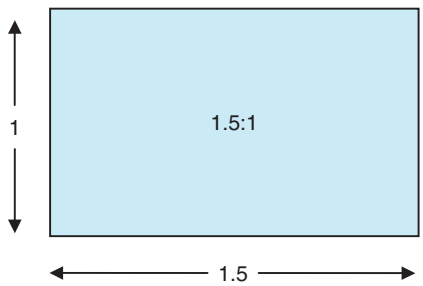
# PART TWO: THE FRAME

Part Two explains various secondary spatial concepts that makes space more visually useful. This includes aspect ratio (defining the physical proportion of a frame), surface divisions (dividing the picture plane), and open space (creating space outside of the screen). Lastly, the Principle of Contrast & Affinity will be related to space.

## Aspect Ratio

Aspect ratio is a pair of numbers indicating the size relationship between the width and height of a frame. For example, 1.5:1 is an aspect ratio. The first number, 1.5, is the width of the frame. The second number, usually 1, indicates the height of the frame. A colon (:) often separates the two numbers. The aspect ratio numbers are the width and height proportion, not the actual size of the frame.



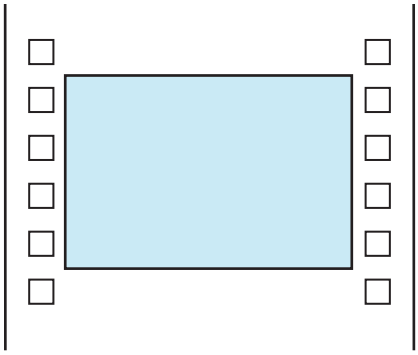

This frame has an aspect ratio of 1.5:1, which was determined by measuring the height (usually given the measurement of 1), and then comparing the height to the width. Because the width is 1½ times greater than the height the aspect ratio is 1.5:1.

The aspect ratio of a picture plane can be determined by dividing the measured height into the width. For example, a screen 20 feet high and 60 feet wide has an aspect ratio of 3.0:1. The math for this calculation is simple: 60 ÷ 20 = 3. The screen is three times wider than it is high.

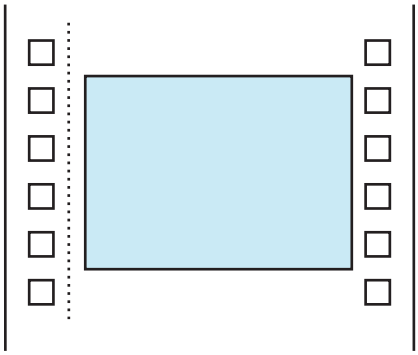
The term *aspect ratio* can be applied to any type of film, video, or digital frame. This includes cameras where we capture pictures, and screens where we watch pictures.

### The Film Frame Aspect Ratio

In standard 35 mm motion picture film, each 35 mm frame is four perforations high. The largest possible frame size (called *Full Aperture*) is approximately 1.33:1 or a frame that is 1⅓ times wider than it is high.



Full Aperture cameras photograph an image in this entire 1.33 area. Super 35 is another term for a Full Aperture camera. These cameras are often used to photograph special-effects shots because the picture area covers the entire frame, offers higher resolution, and allows for greater flexibility in repositioning the image during postproduction. Entire films are often shot in Super 35, which allows the final film to be released in a variety of aspect ratios.



Most 35 mm film cameras photograph on a smaller 1.33 portion of the 35 mm frame called Academy Aperture. These cameras don't photograph an image on the left side of the frame because that area is used for the film's sound track (indicated by the dotted line). Films shot with Academy Aperture cameras do not have the aspect ratio flexibility available with Super 35 cameras.

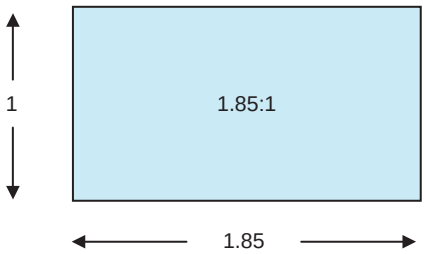
## The Digital Frame Aspect Ratio

Professional digital cameras used for theatrical cinema tend to mimic film camera aspect ratios. Other types of digital cameras are used for a wide variety of other media so a digital camera can use various aspect ratios as described below.

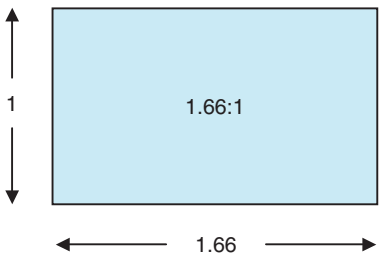
## The Screen Aspect Ratio

Aspect ratio also refers to the shape of the picture plane and the screen. Remember that the picture plane is the "window" within which the pictures exist. Understanding the different aspect ratios is important because the frame proportions for different screens vary. The visual planning for a television program can be completely different from a feature film. Visual content for the Internet provides the opportunity to create new or changing aspect ratios.

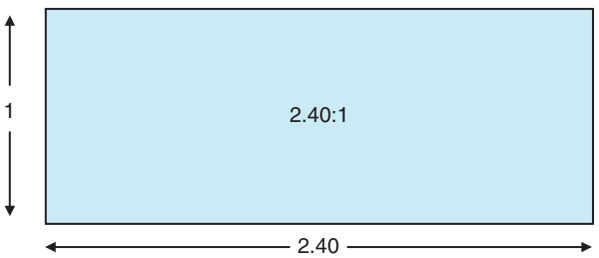
There are many standard aspect ratios in use for theatrical motion picture screens, television screens, and computer screens. The most common screen aspect ratio for theatrical films is 1.85:1.



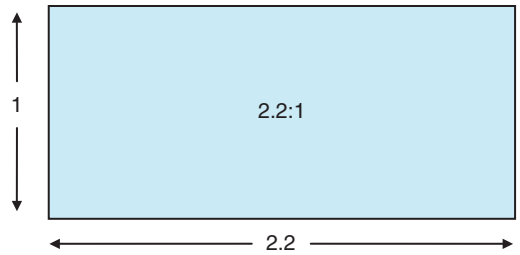

The 1.85:1 frame or screen is approximately 1⅞ times wider than it is high.




The motion picture screen aspect ratio standard in Europe is 1.66:1. The screen is 1⅔ times wider than it is high.

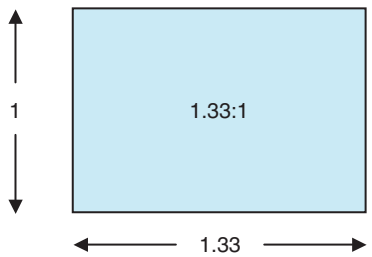



A much wider theatrical screen aspect ratio 2.40:1 is also in use. Here, the frame is almost 2½ times wider than it is high. Originally called Cinemascope, this system uses anamorphic lenses to produce this wide aspect ratio. A complete discussion of this system is included in the appendix.



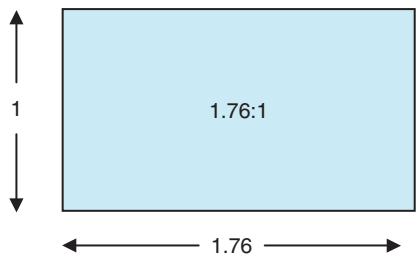

A movie can also be released in 70 mm, which has an aspect ratio of 2.2:1. More details about 70 mm are outlined in the appendix.

Imax and Omnimax, developed in the late 1960s, are two giant screen formats that use special 65 mm cameras and unique 70 mm projectors. Each frame of Imax or Omnimax is 15 perforations wide with a screen aspect ratio of approximately 1.3:1. Imax uses normal, spherical lenses and is projected on a giant, flat screen. Omnimax uses a fisheye lens and is projected on a huge, tilted, dome-shaped screen.




Television and computer screens have a limited range of aspect ratios. Standard NTSC television and many consumer computer screens are approximately 1.33:1.

Measuring the 1.33:1 frame or screen, the width is 1⅓ times greater than the height. Another way to describe television's aspect ratio is 4 × 3, meaning it is four "units" wide and three "units" high. Often, television's aspect ratio is described as 3 × 4, which is technically incorrect, but it still refers to the 4 × 3 aspect ratio.




Most high-definition television (HDTV) screens have an aspect ratio of 1.76:1 or 16 × 9 (16 units wide and 9 units high).

Television shows made before 2002 were produced in the old standard NTSC 1.33:1 aspect ratio. Since then, most television production is done in the HD 1.76:1 format. This proportion is nearly compatible with standard 1.85:1 theatrical films shot after 1952 (before 1952 feature films were shot with aspect ratios of 1.66:1 and 1.33:1). Conventional 1.33 television images do not fit onto the 1.76 screen. Many HD televisions letterbox the sides of the 16 × 9 screen or distort the picture to make various aspect ratios fit or fill the 1.76:1 screen.

Aspect ratio compatibility problems occur whenever theatrical 2.40, 1.85, or 1.66 films are presented on conventional NTSC 1.33 television screens. See the Appendix for an explanation of this problem and its solutions.

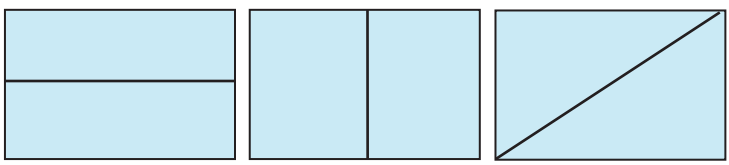
# Surface Divisions

The screen is a flat surface that can be divided into smaller areas using surface divisions. These divisions provide a unique tool for visual storytelling.

## Dividing the Frame

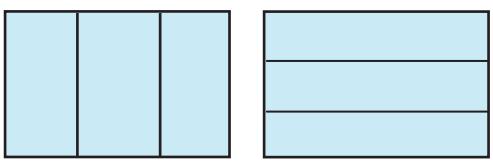
There are several ways to divide the frame: halves, thirds, grids, square on a rectangle, and the Golden Section.

**Halves**: The simplest way to divide the frame is in the middle.



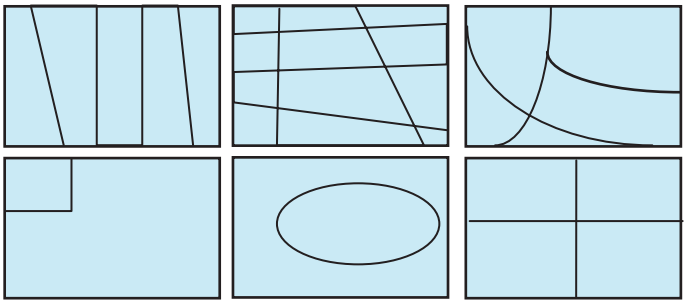
The division of the middle can be horizontal, vertical, or diagonal (the diagonal can be left to right or right to left).

**Thirds**: The frame can be divided into thirds.



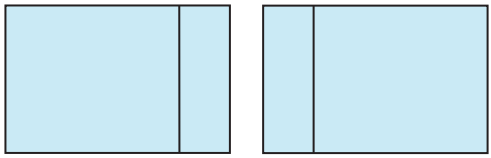
Most often, the divisions are vertical but they can also be horizontal. In painting, the vertical division of thirds is called a *triptych*.

**Grids**: Obviously, the frame can be divided into fourths, fifths, sixths, or more. All these divisions are grids.



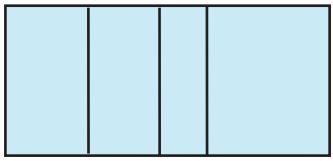
The grid encompasses a wide range of variations.

**Square on a Rectangle**: This is a unique surface division that occurs within any rectangular frame.



This division generates a square within the rectangular frame. The height of the square is the same as the height of the screen. The square can occur on the left or right side of the overall frame.

**The Golden Section**: Dividing a frame using this system is fairly complex.



This frame has been divided using the Golden Section proportion. No two divisions will ever be the same size yet they will always relate back to the overall frame. A detailed explanation of the Golden Section is included in the appendix.

## The Surface Divider

Anything that divides the frame into two or more areas is a surface division.

The divider can be an optical split screen (showing two or more separate images) as in Quentin Tarantino's *Kill Bill*. However, the divider is usually an actual object in the shot.

A division of the middle can be a doorway between two people.

Or it can be the tonal change in a BG wall.

The horizon line creates a division of the middle.

A doorway can create a square on the rectangle division.

A division of thirds can be windows.

Here, the vertical walls divide the frame into thirds.

A grid can be created by the complex architecture of a room or by patterns of light and shadows.

## The Purpose of Surface Divisions

There are several ways surface divisions can be used to help tell a story:

1. Surface divisions can emphasize similarities and differences between objects.

The first shot has no surface division. When a surface division is added, as in the next shot, the viewer is compelled to compare the two people. The surface division has changed one large screen into two small screens. The actual surface division can be anything: a pole, a tree, the corner of a building, a shadow, etc. The surface division asks the audience to compare and contrast each area of the divided frame.

The emotional separation between mother and son is visualized with a vertical surface division that divides the frame. The picture loses its meaning when the division is removed.

2. Surface divisions can help direct the eye to specific areas of the frame for directorial emphasis.

The full 2.40:1 frame allows the viewer's eye to wander.

Adding a surface division places the actor in a new, smaller area of the frame. The surface division acts like a visual fence and confines the audience's attention to one portion of the frame.

Here, the grid surface division causes the viewer to concentrate on the woman and then the man in the BG. The surface division directs the viewer's attention to part of the frame and keeps it there.

3. Surface divisions can alter a picture's fixed aspect ratio. A movie or television show is limited to one aspect ratio (there are some exceptions that change aspect ratio during the film such as Able Gance's N*apoleon* (1927) and Douglas Trumbull's B*rainstorm* (1983). Changing the aspect ratio is useful because a fixed aspect ratio may get boring or is inappropriate for parts of a story.

Viewers are first confronted with the 1.33, 1.85, or 2.40 screen when they enter the theatre or sit down in front of a television or computer screen. The screen's aspect ratio won't change. Imagine an art museum where all the paintings are exactly the same size, the same shape, and in identical frames. One fixed frame is not necessarily right for every picture. Visual variety in the screen's proportion is useful. Aspects of a story can be more visual by dividing the frame into halves, thirds, girds, or squares.

In each of these pictures, a new aspect ratio has been created using a surface division. All the action will take place within the new, temporary frame.

4. Surface divisions can comment on a story situation.

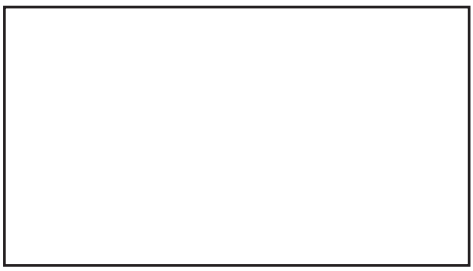
The division of thirds helps to communicate the trapped feeling of the character.

The surface division of the window emphasizes the emotional separation between the two characters.

# Closed and Open Space

## Closed Space

Frame lines are the reason that most pictures are closed space.



Frame lines surround most pictures. In a magazine or book, the frame lines are the edges of the picture itself or the page. Museums display pictures in frames that create a closed border around the picture. Plastic frames enclose televisions and computer screens, and dark fabric that clearly marks the limits of the screen surrounds movie screens. The pictures exist inside the frame, not outside the frame. This is called closed space. These frame lines are so visually strong, so omnipresent, and so fixed that pictures are visually locked in or closed by the frame lines. Almost every picture we see is closed space.

The visual component of line can contribute to the closed space. Not only do the frame lines enclose the space, but the picture itself is full of horizontal and vertical lines that visually reinforce the frame lines. Exaggerating the vertical and horizontal lines reveals how much of the picture's visual construction is composed of lines that parallel the frame and emphasize the closed space. Vertical or horizontal lines are usually present in most pictures, emphasizing the closed space already created by the frame lines.

## Open Space

Open space is a unique type of space that can exist outside the frame lines of the screen. It's difficult to create, but when it does occur, it pushes past the closed frame lines that surround pictures and gives the audience a sense of space outside of the frame.

A picture of a vast desert or a sky is not open space. Creating open space has nothing to do with the actual location. In fact, creating open space in a desert is difficult.

Open space occurs when the picture seems to extend past the frame lines. Of course the picture can never actually exist outside the frame (and 3D movies aren't open space). Open space occurs when something in the frame is visually powerful enough to temporarily erase the frame lines and create a sense of visual space outside the frame.

Creating open space is difficult but it can be achieved with the help of a large screen, intense movement, and the elimination of lines that keep the space closed.

### Large Screens

It is easier to produce open space on a large screen. In fact, the bigger the screen, the easier it gets. Giant Imax screens can easily generate open space but large conventional movie screens in big theatres can work almost as well. As the screen size increases, the frame lines move to the edges of our peripheral vision. With giant screens like Omnimax, the frame lines may be completely out of sight so that our vision is surrounded by a picture that has no frame lines at all. As the frame lines move out of visual range, the chances of creating open space increase.

As the screen size shrinks, the chances of creating open space diminish. Television and computer screens won't produce open space because they're too small and have overwhelming frame lines. In most television viewing situations, the viewing room is full of furniture creating additional verticals and horizontals that enhance the already strong frame lines of the television itself. There's no possibility that the pictures on a television or computer screen will overpower the viewing environment, so the space will remain closed. Pictures on hand-held video devices will always be closed. A carefully controlled home theatre environment using a large screen TV might promote open space, but a movie theatre provides the best chance of creating open space because of the giant screen and the darkened environment that deemphasizes the frame lines.

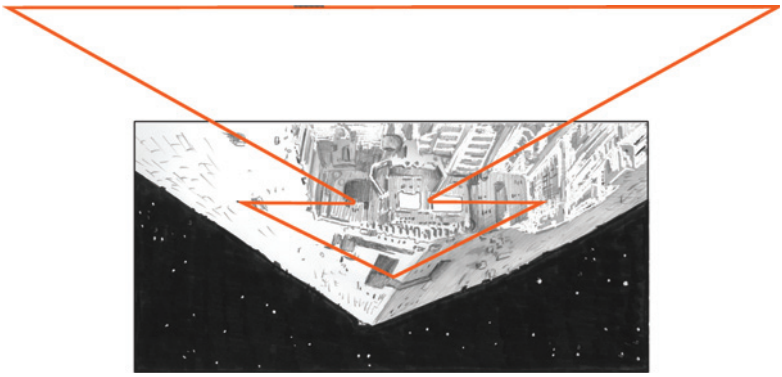
### Strong Visual Movement

Movement is the one visual component that is missing in frame lines so it's the most likely weapon against closed space. Movement that is visually stronger than the frame line can create open space. The screen's frame lines are solid, locked down visual anchors that enclose the picture. An extremely dynamic movement or set of movements within the picture can overwhelm the frame line and give the audience a sense that movement is occurring both within and beyond the picture frame.

There are three kinds of movement that can open the frame. One is a random, multidirectional movement of objects in the frame.

A random, multidirectional movement that fills the frame may have enough visual intensity, or dynamic, to push open the frame lines and create space beyond the actual frame. As the audience watches the screen, the movement will visually overwhelm the frame lines, and the audience will sense visual space outside of the frame.

Movement in or out of the frame can also create open space. The movement must be large in relation to the frame, slow enough to be seen by the audience, yet fast enough to generate visual intensity to overpower the frame lines.



An example of this type of open space is the opening shot of *Star Wars* (1977). When the enormous spaceship enters the top of the frame, the audience feels that it is not only on screen, but also over their heads, outside the frame, in the theatre. The ship's movement creates open space and the top frame line seems to disappear or open as the spaceship enters frame.

Open space is also created when the spaceships in *Star Wars* travel at "light speed." The sudden stretching of the stars creates movement that is more visually powerful than the frame lines. The stars seem to suddenly extend beyond the frame.

An object entering frame won't necessarily create open space because the object is usually too small in relation to the frame and moving at the wrong speed. If a moving object enters too slowly, the movement is not dynamic enough to overpower the frame lines. If the object moves fast, it passes through the frame too quickly and never gets a chance to overwhelm the frame lines and create open space.

Camera movement can also be used to create open space. Although the movement won't be multidirectional, like multiple objects in frame, random camera movement including rotations on the axis of the lens can help to open the visual space.

If the camera movement is random and of sufficient speed and agitation, everything in frame will move in opposition to the stationary frame lines. This increased visual dynamic, created by camera movement, may be enough to overpower the frame lines and open the space.

### Elimination of Stationary Lines

In creating open space, any line that emphasizes the frame lines must be removed. Open space is so delicate that closed space components like stationary lines will easily overwhelm the open space and keep the frame closed.

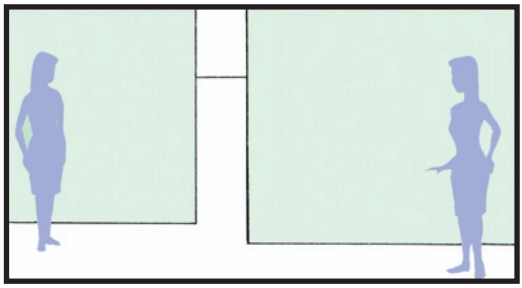
It is difficult to imagine a shot without any stationary lines. Here is a picture of a building and a diagram showing the stationary lines it creates. Lines occur so consistently in the real world that eliminating them seems nearly impossible. Even a horizon line can keep a space from opening (which is why an open desert is rarely open space). The more stationary lines in a shot, the more closed it becomes.

Because open space is so difficult to produce, and rarely occurs, it creates an unusual spatial contrast and generates tremendous excitement and intensity for the viewer. Deep, flat, and limited spaces have no specific emotional meanings for an audience but open space is an exception. Open space will always generate extreme emotional and muscular response from the viewer. The importance of this intensity is discussed in Chapter 9, "Story and Visual Structure."

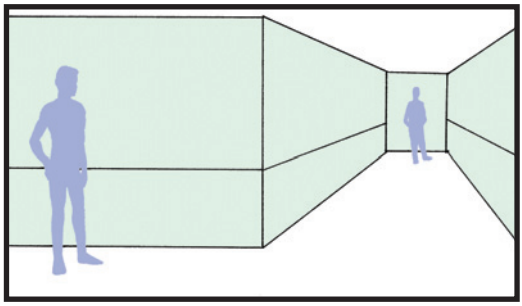
## Contrast and Affinity

The various aspects of visual space can be related to the Principle of Contrast & Affinity. Remember, contrast and affinity can occur within the shot, from shot to shot, and from sequence to sequence.

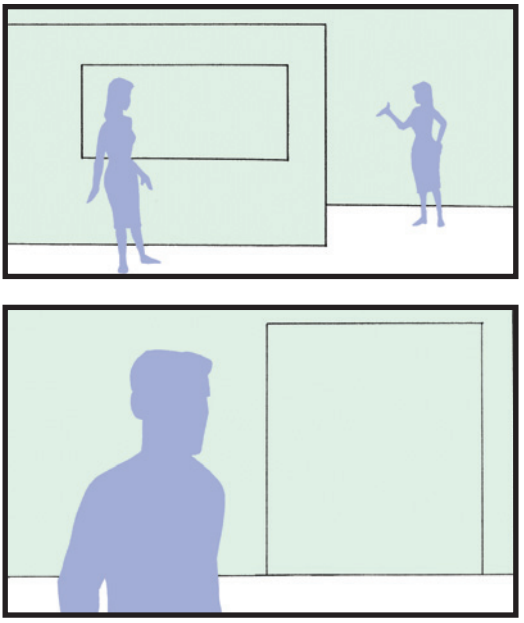
Here are examples of various kinds of contrasts and affinities of space.



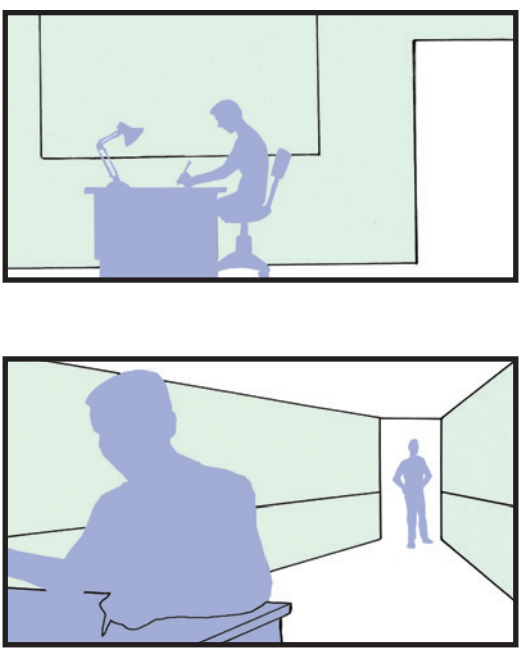
This is an example of affinity of space within the shot. A surface division divides the frame in half and both halves are flat space. Although the frame is divided, both halves are spatially similar, creating an affinity of space. The overall visual dynamic or intensity of the picture is low.



Here is an example of contrast of space within the shot. The surface division separates the deep and flat halves of the picture.



This pair of shots is an example of affinity of space from shot to shot because both are flat. These shots are low in visual intensity because of their visual affinity.



A flat shot and a deep shot illustrate contrast of space from shot to shot. The visual intensity between the two shots is high.

Contrast of space can also occur from sequence to sequence, where one group of scenes is uniformly flat and the next group is uniformly deep. Affinity from sequence to sequence occurs when all shots in a group of sequences use the same type of space.

The Principle of Contrast & Affinity can also be used with ambiguous and recognizable space, open and closed space, and surface divisions.

People often comment that deep space looks interesting and flat space looks dull. That's a generalization, which is easy to reverse, but the reaction is understandable. The viewer is responding to the contrasts found in deep space and the affinities found in flat space.

Deep space is inherently more intense than flat space. Producing deep space requires contrasts such as large and small objects, light and dark tones, warm and cool colors, and textured and textureless surfaces. Contrast creates intensity, so as a space deepens, the visual intensity increases.

Flat space can also be produced using contrasts, but it's often created with affinities, which lack visual intensity. When objects are staged on a single frontal plane, there is no contrast in size. Flat space also uses a limited tonal and color range, emphasizes textural similarities, and eliminates relative movement. The affinity used to create flat space reduces visual intensity.

Space is a large, complex visual component. When you browse through a magazine, view pictures in a museum, or watch a film, try to define the visual space in the pictures. Is it flat, deep, limited, or perhaps a combination? Learn to define the space in other work and then train yourself to control space when designing an environment or looking through the viewfinder of your camera.

Are there only four types of space? No. Deep, flat, limited, and ambiguous space offers a wide range of visual possibilities, but alternatives exist.


A scale from flat to deep reveals the available spatial variations.

Define your own visual space. Mix and match the deep and flat cues to create a space that best suits you and your story. Perhaps your new type of space uses all the depth cues but the colors are only cool. Maybe you prefer limited space but you need movement perpendicular to the picture plane. Fine. Use it. Make new visual rules that satisfy your requirements, but whatever you decide, adhere to your rules or understand what will happen if you don't.

# Films to Watch

It helps to see space in use. There are brilliant examples in television commercials, music videos, computer games, television programs, and short films.

If you've never seen the following films, get the videos and watch them. The visual aspects of any film are best revealed when you view the film with the sound off (although your first viewing of any film should always be with sound). The more times you watch a film silently, the more you'll learn about its visual structure.

The wonderful aspect of studying pictures is that there are no secrets. The ingredients in food, for example, can be hidden. You eat a delicious meal but can't guess the secret recipe. A picture's visual structure can't hide because everything is visible on the screen. The more times you watch a film, the more the visual ingredients will reveal themselves.

The following films are excellent examples of well-controlled space.

## Deep Space

***Touch of* Evil** (1958)

Directed by Orson Welles

Written by Orson Welles

Photographed by Russell Metty

Art Direction by Robert Clatworthy

Watch this deep space noir classic. This film is a catalog of deep space cues and how to use them for maximum effect. Of course Welles' *Citizen Kane* is also an excellent example of extremely deep space.

***Klute*** (1971)

Directed by Alan Pakula

Written by Andy and Dave Lewis

Photographed by Gordon Willis

Art Direction by George Jenkins

***Manhattan*** (1979)

Directed by Woody Allen

Written by Allen and Marshall Brickman

Photographed by Gordon Willis

Production Design by Mel Bourne

*Klute* and *Manhattan* were both photographed by Gordon Willis. *Klute* is a solid example of consistent flat space, which creates the claustrophobic mood of the story. *Manhattan* uses flat space and surface divisions to isolate the uncommunicative characters.

***Witness*** (1985)

Directed by Peter Weir

Written by Earle Wallace and William Kelley

Photographed by John Seale

Production Design by Stan Jolley

*Witness* is about the contrast between the rural Amish community (flat space) and the urban police (deep space).

***American Beauty*** (1999)

Directed by Sam Mendes

Written by Alan Ball

Photographed by Conrad Hall

Production Design by Naomi Shohan

The visual structure in *American Beauty* is a constant, flat space. Watch for the emphasis of frontal surfaces created by walls, windows, and doorways.

## Limited Space

***Fanny and Alexander*** (1982)

Directed by Ingmar Bergman

Written by Ingmar Bergman

Photographed by Sven Nykvist

Production Design by Anna Asp

Bergman and his cinematographer Sven Nykvist are masters at using flat and limited space. It creates a unique visual world for their stories.

## Ambiguous Space and Surface Divisions

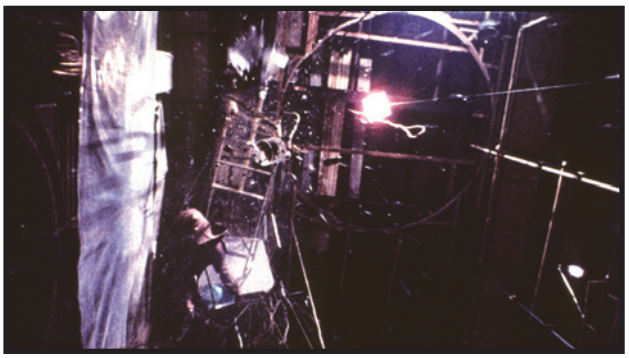
***Don't Look Now*** (1973)

Directed by Nicolas Roeg

Written by Allan Scott and Chris Bryant

Photographed by Anthony Richmond

Art Direction by Giovanni Soccol



The ambiguous space is used to create tension and confusion in the audience. The characters are swept up in a story full of mystery and questionable deception. Ambiguous space characterizes this mood.