

Caring About Composition

Movie Audiences Deserve To See the Entire Film

I participated in a meeting with some of the world's most noted cinematographers. The topic was the future of filmmaking and what can be done to enhance the moviegoing experience. Three items topped their list of complaints about the way their films are presented in theatres. They all revolved around the importance of presenting their films in the aspect ratio that directors and cinematographers chose to frame their stories. Cinematographers believe that today's visually literate audiences know how to 'read' visual clues that are implicit in the choice of aspect ratio, which affects the story-telling. By altering aspect ratios, exhibitors are unwittingly changing the emotional impact of films.

These are the issues involved:

1. Some theatres severely crop the normal aspect ratios for "scope" (2.39:1) and "flat" (1.85:1). By doing so, they are altering composition and changing the story. The cinematographers specifically cited circuits that have a policy of showing both scope and flat with a common "one size fits all" aspect ratio.
2. Some theatres show scope and flat at a common image width, so that the 2.39:1 scope image is actually smaller than 1.85:1 flat, with an unsightly "letterbox" appearance. The excessive magnification of the 1.85:1 format accentuates graininess and results in dim pictures on huge screens.
3. Misframed images which reveal negative splices in 2.39:1 scope presentations, and alters composition in 1.85:1 flat presentations.

Theatres Should Obey the Standard for Projectable Image Area

SMPTE Standard 195 "Motion-Picture Prints--Projectable Image Area" specifies the film area intended for projection. The dimensions specified are as follows:

Aspect Ratio • Lens • Width (In.) • Height (In.) • Width (mm) • Height (mm)

2.39:1 • Scope 2X • 0.825 • 0.690 • 20.96 • 17.53

1.85:1 • Flat • 0.825 • 0.446 • 20.96 • 11.33

1.66:1 • Flat • 0.825 • 0.497 • 20.96 • 12.62

1.37:1 • Flat • 0.825 • 0.602 • 20.96 • 15.29

Cinematographers compose their images for one of these standard formats and expect that theatres will show them that way. The 2.39:1 and 1.85:1 aspect ratios are the most widely used worldwide. The slightly less wide 1.66:1 ratio is sometimes used overseas, and the "Academy" 1.37:1 ratio was used for "classic" sound pictures made before the early 1950's, and some documentary-style films today. In most cases, the intended aspect ratio is written on the print leaders or otherwise specified in writing. Most theatres at least have a scope and a flat lens, but many are not showing the correct image area.

Checking Projected Image Area

The best way to be sure that you are projecting the correct image area is to use the SMPTE Projector Alignment Film 35-PA, sometimes known as RP40. This test film has clearly marked lines outlining the standard image areas. Lens, aperture and masking should be set to project the maximum available image area for the format being shown, with the image centered on the screen. Some cropping of the image may be necessary to correct slight keystone distortion if the projector is not perpendicular to the center of the screen, but except for keystone correction, arbitrary cropping or showing non-standard image area should be avoided.

Movies Are an Art Form and One Size Does Not Fit All

Unfortunately, many theatres have adopted the policy of "fixed masking" for some of their screens: all movies are shown with the same size image by cropping the sides of the wide 2.39:1 scope frame, and the top and bottom of the 1.85:1 flat frame.

Aside from the aesthetics, "one size fits all" screens degrade the image quality of the flat format by requiring excessive magnification of the frame to fill the screen. Grain and unsteadiness are magnified. Cropping the height of the image not only throws away important image area, it also throws away light. For example, reducing the standard 0.446-inch height of the 1.85:1 flat format

to 0.412 inches in order to fit a 2.00:1 screen decreases the image area and available light by almost 8 percent.

Let's be frank: the main reason for this "one size fits all" mentality is to save money by not installing adjustable masking. Another poor reason may be to save a bit on the cost the screen and its frame. In my humble opinion, only historic "landmark" theatres with fixed narrow prosceniums built before the advent of CinemaScope have any legitimate excuse for not installing a screen able to provide a large scope image with the full 2.39:1 aspect ratio intended by filmmakers.

"Scope" Is Meant to be Wider than "Flat"

Filling the full width of the screen for both 2.39:1 scope pictures and 1.85:1 flat pictures is almost as bad as "one size fits all" screens. This poor practice has become a popular trend in modern theatre designs, especially those with stadium seating. The misguided idea is to fill the front wall of the theatre with the biggest image possible, regardless of the intended format. So instead of maintaining the same image height for the scope and flat formats by using adjustable side masking, both formats are projected with the same width. The top and bottom masking are adjusted to letterbox the scope format, and actually project a much smaller image than the flat format.

What's wrong with this picture? Plenty! First, the wider 2.39:1 scope format is usually chosen to give pictures greater impact, than the more intimate 1.85:1 aspect ratio. Letterboxing it to a smaller image often violates the intent of the cinematographer and director in telling a big story.

Image quality of the flat format suffers in comparison to the scope format, especially when common width screens are used. The projectable image area of the 1.85:1 flat format is only 65 percent of the much larger and efficient scope format. It makes no sense to project the much smaller flat film image area on the print to a much larger picture than scope on the screen. It simply magnifies the grain and greatly reduces the light level. For example, a theatre that is getting the SMPTE aim of 16 footlamberts for scope on a 25 x 60 foot screen, will typically get only about 13 footlamberts for the less efficient flat format on a 25 x 46 foot screen, which is still within the tolerances allowed by the standard. But if they try to magnify the flat image to fill a 32 x 60 foot screen, they will only get a sub-standard 8 footlamberts, since the light must be spread over a much larger screen area. When you project flat and scope

films to the same width on the screen, bigger is definitely not better!

If the audience sees a bit of the DTS or analog soundtrack to the left side of the screen, you are showing *too much* image area. Likewise, the audience should never see the perforations of the print along the right side of the screen. Immediately check to be sure the projector aperture is fully seated, and use the SMPTE 35-PA test film to verify the projected image area.

Sizing Up More Information

I discussed the scope and flat image area in the article [Scope and Flat Apertures](#).

Standards and test films can be ordered directly from [The Society of Motion Picture and Television Engineers \(SMPTE\)](#).

Lens manufacturers offer online software to help select lenses and other theatre design parameters to assure proper image size:

www.schneideroptics.com/projection/

www.iscoptic.de/english/indexeng.php

For more information, contact me at john.pytlak@kodak.com