language of the lens

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Figure 4.1. (previous page) Deliberately flaring the lens is an essential element of this shot from *Nine and 1/2 Weeks*.

Figure 4.2. (right) A well-composed, balanced frame from *Barry Lyndon* implies static formalism. The static camera position and the centered "head on" viewpoint all add up to reinforce the story content of a rigid social structure and a highly formalized social milieu in which the story takes place.

THE LENS AND THE FRAME

As we use the term in this book, cinematic technique means the methods and practices we use to add additional layers of meaning, nuance, and emotional context to shots and scenes in addition to their objective content. The lens is one of the prime tools in achieving these means. Together with selecting the frame, it is also the area of cinematography in which the director is most heavily involved.

Foreground/Midground/Background

As we discussed in *Shooting Methods*, one of the key elements of film is that we are projecting 3-dimensional space onto a 2-dimensional plane. Except where we want this flatness, it is a goal to recreate the depth that existed in the scene. A big part of this is to create shots with a foreground, midground, and background.

In the book *Hitchcock/Truffaut*, Hitchcock makes the point that a basic rule of camera position and staging is that the importance of an object in the story should equal its size in frame. We see that principle employed in the shots from *Lady from Shanghai* (Figure 2.26) and *Touch of Evil* (Figure 2.25). The gun is what is important in the scene, so Welles uses a low camera angle and positioning to feature it prominently in the frame — the choice of lens is also important.

Lens Perspective

As we discussed in the previous chapters, the fundamental aspect of the frame is that it constitutes a selection of what the audience is going to see. Some things are included and some are excluded. The first decision is always where the camera goes in relation to the subject. But this is only half of the job. Once the camera position is set, there is still a decision to be made as to how much of that view is to be included. This is the job of lens selection.

Human vision, including peripheral, extends to around 180°. Foveal (or central) vision, which is more able to perceive detail, is around 40°. In 35mm film, the 50mm is generally considered the normal lens. In fact, something around a 40mm is closer to typical vision. In video, the "normal" lens varies depending on the size of the video receptor. A normal lens is considered to be one where the focal length equals the diagonal of the receptor. The focal length is significant in another way in addition to its field of view. Remember that all optics (including the human eye) work by projecting the three-dimensional world onto a two-dimensional plane. Lenses in the normal range portray the depth relationships of objects in a way fairly close to human vision.

Figure 4.3. The wide lens creates a palpable space between the characters in this climactic scene in *The Lady from Shanghai*; he is heading out toward the light and she is in complete silhouette, all of which precisely underpin the story point at this moment in the film.

Wide Lenses and Expansion of Space

With a wider than normal lens, depth perception is exaggerated: objects appear to be farther apart (front to back) than they are in reality. This exaggerated sense of depth has psychological implications. The perception of movement towards or away from the lens is heightened; space is expanded and distant objects become much smaller. All this can give the viewer a greater sense of presence —a greater feeling of being *in* the scene — which is often a goal of the filmmaker. As the lens gets even wider, there is distortion of objects, particularly those near the lens. This is the fundamental reason why a longer focal length lens is considered essential for a portrait or head shot. It's a simple matter of perspective. If you are shooting a close-up and you want to fill the frame, the wider the lens, the closer the camera will have to be. As the camera gets closer, the percentage difference in distance from the nose to the eyes increases dramatically, which causes distortion.

For example, if the tip of the nose is 30 cm (centimeters) from the lens, then the eyes may be at 33 cm, a 10% difference. With a wide lens, this is enough to cause a mismatch in size: the nose is exaggerated in size compared to the face at the plane of the eyes. With a longer than normal lens, the camera will be much farther back to achieve the same image size. In this case, the tip of the nose might be at 300 cm, with the eyes at 303 cm. This is a percentage difference of only 1%: the nose would appear normal in relation to the rest of the face. The same fundamental principle applies to the perception of all objects with very wide lenses (Figure 1.11).

Another aspect of wide lenses is that at a given distance and f/stop, they have greater depth-of-field. Not to get too technical here (we'll do that in the chapter *Optics & Focus*), but suffice it to say that the depth-of-field of a lens is inversely proportional to the square of its focal length. We'll get into the details in later chapters, but perceptual ramifications are very much a part of the psychology of the lens. This greater depth-of-field allows more of the scene to be in focus. This was used to great effect by master cinematographers of the 30's and 40's such as Gregg Toland, who used it to develop an entire look called deep focus, such as in the frame from *The Long Voyage Home* (Figure 3.5 in *Visual Language*). In this film and in other films he shot in this period (such as *Wuthering Heights*) Toland perfected deep focus as a visual system that he later introduced to Orson Welles (Figures 4.3 and 4.4) when they worked together on *Citize Kane*, which was Welles' first film.

Figure 4.4. A deep focus shot from *Citizen Kane*. Three levels of the story are shown in the same frame.

Deep Focus

The high point of deep focus as a storytelling tool is *Citizen Kane*. According to David Cook in *A History of Narrative Film,* "Welles planned to construct the film as a series of long takes, or sequence shots, scrupulously composed in depth to eliminate the necessity for narrative cutting within major dramatic scenes. To accomplish this, Toland developed for Welles a method of deep focus photography capable of achieving an unprecedented depth-of-field."

This deep focus facilitates composition in depth to an unprecedented degree. Throughout the film we see action in the background that complements and amplifies what we are seeing in the foreground. For example, early in the film we see Mrs. Kane in the foreground, signing the agreement for Mr. Thatcher to be the young Charles Foster Kane's guardian. Throughout the scene, we see the young man through a window, playing outside with his sled even as his future is being decided (Figure 4.4).

Welles also uses the distortion of wide angle lenses for psychological effect. Frequently in the film we see Kane looming like a giant in the foreground, dwarfing other characters in the scene — a metaphor for his powerful, overbearing personality. Later, Welles uses the exaggerated distances of wide lenses to separate Kane from other characters in the scene, thus emphasizing his alienation (Figure 14.8).

Compression of Space

At the other end of this spectrum are *long focal length lenses,* which you might hear referred to as *telephoto* lenses. They have effects that are opposite of wide lenses: they compress space, have less depth-of-field and de-emphasize movement away from or toward the camera.

This compression of space can be used for many perceptual purposes: claustrophobic tightness of space, making distant objects seem closer and heightening the intensity of action and movement. Their ability to decrease apparent distance has many uses both in composition but also in creating the *psychological space*.

The effect of having objects seem closer together is often used for the very practical purpose of making stunts and fight scenes appear more dramatic and dangerous than they really are. With careful camera placement and a long lens, a speeding bus can seem to miss a child on a bicycle by inches, when in fact, there is a comfortably safe distance between them, a trick frequently used to enhance stunt

shots and action sequences. The limited depth-of-field can be used to isolate a character in space. Even though foreground and background objects may seem closer, if they are drastically out of focus, the sense of separation is the same. This can result in a very detached, third-person point of view for the shot. This detachment is reinforced by the fact that the compression of space makes more tangible the feeling that the real world is being projected onto a flat space. We perceive it more as a two-dimensional representation — more abstract; this is used very effectively in Figure 4.5.

Another use of long lenses for compression of space is for beauty. Most faces are more attractive with longer lenses. This is why the 105mm and the 135mm lenses (long focal lengths) are known as *portrait* lenses for still photographers who do beauty and fashion or portraiture. Movement toward us with a long lens is not as dynamic

Figure 4.5. (top) Very long lens perspective makes this shot from *Rain Man* abstract. It is reduced to the simple idea of beginning a journey into the unknown future; the road seems to rise up into their unknown future. It is no accident that this frame is used on the poster for the film; it elegantly expresses the basic story of the film.

Figure 4.6. (bottom) A wide lens is essential to this shot from a later scene in *Rain Man*. Trapped in the car with his extremely annoying brother, the wide shot in the emptiness of the prairie emphasizes how the car is like a lifeboat from which there is no escape.

Figure 4.7. (top) This wide master from *The Lady from Shanghai* shows a normal perspective.

Figure 4.8. (bottom) In the close-ups, Welles uses projections of the fish at ten times their normal size to introduce menace and a feeling of strangeness to the otherwise pleasant setting of the aquarium. The huge fish and the rippling motivated lighting from the water all work together to suggest that the character is "in over his head and out of his depth."

and therefore is abstracted. It is more of a presentation of the *idea* of movement than perceived as actual movement of the subject. This is especially effective with shots of the actors running directly toward the camera; as they run toward us, there is very little change in their image size. We would normally think of this as decreasing the sense of movement, but in a way, it has the opposite effect. The same is true of slow motion. Although shooting at a high frame rate actually slows the movement down, our perceptual conditioning tells us that the people or objects are actually moving very fast — so fast that only high-speed shooting can capture them on film. Thus shooting something in slow motion and with a long lens has the ultimate effect of making the moving seem faster and more exaggerated than it really is. The brain interprets it in a way that contradicts the visual evidence.

This is an excellent example of cultural conditioning as a factor in film perception. The convention to show someone running very fast to shoot with a long lens and in *slow motion*. If you showed a long lens, slow motion shot of someone running to a person who had never seen film or video before, they might not understand at all that the person is running fast. More likely they would perceive the person as almost frozen in time through some sort of magic.

Manipulating Perspective

There are many other tricks that can be used to alter the audience's perception of space. In *The Lady from Shanghai* (Figures 4.7 and 4.8), Welles uses a subtle and very clever trick to add subtext to the scene. In the film, Welles plays an ordinary seaman who is seduced into an affair and a murder plot by Rita Hayworth. There are double and triple crosses, and the Welles character is in way over his head. This scene is a meeting between him and the beautiful woman who is at the bottom of all the schemes and machinations. She asks him to meet her in an out-of-the-way public place: the aquarium. On the face of it, this seems like a perfect place for them to meet without attracting attention. In fact, she has a darker purpose.

The staging also seems perfectly straightforward. They meet and then talk while they stroll in front of the glass windows of the aquarium. Welles uses subtle tricks to make this happy, innocent

Figure 4.9. (top) This wide shot comes at the end of a chase scene in *Nine and 1/2 Weeks*; out on the town, the characters have been chased by a gang of violent thugs.

Figure 4.10. (bottom) At the moment they realize they have lost their attacker, a severe lens change *punches in* to the scene. It is a high-energy cut that gets us closer so that we are experiencing the scene along with the characters rather than as an abstract, at-a-distance chase scene. We are drawn into their excitement and identify with their exuberance. The sudden loss of depth-of-field isolates them in the landscape and gives our attention nowhere else to go. The *punch-in* changes the visual texture to match the mood.

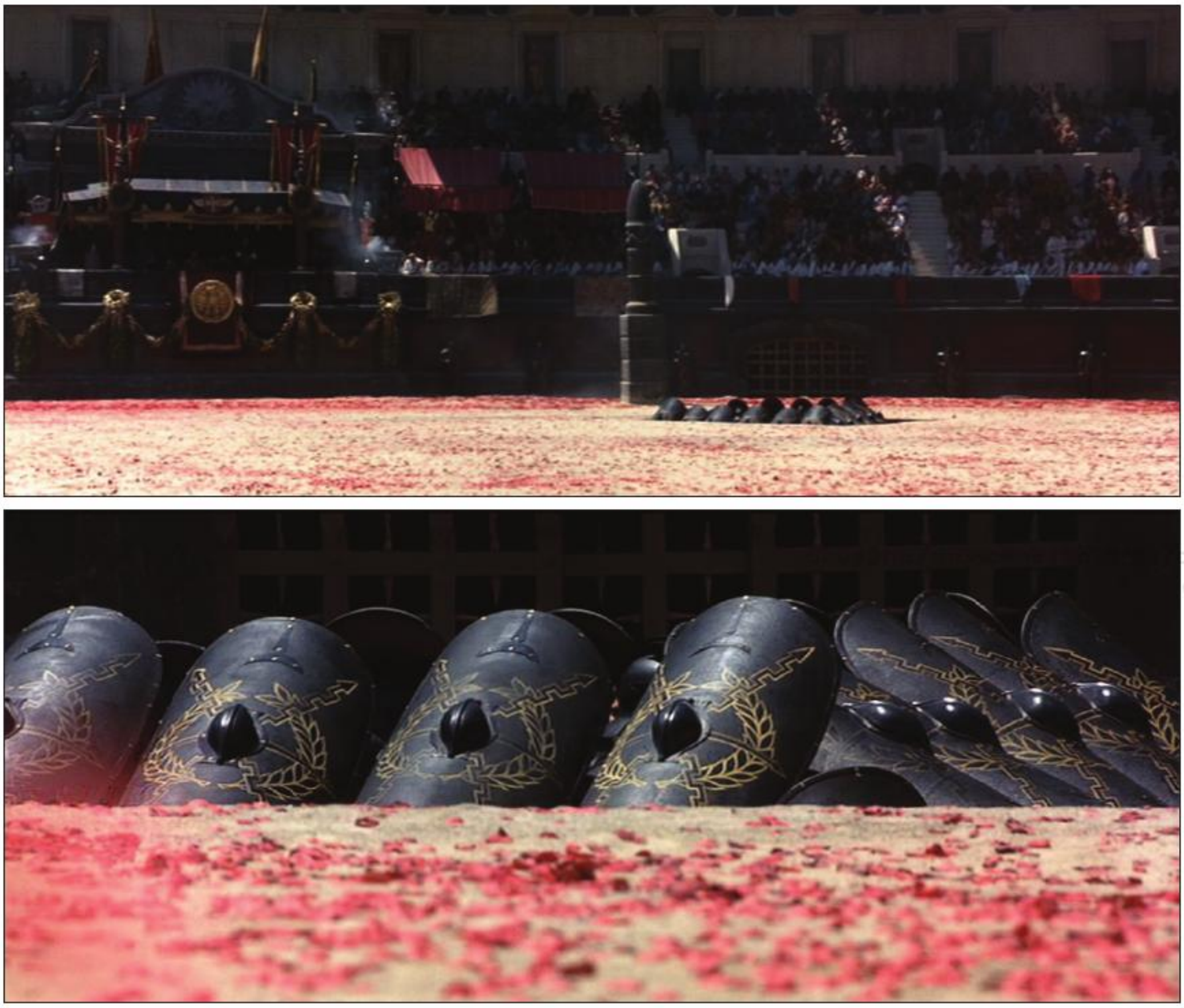


Figure 4.11. (top) A visually powerful *punch-in* from *Gladiator,* as the main characters rise into the arena from the underground space in a wide shot.

Figure 4.12. (bottom) The switch to a very long lens (the *punch-in*) punctuates the moment and intensifies the drama as well as simply being dramatic and visually striking.

place mysterious and foreboding. First, the motivated light from the aquarium backlights them dramatically in a classic film noir fashion. As the Welles character begins to realize the danger of the situation he is in, they move to a spot where they are completely in silhouette. When he goes in for coverage, Welles doesn't chicken out. The motivated lighting is also a water effect so the ripples play across their faces. These devices subtly suggest that the character is out of his depth, underwater, which is exactly the point of the scene.

The third trick is even more clever. In the wide shots, we see the fish in the aquarium: ordinary fish and turtles of one or two feet in length. In the close-ups, however, Welles had film of the fish back-projected at a greatly enlarged size. As a result, the fish are now gigantic. Although just barely seen behind their heads, the effect is mysterious and a little frightening. In combination with the silhouette and the rippling water effects, the subtext is clear: the character is out of his depth, his head is underwater, and he may not survive. It is a masterful stroke that is completely unnoticed by most of the audience. Like all the best techniques, it is seamless and invisible.

Kurosawa uses very long lenses in a way that is stylistically distinctive. See Figure 4.14 for an example of how he uses lenses to achieve certain compositional perspectives and character relationships. Another example of lens use is the *punch-in*, shown in Figures 4.11 and 4.12.

Selective Focus

The characteristic of relative lack of depth-of-field can be used for selective focus shots. As discussed above, shallow depth-of-field can isolate the subject. The essential point is that focus is a storytelling tool. This is a drawback of 16mm film and some High Def cameras. Because they often have smaller sensors, they have far more depth-of-field than 35mm film, thus making it more difficult to use focus in this way; however many HD cameras now have sensors that are the same size as a 35mm film frame or even larger. Depth-of-field is a product of the sensor size, not whether it is film or video. See the chapter *Optics & Focus* for more on selective focus. If you want to reduce depth-of-field on a camera with a smaller sensor, some people will say "pull back and use a longer lens" or "shoot wide open." These are not always options, especially on a tight location.

Focus can also be shifted during the shot, thus leading the eye and the attention of the viewer. The term for the classic use of this is *rack focus*, in which the focus is on an object in the foreground, for example, and then, on cue, the camera assistant radically changes the focus so that it shifts dramatically to another subject either in front of or behind the original subject. Not all shots lend themselves to the technique, especially when there is not enough of a focus change to make the effect noticeable. A downside of rack focusing is that some lenses *breathe* when changing focus; this means they appear to change focal length while shifting focus.

Also with tracking shots that are very tight and close, we can watch as objects come into view, then slowly come into focus, then go soft again. Selective focus and out-of-focus can also be highly subjective visual metaphors for the influence of drugs or madness, as well. The bottom line is that focus is an important storytelling tool as well as being crucial to the overall *look* of a particular production.

Figure 4.13. (above) Japanese and Chinese traditional art do not employ linear perspective but instead they rely on above/below relationships to convey depth.

Figure 4.14. (top) Akira Kurosawa almost always used very long lenses and in this case a slightly elevated points of view to render a compressed space. In this shot from Kurosawa's *Seven Samurai*, we clearly see the influence of composition and perspective from Japanese prints and the same sense of space as in Figure 4.13.

Figure 4.15. (top) A normal lens keeps the background in focus; it can be distracting.

Figure 4.16. (bottom) A very long lens throws the background out of focus and the viewer's entire attention is drawn to the character.

Figure 4.17. (above, right) Deliberate lens flare is an essential part of the look of this scene from *Nine and 1/2 Weeks*.

Another issue in selective focus is when two or more players are in the same shot but at different distances. If you don't have enough light to set the lens to a higher f/stop (and thus you don't have much depth-of-field), it may be necessary for the focus-puller to choose one or the other to be in focus. This is up to the DP or director to decide, and they should consult before the shot — and don't forget to let the focus puller know. A few basic rules of thumb:

- Focus goes to the person speaking. It is permissible to rack focus back and forth as they speak.
- Focus goes to the person facing the camera or most prominent in the frame.
- Focus goes to the person experiencing the most dramatic or emotional moment. This may countermand the principal of focusing on the person speaking.
- If there is doubt about whom to focus on, most camera assistants put the focus on the actor who has the lower number on the call sheet.

This may sound frivolous but, it's not. Call sheets list the actors in numbered order of their characters. The lead is actor #1, and so on. If you are playing it on the fly, the safe bet is to go with the actor with the lower number on the call sheet.

If they are close enough, the AC may split the focus between them (if there is enough depth-of-field to keep both of them acceptable sharp) or by very subtly racking back and forth. Major focus racks need to be discussed in advance and rehearsed. This is true of all camera moves that are motivated by dialog or action. If the AC and the operator haven't seen what the actors are going to do, it is difficult to anticipate the move just enough to time it correctly. Rehearsal is a time saver, as it usually reduces the number of blown takes.

It is interesting to note that older books on cinematography barely mention focus at all. There is a reason for this. Until the 60's, it was the established orthodoxy that pretty much everything important in the frame should be in focus. The idea of having key elements in the frame that are deliberately out of focus really didn't fully take hold until it was popularized by fashion photographers in the 80's. It is now recognized by filmmakers as a key tool and is the reason that when evaluating and using HD cameras, a great deal of attention is paid to the size of the video sensor. There is more discussion of the other factors that affect focus and depth of field in the *Optics & Focus*, later in this book.

Figure 4.18. A high-angle shot along with a dramatic shaft of light and shadows creates a graphic composition in *Sin City*.

IMAGE CONTROL AT THE LENS

Some techniques with the lens are discussed in the chapter on *Image Control*; in this chapter we deal with altering the image quality with the lens and shutter only as they are relevant to this discussion of visual storytelling with the lens. There is a huge variety of visual effects that can be achieved with just the selection of lenses, filters, flare, and similar effects, many of which are difficult or impossible to achieve in other ways.

Filtration

Modern lenses are remarkably sharp. For the most part this is what we want. In some cases, however, we are looking for a softer image. The most frequent reason is beauty. A softer image, especially of a woman's face, will generally be prettier. A soft image may also be more romantic, dreamlike, or, in a subjective shot, may translate to a state of mind less in touch with reality. Some cinematographers tend to think only of diffusion filters but a softer image can be achieved in many different ways. More on this in the chapter *Image Control*.

Soft Lenses

Some shooters use older lenses for an image that is subtly soft in a way that is difficult to achieve with filters. Soft lenses can give a slightly greater apparent depth-of-field. This is because the fall-off from critical sharpness is somewhat masked by the softness.

Besides not being made with the latest computer-aided optical design and manufacturing, older lenses also have less sophisticated optical coatings. The coating on lenses is there primarily to prevent internal flares and reflections, which slightly degrade and soften the image. This can be seen clearly if the sun or other strong light source directly hits the lens. The internal flares and reflections are very apparent in an old lens as compared to a modern one.

Certainly the best-known recent use of this technique was the film *Saving Private Ryan,* where the filmmakers asked the Panavision camera company to remove the modern coatings off a set of lenses so that they would more closely resemble the types of lenses that were used in actual World War II combat photography.

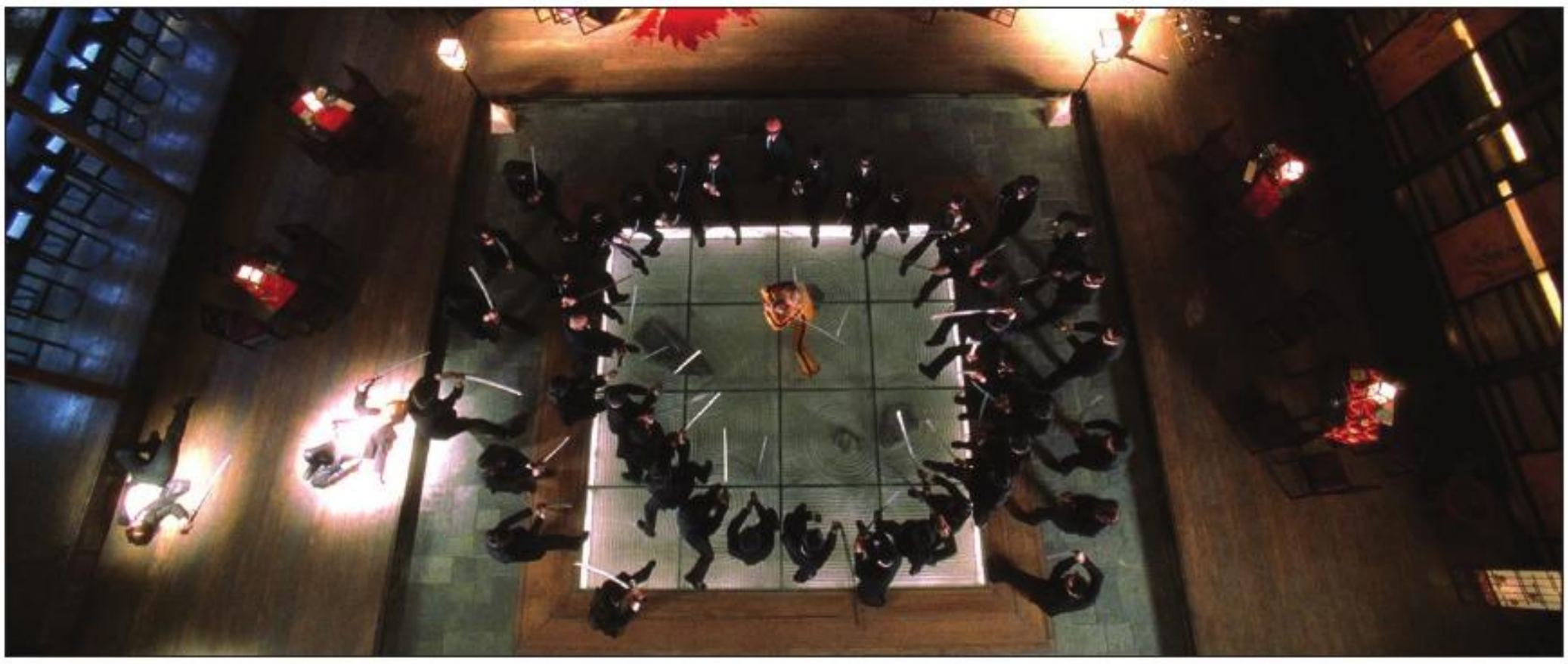


Figure 4.19. This *god's eye shot* (a type of *high angle* shot that is either directly overhead or nearly so) from *Kill Bill* dramatically portrays the situation of the character — utterly surrounded. In filmmaking, everything must have a reason — it's not enough to do something just because "it's a cool shot."

Flare/Glare

A direct, specular beam of light that hits the lens will create a flare that creates veiling glare, which appears as a sort of milky whiteness over the whole image. This is why so much attention is paid to the matte box or lens shade and why the grips are often asked to set *lensers* — flags that keep direct light sources from hitting the lens. There are exceptions, such as in Figures 4.1 and 4.17, where deliberate flare is used as a photographic technique, generally as a device to set a certain tone or mood for the shot.

Lens Height

Variations in lens height can also be an effective tool for adding subtext to a shot. As a general rule, dialog and most ordinary people shots are done at the eye level of the actors involved. Some filmmakers attempt to avoid using many straight-on eye-level shots, as they consider them boring. Variations from eye level have filmspace implications, psychological undertones and are useful as a strictly compositional device.

Variations from eye level are not to be done casually, especially with dialog or reaction shots. Keep in mind that deviations from eye-level are asking the viewer to participate in the scene in a mode that is very different from normal, so be sure that there is a good reason for it and that it is contributing in a way that helps the scene.

High Angle

When the camera is above eye height, we seem to dominate the subject. The subject is reduced in stature and perhaps in importance. Its importance is not, however, diminished if the *high angle* reveals it to be a massive, extensive structure, for example. This reminds us that high angles looking down on the subject reveal overall layout and scope in the case of landscape, streets, or buildings. This is useful if the intent is an *establishing* or *expository* shot where it is important for the audience to know something about the layout.

As with subjective and objective camera views on the lateral plane, we can see camera angles that diverge from eye level as increasingly objective, more third person in terms of our literary analogy. This applies especially to higher angles. A very high angle is called a *god's eye shot* (Figure 4.19), suggesting its omniscient, removed point-of-view: distant, separate from the scene, a world view, philosophical and contemplative. We see all parts of the scene, all interacting forces equally without particularly identifying with any of them.

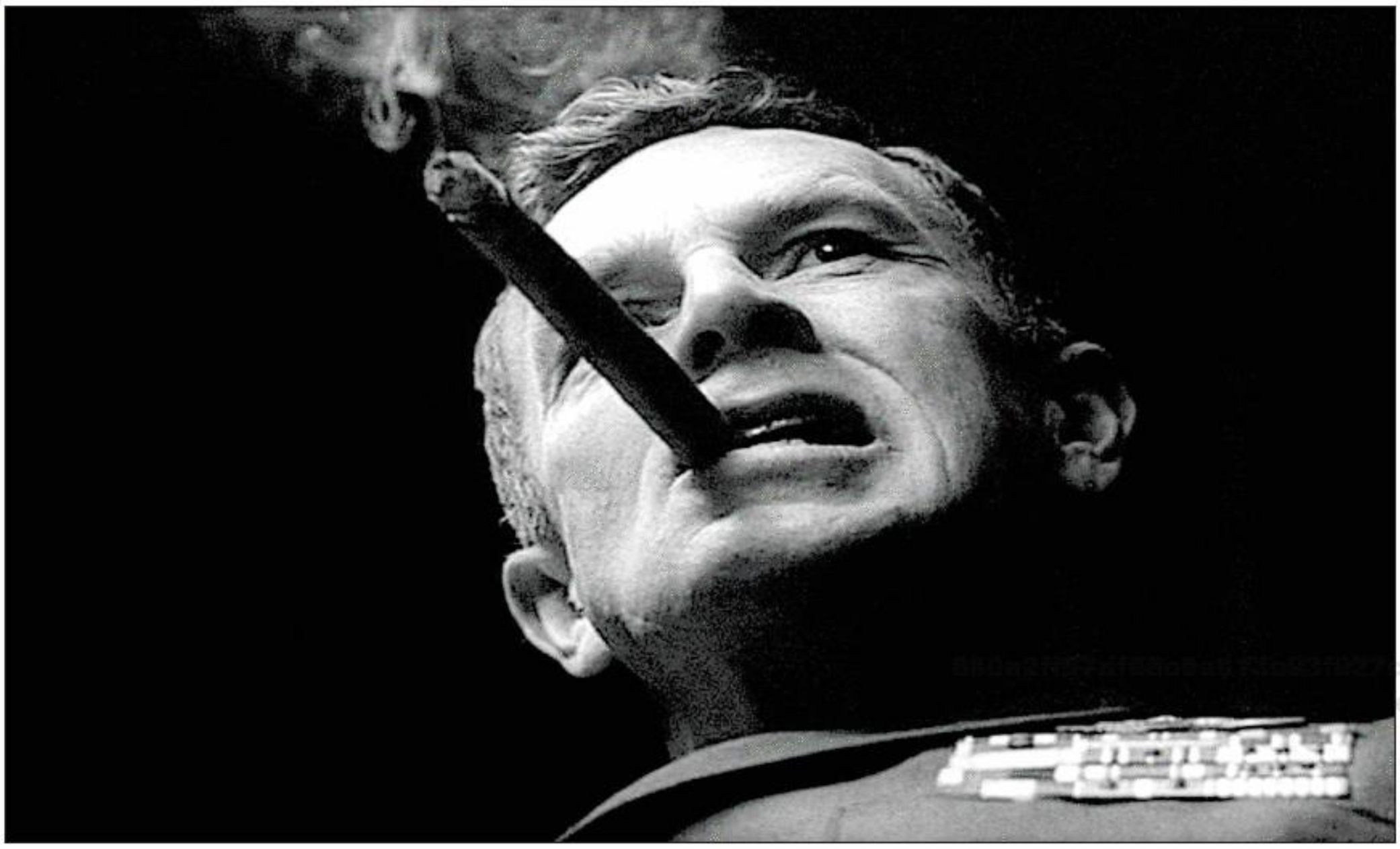


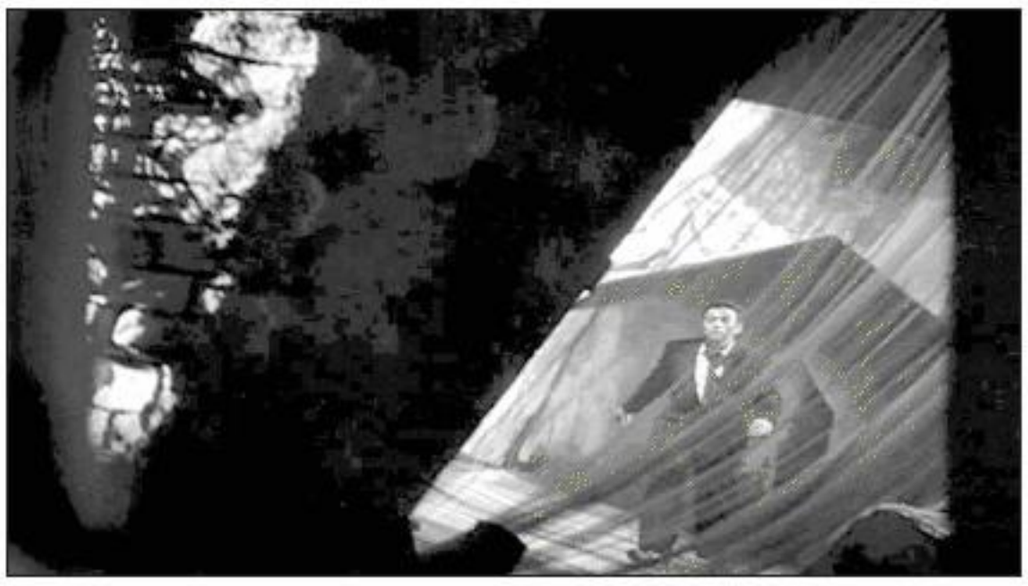
Figure 4.20. Kubrick is a master of choosing the right angle and lens to tell the story powerfully. In this shot, the lens height and angle make a clear statement about the state of mind of the character (*Dr. Strangelove: or How I Learned to Stop Worrying and Love the Bomb*).

Low Angle

A low-angle shot can make a character seem ominous and foreboding, as in *Dr. Strangelove* (Figure 4.20). When a character is approaching something as seen from a low angle, little is revealed beyond what the character might see himself: we share the character's surprise or sense of mystery. If the shots of the character are low angle, we share his apprehension.

If these are then combined with high-angle shots that reveal what the character does not know, for example, we are aware of whatever surprise or ambush or revelation awaits him: this is the true nature of suspense. As Hitchcock brilliantly observed, there can be no real suspense unless the audience knows what is going to happen. His famous example is the bomb under the table. If two characters sit at a table and suddenly a bomb goes off, we have a moment of surprise that is quickly over, a cheap shock at best. If the audience knows that the bomb is under the table and is aware that the timer is clicking steadily towards exploding, then there is true suspense that engages and involves the audience in a way that simple shock never can. If the audience is on the edge of their seats knowing that the time on the clock is growing shorter, then the fact that the two characters seated at the table are nattering on amiably about the weather is both maddening and engaging.

Although any time we get away from human eye level we are decreasing our subjective identification with the characters, low angles can become more subjective in other ways. Clearly a very low angle can be a dog's eye view, especially if it is cut in right after a shot of the dog and then the very low angle moves somewhat erratically and in the manner of a dog. This type of doggie POV is practically required for werewolf movies, of course. With low angles, the subject tends to dominate us. If the subject is a character, that actor will seem more powerful and dominant. Any time the actor being viewed is meant to be menacing or frightening to the character we are associating the POV with, a low angle is often appropriate.



Figures 4.21 (above, left) **and 4.22** (above, right). Director Orson Welles uses shifting *dutch tilt* from dutch left to dutch right to make the crazy house sequence in *Lady from Shanghai* an almost psychedelic feeling.

Dutch Tilt

In most shooting we strive for the camera to be perfectly level. It is the job of the camera assistant and the dolly grip to recheck every time the camera is moved and ensure that it is still "on the bubble." This refers to the bulls-eye or transverse bubble levels that are standard on all camera mounts, heads and dollies.

This is crucial because human perception is much more sensitive to off-level verticals than to off-level horizontals. If the camera is even a little off, walls, doorways, telephone poles, any vertical feature will be immediately seen as out of plumb. There are instances, however, where we want the visual tension of this off-level condition to work for us to create anxiety, paranoia, subjugation, or mystery. The term for this is "dutch tilt" or "dutch angle."

This is used extremely well in the mystery/suspense film *The Third Man*, where a great many shots are done with the camera off-level. Orson Welles also uses it very effectively in *The Lady from Shanghai*. In this example, he is trapped in the carnival crazy house at the end of the film. He is also still under the influence of the pills he took as part of his escape from the courthouse. In this shot, the camera is tilted radically right as he enters in the distance. Then, as he crosses frame and goes through a door to a second room, the camera, instead of tracking, tilts to the opposite angle and ends with a hard left tilt (Figures 4.21 and 4.22).

This of course is entirely in keeping with the surrealistic atmosphere of the crazy house and of his deranged, drugged state of mind, but it has another advantage as well. Tracking shots that move past walls are not at all unusual. In this type of shot we track along with the character who walks through a door into the next room. The camera passes through the wall and what we see is usually a black vertical line that represents the edge of the wall that we are magically transversing.

visual storytelling

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