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Working with Fluorescent Lighting

Joerg Wagner Captures the Wild Ride

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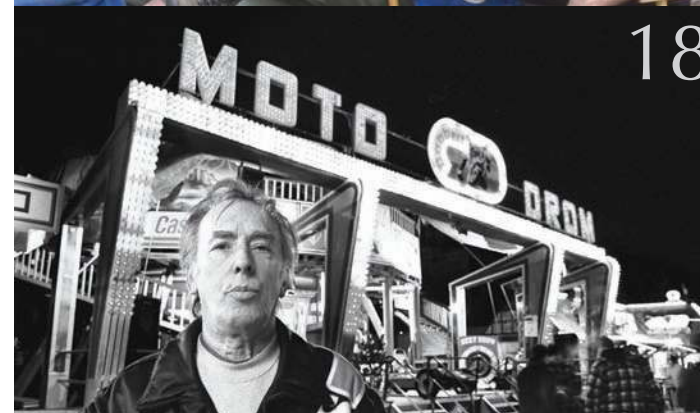
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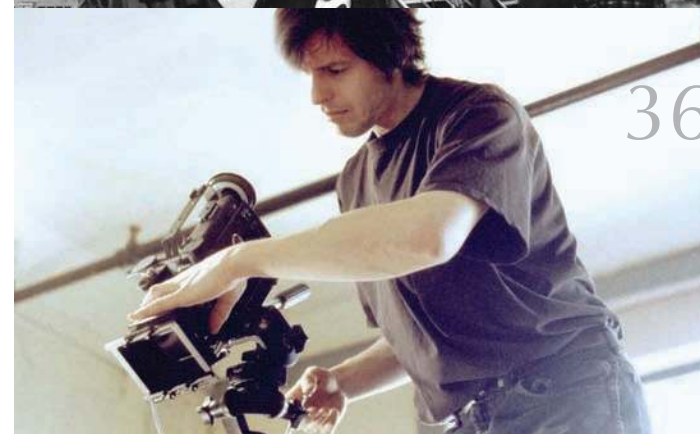
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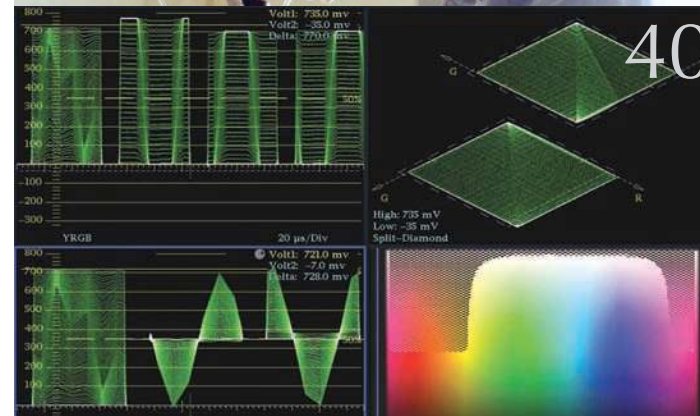
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On the set of *Solstice*. Photo courtesy of Daniel Myrick.



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Today is your day, film and video makers. This is your era. Look at the promise in the world of online entertainment. You can reach out to the world from your living room and be heard in the farthest corners of the Globe. The internet has brought us together, and new affordable technologies are making it easier for our story to be heard like never before

in history. The word is we are democratizing the industry. These are truly amazing times we are living in.

Last year at NAB 2006 we presented our very first issue of *StudentFilmmakers* Magazine, with aspiring actor Shane Kennedy (from "Here and There," directed by Jacob Mason) on the Cover.

This year in Las Vegas, Nevada, we celebrated our first birthday with our Anniversary April 2007 Issue, 12 exciting, information-packed back issues, and booths at the back-to-back shows, NAB 2007 and BEA 2007. On Day 1 of NAB, we served birthday cake and coffee to our booth visitors. In case you missed it, you can check out photos taken from the show online at www.studentfilmmakers.com. Some familiar faces who dropped by our booth included Saul Molina from *American Cinematographer* Magazine, M. David Mullen, ASC, *StudentFilmmakers* Magazine Contributing Writer Anthony Q. Artis, Julianne Grosso from Cine Gear, Dana Lee from Ryerson University in Canada, and Bruce Borowsky from Boulder Digital Arts. At the BEA convention, I had the wonderful opportunity to meet professors and program directors from film universities across the US, including Rexford Metz, ASC, who teaches at Florida State University.

I want to thank all of you who visited us at our booths at the shows, and thank all of you who expressed your recognition and appreciation for our editorial team's dedication and hard work. Thank you for sharing your feedback, compliments, and praise.

Enjoy this issue, with excellent articles written by M. David Mullen, ASC, Ira Tiffen, Myrl A. Schreiber, Chris Cavallari and other talented authors. Join me in welcoming new contributing writers Steve Holmes, Michael Kent, and Vanessa Daniels.

We look forward to meeting you at the next tradeshow, Cine Gear 2007 in Los Angeles, California, on June 22 & 23. Save the dates, and don't forget to register online at www.cinegearexpo.com.

Truly,
Kim E. Welch
Publisher/Editor-in-Chief

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Focus on... *Focus*

How Lens Settings Affect Filter Effects

by Ira Tiffen

The lens is conceptually the part of your camera that dates back the farthest in time. Before lenses, even pinholes, no one was capturing image-forming light on photosensitive surfaces in a box. Lenses being what they are, regardless of how new it is your lens has some basic characteristics that function consistently enough among all lenses to make some general practical assumptions.

I won't get into the issue here of whether depth-of-field increases with decreasing focal length (it doesn't necessarily, but we can go into this another time). Instead, let's look at certain types of filters that use discrete pattern elements to create their effect and how lens opening and focal length enter into the picture.

Diffusion nets and star effect filters are the types most of concern here. Nets involve placing a mesh pattern over the lens to produce what I call selective diffusion. As with some other types of softening effects, fine details are diminished while retaining an overall in-focus appearance. Nets date back to the early days of cinematography where they were responsible for many a glamorous star's pristine screen image. They are still popular for certain situations and are available as fabric or glass.

Star filters create bright 'points' of light, actually long thin lines of light emanating

from highlights in the scene. The effect is created by thin lines hollowed out into the filter surface by chemical etching. Sets of parallel lines run in different directions; for each direction there will be two points, one line running straight through the light. A four point star will have line sets in two perpendicular directions.

Creating stronger effects for both types of filters is accomplished by making the patterns finer - smaller openings in the diffusion mesh and closer spacing between the lines on the star filter. In each case the stronger effect has more 'pattern' on it, making it more of concern as we shall soon see.



So what are we concerned about? Well, at some lens settings, it is possible to actually see the filter pattern in the image, if you are not careful. This may be very obvious, or be completely missed until later, when the image is more properly displayed. The pattern will be most apparent when against a background with little detail, and when the camera is panning. Lighting can also have its effect. The lines of the star filter light up when bright sunlight hits them. Shooting reflective points of light off water waves may have you peering through a 'waffle-iron grid' caused by this.

How to minimize this happening has to do with understanding what is causing it in the first place. Simply, the lens is being set so that it is coming closer to focusing on the filter than it should be. This is going to be more likely when using either a shorter focal length or a smaller lens opening, but especially, both.

Depth-of-field also increases with decreasing size of the recorded image for an equivalent angle of view. This is a matter of physics. It means that as you move from a larger recording format to a smaller, for the same angle of view you will have increasing depth-of-field. So, for the smaller chips

used in video, focusing on a patterned filter will be more likely than on, say 16mm film; and on 16mm it will be more likely than on 35mm.

Larger-chip cameras like those from Arri and Dalsa will accordingly have less of an issue with filter patterns than other smaller-chip cameras. It isn't whether it's film or digital, just the size of the recorded image.

The general rule when using patterned filters would be to make focusing on the pattern as unlikely as you can by shooting with a wider opening and using longer focal lengths.

You may find that a neutral density filter, either on the lens along with the effect filter or behind the lens as with a filter wheel, will reduce incoming light to allow you to use a larger lens opening than you might otherwise. You can also use a polarizer, even if you don't need a polarization effect, as a stand-in for the neutral density, as it typically has a 1-2/3 stop compensation requirement. Just be sure that the polarization doesn't cause some other problem at the same time.

Another issue to remember is that you are also more likely to focus on the filter

when the subject you are focusing on is closer to the camera.

Filter wheels and filters mounted on the rear of the lens, are other options for using patterned filters - either makes it less likely, but still not impossible, to see the filter pattern appear unwanted in the image. These will be available only if your equipment provides for them.

There are a number of filters that may seem safe from this standpoint, but virtually any filter with a pattern may cause a problem, so, especially for critical events, test in advance and evaluate the result on a proper display. What you see in the viewfinder may not be enough to signal that there's a problem while there is still time to correct it.

There is another focus issue that lens accessories can assist with. In particular, I refer to the "split-field" lens, a close-up lens that has been cut in half. This provides the ability to have part of the image focusing normally, usually on an object in the background, while retaining focus on another part of the image in the foreground, especially when the distance between the two and the proximity to the camera

prevents normal depth-of-field from keeping both in focus.

Mount the split-field lens on the camera lens, and position the lens-half to cover the near-field. Focus on the background object normally, and then move the camera forward and back until you obtain simultaneous focus on the foreground. You can properly control the frame and focus of your shot by choosing both the lens focal length and the diopter strength of the split-field lens accordingly.

You will usually have an out-of-focus line between the two fields of focus - this is best handled by placing it in an area with little sharp detail to minimize drawing attention to it. This line will be larger and softer at larger lens openings and smaller and finer at smaller openings. That depth-of-field issue again.

There are many focus issues that you will master as you go along. Focusing on the subject and not on the filter will also keep your audience focused on what's most important - your story.



In over 30 years of making optical filters, Ira Tiffen created the Pro-Mist, Soft/FX, Ultra Contrast, GlimmerGlass, and others, netting him both a Technical Achievement Award from the Academy of Motion Picture Arts and Sciences and a Prime-Time Emmy Award. Elected a Fellow of the SMPTE in 2002, he is also an Associate member of the ASC, and the author of the filter section of the *American Cinematographer Manual*.

Both pictures were made using a 4-point 2mm Star filter. All else being equal, the one at f/22 (left photo) shows the light and dark pattern effect of depth-of-field causing the lines on the filter to be visible; in the one made at f/3.5 (right photo), the larger lens opening eliminates this effect. Photos by Ira Tiffen.



Small office space with fluorescents.

Working with Fluorescent Lighting on Location

Tungsten and Daylight Balanced Lighting

by Saro Varjabedian

Today, most commercial locations such as office buildings, supermarkets and shopping centers use fluorescent lighting. As a director of photography, planning a location shoot will require knowing how to best deal with fluorescent lighting. The difficulty which fluorescent lighting presents is that fluorescents emit high green color spikes. While our eyes adjust to the green color which fluorescents emit allowing us to see it as white light, film or video do not. You will need to color balance the video for the green, add a minusgreen filter to the lens or time out the green during the film development process. The problem is that often times just using the practical fluorescent sources will not be enough to produce a favorable image because either the image will be too flat or the fluorescent sources do not provide enough light for

proper exposure. The solution would be to add other light sources to the set. Once mixed color lighting is introduced then the light sources must be balanced to the same color spectrum or your image will have an unattractive green color hue to it.

For the purpose of this discussion, let us use as an example an office space with fluorescent lighting recessed into the ceiling and the introduction of another source of light. Listed below are two scenarios for balancing florescent lighting with either tungsten or daylight balanced sources.

Scenario 1: Introducing Tungsten Balanced Lighting

To balance for tungsten light sources gel warm white fluorescent bulbs with minusgreen, gel cool white fluorescents with

fluorofilter or replace the regular fluorescent bulbs with full spectrum fluorescent bulbs such as Optima 32s. Plusgreen 50 can also be added to tungsten light sources to balance the source to cool white fluorescent bulbs but the green color will need to be removed by adding a minusgreen filter to the lens or timing out the green during the film development process.

Scenario 2: Introducing Daylight Balanced Lighting

To balance for daylight add minusgreen gel to the fluorescent bulbs or replace regular fluorescent bulbs with full spectrum fluorescent bulbs such as Optima 50s. Plusgreen gel can be added to windows or HMIs to balance it with the fluorescent bulbs but the green will need to be removed by adding a minusgreen filter to the lens or timing out the green during the film development process.

To color balance locations lit by fluorescents it may take a combination of these techniques. The location will dictate the best course of action. If you are filming in a small office it might be better to gel the fluorescent bulbs to match the tungsten or daylight sources. If you are filming in a large supermarket with many fluorescent sources it would be a lot easier to gel the tungsten or daylight source to match the fluorescents.

Saro Varjabedian is a director of photography based in New York and has worked on over twenty films, music videos and corporate videos for various production companies. He has recently finished production on *Erza*, *Story 353*, *Agoraphobia*, *Hero the Great*, and the TV pilot, *Power-Outage*.



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Shooting *Solstice* in New Orleans

A Drama Set in the Bayous of Louisiana with Supernatural Elements

by M. David Mullen, ASC

Often I get asked “how do you find work?” and usually the answer is that most of my work comes from contacts formed on my previous jobs shooting feature films. The added advantage of this situation is getting to work with people that know and trust me, and trust is essential for a cinematographer to be allowed to explore his art fully. Without trust, a cinematographer is forced to build it gradually by delivering good (but somewhat conservative) images in tried and true ways – in other words, the cinematographer feels compelled to play it safe, only do what he knows works. You need trust in order to take chances, to be allowed to occasionally fail.

In the Spring of 2006, I was introduced by my agent to a producer that I hadn’t worked with before, Adam Del Deo, and along with him on this project, a director named Dan Myrick. The script was titled *Solstice*, a drama set in the bayous of Louisiana among some vacationing teens, with supernatural elements. The lead character, Megan, is dealing emotionally with the suicide of her twin sister, Sophie, at the previous Christmas, and mysterious happenings at their summer house lead her to believe the ghost of her dead sister may be trying to contact her.

At the meeting I was impressed by Dan Myrick’s intelligence and sense of humor. Dan was already famous for being one of the creators of *The Blair Witch Project*, and he had very specific ideas for how the horror elements of this story were to be presented. He was determined to avoid or minimize any clichés of the genre – he didn’t want the summer house to be old and creepy, he didn’t want the ghost to be some pale, decomposing dead girl à la *The Ring*. However, he did want a certain naturalism regarding the setting to be captured, a realistic approach to the lighting, and as much use of natural light as possible. Now it’s always a bit dangerous to go against expectations when doing a supernatural tale because to some extent, the gothic elements are part of the charm of the genre (plus they are fun for the cinematographer!). But I liked the challenge of capturing the natural qualities of the swamp location and thought that perhaps this would be a chance to do a horror film in the subtle style of a Terrence Malick movie.

The budget was what could be called the low-end of the union contract scale, and the schedule was incredibly tight, only 25 days. This sent up a warning flag for me because I’ve shot many 25-day features over the years, and have a good sense of how

long things take. The problem of a short schedule on this film was that over half the scenes take place at night, many inside the swamps and woods, and night photography *never* goes fast. The other issue was that we had a certain number of physical effects and some plate photography for post visual effects to set up. I was also concerned that a fast-paced shoot would not allow the sort of Malick-style naturalism to creep in because of the time it took to travel to scenic spots at the right time of day.

The movie was going to be shot in the New Orleans region, despite the fact that Hurricane Katrina happened only seven months earlier. This was not only due to the evocative locations that Louisiana provides, but the new tax breaks and incentives that the state provides productions. I had just returned from the Baton Rouge area only a month before I was hired on *Solstice*; I had been scouting for another indie feature that ultimately lost its financing and sent me

home after two weeks. While I was there, I had interviewed a number of potential local crew people, which I thought would come in handy now that I was returning just a month later.

When I was there before in late January, we were the only production starting up in that area – but now that I was returning in March to start preproduction all over again on a new project, I discovered that three other features were starting around the same time (in fact, one of them called me during prep asking if I wanted to come down to Louisiana to shoot their feature). Worst of all, one was the Tony Scott movie *Déjà Vu* starring Denzel Washington, a big-budget project that sucked up all the top local crew people, including almost everyone I had interviewed just a month earlier. Because of the tax breaks, there was pressure to hire as many locals as possible, but as our prep went on and the first day of shooting loomed closer, we had to start

calling people in Los Angeles that we knew because we had run out of local options. Ultimately almost no one on my camera crew was local, despite our attempts. Even our Key Grip and Gaffer came from Los Angeles, along with some of the electricians and grips. Same was true in many of the other departments as well, ultimately costing the production more money than they had planned on spending. This was complicated by the fact of a housing shortage in the area because of the many Katrina refugees still living in the remaining local hotels.

Since the budget of this movie permitted us to shoot in 35mm, I wasn’t tempted to bring up the possibility of shooting in HD; I felt that the beauty of these locations would best be captured on film. But on most of my recent features, I had opted to shoot the movie for release in 35mm 2.35 “scope” prints. I like that widescreen presentation format for many reasons. One is that it allows the location to play a larger part of the frame, to maintain a sense of place even in tighter shots. Two, it makes a low-budget movie feel larger in budget. And I like the compositional challenges of the very wide frame. But on my HD features, it had been as simple as framing for cropping 16x9 to 2.35 in the viewfinder; we just recorded the HD master to a 35mm anamorphic internegative by cropping and squeezing the image in the Arrilaser. For my 35mm features, I had shot them so far using anamorphic lenses, which I feel yield the highest possible image quality for theatrical projection because of the size of the negative area reserved for the scope image. However, on this project, I was hesitant to suggest anamorphic photography because we had such small locations and we had so much night exterior work. Anamorphic has less depth of field on average than spherical 35mm photography, which is why generally you try to light scenes to at least an f/4 – however, more often than not, large night exteriors are lit to f/2, maybe f/2.8 at the most. This creates a focus-pulling challenge, not to mention that so much of the frame is in soft-focus at wide apertures that we may lose a sense of the space at night. So I suggested that we shoot in Super-35



Solstice swamp location. Photo courtesy of Endgame Entertainment.

