrical video as from domestic theater returns. Because of the enormously widespread use of this new exhibition format, we should recognize the important differences between film and video.

Certain differences depend on technological factors. Video images are created by bombarding light-sensitive phosphors on the surface of the monitor's picture tube. A "gun" at the rear of the tube scans the surface horizontally, rapidly activating the phosphors one by one. In the United States standard established by the National Television Systems Committee, the picture tube has 525 scan lines, each with about 600 separate dots, or picture elements (pixels). (In practice, the number of lines available on a home television monitor is around 425.)

Motion picture film can carry far more visual information. Estimates vary, but a 16mm color negative image offers roughly the equivalent of over 1100 video scan lines, while 35mm color negative offers lightness and color resolution equivalent to 2300 to 3000 horizontal lines. Moreover, while American-standard video has a total of about 350,000 pixels per frame, 35mm color negative film has the equivalent of about 7 million. The number of lines and pixels decreases significantly when we consider positive prints rather than negative film, but the film image still remains far more informationally dense than the video one.

A similar disparity exists in *contrast ratio*, a term for the relation between the brightest area and the darkest area of the image. While the video camera can reproduce a maximum contrast ratio of 30:1, color film negative can reproduce a contrast ratio of over 120:1. As a result of these factors, the 35mm film image can be far more detailed and can display a much greater range of tonalities. When a film is transferred to video, its detail and contrast ratio are sharply reduced.

A film on video may fall prey to other defects as well. The current video image, projected at 30 frames per second, has a pronounced flicker. Video color is likely to smear, with sharp-edged reds and oranges particularly difficult to render. There is also the problem of "comet tailing," streaks of light that trail movements of objects against a dark background. Highly patterned clothing and strong horizontal stripes produce moiré, or "herringbone," striping on the monitor.

There are other important differences between film and television. An obvious one is scale. A 35mm film image is designed to be displayed on a screen area of hundreds of square feet. Video images look faint and stippled when projected on even a 6-by-8-foot area. Another difference between the two media is long-term storage capacity. Film has been a notably perishable medium, but it can last far longer than videotape. By current estimates, images on a tape in the 1-inch format can start to degrade in 10 to 15 years, and images on a 1/2-inch videocassette may fall into jeopardy in half that time.

More than technological differences separate the two media. Broadcast television habitually alters films, reediting them and reworking the sound tracks to eliminate potentially offensive dialogue. Video "colorization" uses computer analysis to add color to black-and-white films. Broadcasters also utilize "time compression," whereby a device speeds up the film past its original 24 fps so that more time can be devoted to commercial advertising. In many cases, broadcast and home-video versions of films also present a "semi-squeezed" version that distorts faces and bodies in order to fit widescreen information onto the square television screen.

The most widespread alteration of the original film comes in the process of "panning and scanning." Here a film made in a widescreen ratio is cropped to fit the narrower television frame. A controller decides what portions of the image to show and what to eliminate. When important action takes place at opposite ends of the widescreen frame, a computer-controlled scanning mechanism pans across the image. Since most films made after about 1960 have been intended to be shown in some wide format, pan-and-scan is very common. It can be seen on films that are broadcast and cablecast, as well as on those available on home video.

Pan-and-scan processes are also highly unfaithful to the original film. The moviegoer who sees *River of No Return* in a 16mm print sees an image like that in Figure 1.19. The home-video viewer sees what is in Figure 1.20. Sometimes the results can be quite hilarious, as when the television image includes an actor's nose sticking into the frame. (See Fig. 1.21, from a 16mm television print of Douglas Sirk's *Tarnished Angels*.) To avoid such awkward compositions, panning and scanning will sometimes make separate shots out of what is actually a single shot. In any case, the video frame may eliminate up to 50 percent of the original image.

All of which is not to say that motion pictures should not be watched on video. Video copies of films are very convenient to use, widely accessible, and comparatively inexpensive. Video has aroused viewers' interest in a wider range of films than is available in local theaters. If a film is no longer in circulation or is prohibitively expensive to rent, watching it on video is usually better than not seeing it at all.

And some video formats are superior to others. A VHS videocassette offers only about 200 lines of resolution and seldom respects the film's original image proportions. Laserdisc video offers much improved image quality (400 or more lines). Laserdisc versions also sometimes approximate widescreen compositions by putting black bands at the top and bottom of the screen ("letterboxing"). In addition, the digital sound track of laserdisc versions, offering stereophonic and surround channels, far exceeds the quality of videocassette and 16mm film. True, there are problems with the laserdisc format: Often the letterboxing does not recapture the full width of the original, and only the CAV disc format allows the viewer to stop at a single film frame and examine it. Nevertheless, the laserdisc format is currently the most preferable video approximation to the original film.

A video version can be useful in film study, but we suggest that it serves best as an adjunct to the viewing of a film copy. Ideally, the first viewing of a film should be in a film-exhibition situation, and close analysis should be done using a film print. If a print is unavailable for study, the scholar or student can utilize a laserdisc version. While a videocassette can give some idea of a film's visual qualities, it remains chiefly valuable for examining dialogue, music, performances, script construction, and similar factors.

As the television image improves, chiefly through the development of high-definition video, it may compete with 16mm (see Notes and Queries). Like all media technologies, video has advantages as well as disadvantages, and in studying film, we need to be aware of both.

For all of these reasons, in the rest of this book we will generally identify the director as the worker responsible for the film in question. There are exceptions, but usually it is through the director's control of the shooting and assembly phases that the film's form and style crystallize. These two aspects of a film are central to film art and thus to the concerns of the rest of this book.

## NOTES AND QUERIES

### ■ THE ILLUSION OF MOVEMENT IN THE CINEMA

Most people are surprised to learn that for much of the time that a film is running, the screen is completely dark. At 24 frames per second, a projected film advances one frame every 42 milliseconds. (A millisecond is a thousandth of a second.) Since the shutter breaks the projector beam twice, each frame is actually shown three times during that 42-millisecond interval. Each of the three displays is on the screen for 8.5 milliseconds, with 5.4 milliseconds of darkness between each one. During a film that lasts a hundred minutes, the audience is sitting in total darkness for almost forty minutes! We do not, however, perceive the brief intervals of darkness because of critical flicker fusion and apparent-motion processes within our visual system.

A useful introduction to visual perception is John P. Frisby, *Seeing: Illusion, Brain and Mind* (New York: Oxford University Press, 1980). A technical treatment of the illusion of movement in film is offered in Julian E. Hochberg, "Representation of Motion and Space in Video and Cinematic Displays," in Kenneth R. Boff, Lloyd Kaufman, and James P. Thomas, eds., *Handbook of Perception and Human Performance*, vol. 1, "Sensory Processes and Perception" (New York: Wiley, 1986), chap. 22. Stuart Liebman uses the perceptual mechanisms of illusion to analyze an experimental film in "Apparent Motion and Film Structure: Paul Sharits' *Shutter Interface*," *Millennium Film Journal* **1**, 2 (Spring–Summer 1978): 101–109.

### ■ THE TECHNICAL BASIS OF CINEMA

André Bazin suggests that humankind dreamed of cinema long before it actually appeared: "The concept men had of it existed so to speak fully armed in their minds, as if in some platonic heaven" [*What Is Cinema?* vol. 1 (Berkeley: University of California Press, 1967), p. 17]. Still, whatever its antecedents in Greece and the Renaissance, the cinema became technically feasible only in the nineteenth century.

Motion pictures depended on many discoveries in various scientific and industrial fields: optics and lens making, the control of light (especially by means of arc lamps), chemistry (involving particularly the production of cellulose), steel production, precision machining, and other areas. The cinema machine is closely related to other machines of the period. For example, engineers in the nineteenth century designed machines that could intermittently unwind, advance, perforate, advance again, and wind up a

strip of material at a constant rate. The drive apparatus on cameras and projectors is a late development of a technology which had already made feasible the sewing machine, the telegraph tape, and the machine gun. The nineteenth-century origins of film are even more apparent today; compare cinema technology's mechanical and chemical basis with image systems such as television, holography, and "virtual reality," which depend on electronics, lasers, and computer imaging, respectively.

On the history of film technology, see Barry Salt's *Film Style and Technology: History and Analysis* (London: Starwood, 1983); David Bordwell, Janet Staiger, and Kristin Thompson's *The Classical Hollywood Cinema: Film Style and Mode of Production to 1960* (New York: Columbia Press, 1985), parts 4 and 6; and many essays in Elisabeth Weis and John Belton, eds., *Film Sound: Theory and Practice* (New York: Columbia University Press, 1985). Primary sources of technological information are included in Raymond Fielding, ed., *A Technological History of Motion Pictures and Television* (Berkeley: University of California Press, 1967). Douglas Gomery has pioneered the economic history of film technology: for a survey, see Robert C. Allen and Douglas Gomery, *Film History: Theory and Practice* (New York: Knopf, 1985). In *Basic Motion Picture Technology* (New York: Hastings House, 1975), L. Bernard Happé includes some historical background; the book as a whole constitutes a solid introduction to the technical basis of cinema. The most comprehensive and up-to-date reference book on the subject is Ira Konigsberg, *The Complete Film Dictionary* (New York: New American Library, 1987).