

STRUCTURING THE FIRST AESTHETIC FIELD: LIGHTING

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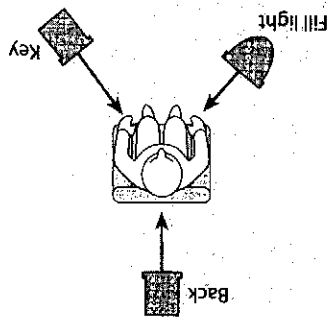
LIGHTING is the deliberate control of light and shadows to fulfill specific aesthetic objectives relating to outer and inner orientation. This chapter on structuring the first aesthetic field includes a discussion of the major lighting types and functions. You should realize, however, that these lighting types and functions are not etched in stone and are often adjusted to suit a certain theme or communication objective. They also depend on the specific application of other aesthetic elements, such as music. As elements of an aesthetic field, the specific functions frequently do, and should, overlap when finally applied to actual lighting situations.

All lighting shows up on the screen as an interplay of light and shadow and colors. As you recall, some scenes need fast-falloff lighting with deep and pronounced attached and cast shadows. Others call for much softer slow-falloff lighting with highly transparent shadows. The lighting type that emphasizes light and dark, contrasting light and shadow areas, is called *chiaroscuro lighting*. The type that de-emphasizes the light/dark contrast is called *flat lighting*. Most chiaroscuro and flat-lighting techniques are relatively simple variations of the standard *photographic principle*. You can read more about color in chapter 4.

STANDARD LIGHTING TECHNIQUES

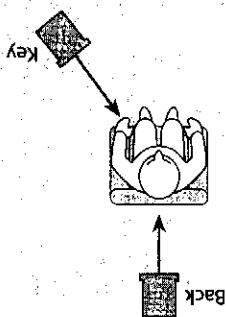
The standard photographic lighting technique is known as the *photographic principle*. This refers to the triangular arrangement of key, back, and fill lights, with the back light opposite the camera and directly behind the object, and the key and fill lights on opposite sides of the camera and to the front and side of the object. Because the placement of the three main instruments form a triangle, this lighting setup is commonly known as *triangle lighting*.¹

The *key light* is the principal source of illumination. It reveals the basic shape of the object or event. **SEE 3.1** The *back light* separates the figure from the background and provides sparkle. **SEE 3.2** The *fill light* controls falloff. **SEE 3.3** Additional light sources are the *side light*, which comes from the side, the *kicker*, which comes from the back, usually from below and off to one side, and the *background light*, or *set light*, that illuminates the set and the background. **SEE 3.4-3.6** The kicker is an extension of the back light and rims the object from below what the back light can reach.



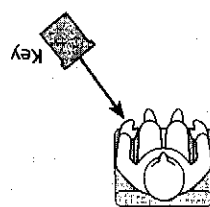
3.3 Standard Lighting
Techniques: Fill Light

Fill light: controls falloff (normally a floodlight).



3.2 Standard Lighting
Techniques: Back Light

Back light: rims top and separates subject from background (normally a directional spot).



3.1 Standard Lighting
Techniques: Key Light

Key light: principal source of illumination (normally a directional spot).

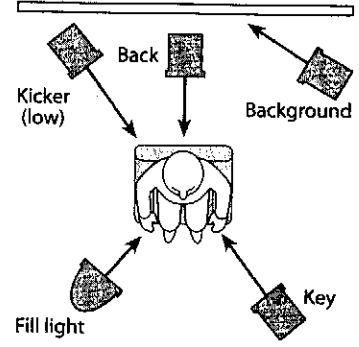
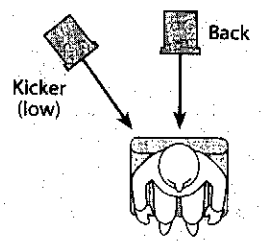
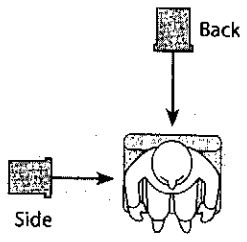
ANALYSIS OF CHIAROSCURO LIGHTING

Let's briefly analyze a chiaroscuro scene and see how the lighting contributes to our outer and inner orientation, that is, to how we see the event and how we feel about it. **SEE 3.7**

You probably feel that the scene (*Spanish Wake* by the late American master photographer W. Eugene Smith) is dramatic and emotionally involving. This emotional reaction is due in large measure to its highly charged subject matter—women mourning the death of a patriarch—but also the chiaroscuro treatment of the lighting. The chiaroscuro lighting of the scene adds to the intensity and drama of the event.

Light source and overall illumination The light source seems to come from a single direction—the upper left. Although the actual photograph was taken with a flash that was positioned camera-left, we assume that the illumination originates from candles or a small window. It is highly specific, illuminating some parts of

Chiaroscuro (pronounced "key-aura-skoo-ro") is an Italian word meaning "light/dark" (*chiaro* = light; *oscuro* = dark). Chiaroscuro lighting borrowed its name and technique from the chiaroscuro of the Mannerist (post-Renaissance) and Baroque periods (roughly 1530–1650), who emphasized specific high-contrast "lighting" in their paintings. Chief among them are the Italian painter Michelangelo Merisi da Caravaggio (1573–1610), who is commonly considered the father of the chiaroscuro school, and the Dutch painter Rembrandt van Rijn (1606–1669), who brought the chiaroscuro technique to perfection.



3.4 Expanded Lighting Techniques: Side Light

Side light: directional spotlight coming from the side.

3.5 Expanded Lighting Techniques: Kicker Light

Kicker: directional spot from the back, off to one side, usually from below.

3.6 Expanded Lighting Techniques: Background, or Set, Light

Background light: background or set illumination (often by spots).



3.7 Chiaroscuro Lighting

In this photograph we can see major elements of chiaroscuro lighting: (1) selective illumination (faces, hands, part of the background); (2) low-key effect (background is predominantly dark, overall light level is low); and (3) fast-falloff lighting with distinct, dense attached shadows. *Spanish Wake*, courtesy of the late W. Eugene Smith.

the scene while leaving others purposely dark. The overall illumination is low-key: the background is relatively dark, the overall light level is low, and the lighting is selective.

Shadow distribution and falloff The scene shows a fine example of fast-falloff lighting. The lighted areas change abruptly into dense attached shadows, telling us once again that the illumination source is highly directional. The faces of people appear stark and sculpted, reflecting death and the expression of intense sorrow. The dark areas (shadows and black clothes) dominate the scene and are accented by carefully placed light areas. In a high-key scene, the opposite occurs: the light areas dominate and are only occasionally accented by shadows.

Texture The highly directional light source and the fast falloff emphasize the texture of the faces, the beard of the deceased, the clothing, and even the walls. This photograph fulfills most of the functions of chiaroscuro lighting.

FUNCTIONS OF CHIAROSCURO LIGHTING

Chiaroscuro lighting should perform some or all of these major aesthetic functions: organic, directional, spatial/compositional, thematic, and emotional.

Organic function

The lighting should look organic, that is, approximate as closely as possible the actual illumination source shown in the scene, such as a table lamp, a candle, a window, or the sun. For example, if the only illumination source is a candle, the lighting should look as though the scene were in fact illuminated by a single candle. You may be able to accomplish this by using only a single light or, more often, by having the principal light source (key light) come from the "organic" direction (the direction of the light source in the scene) so that the attached and cast shadows are in their appropriate place—opposite the principal light source. In lighting for television, however, you will rarely get a satisfactory effect by simply duplicating the actual light source shown in a scene. In other words, a single candle will probably not yield enough light to create the lighting effect of a single candle. But there is no harm in trying to start out with a single candle or at least with a few lighting instruments as possible before adding more. If you were asked to reproduce the scene of the painting *The Newborn Child* by Georges de La Tour, how would you light it? **SEE 3.8.** Would you just hand one of the women a single candle and let it go at that? It's certainly worth a try, but you would probably find that a single candle is simply not enough light to effect such strong illumination as is shown in the picture.

Even with highly light-sensitive television cameras, the lack of adequate *baseline* (overall light level) and the high contrast would probably cause picture noise (snowlike electronic interference) in the large shadow areas, especially in the background.² By looking at the painting more closely, you will undoubtedly discover that the light is coming not just from a single source. For example, the background light in the upper-left corner cannot possibly come from the candle. The following figure shows a possible lighting setup that simulates the illumination in the La Tour painting. **SEE 3.9.** When duplicating the lighting setup, start with one or two light sources. If they are sufficient, stop. If you need more, you may want to place them in the approximate positions indicated in figure 3.9. Note that you can always use reflectors instead of the fill lights.

Directional function You can use light to direct the viewer's attention to certain picture areas. In figure 3.7 the lighting guides you to the women's faces and hands. In figure 3.8 the light directs your attention to the women's faces and ultimately to the child. Although this function is very important for theater lighting, paint-

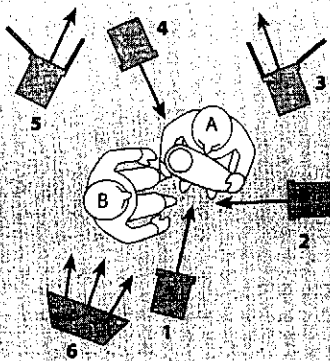


3.8 Functions of Chiaroscuro Lighting

The principal functions of chiaroscuro lighting are clearly identifiable in this reproduction of a La Tour painting: *organic function*—the light seems to radiate from a single candle hidden behind the left woman's hand; *directional*—our eyes are led to the women's faces and, ultimately, to the newborn child; *spatial/compositional*—note the light-against-dark and dark-against-light illumination that sets off the figures from the dark background as well as the balanced distribution of light and dark picture areas. *The Newborn Child* by Georges de La Tour (ca. 1630), courtesy of Musée des Beaux-Arts, Rennes, France.

ing, still photography, and even film, it is less critical in television, where we are much more readily guided by close-up shots than strategically placed points of illumination.

Spatial/compositional function The light (high-energy) and dark (low-energy) areas should be distributed within the frame in such a way that they balance each other (see figure 3.8). The distribution of light and dark also contributes to a definition of volume, contour, and foreground and background planes. Note how in figure 3.8 the light profile of the left figure is set off against a dark background, while her darker headdress and clothing are contrasted against a slightly lighter



3.9 Lighting Setup for La Tour's *The Newborn Child*

Lighting instruments and major functions: (1) key light for woman A: focused spot; (2) key light for woman B: focused spot; (3) background light camera-right: flooded spot (left barndoor prevents spill into center); (4) back light/kicker for baby and woman B's shirt: focused spot; (5) background light camera-left: flooded spot (right barndoor prevents spill into center); (6) baselight to raise level and to slow falloff on woman B: softlight.

background. Such light-against-dark and dark-against-light variations are favorite lighting techniques for defining foreground and background in static scenes.

Thematic function Lighting should emphasize the theme or story of the scene. The lighting in figures 3.7 and 3.8 clearly emphasizes the eternal themes of birth and death. In figure 3.8 the lighting focused on the two women and the child seems to suggest that the newborn child is itself part of the light source. All other aspects are deliberately kept dark and thus de-emphasized. The death theme in figure 3.7 is similarly communicated: the light is on the dead patriarch and the faces of the mourning women.

Emotional function Though closely related to the thematic function, the emotional function of chiaroscuro lighting is to affect our feelings directly regardless of the actual subject matter of the scene. Most often these two functions operate in unison. In both figures 3.7 and 3.8, the lighting determines a dominant mood and reflects the strong emotions that prevail in both scenes—one of deep sorrow and anguish, the other of wonderment and joy. Both have drama. But, although both lighting setups use chiaroscuro techniques, the tragedy of death in *Spanish Wake* is intensified through extremely fast falloff. In *The Newborn Child*, the falloff is much slower, underscoring a more gentle, less dramatic occurrence. All major functions of chiaroscuro lighting clearly operate harmoniously in both pictures: the lighting obviously contributes to the clarification, intensification, and interpretation of the scenes.

SPECIFIC CHIAROSCURO LIGHTING TYPES

Rembrandt and *cameo* lighting are two distinct types of chiaroscuro lighting. Both are used in a great variety of ways, many of them displaying only part of their primary characteristics.

REMBRANDT LIGHTING

The major characteristic of *Rembrandt lighting* is its selectivity: only specific areas are carefully illuminated, while others are kept purposely under- or unlighted. The falloff is fast, but there is enough fill light to render the attached shadows somewhat transparent. The background, although generally dark, is at least partially illuminated to outline and set off the figures or to fulfill other orientation functions.

When you look at Rembrandt's *Old Woman Reading*, you can clearly see the basic characteristics of Rembrandt lighting. **SEE 3.10** Only some areas are illuminated (the woman's blouse, her face, her hands), while others are kept relatively dark. The falloff is fast, but the shadows are reasonably translucent. The book itself, acting as an efficient reflector, seems to emit light, although we do not actually see its illuminated side. The background is kept dark, but it is still carefully illuminated to set off the contour of the foreground figure. Such separation of background and foreground is especially important because Rembrandt did not simulate any back lighting.³

CAMEO LIGHTING

Cameo lighting is chiaroscuro lighting pushed to its extreme: as a direct imitation of the cameo stone, in which white figures are seen sharply set off against a dark background, cameo lighting illuminates the foreground figures while leaving the background totally dark. **SEE 3.11 AND 3.12** The lighting is highly directional,

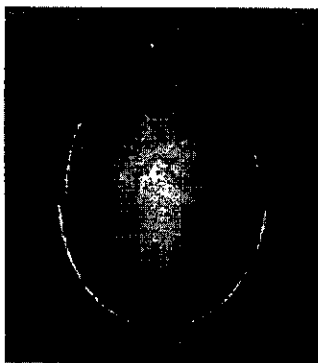


3.10 Rembrandt Lighting

The most widely applied type of chiaroscuro, Rembrandt lighting has selective lighting, transparent shadows, fairly fast falloff, and carefully placed background illumination. It is lighting for volume and drama. *Old Woman Reading* by Rembrandt, courtesy of the Duke of Buccleuch. Photograph by Tom Scott.

producing fast falloff with dense attached and sharply defined cast shadows. The cast shadows are usually visible only on the lighted floor areas or occasionally on the performers themselves. **SEE 3.13**

The high concentration of light on the performers and the lack of scenery should make cameo lighting an ideal television production technique. Unfortunately, this has not proved to be the case. The highly directional nature of the lighting makes it difficult for performers to move about without stepping out of the precisely defined light pools. Also, if the audio pickup is by boom



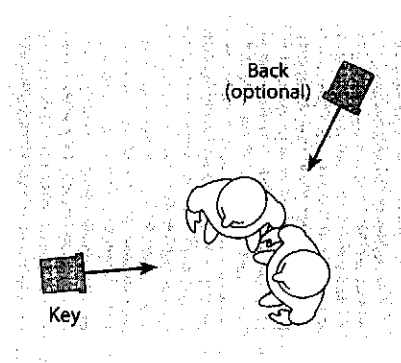
3.11 Cameo Stone

In a typical cameo, the light figures are sharply set off against a dark background.



3.12 Cameo Lighting

In this cameo scene, the performers are sharply set off against a dark background very much like the figures in an actual cameo stone. Note the extremely fast falloff and the dark, unlighted background. A cameo scene has no scenery.



3.13 Cameo-Lighting Setup

A cameo-lighting setup normally uses spotlights for the key light and the back light. Sometimes a kicker is added. There are no fill lights or background lights.

microphone, you may find it hard to avoid boom shadows falling across the actors' faces. Such high-contrast lighting is also difficult to handle even for high-quality television cameras. If the camera is adjusted for the brightly illuminated areas, the dense shadow areas tend to turn uniformly black and become subject to video noise. If adjusted to the dark areas, the light areas overload the camera circuits and start to "bloom" unnaturally bright. Extreme light/dark contrast also tends to distort color somewhat, especially in the shadow areas.⁴ The most serious problem of cameo lighting, however, is its visual intensity. Even if this stark and focused lighting were matched by an equally dramatic performance, the pictures would still look strangely theatrical and often removed from the television reality to which we have become accustomed.

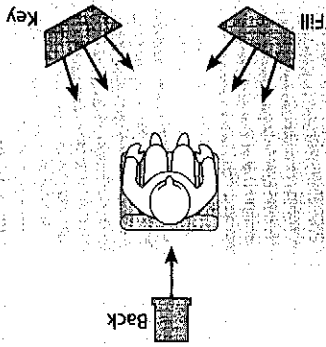
FLAT LIGHTING

The opposite of chiaroscuro lighting is *flat lighting*, which uses highly diffused light that seems to come from all directions. It has very slow falloff and such highly transparent and cast shadows that we usually do not notice them. In flat lighting we are not aware of any principal light source. **SEE 3.14**

FUNCTIONS OF FLAT LIGHTING

Although flat lighting is often done for optimal visibility or expediency, it can nevertheless fulfill several important aesthetic functions.

Visibility Contrary to chiaroscuro lighting, where much of the picture detail is purposely hidden in deep shadows, flat lighting shows the whole scene more or less equally illuminated. If the background is bright, you have high-key lighting. Flat lighting is ideal for continuous action, making it possible for cameras to shoot from a variety of angles without having to worry about lighting problems and thus affords performers maximum mobility. **SEE 3.15** But while we can see a



3.15 Flat-Lighting Setup
A flat-lighting setup normally uses softlights for both the key and the fill functions. The back light, however, is always a spot.



3.14 Flat Lighting

Note how in this scene the light does not come from a particular direction or source; it is simply there. The shadows are so transparent that they are, for all practical purposes, invisible. Flat lighting has slow falloff, more often, no falloff.

maximum of picture detail with flat lighting, the slow falloff reduces the three-dimensionality and texture of things and renders them oddly flat (see chapter 2). Extremely flat lighting can lead to serious disorientation, very much like total darkness. Sometimes, when the highly diffused light of an overcast day robs a snowy landscape of all shadows, and the white ground seems to blend into an equally white sky, skiers and mountain climbers experience a "whiteout," even without a snowstorm. Without any space-defining shadows, they lose all sense of direction and are no longer able to see, but only feel, whether they are moving up- or downhill. You may have had a similar disorienting experience when driving in heavy fog or standing in a television studio whose cyclorama is made to blend into the studio floor through uniform color and illumination.

Technically, the television camera likes flat lighting because little contrast exists between light and shadow areas. Lacking prominent shadows, there is no danger of color distortion or blooming (overloading the white areas), but the absence of shadows takes away important spatial orientation clues. Flat lighting *looks* flat, and it is uninteresting unless used to serve a specific aesthetic purpose.

Thematic and emotional functions In flat lighting the thematic and emotional functions are so intertwined that we can discuss them together. Flat lighting can suggest efficiency, cleanliness, truth, an upbeat feeling, and fun. News sets are always lit with flat lighting, not just to make the newscasters appear wrinkle-free but also to assure us of the "enlightened" accuracy of the news. Flat lighting can also spell mechanization, depersonalization, or disorientation. For example, if you want to stress the theme of high-tech operations and impress the viewer with its efficiency, you might do well by lighting the computer room flat rather than chiaroscuro. But you might also inevitably communicate the metamessage that this environment is devoid of human warmth and compassion. If you need to intensify the feeling of a prisoner's isolation in an interrogation room, you could use totally flat lighting in a white room to simulate the disorienting whiteout discussed earlier. The shadowless environment prompts the viewer to empathize with the prisoner's isolation, his being in nothingness, probably more so than if he had been placed in the traditional chiaroscuro-lighted cell with the strong light source shining into his eyes.

On the other hand, high-key flat lighting can also express energy and fun. Game shows and many situation comedies are illuminated with flat lighting—apt signifiers of the energy and pleasant superficiality of such events. Sometimes sitcoms play in cramped quarters, such as army camps, small motel rooms, or restaurants, or they have action that happens at night. In such cases, moderate chiaroscuro lighting is obviously more appropriate to fulfill the organic functions, but it should not be so heavy that it detracts from the comedic action.

Let's apply these theories and assume that you must light the set of a hospital corridor so that it first suggests to the viewer that the hospital is inefficient and run-down, and then rearrange the lights to indicate that it is clean and highly efficient without changing anything in the set itself. Which type of lighting would you use for the run-down hospital and which for the clean and efficient one?

Chiaroscuro is the most appropriate choice for the first assignment, and flat lighting for the second. Why? Because the many prominent shadow areas that stripe the corridor through chiaroscuro lighting inevitably provoke a response in the viewer that the hospital is so poor it cannot afford adequate lighting; it must be old because it obviously has too few windows that are also too small; it lacks adequate ventilation; it is likely to be untidy and dirty; it is a firetrap because we can't see where we are going; and the rest of the hospital, including its staff, must be just as antiquated.

Leonardo da Vinci preferred an overcast sky while painting. Under even, diffused light, the colors are less distorted than in bright sunlight with deep shadows. This is also the reason why, traditionally, studio windows are oriented toward the north: the light inside remains more even throughout the day than if the studio were subjected to direct, changing sunlight.

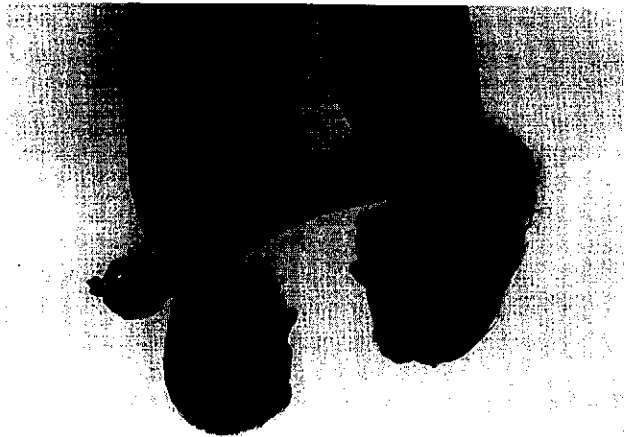
With flat lighting, however, everything changes. Due to the profuse amount of shadowless illumination and increased visibility, we are now inclined to feel that the corridor and so the entire hospital is clean and germ-free; nothing is hidden in dark corners; it has big windows and is, therefore, modern throughout; it is a place where we can easily find our way around; and its staff and doctors must be equally bright and efficient.

SILHOUETTE LIGHTING

Silhouette lighting falls into neither the chiaroscuro nor the flat category, and yet it has characteristics of both. It is chiaroscuro because of its extreme light/dark contrast. It is also flat because it emphasizes contour rather than volume and texture. So far as lighting technique is concerned, *silhouette lighting* is the exact opposite of *cameo*: in *cameo* we light the figure and not the background, but in silhouette we light the background and not the figure.⁵

Obviously, you light only those scenes in silhouette that gain by emphasizing the contour of things. A sharp, jagged jazz dance, in which outer movement is of the essence, calls for silhouette lighting. Romantic scenes take on a certain prominence when shown in silhouette. SEE 3.16 You can also use silhouette lighting for concealing a person's identity. If you're interviewing someone who has good reason to remain incognito, or you show someone cautiously entering a luxurious mansion through the bedroom window, silhouette lighting will help dramatize either event.

On the other hand, always be aware of unintentional silhouette effects. A field reporter positioned against a sun-drenched white wall will certainly turn into an unflattering silhouette, especially if no reflector or additional lighting is used to offset the strong background light. A similar problem exists if you want to photograph someone on a sunny beach against the ocean. The water, reflecting the sunlight, acts like a giant background light, illuminating the background so much that the foreground person looks unlighted. As you now know, such a lighting contrast shows up as a silhouette. To cope with this abundance of background light, you must close the iris of the lens somewhat, making the underlit foreground figures even darker. To avoid such problems, you may want to shoot beach scenes on an overcast day (thus reducing the glare of the sea), shoot against the land rather than the water, or put the subjects in the diffused shade of a beach



3.16 Silhouette Lighting

Notice that this lighting is the exact opposite of *cameo*. In silhouette lighting, the background is lighted and the figures in front remain unlighted. Silhouette lighting shows contour but no volume or texture. Silhouette lighting intensifies the outline of things.

One specific flat-lighting technique is sometimes called *limbo*. In *limbo lighting*, the background is evenly illuminated, and the object in front of it is lighted with the standard photographic principle. Actually, *limbo lighting* is more specifically to a staging rather than a lighting technique. For example, if you are asked to set up a commercial display in limbo, you need not light specially for it. It simply means that you push the commercial display in front of a neutral, plain background (usually light colored) so that the emphasis is on the product and not on the environment.

3.17 Overview of Chiaroscuro- and Flat-Lighting Techniques

Type	Source, illumination area	Illumination level	Falloff, shadow distribution
Rembrandt	Spotlights with barn doors. Carefully placed background lights. Specific area lighting—selective illumination but fill light for making shadows transparent.	Low-key. Selectively illuminated figures. Illuminated yet generally dark background.	Fast falloff. Transparent shadows.
Cameo	Directional spots. Directional fill on subject. Back light. Dark background. Minimum of spill, especially on background.	Low-key. Illuminated figures only. Dark background.	Fast falloff. Dense shadows.
Flat	Highly diffused floodlights (scoops and softlights). Nonselective, omnidirectional illumination. Light is fairly evenly distributed.	High-key. Generally bright illumination with light background.	Slow falloff. Highly transparent shadows or no perceivable shadows.
Silhouette	Evenly lighted bright background (floodlights). No illumination on foreground figures.	High on background. No illumination on foreground figures.	No shadows, but figures appear as black, contoured cutouts.

umbrella. A more expensive way to offset the silhouette effect is to use additional illumination on the subject, such as powerful spotlights or giant reflectors.

The table above gives a brief overview of chiaroscuro- and flat-lighting techniques. **SEE 3.17** You should realize that each scene has its own specific lighting requirements and that there are many approaches to achieving similar effects.

MEDIA-ENHANCED AND MEDIA-GENERATED LIGHTING

All photographic arts (still photography, film, and television) can enhance, change, or simulate the lighting effects through manipulation by the medium. In photography and film, you can affect colors or the brightness contrast through various filters as well as in the processing phase. In television these variables can be manipulated through the camera controls, various electronic enhancement equipment, or computer software. Television allows further electronic manipulation by the viewers, who may adjust, or misadjust, the brightness, contrast, and color controls of their television sets.

For example, you can easily change the appearance of a chiaroscuro scene by turning down the contrast control and turning up the brightness control. What you end up with is a washed-out picture with the original lighting setup no longer recognizable. You can increase falloff by simply turning up the contrast control as far as it will go.

Most of the media-controlled lighting effects are achieved through digital special-effects equipment or computer programs. In computer-generated images, all lighting effects are synthetic and, like in painting, totally independent of actual external light and lighting techniques. Most computer graphics programs let you simulate light sources and their resulting attached and cast shadows. Because the