HANDBOOK OF MOTION PICTURE PRODUCTION

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To

ELODIE KEENE

Preface

This is a guide for the would-be film producer, for the lone filmmaker, and for those somewhere in between the two. Regardless of the kind of motion picture you intend to produce—high-budget, low-budget, studio-made, or individually made—the basic skills are the same. This book describes most of the tasks involved.

Most books on filmmaking have been organized around the chronology of film production. They imply that making a film is comparable to stringing beads together: start with the idea bead, put on the script bead and a number of other beads in chronological order, and finish with the negative-cutting bead. Some books, built around the work categories set up by the craft unions, imply that filmmaking comprises a number of separate activities: acting, directing, writing, photographing, editing, designing, scoring, and so forth, and that workers in those areas can limit their work to their specialties just as they could if they were making automobiles or sewing machines. This idea is common today, although practicing filmmakers have long since learned that all film elements are operative to some extent at every point in filmmaking, which is the process of integrating these elements horizontally, vertically, forward, and backward throughout the course of the production. Currently, the teaching of filmmaking is of course no less integrated than the process itself. As a consequence, books that are based on production chronologies, work categories, and encyclopedias are of little value in both the teaching of filmmaking and in filmmaking itself. I have avoided the string-of-beads theory, the job categories, and the encyclopedics and have instead tried to indicate that filmmaking occurs in several dimensions simultaneously.

Much of this manuscript embodies the experience, ideas, and attitudes of Kenneth Macgowan, Edgar Brokaw, Norman Dyhrenfurth, Floyd Crosby, Charles Van Enger, Curtis Courant, George Travell, Palmer Schoppe, William Shull, Lynne Trimble, Colin Young, and other faculty members during the exciting early years of the UCLA film school. Their learning and experience have been passed along to succeeding generations of faculty and students. I am indebted to Edgar Brokaw for allowing me access to his amazing fund of personal knowledge and expertise; to Len Keennon, who drew the illustrations and whose work in both film and teaching are reflected in them; and especially to Elodie Keene, filmmaker extraordinary, whose hard work and professional advice made the completion of this book possible.

WILLIAM B. ADAMS

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Handbook of Motion Picture Production

Contents

ONE

Production Phases

Although filmmaking can entail an almost unlimited number of tasks and operations, certain basic steps are common to all films; yet there is no absolute set of rules and procedures to follow. Every film, every filmmaker, every set of working conditions is unique in some way, and the process must be modified to fit the circumstances. The large production company employs hundreds of specialists and builds expensive sets. The small producer may use a crew of five or six and a simple set or two. The lone filmmaker, working with one helper, does everything himself. Regardless of the degree of complexity and expense of your particular undertaking, the basic tasks of filmmaking must be done by someone, no matter what his job title may be. These tasks fall into three stages, as follows:

1. Preproduction
   Writing
   Preproduction planning
2. Production
   Picture shooting and sound recording.
3. Postproduction
   Editing
   Sound recording (music and effects)
   Final editing
   Mixing
   Titles and opticals
   Negative cutting
   Composite printing

Production here means the actual shooting, or photography, although the whole job of making a film from start to finish is obviously production.

PREPRODUCTION

The preproduction process includes everything you must do before you can begin shooting the picture. Depending on the type of film you are making and the type of producer you are, production involvement varies widely. Basically you need a plan and careful preparation before you can start, and the plan begins with a central idea that can be developed into a script. For a feature entertainment film, you usually start with either a story or a synopsis of one. For a documentary, you select a particular phase of actual life. An educational film starts with certain information or attitudes. Business and industrial films deal with aspects of a particular business. And experimental and avant-garde films often start with the desire to express a mood or merely manipulate visuals. Film ideas, stories, and information must be arranged verbally in the form of a script, which then becomes the basis of a definite plan for shooting and completing the picture.

The script then goes to a production manager, who breaks it down and isolates every person, prop, special effect, and item needed to get the shooting done. He also gives copies to specialists—set design and construction, camera, props, wardrobe, special effects, transportation—and each analyzes the script and makes a detailed list of the requirements for his specialty. With all this information on hand, the production manager prepares a production schedule and a budget.

Although we usually think of film for a picture as coming from the shooting unit, there are actually three sources of film: (1) film shot for the picture during the scheduled production period; (2) animation and art work; and (3) stock film from the film library. Decisions about what use to make of film from these three sources are generally made during the writing and production planning stages. As you edit the film, however, you may discover places where animation, artwork, or stock footage can save you money or enhance the film's effectiveness. Most feature films consist predominantly of originally produced footage, but it is not unusual for them to include either an occasional stock shot of an interesting location or animated titles. Documentaries tend to use a greater amount of library film, while educational and technical films use footage from each source in varying amounts depending on the information or process to be depicted.

Preproduction planning is usually quite formal, specific, and comprehensive, and the company adheres rigidly to a script and a detailed shooting schedule. The production manager plans every move in advance. For example, say that on July 10, scenes 10, 11, and 36 of a script are to be shot on location at the Lazy-Y ranch. Needed—in addition to the director, production staff, and actors—are twenty horses, thirty extras, production crews, trucks, buses, meals, rest rooms, and all the necessary camera, grip, and sound equipment. All must be notified, confirmed, and transported. The amount of paperwork—memos, orders, receipts, letters, requests—and man-hours of planning are staggering. Without such preliminary work, a production of any complexity at all will collapse before it ever gets started.

In contrast, shooting may be quite informal, as with the lone filmmaker shooting an unstaged documentary-oriented film. In this situation, tortuous preproduction planning need not be carried out just because "that's the way they make movies." Obviously, it is possible to go scriptless into the world equipped only with camera and film, shooting whatever strikes your interest and later making something of it in the editing room. Yet even this seemingly casual method entails starting with a plan—the plan to shoot in a random way. You cannot escape the necessity to preplan to some extent: how much film to carry, where to go first, what equipment to take for contingencies, what tentative schedule to follow, what sort of action to look for, how much money to carry, how big a crew to use, and so on. If your subject matter does not permit a formal schedule, you can analyze your working conditions and be ready for all contingencies.

Anyone in the film business to make a living or even a lot of money will have to pay especially close attention to preproduction planning, for often it is in this stage that the line is crossed between profit and loss. Paradoxically preproduction planning does not end with the beginning of shooting but continues through completion of the film. A film in production must be closely monitored at every stage to determine exactly how the money is holding out and where the major problems will probably occur.

Production planning consists of analyzing the script, isolating essential details, designing the production, preparing the budget, setting up the shooting schedule, hiring people, and keeping track of the budget and the progress of the production.

PRODUCTION

Production is the actual shooting of the picture and involves most of the familiar specialties and techniques—acting, directing, camera, sound, and special effects. The director and his crews stage, enact, and record on film all the action the script requires. Successful shooting will depend to a great extent on how carefully the preplanning has been conducted and how promptly everyone and everything arrive at the right place at the right time.

Shooting

On location or on the set the camera photographs the action and the recorder records the

sound. This is called *double-system shooting*—that is, sound and action are recorded on separate pieces of equipment and remain on separate pieces of film from this point on until the final print of the finished picture. All film production, with the exception of news reporting and unstaged events, is done in double system which, because of the separation of sound and action, allows complete flexibility in editing and creating sound tracks.

In *single-system shooting,* the sound is recorded in the camera on the picture film at the time of shooting. The result is a picture negative with the sound track recorded along the edge on a thin magnetic stripe. Since this makes editing extremely inflexible, single-system shooting is used only when the subject matter is more important than the quality, as in news events and political speeches.

During shooting, the camera is loaded with either negative or original reversal film on which the action is exposed. The accompanying sound is recorded on quarter-inch tape on the sound recorder. At the end of the day's shooting, the cameraman sends the exposed negative to the laboratory to be developed. After developing the laboratory makes a positive print of the negative, which is called the "daily print." The combined prints are referred to as "dailies," or "rushes." Every day, the editor, director, and cameraman look at the dailies from the previous day's shooting. These prints are then sent to the editing room to become the editor's workprint.

After the dailies have been printed, the lab sends the *negative/original* (see p. 159) to the vault to be stored under controlled humidity and temperature conditions for use later in the negative cutting room.

The sound track of the day's shooting must also go to the editing room to be edited along with the picture, but since it is on quarter-inch tape it is first sent to the studio to be transferred to sprocketed magnetic film.

POSTPRODUCTION

Postproduction includes everything necessary to complete the picture after it has been shot. Although there is an understandable tendency on the part of those unfamiliar with filmmaking to assume that when the shooting is over the job is done, this is far from the truth. Film financing and planning based on this assumption easily lead to disaster. After all shooting is finished, a film is about 25% complete: the workprint must be edited; sound effects have to be recorded and built into sound tracks; music must be selected, scored, and edited to the workprint; and all the sound tracks—music, dialogue, sound effects, narration—have to be combined into a single track. Titles must be designed and photographed and optical effects made. The negative has to be cut and matched to the workprint, and final composite prints made in the laboratory.

Since it comes as an anticlimax, it is easy to bog down in postproduction. During shooting, everyone is fresh and excited; afterward, the psychological advantage is gone, and it requires extra effort to maintain the momentum.

Editing

In the editing room the editor manipulates, or edits the workprint and the sound track to arrive at a final version of the film that reflects that intent of the script. His task is one of selection. The length of this workprint is many times the length of the completed picture, and it is the editor's job to select certain shots and pieces of shots from the workprint and assemble them so that they tell the story or create the desired impression. He edits the workprint of the *visuals* and the *principal sound track* simultaneously. For a narrated film, it would be the narration track. For a lyric or rhythmic film, in which music and visuals are integrated, the principal track would be the music. Usually the principal sound track is either dialogue or narration.

The editor's job is one of constant viewing, selecting, rearranging, evaluating, and rearranging again. He continually handles and works with all film shot for the picture and is responsible for making a coherent picture out of the mass of film produced during shooting.

Interlock Screening

During editing, as has been discussed, the sound and the picture are on separate strips of film. One of the requirements of editing is the handling of the two strips so that they are always synchronized, or "in sync." Film editing machines are designed with two separate "heads"—one for action and one for sound—that can be operated separately or quickly and easily locked

together to hold sound and picture in a perfect in-sync relationship. When picture and sound are played back in this way, we speak of running a picture "in interlock." Until the time that the final print of the completed film comes out of the lab, sound and action can only be seen and heard together on the editing machine in interlock, or on the screen by means of interlock projection. In the latter method the projectionist threads each sound track—there are often more than one—onto separate magnetic playback machines. Then he threads the picture in a projector. Playback machines and projector are electrically interlocked—that is, they are wired to start at exactly the same instant and run at exactly the same speed, thus maintaining picture and sound in sync.

When the editor gets the workprint edited into its first version, he screens it in an interlock projection session. Here the editor, producer, and director can observe the progress of the picture. Here too they make suggestions and try to agree on all changes, since alterations are relatively simple at this stage. Later, when sound effects and music have been added, changes can become quite costly, even prohibitive.

Music and Sound Effects

After the editor has revised the workprint it is ready for music and sound effects to be incorporated. The sound studio uses sound effects from its library as well as actually creating and recording effects, which are then used to build complete sound effects tracks to fit the edited workprint. Since very few sound effects recorded at the time of shooting are usable—they may be too loud or too soft; there may be too much interference from other noises; they may not sound right—almost all the sounds you hear in a film have been painstakingly recorded by some hardworking technician and carefully synchronized to the picture by the editor.

Frequently two kinds of music tracks are used in motion pictures: an originally composed score or a track consisting of already recorded library music. If an original score is to be written, the composer views the edited workprint, takes down the footage and time of each sequence, and notes any special effects that may be needed. He then composes the score, which is recorded by musicians according to precise timing or to the picture itself screened in the recording studio.

If the score is not to be original, there is a large and varied body of "canned" music available in libraries. The music cutter selects several different pieces and then edits them to the workprint. As in picture editing, he uses parts of musical numbers, rearranges their position, and mixes portions of many different numbers together. A good music cutter can synthesize a track so skillfully that few viewers ever suspect the music was not composed especially for the picture. Like the sound effects tracks, the music tracks must be synchronized with the edited workprint.

Often two pieces of music—or two sound effects—must overlap one another, but physically two pieces of film cannot be spliced together overlapped. Instead they must be put on separate strips of film and mixed together later. Since music, sound effects, and voice frequently overlap many times in a film, a picture with even fairly simple sound will have from four to ten sound tracks in the editing stage. A film with complex sound may have twenty or more sound tracks, all of which must ultimately be mixed together on one track.

Mixing

In preparing for sound mixing the editor makes up a cue sheet for each sound track, indicating the exact footage where a sound is to come in or go out, to be made soft or loud, or to be combined with sound from one or more of the other tracks. The editor measures footage from a start mark at the head of the edited workprint. Each sound track has its own start mark corresponding to and synchronized with the mark on the workprint. In the mixing session—which is actually an interlock projection of the workprint and all the tracks—the sound man, called the mixer, sits at the mixing console which has a separate volume control for each sound track. He watches the film as it is projected, refers to the cue sheets, and controls the volume of each track. Meanwhile the resulting sound is being recorded on a single track. Since the mixer is provided with a footage counter set to zero on the workprint start mark, he can determine from the cue sheet, as the picture runs through, which effects and music are coming up on which channels. The editor may also have cued the tracks with "streamers," diagonal lines about four feet long marked on the workprint.

The mixing console has a large number of con-

trols: the main volume controls, banks of equalizers and filters to alter the frequency characteristics of any desired channel, a footage indicator, the dB meter, various other meters, and an intercom system that links the studio, the projection booth, and the machine room. If there are between ten and twenty tracks, the mixer cannot possibly adjust the level of them all, since he has only the usual human complement of hands. The object of having many tracks is to separate the different effects so that each can be preset at the level at which rehearsal proves it to be most effective. For complicated jobs, there may be assistant mixers to handle subsidiary tracks. The head mixer is responsible for dialogue, music, and perhaps the two main effects tracks. The fewer the tracks the greater the mixer's difficulties, since he must continually alter his levels, fading from one track to another, always keeping one eye on the screen and the other on the dB meter. An expert mixer working under these conditions develops the bravura of a virtuoso pianist. He is a peculiar, and valuable, combination of technician and artist.

Several practice run-throughs of the picture and its tracks let the mixer get the feel of the whole film. Any mistakes made during the recording require additional run-throughs until it is perfect. If the mixer cannot handle the complex tracks with sufficient speed, the tracks may have to be altered or another mixer may be needed to assist. A difficult reel will require many rehearsals before the crew is ready for a "take," and often several takes may be necessary before the producer is satisfied.

The final mixed track (also called the *composite magnetic track*) will be on magnetic film. But before this track can be used in making the composite print of the picture, it must be transferred onto photographic film in the form of a negative. This is called the *optical negative sound track,* and is made by the laboratory when it receives the magnetic mixed track from the mixing studio.

Titles and Opticals

When the negative cutter starts to match the negative to the workprint, he must have on hand the negative for the titles and all optical effects that are to be in the picture. Thus, soon after editing starts the titles must be designed, printed, and photographed and all the optical effects must be planned and made. It is wise to start work on titles very early in the production, and on opticals as soon as the editor knows their position in the picture. Both procedures take time, and completion of the film is delayed and costly if the titles and opticals are not ready.

Negative Cutting

Once the editor's final cut of the film has been approved and the mix is under way, the workprint and the negative from the vault go to the negative cutter who matches the negative exactly to the workprint. He breaks the negative down and winds each separate scene onto a core. Since the workprint was printed from the negative, there is a corresponding scene in the negative for each scene in the workprint. The cutter sets aside all such negative scenes and splices them together in exactly the same length and order that they appear in the workprint. This job must be done with extreme care under the most scrupulously clean conditions, since even the slightest damage to the negative is permanent and affects the quality of the final image. Tiny particles of dust actually scratch the negative and oil from the skin etches it. The negative cutting room is dustfree, with carefully controlled temperature and humidity, and the negative cutter wears clean white gloves as he works. Since the negative is irreplaceable and represents the entire investment of the producers, the necessity for its protection cannot be overemphasized.

The assembled and spliced negative, called the conformed negative (since it conforms to the workprint), then goes to the laboratory for composite printing.

Composite Printing

The composite print of the picture is a single strip of film on which are printed both the picture and the sound track. To make the composite print, the lab exposes both the conformed negative and the optical negative sound track onto one piece of film. The appearance of the resulting composite print is a series of pictures, or frames, with a narrow sound track running beside them for the length of the film. The first composite print to come out of the lab is called the first answer print, or the first trial composite print, and is viewed by the laboratory technician, producer, and director to observe the accuracy of color balance and printing light intensities. If these are not satisfactory, a second answer print, or second trial com-

posite, may be struck with corrections. Sometimes a film goes through several answer prints before the desired quality is achieved. When an acceptable answer print is approved by all concerned, the subsequent prints, known as composite release prints, are made for release to theaters.

SUMMARY OF PRODUCTION STEPS

1. **Writing.** The writer prepares a script from a story or idea.
2. **Production Planning.** The production manager breaks down the script, prepares a budget and production schedule, and keeps track of the production's progress.
3. **Shooting the Picture.** The director stages the action along the lines of the script. The cinematographer photographs the action, and the sound director records the dialogue.
4. The cinematographer sends the exposed negative film from the camera to the laboratory for developing and printing.
5. The sound director sends the dialogue sound tape to the sound studio for transfer to magnetic film.
6. The laboratory develops the negative and makes a workprint from it. This workprint is sent to the film editor.
7. The laboratory puts the negative in a vault until it is needed.
8. The sound studio sends the magnetic sound track—now on sprocketed film—to the film editor.
9. The editor edits the picture and the principal sound track.
10. The editor conducts an interlock screening of the workprint for the director, the producer, and the sponsor.
11. The sound effects editor selects and records sound effects to fit the edited workprint. The composer composes and records the musical score.
12. Music and sound effects cutters cut the music and sound effects tracks to match the edited workprint and dialogue track. The editor then makes final adjustments.
13. The editor sends the edited workprint and all the edited sound tracks to the mixing studio.
14. Under the producer's supervision, the mixer and his assistants mix all tracks into one magnetic track while watching the picture.
15. The mixing studio sends the mixed magnetic track to the laboratory to be made into an optical negative track.
16. The workprint goes to the negative cutter.
17. The vault sends the camera negative to the negative cutter.
18. The optical department sends the negative of the titles and optical effects to the negative cutting room.
19. The negative cutter cuts the negative and conforms it to the workprint.
20. The conformed negative and the optical negative sound track are sent to the laboratory to be used in making the first trial composite print (answer print).
21. The laboratory screens the first trial composite print for approval.
22. Release prints are sent out to theaters.

TWO

Conventions

There are no such things as "good" or "bad" films; there are only effective and ineffective films. If what you produce is visually successful, you have made a good film. To make exactly the film you want requires a mastery of the medium and its conventions, which means learning all the techniques, methods, tricks, gimmicks, and skills of filmmaking and being able to use them in any way necessary to achieve the desired effect. Don't restrict yourself by espousing a particular school of filmmaking—never using a dissolve because "the dissolve is philosophically wrong," or making your entire film in one continuous shot because "reality has no cuts in it." If you must work this way, however, bear in mind that you limit your effectiveness as a filmmaker when you restrict yourself to a cult that designates "acceptable" and "unacceptable" techniques.

DEFINITION

A *convention* is a general agreement about basic principles. Perspective in drawing and painting is a highly sophisticated convention that we have all agreed upon as representing depth. In a photograph perspective is automatic, but it is still a convention. Although we find it hard to believe that photographic perspective is not self-evident to all people, anthropologists have discovered that to the unsophisticated untrained eye a photograph is a flat thing with no depth to it. Thus, until we have learned the convention of converging lines, a still photograph is not interpretable. We who have been accustomed to perspective from birth take it for granted, but we nevertheless had to learn to understand it. In the same way the motion picture, although it looks real, is a highly conventionalized piece of symbolism. Its conventions may seem self-evident to our sophisticated eyes, but film symbolism can be understood only by audiences educated to those conventions.

When we look at a movie, we sit in a large room surrounded by visible people all looking in the same direction. On the wall facing us is a two-dimensional picture projected from a window in the wall behind us. The action of the screen is accompanied by music from some orchestra apparently nearby, and we often hear sound effects unlike anything in real life. The action jumps from place to place instantaneously—from day to night, from reality to fantasy, from present to past. In no other art form are so many concessions made to credibility. Yet we do ignore the artificiality and accept the conventions of the motion picture. This is an important consideration when attempting new ways of expression on film. Normally, violating a conven-

tion causes confusion and misunderstanding in an audience, as, for example, in Fellini's great film 8½ in which he used the CUT instead of the conventional DISSOLVE to go from scenes portraying reality to those depicting fantasy. At that time, audiences, had been conditioned to a DISSOLVE in such a situation and simply did not understand what was happening. As more filmmakers began using the CUT in this way, however, audiences eventually became accustomed to the technique and a new convention came into being.

The conventions of film, then, are those working principles that audiences accept as believable. A convention has a life—it comes into existence and is accepted initially by only a few viewers. As the convention becomes established, it becomes meaningful to all. In time it may become a hackneyed cliche, rejected by audiences as laughable and old-fashioned. This is the general progression of taste in any art. A pattern of conventions becomes stifling to the artist and he seeks new ways to express himself. At first the public does not accept the artist's new techniques, and a period of terrible misunderstanding follows. When people talk about the meaninglessness of art, its immorality, and its political radicalism they are really indicating that they do not understand because they have not yet entered into an agreement about exactly what the new techniques mean.

Creativity in every art form is intimately related to the invention of new techniques and new modes of expression. Mastering a craft means mastering its conventions. But becoming an artist means being able to use these conventions creatively and then devising new ways of expression which may in turn become conventions.

Conventions are not static although some, such as canvas in painting and matching continuity in film, appear to be almost eternal. Inevitably conventions change, reflecting, of course, the changes in society and culture. Conventions are absolute rules only to the bureaucrat and the unimaginative filmmaker. The creative person instinctively takes conventions for what they truly are—a point from which to deviate. Following are some of the principal conventions of the motion picture:

CONTINUITY

All motion pictures fall into two categories: continuity films and noncontinuity films. A continuity film or scene is one that depicts a literal presentation of real life in believable, realistic chronological order. This is the continuity of the conventional dramatic feature film in which we see actors going through a series of actions that appear real and seem to be taking place in real time. The audience gets the feeling that the camera is watching actual events as they occur. All movements "match." When we see an actor in a MEDIUM SHOT reach for a gun on a table and we immediately follow with a CLOSEUP of his hand picking up the gun, the action in the CLOSEUP must look as if it were a continuation of the movement in the preceding MEDIUM SHOT. The speed and direction of the movement in the two shots must be identical—they must match. Another scene: As a woman opens a door and exits, we CUT to a shot on the other side of the door showing the continuation of her movement. The movements of both the door and the woman in the second shot must appear as an uninterrupted continuation of the first shot. If the matching is skillful, we may not even be aware that we have gone from one shot to another. Yet another example: We see a CLOSEUP of a man who turns his head to the right and speaks. We then see a CLOSEUP of a woman who turns her head to the left and smiles, and we believe that the woman is responding to the man.

The intent of continuity is to create in the audience a feeling that real action is occurring in real time. Essential to this type of film are the traditional conventions of matching action, matching screen direction, and matching set elements. Matched continuity has been a characteristic of narrative films for so long that many people both in and out of the film business have mistakenly come to accept it as the immutable law of motion pictures. Yet there is more to making effective films than following rigid logical continuity.

In the dramatic narrative film, matched continuity is the essential technique that produces the *illusion of reality.* It is the film equivalent of

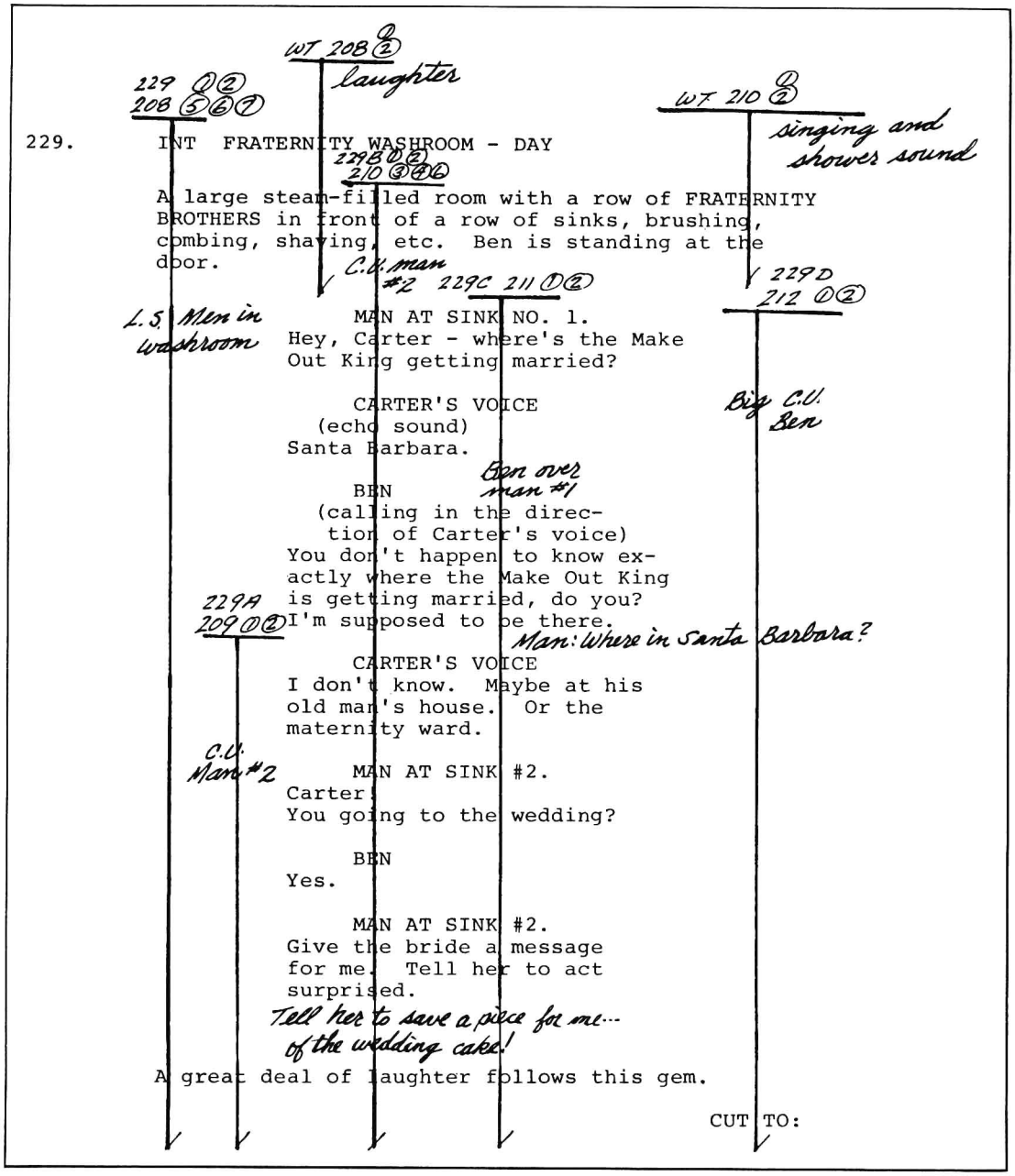

Fig. 2.1. Excerpt of script page of "The Graduate" as marked by the script supervisor at the time of shooting.

Daniel Defoe's "minuteness for verisimilitude," or scrupulous attention to all the details that make the reader feel he is reading a believable story that could be "real." In film, minuteness for verisimilitude consists not of exhaustive descriptive writing but of excruciating attention to matching visual details such as set geography, dress, decor, props, speech, and movement.

In its worst sense continuity means following all action through all its steps and can result in seemingly endless screen time spent merely to get characters from one place to another. For