the filmmaker's eye

learning (and breaking) the rules of cinematic composition

GUSTAVO MERCADO

principles of composition and technical concepts

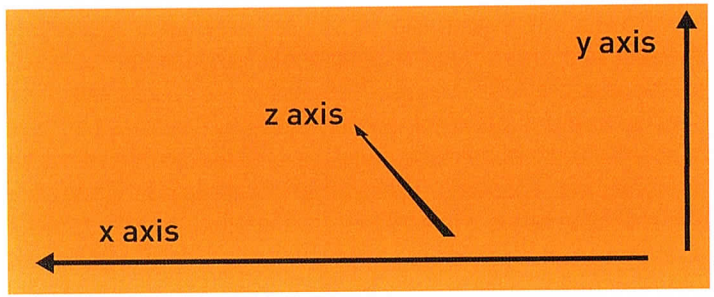
aspect ratios

Every compositional decision you make will be first defined by the dimensions of your frame. The ratio between the width and height of the frame is referred to as the aspect ratio, and it differs depending on the shooting format. The most common aspect ratios are 2.39:1 (called anamorphic or scope, originally 2.35:1 until the 1970s), 1.85:1 (American theatrical standard, also called "flat"), 1.66:1 (European theatrical standard), 1.78:1 (the HDTV standard that is also called 16x9, used in HD cameras), and 1.33:1 (the aspect ratio of 16mm and 35mm shooting formats, and also the theatrical format used until the 1950s, and analog TV). It is essential to know both the aspect ratio of the shooting format and the exhibition/distribution format to ensure that the compositional choices you make as part of your visual strategy in production will be preserved.

most common exhibition/distribution aspect ratios

frame axes

Since the frame is essentially two-dimensional, it is defined by two axes, a horizontal or x axis, and a vertical or y axis. A third axis that denotes the depth in a frame, or z axis, can be emphasized by the use of depth cues (examined later in this chapter), to create deep frames, or purposely understated, to create flat frames, as shown in the two examples below from Steve McQueen's *Hunger* (2008). Most often however, filmmakers tend to create compositions in depth, emphasizing the z axis to overcome the inherent flatness of the frame and enhance verisimilitude. Perceived distances and movement along each one of these axes can also be manipulated by the type of lens used, altering the visual relationship between subjects and the space around them.



frame axes

a deep frame that emphasizes the z axis

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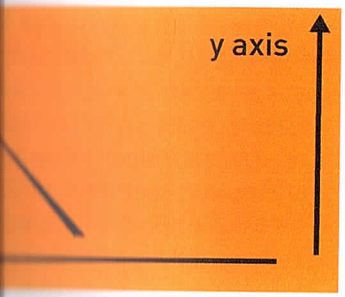
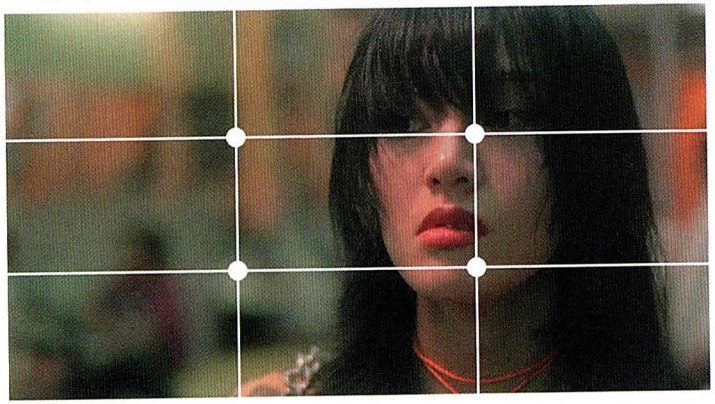


he z axis

a flat frame that understates the z axis

the rule of thirds

Some of the conventions used to create visually harmonious compositions have evolved over hundreds of years of artistic experimentation and development; one of the oldest is known as the rule of thirds. By dividing the frame into thirds along its width and height, sweet spots are created at their crossing points, providing a guide for the placement of important compositional elements that results in dynamic compositions. The lines themselves are also often used as guides for the placement of horizons in extreme long shots and establishing shots. When subjects are placed in the frame according to the rule of thirds, it is common to position their eyes over one of these spots, the top left sweet spot if they are looking towards the right side of the frame, or the top right if they are looking at the left side of the frame, as seen in the example in the next column from Wong Kar Wai's *Fallen Angels* (1995). This placement ensures that they are given enough looking room, a convention designed to balance the composition by countering the compositional weight of the subject's gaze. If looking room is not added (for instance by placing the subject at the center of the frame while they are looking toward either side) the composition will feel static and lack visual tension, which in some cases might be exactly what you want to convey. The placement of a subject using the top line also gives them the proper amount of headroom: the positioning of the subject's head in relation to the top of the frame. The amount of headroom is a function of the size of the subject in the frame, so that subjects in a close up should have their heads cropped by the top of the frame for proper headroom, while subjects in a long shot should have a sizable amount of headroom above their heads. The rule of thirds also applies to subject placement as they move across the x axis of the frame; if they are moving toward the right side, they should be placed along the left vertical line to give them proper walking room, and vice versa, unless you want to create a composition that purposely feels uneasy and unbalanced.



subject placement using the rule of thirds

Hitchcock's rule

An amazingly simple yet extremely effective principle that Alfred Hitchcock shared with François Truffaut during the writing of Truffaut's *Hitchcock/Truffaut*, states that the size of an object in the frame should be directly related to its importance in the story at that moment. This principle can be applied whether you have only one or several visual elements in the frame, and can be used to create tension and suspense, especially when the audience does not know the rea-

son behind the visual emphasis being placed on the object or subject. In the example below, from Rob Reiner's *Misery* (1990), a tiny ceramic penguin is composed so that it is large in the frame, since it will be the clue that later alerts Annie (Kathy Bates) that Paul Sheldon (James Caan), a writer she has imprisoned in her house, had in fact managed to leave his locked room while she was away.

Hitchcock's rule in action

balanced/unbalanced compositions

Every object included in a frame carries with it a visual weight. The size, color, brightness, and placement of an object can affect the audience's perception of its relative visual weight, making it possible to create compositions that feel balanced when the visual weight of the objects in the frame is evenly distributed, or unbalanced when the visual weight is concentrated in only one area of the frame. Although the terms balanced and unbalanced have no inherent value judgement in terms of composition, it is not uncommon to find balanced compositions that have their visual weight distributed symmetrically or evenly in the frame being used to convey order, uniformity, and predetermination. Likewise, unbalanced compositions are often associated with chaos, uneasiness, and tension. Ultimately, the feeling that can be communicated by the use of balanced and unbalanced compositions will depend largely on the narrative context in which they are being used. In the example below, from Zhang Yimou's *Hero* (top, 2004), a balanced composition is used to convey that we are about to see a duel between equally-matched adversaries, adding suspense and tension to the scene. The placement of subjects in the example from John Hillcoat's *The Proposition* (bottom, 2005), also creates tension by framing them in an unbalanced composition as they witness the unjust punishment of a young man. Note that although the composition is unbalanced, with most of the visual weight on the bottom right corner of the frame, the main subject was still positioned according to the rule of thirds.

a balanced composition

an unbalanced composition

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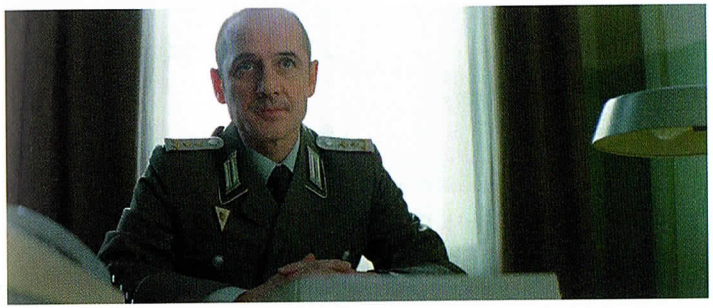
high and low angles

The height of the camera relative to a subject can be used to manipulate the audience's relationship to that subject. Eye-level shots place the camera at a height that matches the subject's eyes. A high angle shot places the camera above eye-level, and results in a framing that has the audience looking down on a subject. A low angle shot, on the other hand, places the camera below eye-level, and lets the audience look up at a subject. It is very common to see low angle shots used to convey confidence, power, and control, and high angle shots weakness, passiveness, and powerlessness, but these interpretations are not absolute and can be subverted based on the context in which they are presented. A common misuse of high and low angle shots is to frame the subject at too steep an angle, which results in a very dynamic but at times distracting composition. Only a minor adjustment in the angle of the camera right below or above eye level is sufficient to make an impression in the minds of the audience. The two examples on the left, from Florian Henckel von Donnersmarck's *The Lives of Others* (2006), use this principle to convey two very different emotional states; the top frame uses a slight low angle that shows a confident and even menacing Wiesler (Ulrich Mühe), an officer for the Stasi, as he systematically and mercilessly interrogates a suspect until he makes him confess. The bottom frame, from much later in the film, uses a slight high angle that emphasizes the tension and fear he experiences as he monitors agents raiding the house of a dramatist he protects at great personal risk.



low angle shot

high angle shot

depth cues

Creating depth to overcome the inherent two-dimensionality of the frame is one of the most common compositional strategies designed to produce a dynamic frame and a believable three dimensional space. While there are several techniques to add depth to a composition, two of the most frequently used by filmmakers are the relative size and object overlapping depth cues. The relative size depth cue is based on our assumption that if two objects are of the same size, seeing a smaller one is perceived as it being farther away, creating the illusion of depth. Filmmakers exploit this technique by placing subjects along the z axis of the frame, as shown in the example on the next page from Quentin Tarantino's *Inglourious Basterds* (top, 2009). Object overlapping entails just what its name says: the overlapping of objects along the z axis. When an object is seen partially covering or overlapping another object, we perceive the covered object as being farther away from us, creating the illusion of depth in the composition. The use of this technique by filmmakers usually involves finding any excuse to place something in the

foreground of the frame, sometimes partially blocking our view of the focal point of the composition. The O.T.S., or over the shoulder shot, is probably the most common example of this technique, but it is not uncommon to see filmmakers place objects in the foreground simply to add depth to the frame, as seen in Michael Bay's *The Rock* (bottom, 1996), where the chains in the foreground add depth and frame the subject (Nicolas Cage) within the frame, ensuring he is the focal point of the composition.

relative size depth cue

overlapping objects

closed frames and open frames

Closed frames refer to shots that do not acknowledge or require the existence of off-screen space to convey their narrative meaning, since all the information necessary for this purpose is contained within the frame itself. Open frames do not contain all the necessary information to understand their narrative meaning, and therefore require and draw attention to the existence of elements off-screen. Many compositional techniques are designed to imply the existence of off-screen space, since it acknowledges that the frame does not contain the entire world of the story, but instead acts like a window through which a larger world exists. However, there are benefits to using both of these types of frames depending on

a closed frame

an open frame

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the needs of your story. Off-screen space is also exploited to create tension and suspense, particularly in the thriller and horror genres. In the two examples on the previous page, from Uli Edel's *The Baader Meinhof Complex* (2008), a closed frame (top) is used to emphasize the isolation Ulrike (Martina Gedeck), a member of a German terrorist organization, feels while serving time in jail. The open frame used in the second example adds tension to a shoot-out between Petra (Alexandra Maria Lara), another member of the organization, and the German police trying to apprehend her after she broke through a roadblock.

focal points

One way to ensure your compositions clearly convey the idea or concept you want to communicate is to use strong focal points. Focal points refer to the center of interest in a composition, the area where the viewer's gaze will gravitate to because of the arrangement of all the visual elements in the frame. Focal points can include one or several subjects, and are commonly created by using the rules of composition listed previously in this chapter, like the rule of thirds, Hitchcock's rule, and balanced/unbalanced compositions. In fact, you will notice that nearly all of the examples used in this book have very strong focal points. By carefully selecting what is included and excluded from the frame, what is in focus and out of focus, what is lit and unlit, and what visually dominates the frame, you can create compositions that will not be misunderstood by your audience; this is one of the most important principles to create eloquent, compelling images. The frame below left, from Rolf de Heer's *Bad Boy Bubby* (1993), is a particularly good example of a composition with a very strong focal point, utilizing a visual trope (looking to the horizon as if to their future) that has been used by filmmakers as varied as George Lucas and Werner Herzog.

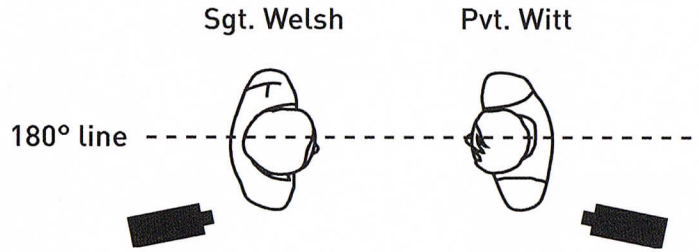
a composition with a strong focal point

180° rule

This rule is designed to maintain the spatial continuity that should exist whenever subjects interact in a scene, and will therefore directly impact where they should be placed in the frame. Simply put, it states that the camera should always

following the 180° rule

be placed on only one side of the imaginary line that is created by the looking or moving direction of the characters as established in wider shots. If the rule is not followed and the line is crossed, the resulting shots will not cut together properly, since subjects will not appear to be facing the right direction. In the examples on the previous page, from Terrence Malick's *The Thin Red Line* (1998), a conversation between Sgt. Welsh (Sean Penn) and Pvt. Witt (Jim Caviezel) places each camera angle on the same side of the 180° line, so that their looking direction remains consistent.

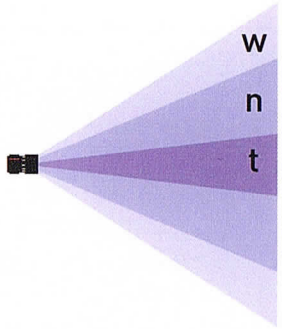


focal length

One way to classify lenses is according to their focal length, which equals the measurement, in millimeters, from the optical center (the point in the lens where the image is flipped and reversed) to the recording surface (a film frame or a CCD, or charge-coupled device, sensor in a video camera). Understanding focal length is important because it has a direct impact on the way lenses show perspective along the z axis, and on the field of view spanning the x axis. Lenses that reproduce perspective the way a human eye sees it are called normal; in the 16mm format, a normal lens has a focal length of 25mm, while in the 35mm format, a normal lens has a 50mm focal length. Any lens that has a focal length shorter than the normal for its format is referred to as a wide angle lens, while any lens with a focal length longer than the normal is called a telephoto lens.

field of view

Field of view refers to how much space along the x and y axis a lens can include in the frame. Lenses with short focal lengths (wide angles) produce a greater field of view than lenses with long focal lengths (telephotos). Understanding this concept can make including or excluding visual elements in your composition simply a matter of choosing a lens based on focal length and its corresponding field of view.



field of view of a wide (w), normal (n) and a telephoto lens (t)

wide angle lenses

Wide angle lenses capture a wider field of view than normal and telephoto lenses, and distort distances along the z axis, making them appear longer than they actually are. These lenses also exaggerate the perceived rate of movement along the z axis, so that if a subject approaches or moves away from the lens it will appear to do so faster than normal. Wide angles produce the appearance of a deeper depth of field than normal or telephoto lenses, but if their focal length is too short (a feature of "fisheye" lenses) they can distort the edges of the frame, creating what is called a "barreling" effect. Wide angle lenses are not commonly used too close to a subject, because of the distortion they can add to faces, as seen in the example on the next column, from Wong Kar Wai's *Fallen Angels* (1995).

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normal lenses

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wide angle lens distortion

normal lenses

Normal lenses reproduce perspective in a way that closely resembles what a person would see if he or she stood where the camera is, except for the field of view, which is much greater in human eyesight thanks to our peripheral vision. Normal lenses are commonly used for shooting human subjects, especially close ups, since they do not distort faces like wide angle or telephoto lenses do. Distances and movement along the z axis of the frame are not exaggerated with normal lenses.

telephoto lenses

Long focal length lenses, also called telephotos, have a narrower field of view than normal and wide angle lenses, and compress space along the z axis of the frame. Because of this, telephoto lenses appear to bring the background of an image closer to the foreground, flattening space; movement along the z axis is also distorted, so that subjects walking toward of away from the lens can look like they are hardly moving. Telephoto lenses flatten facial features, so they are not commonly used for close ups of subjects unless they are only slightly longer than a normal lens. The depth of field produced by these lenses looks shallow, but there are other factors at play that are examined closer in the depth of field section of this chapter. A good example of a creative use of the telephoto lens can be seen in Stanley Kubrick's *Barry Lyndon* (1975, below); the distortion of distances along the z axis produced by the telephoto is exploited to compress a dense formation of soldiers, emphasizing the cohesiveness, power, and unity of purpose of the advancing Prussian army.

telephoto lens distortion

fast vs. slow lenses

The aperture is the mechanism within a lens which controls the amount of light entering to expose an image on a film frame or CCD sensor. The maximum aperture of a lens (as measured in f-stops), or how much light it lets through when set at its widest opening, forms the basis to classify lenses according to their speed. Lenses with a very wide maximum aperture are called fast, meaning that they require very little light to register an image; for instance, *f* 1.4 or *f* 1.8. Lenses with smaller maximum apertures, like *f* 2.8 and smaller, are called slow, and require more light to register an image. While having a faster lens is invariably a better option, they are much more expensive than slower lenses. On the

other hand, they can save you money and time in the long run, since they require less light than slower lenses and let you shoot for longer after the sun sets (and way after a slow lens becomes unusable because your light meter tells you to open up to *f* 1.4 and you can only go to *f* 2.8).

prime lenses

Lenses that have a single (or fixed) focal length are known as prime lenses. If the quality of the image is the main priority, these lenses are preferred over variable focal length lenses, or zooms, because they can produce better images in terms of contrast, color, and resolution. Primes are also lighter than zooms, because they have fewer lens elements. When compared to zoom lenses, primes have a shorter minimum focusing distance, and are generally faster (they have a wider maximum aperture). However, primes are also more time-consuming to use, because they need to be changed every time a different focal length is needed, requiring careful and meticulous handling.

zoom lenses

Zoom lenses are also known as variable focal length lenses, because they have the capability to slide through various focal lengths, often including wide, normal, and telephoto. This is accomplished through a complex mechanism that allows the user to manually adjust the position of elements in the lens housing, effectively changing its optical center. The zoom ratio of a zoom lens refers to its focal length range; a 10:1 zoom means that it can increase its focal length 10 times, going from 12mm to 120mm, for instance. A drawback of using zoom lenses is that because they have more elements than prime lenses, they are slower (the maximum aperture of a zoom lens is always smaller than that of a prime lens). The extra elements in a zoom also tend to produce inferior quality images than those that can be obtained with an equivalent prime lens. On the other hand, zoom lenses let you work faster because you no longer have to stop shooting every time you need to change the focal length by switching to a different lens. In addition, zoom lenses let you change the focal length even during a shot, which is impossible with a prime lens.

specialized lenses

There are lenses that differ in their construction from primes and zooms, and are generally only used under special circumstances when a specific effect is needed. The tilt-shift lens, for instance, has a movable front element that can be swung, allowing the user to create compositions where two subjects on the same plane of focus will have only one of them in focus. Another specialized lens is the split field diopter, which attaches over your lens and lets you have two subjects at different distances along the z axis in focus simultaneously. A drawback of using this lens attachment is that an area of blurriness is created where the two lenses meet, which filmmakers often conceal by placing it somewhere in the frame where it will not be too evident, as shown in the example from Brian De Palma's *The Untouchables* (1987) below. Other specialized lenses include wide angle and telephoto converters, which attach to the native lens of a video camera to achieve a wider or narrower field of view

split field diopter in action

than the factory lens provides. Although these attachments are relatively inexpensive, there is a clear compromise, since they generally produce images of diminished quality in terms of contrast, color, and sharpness (which becomes even more evident when projected on a large screen). Another kind of specialized lenses include macros, which allow you to focus extremely close to a subject to capture very small details; these lenses are examined further in the *Macro Shot* chapter.

depth of field

Depth of field refers to the distance range along the z axis that will be in acceptable focus, meaning sharp. A composition with a deep depth of field has a large area in focus, while a composition with a shallow depth of field has only a small area of the frame in focus. The aperture of a lens is a major factor in manipulating depth of field. Larger apertures that let in more light produce images that have a shallow depth of field, while smaller apertures that let in less light produce images with deeper depths of field. Another way to control depth of field is by changing the distance between the camera and the subject; placing the camera closer to the subject results in a shorter focusing distance, which produces a shallower depth of field. Placing the camera farther away from a subject increases the focusing distance, resulting in a deeper depth of field. If the size of a subject in the frame is kept constant, focal length is not a factor in changing the depth of field. When the size of a subject is not kept constant, increasing the focal length (by using a telephoto lens, for instance) will produce a shallow depth of field, while decreasing the focal length (by using a wide angle lens) will produce a deep depth of field. Another determining factor is the size of the shooting format you choose for your project; this is explained in the shooting formats section of this chapter. Being able to produce a shallow depth of field will allow you to isolate your subject in the frame by keeping other visual elements out of focus; this prevents the audience from being distracted and directs their attention to the subject. Alternatively, a deep depth of field makes every visual element sharp and therefore noticeable by the audience, adding information that can augment their understanding of a subject. Depth of field is one of the most visually expressive and powerful tools you can use to manipulate the composition of a shot. In the two examples above, from Mel Gibson's *Apocalypto* (2006), depth of field is used creatively to indicate the

shallow depth of field

deep depth of field

dynamics within a group of Mayan warriors. In the top frame, a shallow depth of field is employed to visually isolate Middle Eye (Gerardo Taracena) after he acted against the will of their leader, Zero Wolf (Raoul Trujillo). In the bottom frame, from later in the film, Middle Eye has stopped questioning Zero Wolf's authority and rejoined the group, united behind a single purpose. This dynamic is conveyed visually with the use of a deep depth of field.

camera to subject distance

The camera to subject distance is measured from the film plane, the area inside a camera where the light gathered by the lens reaches the film or the CCD sensor, to the subject, and is used to achieve critical focus (the sharpest possible image). Often, filmmakers will decrease the camera to subject distance to produce a shallower depth of field, although doing this will also change the size of the subject in the frame. Conversely, increasing the camera to subject distance will also increase the depth of field, and decrease the size of the subject in the frame. Using a zoom lens to change the camera to subject distance while maintaining the size of the subject constant will not have an effect in the depth of field, but will affect the perception of it. For instance, a zoom with an aperture setting of *f* 4 set as a telephoto will appear to produce a shallow depth of field when compared to the same zoom with the same aperture set as a wide angle. In fact, the depth of field will be practically identical, but since the telephoto lens compresses space along the z axis, the background will appear to be much closer, making it easier to see that it is out of focus.

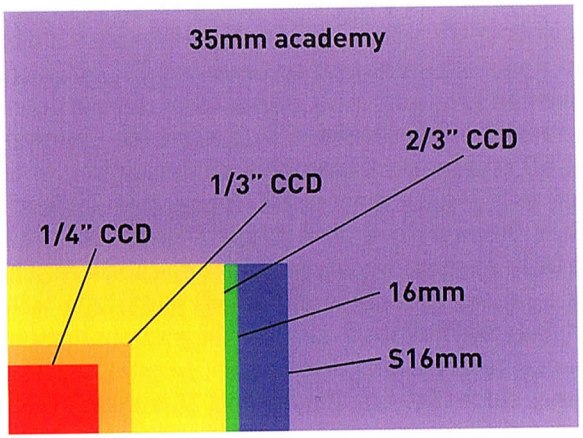
neutral density filtration

An effective way to control the depth of field in a composition is through the aperture of the lens, but you cannot simply open up or close down without compensating for the light you are losing or gaining as a result, or your exposure will be completely off. When shooting outdoors on a sunny day, it would be impossible to create a shallow depth of field without the use of Neutral Density, or ND, filtration. These filters are calibrated to cut light in precise f-stop increments (cutting light by 1, 2, or 3 f-stops). ND filters work just like sunglasses for your lenses, affecting only the quantity, not quality, of the light that reaches the film or CCD sensor. Using these filters and a depth of field chart (a table that lists the various depths of field that result from a specific camera to subject distance, focal length, and aperture setting), it is possible to accurately determine how many f-stops you need to close down or open up to produce the depth of field you want. When shooting indoors with highly controllable artificial light, it is usually not difficult to shoot with the larger apertures needed to produce a shallow depth field. However, achieving deep depths of field while shooting indoors with artificial lighting poses a problem, because of the extreme lighting requirements necessary to shoot with small apertures. Some professional-grade SD and HD cameras come equipped with internal ND filtration, typically letting you cut light in increments that are equivalent to 3 and 6 f-stops of light (labelled on the camera as 1/8 and 1/64, denoting the amount of light that gets through when the filter is activated).

shooting formats

Your choice of shooting format will have a major impact on many aspects of your visual strategy, but one of the most important has to do with the depth of field you can produce. The smaller the size of the film frame or CCD sensor, the deeper the depth of field will be, and the more difficult it will become to produce shallow depths of field. The reason is directly related to the size of the lens used; smaller formats use smaller lenses, since the area being used to record an image is small. For instance, if you are shooting with 16mm film and you use a 25mm lens (considered a "normal" lens

for this format), your depth of field at *f* 5.6 with a lens focused at 10 feet will be roughly 10 feet. Shooting the same shot in 35mm, at the same f-stop and camera to subject distance with a 50mm lens (considered "normal" for this format), will yield a depth of field of only 3 1/2 feet. The physically larger 50mm lens has a longer focal length than its 16mm equivalent, producing a shallower depth of field than the 25mm lens. Now consider SD (standard definition) and HD (high



CCD sensors and film format sizes

definition) cameras, which use CCD sensors that are many times smaller than a 16mm film frame; the lenses for these video formats are smaller, and therefore shorter in focal length, than their larger format equivalents (as seen in the figure above; not actual size). This is the main reason why it is so difficult to create a shallow depth of field when shooting with formats smaller than 35mm, especially with formats that use very small CCD sensors. However, we could also reverse this argument, and say that it is very difficult to create deep depths of field when shooting with formats larger than 16mm; you might, for instance, devise a visual strategy that relies on having a deep depth of field, and therefore prefer shooting with a smaller format that will make this possible.

Before the advent of HD video, super 16, or S16, was a popular alternative to approximate the look of 35mm film at a much lower cost. As you can see from the illustration on the left, the frame size is slightly larger than a regular 16mm film frame; this is achieved by using a wider aperture plate that extends to an area of the standard 16mm negative that used to have an optical soundtrack. This results in a frame that uses 20% more negative area, producing an image that has significantly more resolution than standard 16mm. This extra detail becomes crucial when S16 is blown up to 35mm for theatrical distribution (S16 is not a distribution format), since this process tends to magnify grain and any flaws present in the image. S16 is also ideal for HD transfers, because its native 1.66:1 aspect ratio closely approximates the 1.78:1 (or 16x9) aspect ratio of HDTV; regular 16mm has to be severely cropped to fit in this aspect ratio, wasting a large area of the negative and losing resolution in the process. However, the larger size of the S16 format does not bring with it the ability to create shallower depths of field, since its lenses are basically the same size as those used for standard 16mm, producing the same depth of field as a result.

35mm lens adapter kits

A small number of companies have developed lens adapter kits that allow you to attach a 35mm format lens to an SD or HD camera. With these kits, you can produce images with shallow depth of field that would otherwise be very difficult or impossible to produce with video formats. These adapters work by focusing the image from the 35mm lens on a vibrating ground glass; the native lens on your video camera is then focused to record this image. Because 35mm lenses are so much larger than lenses made for video formats (since they were designed to create an image large enough to fill a 35mm film frame), they can easily produce shots with a shallow depth of field. These 35mm adapters, coupled with the higher resolution of an HD camera and 24p progressive

shooting, makes it possible to create images that approximate the feel and look of film-originated material (although HD still cannot match the dynamic range or resolution of 35mm film). It is important to take into account that using an adapter will cut a certain amount of light, anywhere from 1/2 to 2/3 of an f-stop. While this might not sound like a lot of light, if you are shooting indoors with artificial light or night exteriors with available light, 1/2 f-stop can be the difference between having a usable image and not being able to shoot unless you have additional lighting. Another important fact to keep in mind is that these adapters usually do not permit you to close down the aperture too much (commonly around *f* 5.6), or else the texture of the ground glass becomes visible, making your images look like they were shot using a very heavy black pro mist filter with a grainy texture. The shallow depth of field you will get with an adapter will also make it more difficult to ascertain critical focus without the use of a large external HD LCD preview monitor; the small LCD flip-out screen that comes with most HD cameras simply does not have the resolution to let you do this, and can make a slightly blurry shot appear to be in focus. An extremely useful tool to use with a lens adapter kit is a follow focus attachment, which can help you focus quickly and accurately. This geared device attaches a wheel that protrudes perpendicularly to the lens, so that a focus puller (a camera crew member whose job is to maintain focus while taking a shot) can much more easily access and control the focusing ring.

SD and HD video

High Definition, or HD, is rapidly becoming the format of choice for both shooting and broadcasting digital video. Advances in technology are making features that were previously only available on high-end HD cameras (like variable frame rates) available on prosumer (professional-consumer) grade cameras. On the other hand, Standard Definition, or SD, video is slowly but surely being phased out, although there are still millions of SD cameras out there. Whichever video format you choose for your project, you should be aware of the advantages and shortcomings they will entail. The biggest difference between the SD and HD cameras is, of course, resolution. The standard SD video frame has a resolution of only 720x480 pixels, while HD cameras record frames of 1280x720 and 1920x1080 pixels in size, depending on the camera being used. The higher resolution of HD lets you capture details and render a range of color that is impossible in SD video. This might not be immediately apparent if you are shooting a close up of a subject, but if your composition is a wider shot with a lot of minute details, the extra resolution can make a big difference. Some professional SD and most HD cameras also allow you to capture footage at a 24p, or progressive, frame rate, instead of the standard 30 interlaced frames per second (actually, 29.97 frames per second) which was the only choice for shooting SD video in the past. Shooting at 24p allows the footage to have the same motion artifacts, or degree of blurriness, we have become accustomed to see as "normal" when watching films, since they are also shot at 24 frames per second. Watching side by side identical footage of video shot at 24p and 30i (or interlaced) is startling; even if both videos have the same resolution of 720x480 pixels, the footage shot in

SD and HD frame sizes

24p will seem much more film-like, since it will not have the added crispness those 6 extra frames per second add.

Prosumer SD and HD cameras also let you control the way the camera responds to light, allowing you to tweak areas of under and overexposure to produce images that have a wider exposure range than what is commonly seen in material shot with less expensive SD cameras. This means that footage shot with cameras that have "gamma compression" or "cine-gamma" settings can produce images that will have a range of tonalities that resemble (although not match) the exposure range of film-originated material. If your aim is to produce footage that will have the feel and look of film without the expense of actually shooting film, then HD video shot at 24p with cine-gamma is your best choice. You might, however, purposely want your footage to have the look and feel of standard SD video, with less resolution than HD, the motion artifacts of 30i, and a narrower exposure range as part of your visual strategy; it worked wonders for Daniel Myrick and Eduardo Sánchez' *The Blair Witch Project* (1999).

Most prosumer and professional video cameras also come equipped with a gain switch, normally with three settings (low, medium, and high), which allows you to boost the sensitivity of the CCD sensor for shooting under low-light conditions. While it might be tempting to engage this switch when you do not have enough lights, you should be aware that using gain invariably adds video noise to your image, even if it is not visible while you are shooting (since the small LCD screens most cameras come equipped with do not have enough resolution to display it). Unless having video noise is part of your visual strategy, you should avoid using gain, and make sure you have sufficient lighting instead.

director's viewfinder

One tool you should try to use as much as possible to train your eye is a director's viewfinder; a small viewing glass that lets you see what the framing of a shot will be depending on the field of view of a given lens and format. Consistently using a director's viewfinder is a good way to become familiar with the aesthetic characteristics of particular focal lengths, specifically field of view, z axis perspective, and apparent motion across the frame. Unfortunately, good director's viewfinders are not cheap, easily costing a few hundred dollars. There are smaller models available, but they have rather small viewfinders that make it hard to see what the frame looks like. If you do invest in one, you will find many opportunities to use it, for instance during preproduction for location scouting (letting you preview potential shots), and during production (letting you quickly select the appropriate lens and position of the camera without having to physically move it). Alternatively, you can also use a digital or even an SLR still camera as a director's viewfinder, provided you know or can calculate the equivalent field of view and focal length of the lens in that camera to the lenses used by the shooting format you choose for your project. Lastly, you can always use your hands to create an ad hoc frame that will let you roughly see what can be included or excluded in a composition. Whichever method you choose, you will eventually become more discriminating about the composition of your shots; your eye will naturally scan the entire frame and not just the focal points, and you will begin to naturally discover visual relationships between elements in your frame that you could not see previously.

a director's viewfinder