FROM CONCEPT TO CUES

Application of Aesthetic Concepts to Lighting Design

This chapter serves three purposes:

1. It introduces the reader to some of the most commonly used techniques for lighting the stage, particularly for dramatic productions.
2. It places aesthetic terms introduced in Chapter 1 into practical context using them to explain how lighting equipment arrangements and cues can have artistic effect.
3. It moves our description of the process of lighting a show forward through the technical interlude of mounting the equipment to the point where the designer is ready to create the cues

We begin with a study of some of the "commonplaces of lighting," schemes of lighting design that almost inevitably come to the designer's mind as he or she mentally lights the show.

"Stock" lighting schemes

The reader should be aware that this list is in no way exhaustive; each designer will contrive new ways of lighting whatever production is at hand. This chapter merely includes some of those most commonly used, indeed these are so common that one might call them the "stock in trade" of the lighting designer.

The artistic import of any of these schemes can vary from negligible to major. For instance, a technique such as sidelighting can be used in a particular show exclusively for its utilitarian value—to make the show more visible and interesting. In another production the identical lighting setup might be cued in a way that fuses it with the acting, the directing and the script making a major contribution to the artistic impact of the production.

Design should never repeat what has been done in the past.

Although the following techniques are the "commonplaces" of lighting design, no designer should adopt them simply because they are frequently used. Design, when artistically effective, is guided by insight, not

slavish repetition of what has worked before. The designer's vision, blended with that of the playwright and the director, will form the designer's artistic goal for the lighting. Only if these techniques promise to bring that goal into being, should they should be adopted.

Light and the Actor

The essence of theatre is the moving, speaking actor who inhabits a virtual world into which the audience enters. If we are referring to live performance (legitimate theatre), the actors perform their magic in the immediate presence of the audience and actor-audience interaction is part of the art. In motion picture and television this interaction is lost (save for an occasional and rather artificial "studio-audience" situation). Nevertheless, from the point-of-view of the lighting designer, the manner in which the audience views the actor is vital whether the situation is "live" or not.

A beginners' list of functions of lighting almost always begins with "visibility." If the actors cannot be seen, radio drama is the result. But *being visible and being effectively lighted are two vastly different things*. Artistically effective lighting helps to determine how the audience views the actor's character—a matter vital to the art of the theatre—mere visibility will suffice for janitorial services on stage.

"Designed" visibility

Directional Light and Three Dimensionality

The majority of objects observed in life are three dimensional i.e., they have thickness as well as height and width. The degree to which this third dimension is perceived depends on lighting except for cases where the observer is close enough to sense three dimensionality using the focusing apparatus of the eyes (accommodation). Practically, this means that the observer must be quite close to the object (say, under twenty feet) if the object is the size of a human being or smaller. Perspective will aid in sensing three dimensionality of large objects at greater distances, espe-

Perception of the third dimension usually depends on the lighting.

Sensing three dimensions

Technology of Directional Light

Directional lighting is usually produced on stage by using relatively narrow-beam sources such as spotlights or beam projectors so positioned that they produce shadows clearly visible to the audience. The most important of these shadows will normally be those on the actors' faces. Only rarely will a broad source such as a floodlight, suffice. Directional lighting is arranged so that shadows produced by the principle luminaires are carefully protected from being washed out by the light from other luminaires. See "Key and Fill Lighting" below. Both intensity and color may be used to make the directionality of the lighting evident. Much of the art of lighting depends on the skill of the designer in arranging directional sources so that the shadow patterns produced are both effective and appropriate to the artistic intent of the scene.

cially if they are made up of planes and angles.

Given these exceptions, the main determinate of our perception of the three dimensionality of objects is directional light (Figure 2.1). The shadows cast by this light define the thickness of the object aiding visual perspective and the focusing of the eyes in defining the shape of the object.

On stage in almost all but the smallest theatres perception of three dimensionality depends mostly on light and shadows—the result of directional light.

Directional light determines three-dimensionality

Figure 2.1. Directional Light. Dickens' *Nicholas Nickleby* (Part II). Note the strong orientation to stage left produced by the sidelighting from that location plus the generally quarter-left facing of the actors. Produced at Carnegie Mellon Kresge Theatre. Directors, Gregory Lehane and Jed Allen Harris; set designer, Tony Mileto; costume designer, Cletus Anderson; lighting designers, Part I– Lauren Crasco, Part II– Cindy Limauro. Photo by Harold Corsini. Courtesy Cindy Limauro.

Technology of Nondirectional Lighting

Nondirectional light is usually produced by wide-source equipment such as border lights or large floodlights arranged so that any shadows produced are canceled by other luminaires. An exception to the use of wide-source equipment is the common professional theatre practice of creating a "wash" of light on the entire front of the stage by a battery of spotlights mounted low on a balcony rail and focused straight toward the stage. When properly angled and focused, any shadows produced by an individual spotlight are washed away by light from those adjacent to it. The use of spotlights makes it possible to have the flood of nondirectional light without noticeable spill light onto the proscenium arch or into the house—something borderlights could not do.

Directionality Depends on the Way Light Is Used

All light has direction; at less than astronomical distances, it travels in straight lines from its source until it strikes some reflecting, refracting or absorbing object. Directionality, however, depends on how the light is observed. When it strikes an object, it casts a shadow. If the shadow is visible to the observer in such a way that it reveals the 3-D nature of the object, the light may be termed "directional." If the shadow is invisible to the observer, because it is hidden from view or because it is overridden by other light, the light is not directional for that observer. In theatrical terms this means that any light which casts a shadow that is clearly visible to the audience is directional and any that has its shadow hidden or washed out is nondirectional.

Directional light

    The only exception is the visible light beam. If the air is filled with smoke or haze so that the beam of light itself can be seen, a strong sense of directionality will be present even if the light casts no visible shadows. Powerful follow spotlights often produce this effect even without the addition of haze to the air in the theatre. However there is a caveat: Although the audience will be very aware of the direction of the beam, they may not be able to use that directionality to make out a performer's facial expression. For many in the audience, the shadows produced will be invisible and the performer will appear "flat."

Nondirectional Light

Light that illuminates, but doesn't appear to have a direction also has its functions on stage: It is the choice of the designer wherever he or she wants to obscure the three-dimensional nature of an onstage object. For example, a painted drop or cyclorama requires nondirectional light to obscure the minor imperfections in the base material. Also, in theatres short of spotlights, nondirectional light may be used as fill light (see "Key and Fill" below) making it possible to use the few spotlights available for key lighting.

Nondirectional light can hide imperfections in scenery.

The Actor As Three-Dimensional Object

It is a fact of life that all human beings are three-dimensional, they have height, width and thickness. Moreover much of what we as observers determine about a person comes through our eyes and depends on the shape, position, and movement of various parts of the person's body. If we cannot make out these details either because of darkness or because shadowless lighting obscures them, we do not get the information. What is true in life is even more true on stage where the nature of the character being created by the actor depends even more heavily on our seeing that actor, particularly his or her face, in three dimensions. If we are observing a dancer or a mime, our perception of character and, indeed, plot too, depends entirely on how we see the whole body.

Plasticity—the Objective of Key/Fill Lighting

Plasticity (also sometimes "modeling light" or "modeling") refers to the audience' perception of the actor in three dimensions, particularly the actor's face. In all but the most intimate of theatres plasticity depends on the directional lighting provided for the actor. This is usually provided by *key* and *fill* light.

Key light (Figure 2.2) is the directional light that creates the most conspicuous pattern of highlights and shadows on the actors' face (and body if the costume affords this possibility). This pattern of highlights and shadows makes it possible for the audience to sense the direction of the light.

Clearly, key light has potential symbolic value i.e., it can become part of the symbolic structure of the production. For example, in Shaw's *Saint Joan* a high-angle key light can become a symbol of Joan's faith as she renounces her previous denial of her visions and thereby condemns herself to the stake. It is hard to imagine Hamlet's *to be or not to be* speech without strong modeling on the actor's face produced by a set of specially angled key lights designed and cued to follow him as he moves through the scene. Thus the designer's consideration of key lighting—a major part of his or her design process—must grow out of his or her perception of the import being built up by the actors and the director as the action progresses.

Fill light literally fills in the shadows cast by the key light making the details within the shadows visible. The brightness ratio between the highlights formed by the key light, and the shadows illuminated only by the fill light, is known as the *contrast* of the lighting. It defines the plasticity of the lighting at that particular moment. Designers often refer interchangeably to the "contrast of the lighting" or the "key/fill ratio." What-

Technology of Key/Fill Lighting

Historically, key/fill lighting was provided by dividing the stage into areas capable of being covered by a single spotlight which provided the key lighting and by flooding the stage with nondirectional lighting from borderlights and footlights for the fill light. This system had the advantage of getting the most effective use out of relatively rare spotlights in an era before they became the main means of lighting actors.

Modern key/fill lighting is accomplished entirely with spotlights used in pairs normally of equal power, one serving as key and the other as fill. The luminaires are angled to illuminate the same area of the stage which is termed an "acting area." These acting areas are carefully blended into each other so that an actor crossing from one to another receives essentially the same key/fill lighting over the entire movement. Refer to Chapter 10 for details on arranging acting areas.

Ideally each acting area luminaire should be separately controllable. Thus either can serve as key or fill depending on relative brightness. This doubles the range of possible contrast settings and makes possible a wide variety of subtle color changes in the acting area lighting.

In special circumstances an additional luminaire or even two may be added to selected areas to further increase the range of lighting angles and/or color changes available to the designer.

ever the term, this combination of lighting on the actors' face and/or body comprises one of the most powerful of the designer's variables.

The Designer's Eye for Plasticity

Throughout the design process the designer must attend to plasticity. He or she must maintain sufficient shadow detail on faces and or figures to enable the audience to see their facial expressions. Where entire bodies are the expressive elements, the audience must see the details of those bodies well enough to respond kinesthetically to their actions.

Keeping the lighting plastic involves careful attention to key/fill and also to background/actor contrasts. Figure 2.2 shows one of the almost infinite variety of key/fill possibilities possible on an actor's face. Obviously in any given lighting situation, there is a limited but rather large number of possible variations available for experimentation. Thus the design of key/fill lighting depends not on trial and error but on the "vision" of the designer, his or her capability to imagine the lighted face or figure in a way that best contributes to the dramatic value of the scene. Clearly, this is an extension of the vision-critique process. The designer first envisions the lighting and then turns critic to evaluate the results. Finally the designer uses his or her technical skills to create the envisioned effect on stage. Fortunately the process of tweaking the contrast settings is usually fairly simple and contrast-controlling cues are subject to repeated change far into the rehearsal process.

Using a Single Luminaire

Any acting area can be easily reduced to a single-luminaire area by adjusting the controls if separate control is available for each luminaire. The result will be an exaggeration of the effects listed above but with the caveat that the actor must play into the light or lose much of the expressiveness of one side of his or her face. Given a scene that calls for this extreme plasticity, a single luminaire can have the dramatic power of a special while remaining part of the acting area scheme for use with other luminaries as needed.

Plasticity is vital except in the smallest theatres.

Figure 2.2. Key Light. The strong, shadow-producing light coming from the actor's right and well above his eye level is the key light. It establishes the direction of the scene, aided by the slight stage right facing of the actor. Scene from Shakespeare's *Macbeth:* "Your castle is surprised, your wife and babes savagely slaughter'd." Actor, Gilman Rankin. Lighting by author. Photo by M. Herbst.

Key/Fill and Dramatic Impact

An examination of key/fill lighting used in dramatic scenes reveals a wide range of potentialities for artistic import. *All of these depend on the actor and ultimately the script for fulfillment* but the contribution of lighting, given this fulfillment, can be powerful. Below are some general "rules of thumb." Note that in each case the greater the contrast between the acting area and its surroundings, the greater the dramatic impact.

- As contrast between key and fill increases so does the potential for dramatic impact.
- A scene being built toward a climax by means of acting and directing techniques can be heightened even more by also increasing key/fill contrast. Pacing of the key/fill changes to fit the development of the scene is the very essence of such builds.

- Adjusting dimmer settings to change the key light to a fill and vice-versa is a powerful way to aid in the giving and taking of the scene by the actors. This dimmer change is sometimes known as "crossing the key."

The vertical and horizontal angles of key/fill lighting also can have import:

- The greater the vertical angle of the acting area lighting, up to where it becomes top lighting, the greater the potential for dramatic impact.
- To a lesser but still significant degree, increasing the horizontal angle past the normal 38° (as measured from the centerline of the stage) also suggests greater dramatic tension.

Color in Acting Area Lighting

The technology of color in acting areas, including the very important effect on color when incandescent sources are dimmed, is detailed in Chapter 10. The artistic impact of color can vary from almost zero to powerful, However the effect is fleeting because of the physiological phenomenon which causes the eye to rapidly adapt to a color environment and cease to respond to it. The designer must take this into account. Frequent changes in the color environment are one solution to this problem.

The use of complementary or related tints in acting areas will afford the designer a wide range of possible color shifts. Shifting from predominately warm or cool colors to the opposite can have strong dramatic effect if coordinated with the action of the play.

Color and Plasticity

The plasticity of acting area lighting may be enhanced by the subtle use of color. (See Chapter 10 for the technology of this process.) If the left and right components of each acting area are fitted with complementary tints, the effect will be to create a warm side, a cool side and a portion of the face which exhibits the combination of the two colors. This increases plasticity by adding color contrast to the shadow contrast present on the actors' faces. The same effect will prevail on the actors' bodies if costumes will allow it. The use of related tints in acting area luminaires

will have the same but lessened effect.

These adjustments in color offer the designer a chance to enhance plasticity without increasing shadow contrast.

Designers must take care that they do not inadvertently destroy the modeling effect of acting area color by dimming. Even a reduction of only 3 or 4 points on the usual dimmer scale will shift many cool acting area tints to warm by removing most of the blue light from an incandescent source. (This is known as "color shift" and will be discussed in detail later.) If dims of this magnitude or more are necessary—and they often are—the designer should add other sources (usually sidelighting) to maintain modeling. This color shift will not occur if non-incandescent sources are in use.

Red shift can eliminate color differences

Sidelighting as a Designer's Variable

Sidelighting is another major type of actor lighting. Unlike acting area lighting, it covers much larger areas of the stage than an acting area, usually an entire "slice" of acting space reaching from stage left to stage right and perhaps six to ten feet deep. Designs for dance lighting and sometimes for musicals often specify that the sidelight beams pass straight across the acting area. However the designer will often find that "front-sidelights" are more useful. These are luminaires mounted so that their beams cross the acting space from above the eye level of the actors and somewhat downstage of the acting space they illuminate. (Figure 2.3) Both varieties of sidelighting serve many purposes:

Adjunct to Acting Area Lighting

Sidelights adjusted to augment a row of acting areas reaching across the stage can add yet another range of variables for the designer. These lights can be added to the actors' faces and bodies or even used to replace one side of each acting area with yet stronger key lighting, possibly of a different color. See Figure 2.4.

Sidelighting can also aid in the design of cues. If there is rapid action moving over wide areas of the stage and the designer wishes to carefully control key/fill ratios on these moving actors, cueing area-to-area changes may be

Front-sidelighting may be more effective than 90 degree sidelighting.

Figure 2.3. Sidelighting. The strong shadow pattern creates a powerful orientation to stage right. In this case the sidelight is also located somewhat above eye level improving the modelling of the actor's face. Scene from Shakespeare's *Macbeth*: "Bring thou this fiend of Scotland and within my sword's length set him…" Actor, Gilman Rankin; lighting by author. Photo by M. Herbst.

impractical. Any changes that will be effective will be too fast for subtlety and very hard to execute. If sidelighting can be arranged so that it spills invisibly into the wings, it will remain essentially invisible to the audience until an actor moves into it. This creates the equivalent of a set of acting areas which turn themselves on and off as the actors pass through them but without attracting any attention to themselves. This may leave the regular acting areas available to the designer for use as additional accents.

Such use of sidelighting needs the cooperation of the director. Unless the actors are carefully blocked, there will be times when one actor's shadow will block light for another actor. The solution is to move one of the actors either down- or upstage of the other.

Figure 2.4. Acting Area Plus Sidelighting. The key/fill ratio has increased but almost all of the actor's face remains visible. Every shadow delineates his expression. Scene from Shakespeare's *Macbeth*: "O, I could play the woman with mine eyes and braggart with my tongue…" Actor, Gilman Rankin; lighting by author. Photo by M. Herbst.

Sidelighting Emphasizes the Whole Figure

Although acting area lighting normally strikes the entire actor, it is designed primarily to light faces. Sidelighting is the equivalent of a much "larger paint brush." It tends to place emphasis on the entire figure of the actor or actress. This is the reason it is so effective for lighting dance where the figure is usually more important than the face.

This "broad brush" characteristic of sidelighting can be valuable to the designer as a supplement to acting area lighting. In the case of musicals and operas where dance is an integral part of the show, the combination of acting area and sidelighting makes it possible to shift from lighting faces to lighting figures, or to have any combination the designer wishes.

Technology of Sidelight

Sidelighting is normally provided by ellipsoidal reflector spotlights capable of precise shuttering to keep spill light out of the house. These luminaires are normally circuited separately stage right and left and also separated by color.

Colors chosen will usually be stronger than the acting area colors but part of the same color scheme. See Chapters 10 and 11 for details.

A Caution

As more light sources are added to the stage, the designer may be in danger of washing out most of the shadows needed for plasticity. Simply bringing in the sidelights on top of existing acting area lighting may turn out to do exactly this. The solution is to balance the brightness of the two types of lighting to maintain good modeling.

Building a Scene

This is a directorial concept wherein a number of attention-heightening techniques are used to bring audience interest to a climax. This is usually done in conjunction with a climax written into the script although a scene may be built entirely by staging techniques—a practice common in revue and musical shows. Directors of revues and musicals use such techniques as larger and more rapid actor movement, louder voices and the addition of more moving figures on the stage. Lighting can be used to further heighten the build by cueing in more rapid and more drastic changes, adding brightness, color, and movement if automated luminaire equipment is available. As such a sequence of cues builds to its end, the designer may be tempted to specify an "all to full" cue shortly before "curtain" is called. However he or she should proceed with caution; this tactic may also destroy the plasticity of the lighting by blanking out all shadow detail leaving the audience with a last impression of a mass of blank-faced performers. A well designed "build" cue requires the careful adjustment of contrast on faces and bodies—sometimes even the removal of some luminaires from the cue. The goal is to leave the audience with an image of the most sparkling stage picture possible but with faces and figures clearly defined. Once designed, such cues are as easy to effect on a modern console as a single preset.

Note that dramatic climaxes are often built by an almost opposite technique. Shakespearean soliloquies are good examples. For example: The focal character takes the stage using the techniques of acting and directing to render the other figures onstage insignificant. The actor uses his or her voice and gestures to command attention and focus. An effective way for lighting to assist this build is, paradoxically, to *eliminate* sources leaving the key figure almost isolated on the stage but with excellent plasticity. If the character moves as the scene builds, the lighting should seem to move with him or her as though it is a sort of "aura" attached to the figure. Although this kind of build may involve many cues, none of them should call attention to the lighting—they should seem to "emanate" from the character. Either increasing or decreasing the intensity of the lighting on the main figure may be effective depending on the nature of the scene.

Specials

A "Special" is a luminaire planned by the designer for a single purpose in a production such as the special lighting to build to a climax as discussed above. Although it is quite possible that additional uses will be discovered for this luminaire, its location, focus and other adjustments will be determined exclusively by the original purpose.

Working toward a climax

Adding more lights is not always a good idea.

Avoid destroying plasticity

Building by taking away light

Specials have but one design purpose.

Specials are the designer's most precise lighting. As such they most intensely reflect his or her approach to the scene. They tend to come first in the designer's thoughts with the remainder of the lighting filled in around them. Extending our earlier example, the designer creating the lighting for Shaw's *Saint Joan* might design the renunciation scene around a high angle special focused precisely for the character's position, particularly her face. Once this special is established as the central element of the lighting, the designer, with the collaboration of the director may add other specials to fill in the scene. However the high-angle special will remain the central light perceived by the audience. Ideally, it should blend so integrally with the characterization and movements of Joan that it seems to belong to her.

Specials may fulfill artistic purposes such as the one discussed above or they may be purely utilitarian, for instance, to light an alcove used only once in the show and out of reach of the area lighting.

Backlighting

Backlighting is lighting that comes from above and somewhat behind the actor. Its purpose is to delineate the actor from the background by producing a bright "halo" of highlights around the head and shoulders. Occasionally it can become a major design element when the designer wishes to place the actor or dancer in near-silhouette but retain accent on the character.

The effectiveness of backlight depends on the hair and costume color of the actor or actress and upon the background. Blonds have a great advantage because their light colored hair takes backlight well. Light colored costumes are also effective. A relatively dark background increases the effect of backlight.

In live theatre the need for backlight is a sometime thing. It is obviously necessary if there is a difficulty separating the actors from a light-colored background. However in many instances the light from the acting area lighting will provide sufficient separation particularly if sidelighting is being used.

The lens media are another matter. The television or movie camera has a powerful tendency to merge the foreground, including the actors, into the background. Remember that the final product is a two-dimensional picture on a screen. This makes backlighting almost a necessity. In fact, it may require more wattage to backlight the scene than to front-light it.

If the designer is completely informed about color of settings and costumes, the hair color and makeup of the actors and the general style of the production he or she may be able to forecast the need, if any, for backlighting. If there is a probability that it will be needed, equipment must be specified on the lighting plot and control provided. Even if it is later eliminated, this procedure will probably cost less in time and production funds than installing back lighting after the show is mounted.

Design Conferences

As the designer's concept takes form, discussions with the director and other designers become increasingly important. Talking about the proposed lighting design may be frustrating and misunderstandings abound. Some designers may use sketches or computer simulations to aid them in making their still-evolving lighting design clear to others. The designer should consider this option carefully; the specificity of a drawing, even a very crude one, may lead the director or other designers to expect that the final design will match the sketch, trapping the lighting designer in a half-conceived thought. If the designer decides to use sketches or simulations despite the risk, there are several possible methods:

The designer's sketches may originate the lighting plot.

1. Fragmentary sketches of a light plot: These are really crude technical drawings that show the angling of one or more luminaires proposed to light actors. Such drawings will often be highly useful to the designer later when developing the final lighting plot but are apt to be almost intelligible to others.

2. Hand-drawn sketches (Figure 2.5A). These can be as crude or as refined as the designer's drawing talents allow. Actually, since a crude drawing may be less apt to be taken as a final concept, designers may choose to make their drawing crude. Such drawings may prove to be helpful in director-designer conferences because they require less knowledge of the technology of lighting.

3. Computer simulations. Modern computer graphics programs for lighting offer a variety of simulation applications including full-stage lighting on a simulation of the setting (Figure 2.5C) Such drawings, usually in color, can achieve a high level of accuracy showing how the lighting will highlight objects and how light is to be distributed over the entire stage. Close-up details of parts of the stage are also possible but bringing the image down to illustrate the lighting on one or two actors may exceed the capability of the system to render useful facial or figure detail. Figure 2.5B illustrates the capability of one computer program to display lighting on actors. It is based on the same composition as shown in Figure 2.5A.

From Conferences to Light Plot

As the conferences with the director and other designers yield positive results, the technology of lighting becomes increasingly important. Before the designer can move ahead to bring the concept to the stage by creating lighting cues, the stage must be prepared. Equipment must be chosen, prepared, mounted, circuited and focused. The control console must be readied and the operator(s) trained. This process begins with the preparation of the formal light plot.

If the designer has used technical sketches as discussed above, he or she may already have the key parts of the light plot sketched out. With or without benefit of sketches, the designer converts his or her well-formed concepts into a technical drawing that instructs the crews what luminaires to place in which locations and how to equip them and interconnect them to the control system. The goal of this massive effort is to

Figure 2.5A. Sketch of Proposed Lighting. This white-on-black drawing is intended to convey a rough idea of the look the designer has in mind for a particular moment in the production. Compare with Figure 2.5B. Sketch by Ellen E. Jones.
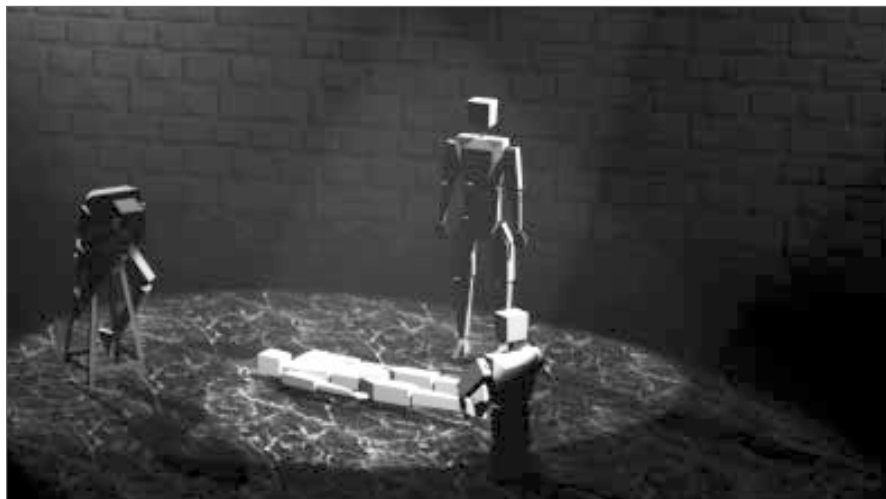

Figure 2.5B. A Computer-Drawn Version. This version of the sketch in Figure 2.5A was created by inputting lighting plot-like information from the original drawing into WYSIWYG, a computer lighting graphics program. Additional information specifying floor and background textures was added. Stock figures from WYSIWYG were used as replacements for the figures in the drawing. Note the limited amount of modeling detail, especially faces, in the figures. Computational power greater than what is available in most personal computers limits the modeling capability of many software programs like WYSIWYG. Note in Figure 2.5C how the software does a much better job modeling settings and lighting effects. Computer sketch drawn and supplied by CAST Lighting.

make it possible for the designer to bring the concept to the stage. For the duration of this interlude, the subject has shifted from art to technology.

Designers still using mechanical drafting techniques will create lighting plots on vellum, all based on a master floor plan (or multiple master plans for shows with multiple settings). Such master plans should contain all of the outlines of the setting and major properties but not be cluttered with dimensions or carpenters' instructions. The drawing will be cluttered sufficiently with lighting information. Many, perhaps most designers, will turn to one of the several very useful computer programs for creating light plots. These speed up the work, for example, by making the process of working in layers much easier to handle, by providing ready-made symbols for equipment, and by keeping track of equipment lists,

Software for creating
lighting plots

Figure 2.5C. Computer Simulation. This drawing shows proposed staging for a Canadian East Coast Music Awards Show to be presented in the Centre 200 Arena in Sidney, Nova Scotia and broadcast nationally. The lighting design is by Robert Bell and Gil Densham of CAST Lighting. This simulation illustrates the ability of computer graphics to sketch large-scale drawings for use in production conferences. Courtesy CAST Lighting.

color media and a myriad of other details that the designer would otherwise have to retrieve from the finished drawings and make into separate schedules. Some of these computer-based programs are capable of interfacing directly with a console enabling the designer and/or the operator to create cue information within the program and view its effect directly on the console and thence the stage, or conversely, to create lighting on the stage and feed the data back to the computer program. Conversion from floor plan to sectional view, determination of lighting angles and other items requiring a three-dimensional approach to the plot are facilitated. Finally, printing out the plot and its accompanying schedules is easily accomplished.

Once the designer has completed the lighting plot and associated charts, lists and specifications these are turned over to the technical director, the lighting crew chief and the various assistants who follow them to assemble the electronic giant known as the "lighting setup" or the "lighting rig." This array of control equipment, wiring both temporary and permanent, luminaires, projectors and other equipment must be assembled into a complex but highly reliable "lighting instrument," analogous to a giant pipe organ or, closer still, a huge symphony orchestra with its instruments at the ready. Only when the lighting instrument has been tested and finely tuned can the designer proceed with cue writing and this only with the equally complicated preparation of the cast and other technical crews who will together create the theatrical art work in the making.

The lighting "instrument"

FROM CONCEPT TO CUES

Supporting the Technical Work

The designer's first obligation to the technical staff as it goes about its work is to make sure that these plans and specifications are as clear as possible and to be available to answer questions as needed. Toward the end of the process when the equipment has all been mounted and roughly focused, the designer or a trusted assistant will do the fine focusing. However this assumes that the designer has no other responsibilities toward the production except lighting design and that the designer is only working on a single production. Most professional designers find it necessary to be working on more than one show at a time and therefore may be at another theatre working on another show while the show at hand is being mounted.

Fine focusing by designer

It is also possible that the lighting designer's title is "designer- technical director" or "designer-technical director-educator." If this is the case, he or she is the person in charge of the technical interlude. In his or her role as technical director or lighting technician the erstwhile designer will interpret the lighting plot for the crew, checking such things as critical loading of dimmers and special circuitry and, if teaching is part of the task, instructing the crews in all of the many details of their work. While this can grow into an exhausting assignment fraught with long hours and pressures to be in several places at the same time, it does offer some time and energy saving aspects. For instance, if the designer/technologist is in charge of focusing, the entire task, including fine focusing may be done in one operation instead of waiting for the designer to come to the theatre for a special fine-focusing session. In the role of teacher, the designer can observe the performance of the crew members and begin the task of deciding on the operating crew early in the work sessions.

Multiple responsibilities

As the last of the fine focusing sessions are finished, the designer can resume the role of artist and begin the second most creative part of lighting design—creating the lighting cues.

Technique of Lighting Plots

The intricacies of lighting plots are covered in detail in other texts. However some notes may be helpful here:

Light plots usually consist of a plan view of the stage plus a section through the centerline of the stage for each setting. They are normally drawn at either 1/2" = 1'-0" or 1/4" = 1'-0". The latter size is more convenient to handle but may not afford enough space for detail. The plot should indicate the kind, wattage, location, circuitry, color medium, focus and any other special details for each luminaire to be mounted. The section should indicate trims and masking, if used, for all lighting pipes.

Additional schedules should detail hookups, control arrangements, special equipment, gel cutting instructions and plugging if the theatre's equipment forces interplugging during the production. A "magic" sheet directly indicating which controls affect which design elements of the lighting (acting areas, for example), is usually derived from the plot by the designer for his or her personal use.