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DEFINING HIGH DEFINITION

SPEED RACER

interview with
David Tattersall

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by Bradley M. Look

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c o n t e n t s

Front Cover: Emile Hirsch as Speed Racer in a scene from Warner Bros. Pictures' and Village Roadshow Pictures' action adventure *Speed Racer*, distributed by Warner Bros. Pictures. Photo courtesy of Warner Bros. Pictures.

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NEWS & PRODUCTS

ARRILASER HD/DI INSTALLATIONS

ARRILASER HD/DI has more than 15 units installed, mainly in Asia and South America. It was designed as an entry-level system in response to the increasing demand of film recording for low-budget productions. The unit records in 2k at a speed of 3.2 seconds per frame with the full dynamic range of 2.04 densities above base onto intermediate material. The ARRILASER HD/DI is compatible with options such as ALICE (the interactive image viewer), ARRICUBE Video Look (color management system for linear workflow), Camera Negative Module and all Geometry options (3-perf, HD and Native Academy Module).

SONY HD CAMERAS AT SUPER BOWL XLII

Mobile production company Game Creek Video used Sony high-definition cameras to cover the action at Super Bowl XLII. A total of 27 HDC-1500 multiformat cameras served as the primary field-production units, supported by four HDC-3300 3x slow-motion cameras. Two "slow-motion" systems were placed in each end zone, while the other two were free-roaming handheld units. Sony's HDC-1500 multiformat camera system captures high-definition images in either 1080i or 720p. The HDC-3300 camera achieves 3x speed slow motion effects in full HD resolution.

PANASONIC AG-HMC150 HANDHELD

Panasonic announced the latest addition to its line of professional AVCHD camcorders - The AG-HMC150 handheld. The affordable 1/3" 3-CCD camcorder, which has a similar build as the popular AG-DVX100 DV-based camcorder, records impressive 1080i, 1080p and 720p high definition images onto solid-state SD memory cards and features 28mm Leica Dicomar wide-angle zoom lens (35MM equivalent) and professional audio (XLR) and video connections . AVCHD, based on MPEG-4 AVC/H.264 high profile encoding, provides a near doubling of bandwidth efficiency and considerably improved video performance over older MPEG-2 compression used in HDV formats.

EVERTZ VIP-X CONTROL ROOM

The Evertz VIP-X simultaneously combines control room routing platform with a modular multi-image display system in one integrated package. Features include: up to 288 HD, SD inputs with up to 72 multi-image display outputs; auto-sensing HD/SD and 3Gbps (SMPTE 424M) inputs; Evertz next generation image processing technology; display resolutions of up to 1920x1080p; full screen viewing of any input on any output; support for all display types via DVI, VGA, and HD-SDI outputs; support for dynamic under monitor displays and tallies; advanced on screen graphics; built-in graticule generator, user defined per window; decoding and display of VITC/HD time code; minimal processing delay (~1 frame); and real time control of display outputs via Maestro.

DOREMI GHX-10 CROSS CONVERTER

The GHX-10 from Doremi Labs features HDMI, DVI, and SDI connectors that allow for any input to be converted to any output format or scan rate. It supports both SD and HD video and employs high quality 12 bit bicubic interpolation to ensure the highest quality picture. Doremi has included many advanced features such as audio support, sync output and genlock. The GHX-10 also features the latest video technology in the form of dual-link SDI and 3Gb/s SDI connectors for 4:4:4 2K film resolution. The GHX-10 can be used as a computer DVI to HD-SDI converter, a HDMI resolution converter, or as a HD video upconverter or downconverter and much more.

PANASONIC AK-HC3500 STUDIO CAMERA

Panasonic's full native resolution, 1080i AK-HC3500 2/3" 2.2M 3-CCD high definition studio camera is equipped with exclusive image processing and color reproduction functions for the highest quality in 1080/59.94i and 1080/50i image acquisition. The HC3500 features three 2/3" 2.2-megapixal IT-CCDs with an advanced single-channel transfer system, 14-bit A to D converter, an advanced 38-bit digital signal processor, LSI and spatial offset processing for exceptional sensitivity, resolution (1100 horizontal lines), as well as reduced aliasing.

THE CHRONICLE AND CANON'S XH A1 HD CAMCORDER

Knowing the importance of the internet to the future of the news media, the San Francisco Chronicle's Photo Dept. purchased four Canon XH-A1 HD camcorders after learning that it not only shoots high-quality widescreen video but also digital still images, which can be captured at full HD (1920 x 1080) resolution in either video color space or digital camera color space. Shooting video for the SFGate.com Web site they frequently capture still frames simultaneously for the print edition of the Chronicle. Using the XH A1 HD camcorder for both tasks has even introduced a new shooting style to the work. Several stories have run both online and in the paper using stills from the video. HD

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Speed Racer with David Tattersall

Photo courtesy of Warner Bros. Pictures

interview by David Thompson

Q. What specific role did you fill during the production of *Speed Racer*?

As the cinematographer I'm responsible for all things photographic at the principal photography stage of production. It's a long list of responsibilities, but chiefly the look of the movie through lighting and photography. Once principal photography is finished then the baton is passed to Visual Effects. For *Speed Racer* our Visual Effects Supervisors are John Gaeta and Dan Glass (*The Matrix* series and many others). They inherited our foundation and then they and about 500 other digital artists composite and polish the background layers. This is very much a layered look, with a lot of green screen photography, mostly on stage. I think we did all but two days outside on location. 95% was shot on the stages at Studio Babelsberg in Berlin. Now it's in post and I am in Vancouver, Canada working on *The Day the Earth Stood Still*. Because it is such a heavy visual effects production, the brothers (Larry and Andy Wachowski), John Gaeta and Dan Glass are nursing *Speed Racer* through its incredibly complicated post phase.

Q. Prior to *Speed Racer* what experience had you had with High Definition?

This was my fourth outing. I was involved early on in HD and cinema with the F-900 camera on *Star Wars, Episode II* and then again on *Episode III* with the 950. A couple years ago I got to use the Panavision Genesis system for a movie called *Next*. This is my fourth different system

A scene from Warner Bros. Pictures' and Village Roadshow Pictures' action adventure *Speed Racer*, distributed by Warner Bros. Pictures.

Photo by David Appleby

(L to R) Emile Hirsch as Speed Racer, Roger Allam as Royalton and the DP David Tattersall on the set of Warner Bros. Pictures' and Village Roadshow Pictures' action adventure *Speed Racer*, distributed by Warner Bros. Pictures.

on a different movie and quite a different sort of set up. I really only have good things to say about HD.

Q. How and why was the decision made to produce *Speed Racer* in High Definition? Did you have a part in that?

I did, yes I was brought on fairly early in the pre-production stage. Larry and Andy Wachowski were looking for something new and different, as usual. They march to their own drum and they have this kind of "sink or fly" daring when it comes to the photographic look and the aesthetic choice. They wanted to do something different to what they had done before and what everyone else was doing at the time. They wanted to go in the direction of a very sharp, super saturated, new glossy look, with deep, deep focus. You've got a fighting chance of getting it with HD, especially the way in which we ended up shooting it, by layering foreground, mid-ground and background elements separately against blue and green screens. After a test it became apparent that was the way to go.

Q. What did Andy and Larry think of their experience with Highdef?

After the initial trepidation they definitely warmed to the process. With every new show they are trying something new and different. Eventually any trepidation went away and they became very enthusiastic about it. What's not to like about full rez, 50 inch monitors on the set and instant full rez playback and all the other "pros" that come along with the pipeline.

Q. Describe the production flow.

We recorded on to SR decks as well as a Codex drive. Recording directly onto the hard drive offers all sorts of advantages, principally a compression free negative, instant HD playback and the ability to grab stills at full resolution while shooting. We created a huge library of reference stills that all departments could use easily. It is possible to finely tune the color timing of a scene on the Codex, a huge advantage for me! After just a little bit of set up time at the beginning of the day with gray scale and Macbeth charts camera settings could be locked and I was free to operate the camera, checking light values with an on-board 5" wave form monitor. It wasn't necessary for me to sit with the engineer as I had on previous HD shoots. It was great to be back on the floor, close to the action, close to the directors and the actors and being able to judge the lighting more clearly.

Q. What cameras were utilized and how did they perform?

We used Sony F-23 cameras with Zeiss digi-primes. We had two parallel units, with each having two cameras. We had an additional F-23 that was "shared" between the two par-

Photo courtesy of Warner Bros. Pictures

Emile Hirsch as Speed Racer in the Mach 5, in a scene from Warner Bros. Pictures' and Village Roadshow Pictures' action adventure *Speed Racer*, distributed by Warner Bros. Pictures.

Image on page 12: A scene from Warner Bros. Pictures' and Village Roadshow Pictures' action adventure *Speed Racer*, distributed by Warner Bros. Pictures.

allel units, as needed. We tested many cameras prior to selecting the F-23. The cameras came to us from PACE, as he bought them specifically for this show. They were the first five F-23 cameras that Sony made. The cameras performed beautifully. I can only think of one limitation and that has to do with shooting at a high frame rate. The limit is 60 frames per second and for extreme high speed we had to switch to scientific cameras. We used the Phantom camera that can shoot up to 1,000 frames per second in HD. This limitation did not really affect us on this production. The look is noteworthy. It's a strong, graphic, comic book look with extreme super saturated color mixes accentuated with deep focus.

Q. What was unique about the production of *Speed Racer*?

It's a very kinetic show. A lot of mobile camera work, including whip pans, crash tracks and trombone zooms. It's a pretty lively show. This new idea that John and Dan came up with for creating plate backgrounds was accomplished by tiling thousands of digital still shots of existing beautiful locations. Then running the finished digital files through a series of photoshop filters to accentuate and exaggerate colors and hues. We had a stills unit that traveled the world and they shot the most beautiful palaces, hotel foyers, post modern architecture interiors, and anything that was visually interesting or unusual in terms of space and light with a special camera that tiled a 360 degree view of each space. It was nicknamed "the bubble unit." These images were tiled together to create a virtual 3D bubble where you could put the camera anywhere in that space and shoot pretty much any focal length and still retain a sharp, vivid background plate. The production challenge was to get that part of the show completed before principal photography started. We had all of the bubbles in place so that once we did start shooting with the actors we had a very good idea of what the backgrounds were going to be when we were shooting on green screens. Once the show is all polished and dry and all of the backgrounds and the layers have been added, it should be pretty extraordinary.

Q. What advantages did you have by utilizing Highdef, not only during production, but as an end result?

Most of the advantages will be experienced through the visual effects and compositing process during editorial. Our editors, Roger Barton and Zach Staenberg, are editing on full rez HD Avids. They had a projector which could project to 12' across in the edit space to give them a better idea of how the movie will look. This provided an advantage for judging the pacing of the action and examining the fine details. Usually it is a bit of a surprise once you finally go to film and you get

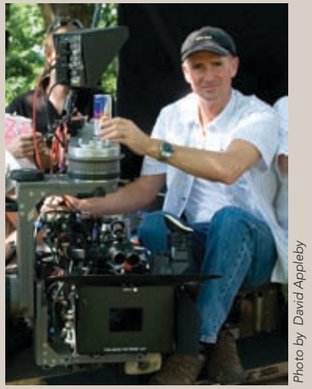

Photo by David Appleby

DAVID TATTERSALL
Cinematographer

1. ***Speed Racer*** (2008)
2. ***The Hunting Party*** (2007)
3. ***Next*** (2007) (Director of Photography)
4. ***Star Wars: Episode III - Revenge of the Sith*** (2005)
5. ***xXx: State of the Union*** (2005)
6. ***The Matador*** (2005)
7. ***Lara Croft Tomb Raider: The Cradle of Life*** (2003)
8. ***Die Another Day*** (2002) (Director of Photography)
9. ***Star Wars: Episode II - Attack of the Clones*** (2002) (Director of Photography)
10. ***The Majestic*** (2001)
11. ***Vertical Limit*** (2000) (Director of Photography)
12. ***The Green Mile*** (1999) (Director of Photography)
13. ***Whatever Happened to Harold Smith?*** (1999)
14. ***Star Wars: Episode I - The Phantom Menace*** (1999) (Director of Photography)
15. ***Soldier*** (1998)
16. ***Con Air*** (1997) (Director of Photography)
17. ***The Wind in the Willows*** (1996)
18. ***Moll Flanders*** (1996)

to see the large image. You also get surprises due to focus and pacing.

Q. What did you like about using HD overall?

It was totally appropriate for us and the look that Larry and Andy were aiming for. The 2/3" chip digiprime lenses naturally create a deeper focus than shooting on 35, plus the HD aesthetic being smoother and grain-free was tremendous. We actually shot at minus 3 db gain to heighten the sharpness. It was the right choice.

Q. Any dislikes or any areas for improvement with HD?

I think the format is definitely "there" for some types of movies. The format is strongest with stage bound shows and shows with an emphasis on, or large percentage of visual effects work. It would be more difficult to shoot something like *Vertical Limit*. It was a film I did several years ago in New Zealand and mostly we were shooting over 10,000 feet elevation in blizzard conditions with lightweight handheld 35 mm cameras. That was the right choice for that type of film. I have difficulty imagining dragging the engineering tent and monitor assembly through those kinds of extreme location and weather conditions. I shoot both 35 mm film and HD and I am comfortable with both, and I also see the advantages and disadvantages of both systems. HD

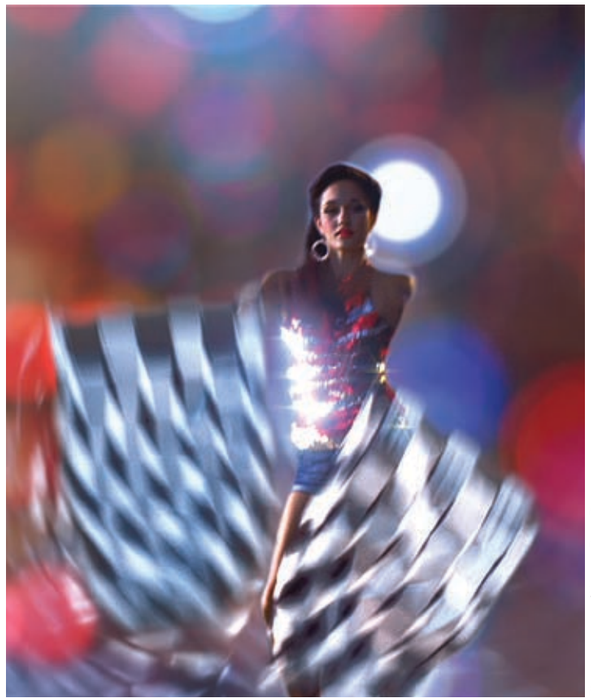

Photo courtesy of Warner Bros. Pictures

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"Without looking at the timeline, there's no way you could tell which camera was which."
- Jody Eldred

To cover a once-in-a-lifetime air show, veteran Director/Cameraman Jody Eldred relied on Sony's PDW-F350 and 355 optical disc cameras and supplemented them with the ultra-compact PMW-EX1 XDCAM EX solid state camcorder. The XDCAM HD camcorders captured pilot interviews, time lapse sequences and beautiful ground-to-air footage. The EX1 went even further.

Eldred says, "We strapped the EX1 into the tight confines of Patty Wagstaff's stunt plane and captured a full 12-minute aerobatic routine at up to 10Gs of force. Amazing footage! And it was easy to color match the cameras so the clips intercut seamlessly in post."

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Beyoncé's Highdef Spot

by Jennie Taylor

Steele FX, the post-production, visual effects and finishing studio based in Santa Monica, recently deployed its tools and talent to turn a popular Beyoncé music video into a TV commercial for DirecTV.

The project's roots go back to two popular Beyoncé music videos that had been completed a few months earlier, "Suga Mama" and "Upgrade U," directed by Melina Matsoukas of Black Dog Films. Steele performed beautification and visual effects work on both videos.

Realizing how well the message of "Upgrade U" could be applied to its new HDTV service, DirecTV and its agency, Deutsch LA, decided to use material from the music video on one of a series of spots that comprised its new TV ad campaign. In the spot celebrities turn to the audience and praise DirecTV's new line-up of high-def channels.

The challenge, says Jerry Steele, Senior Creative Director, Visual Effects Supervisor and co-owner of Steele FX, was that "our work on the music video was for standard-def delivery. Any commercial about HD would have to be a highdef spot, and none of the material we had shipped on SD was usable.

"There was no way an SD-to-HD conversion was going to cut it," explains Steele, "The only solution was to re-transfer much of the material, converting it from 4x3 to 16x9, and re-shoot the footage where Beyoncé delivers her lines." The producers rebuilt the "Upgrade U" set, brought Beyoncé back wearing the same outfit, and re-hired the same dancers doing the same number.

Everyone involved was delighted with the way the DirecTV commercial turned out. "It all came into place and worked out very well," says Jerry Steele. "And I hear Beyoncé was pleased too." HD

Photo courtesy of National Geographic Channel

Human Footprint

by Dara Klatt

Filmmakers assemble 13,056 pints of milk on the set of *Human Footprint*.

You've likely never thought about the sheer number of sodas you drink, showers you take or televisions you buy in a lifetime. National Geographic Channel's newest high-definition special *Human Footprint* offers a series of revealing visual demonstrations displaying what we each consume, from cradle to grave, using a typical American home as the backdrop.

Director Clive Maltby used a Sony F900R to film the demos, which included a river of 28,433 rubber ducks flowing down the stairs of a home and into the neighborhood, each representing one of the showers we take in our lifetime, and 43,371 soda cans laid out in the shape of the number 43,371.

"Many of our largest shots in *Human Footprint* were ideal subject matter for HD," said Maltby. "Imagine the details in a shot which runs uncut for 90 seconds as it tracks across our lifetime's consumption of milk — arranged in 13,056 pint cartons and displayed across an entire street.

"Just see how HD deals with the light glinting from a 65-foot-wide display of all the soda cans we will get through in a lifetime — or a giant American flag made up from all the bread, hot dogs and hamburgers we'll eat. You can really see HD's extra detail displayed in shots like this."

Maltby also stressed the unforgiving nature of HD, especially in doing massive set-ups, such as a piece of litter blowing into the shot, or a smudge on a drinking glass. While each set-up required many hours and dozens of hands, extra time and care were required to clean everything in the frame so that it was flawless under the scrutiny of the HD format. Additionally, because of HD's higher contrast range, more extensive and careful lighting was required to get the most out of it.

Beyond showing the sheer magnitude of what we consume, the special follows the chain of production to find out what goes into making what we use every day, from T-shirts to laptop computers. HD

Human Footprint *is anchored by ABC News' Elizabeth Vargas and premieres Sunday, April 13, at 9 p.m. ET/PT on the National Geographic Channel.*

Photo by Saeed Adyani, Courtesy of MGM

Milo Ventimiglia as Ted Gray in a scene from *Pathology*. The indie film went through LaserPacific's proprietary inDI™ post process for the digital intermediate.

Putting Final Touches on *Pathology*

by David Heuring

Director Marc Schoelermann and cinematographer Ekkehart Pollack put final touches on the look of *Pathology* in collaboration with Mike Sowa, senior digital intermediate colorist at LaserPacific in Los Angeles. The independent feature was photographed on 35 mm in 2.4:1 aspect ratio in the Los Angeles area.

"The proprietary inDI™ system was introduced by LaserPacific in 2005 to provide an affordable digital intermediate option without compromising production values for filmmakers who are working on lower budget projects," Sowa says.

MGM's *Pathology* is a thriller that takes place in the world of forensic science. The protagonist, Dr. Ted Gray, joins a group of extremely talented young doctors in a prestigious pathology program. Soon he discovers that his colleagues are playing a deadly game in which they compete to commit the perfect murder. Gray must devise a way to outwit them.

LaserPacific transferred the filmed images with a Spirit DataCine telecine at HDSR 4:4:4 resolution. Sowa explains, "The inDI method doesn't use sub-sampled color information. It utilizes Kodak color science to transfer the full range of image information to the digital master file. Because they are high resolution, log-based images, we can apply film LUTs (look-up tables) and treat them like data scans."

Sowa used the Autodesk® Lustre® digital timing system while timing *Pathology* in an interactive environment with Schoelermann and Pollack. The digital images were projected on a cinema-sized screen in a LaserPacific screening room.

The script called for many shocking scenes on the examiner's table, but Schoelermann and Pollack didn't want the images to be too explicitly gory. The digital timing allowed the filmmakers to fine tune each shot.

Sowa also manipulated a number of scenes that take place in a dark operating room. "This operating room included almost no practical light, but Marc and Ekkehart still wanted the audience to feel the room," says Sowa. "They wanted to retain a green, fluorescent feeling in the low lights. The challenge was to keep the light levels low while maintaining all the detail in the shot. We put the Lustre to the test, creating Windows to isolate and track elements within the frame. Ekkehart did such a good job of getting the images on the negative, and combined with the 4:4:4 transfer, the final images looked just beautiful. Working with them was a lot of fun."

Sowa says that it took approximately 40 hours to time *Pathology*. "Both the subject matter and the images are very dark," he says. "We were able to perfect that dark look and yet retain all the detail and information that is necessary to the story. There was definitely a 'wow' factor when Marc and Ekkehart saw their images projected. They have considerable experience creating artful commercials and timing them in digital postproduction. I think they enjoy seeing it's possible – and affordable – to do that in the feature realm as well."

The inDI system can also save filmmakers money by using a single, high-quality scan for dailies, editorial copies and final digital timing. That path also results in higher resolution dailies, which can improve communication between collaborators and make for more accurate expectations through the post process.

"inDI is a great option for independent filmmakers," says Sowa. "They can take advantage of the creative opportunities that the DI process offers without breaking the budget." HD

Pathology *is slated for release in the United States in early 2008.*

Photo by Saeed Adyani, Courtesy of MGM

(L to R) Director Marc Schoelermann and Milo Ventimiglia discuss a scene in *Pathology* before shooting. LaserPacific transferred the filmed images with a Spirit DataCine telecine at HDSR 4:4:4 resolution.

Tech hd

by Lowell Kay

Why 59.94 at Sundance?

Lowell Kay is the founder and president of Hollywood's top post-production and motion picture film servicing company, The DR Group.
www.thedrgroup.com
323-960-1781

Ian Calderon, Director of Digital Initiatives for Sundance has been accepting HD for projection for several years now, allowing a slew of new filmmakers access to this festival. Projects even shot on mini DV to Digital Betacam could be upconverted to an HD master and projected in the same theaters as 35mm projects.

Today, Sundance now screens at 17 different locations during the festival. Each location is equipped with both 35mm and HDCam projection systems. Of the 210 films screened this year, 42 originated on a digital format and 115 were screened from an HDCAM master. Sundance screened the 1st 3D project using a digital projection system.

The majority of HD projects finish at 23.98 fps, so why would Sundance have a delivery specification of 59.94? I asked Ian this question. In the early days of HD projection, the majority of films accepted were captured and completed on SD formats, which had a frame rate of 29.97. The natural progression from that SD frame rate was to require all HD masters to be delivered to Sundance at 59.94. This allowed all the playback decks to be set once and reduced the amount of oversight at each location. This decision has remained in effect since Sundance's introduction of HD.

Today, more and more projects, including those originating in film, are being completed in a digital format. Film transfers to HD at 23.98. Low-end prosumer HD cameras can shoot at 24 frames or frames shot over 24fps can be flagged for removal at the ingest stage of editing. The future is digital projection at festivals and at most cinemas. It seems in the not so near future, the frame rate accepted will also change to be 23.98. In the mean time, expect to submit your HD master to Sundance with a 59.94 frame rate. HD

Photos courtesy of Governors State University

HD Studio for Chicago's Governors State

by Brian Cali

In keeping with its vision of using technology in advanced and innovative ways for instruction, Chicago's Governors State University recently established a new high definition studio system. The new HD studio is now equipped with four Panasonic AJ-HPX2000 2/3" shoulder-mount P2 HD camcorders.

Charles Nolley, Director of the Division of Digital Learning, elaborated: "The university began the transition to digital several years ago with a vision of laying groundwork for the move to HD when the time was right. Over a year ago, we had completed the transition to 16:9 standard-definition production and established a tapeless workflow for studio-based projects. So last April at NAB, when I saw the HPX2000 coupled with its AJ-RC10 remote and the Telecast Copperhead G2 fiber-optic system, bells started to go off."

"We now have three HPX2000s equipped with Telecast G2s as main studio floor cameras on Vinten pedestals; a fourth HPX2000/G2 combination is used on a CamMate crane in studio and also taken into the field for EFP work," Nolley explained. "The G2s provide HD-SDI video, multiple monitor feeds, multiple return video and prompter feeds, genlock, two channels of intercom, multiple audio channels, bi-directional serial communications for RCP (CCU) control, as well as several additional data channels that can provide machine control or even an ethernet connection, all over two strands of single mode fiber.

"Not only are the cameras physically more robust and reliable than any tape-based system will ever be, the file-based process creates greater simplicity and reliability in getting material from the camcorder into the editing environment," he continued. "With the P2 cards, it's a simple file transfer. There's nothing to worry about with black levels, gain, chroma or audio levels. All remains exactly as it was captured, and transfer time is considerably faster than real time."

"In terms of work flow integration we can now produce in any standard - from SD to 1080i - with no compromise, and record the mixed studio signal to Panasonic's AJ-HPM100 P2 Mobile, a full-featured HD recorder/player." HD

At top: Governor's State's Division of Digital Learning department combines broadcast video with interactive computer-based learning.

Above: Staff can easily roll the cameras into virtually any location on campus, plug in the fiber connectors, and use them as fully-functional, remote HD studio cameras.

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Now You See It, Now You Don't

by Bradley M. Look

One main objective for makeup artists, is the artful technique of concealing. That is, rendering an imperfection invisible to the camera. Today, concealing tattoos has become a common task for makeup artists.

While performers may be proud of their "tats," they may not always be appropriate for certain roles. Depending on the location of the tattoos, it may be difficult to properly conceal them. While makeup may be able to eradicate the color, the multiple ink injections under the skin, will usually create keloid scarring that can't be covered.

For this demonstration, Shanna Fleishhacker kindly consented to be my model. Before I could begin, I first determine the most predominate colors in Shanna's tattoo: red and blue. To properly cancel the tattoo, I will use some color theory. Looking at a color wheel, you will notice that the opposite color to blue is orange. The opposite of red is green. These opposing colors are known as complements. Complements neutralize complements. To neutralize the blue, I pre-mixed color using Reel Creation Tattoo Ink's Sand Beige, Lite Toner, and orange. For the red, I would use Reel Creation's Red Neutralizer.

First, the skin needs to be cleaned using a little isopropyl alcohol 99% on a cotton pad. It should be noted that if your talent has a lot of body hair, it is necessary to have them remove it, either through waxing or shaving. Hair will give a textural appearance under the makeup and will read as crepey skin on camera.

A synthetic filbert brush was used to apply the custom blue neutralizer over half of the tattoo. Then a cotton swab was dipped in alcohol, and used to lightly fade the edges. Then using an orange sponge, red neutralizer was stippled on to break up the color.

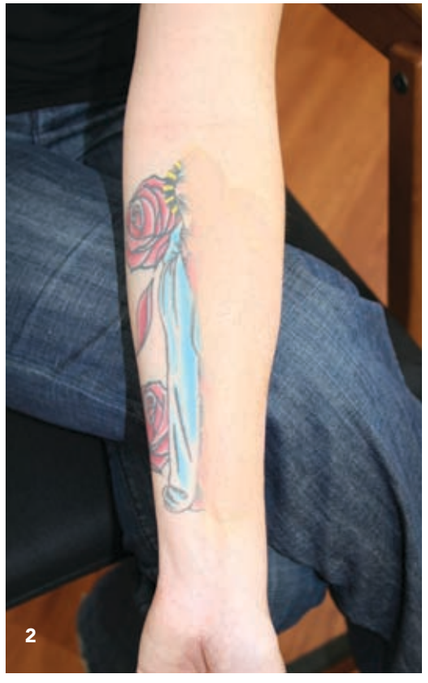
Next, several other colors were spattered using an Iwata's Kustom TH airbrush, to replicate the natural coloring on my model's arm. If an airbrush were unavailable, then a crème base would be stippled over top of the tattoo ink.

Finally, to remove the flatness of the airbrushing, I lightly patted a water-based moisturizer on top of the skin to give it a little natural halation.

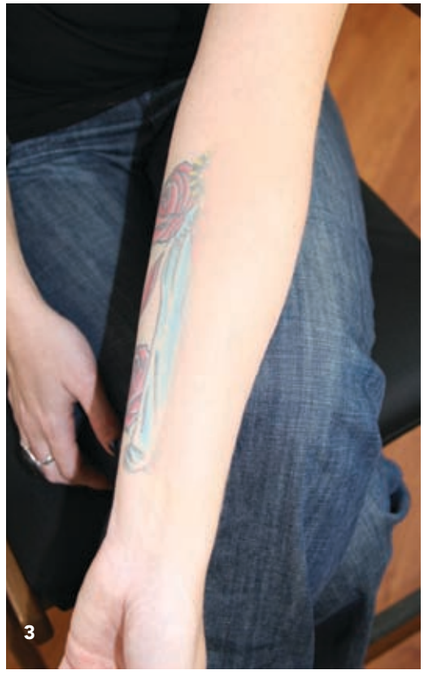
If the makeup artist has done their work well, then the trick will go unnoticed. After all, makeup artists are like magicians in many respects, creating illusions. "Now you see it, and now you don't." HD

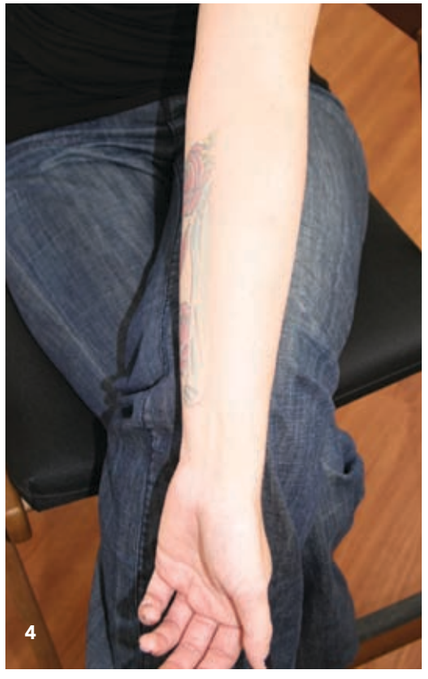
A special thanks to Cinema Secrets for allowing me to use their beautiful new classroom to shoot the photos for this article.

1. Here is model's real tattoo sans any makeup.



2. Half of the tattoo has been covered using the product line Reel Creation Tattoo Ink. A secondary color, Red Neutralizer, was stippled over top of the first coat. The edge was faded into the skin using an alcohol damped cotton swab.





3. Several skin tones are spattered on top of the under-base neutralizer. It's important to match the skin as close as possible for the illusion to work. If there is any tell tail signs of the tattoo, it usually will be that of keloid scar in the outline of the artwork. For example, very black tribal tattoos generally leave very pronounced scarring that can read even after being concealed. Usually this can be lessened if the DP flat lights the problem area.

4. To make the tattoo cover less obvious to the camera, remove the "flat" appearance by restoring some of the skin's natural shine with a light application of moisturizer.

Preserving
Today's Films

by Bob Fisher

Photo courtesy of © A.M.P.A.S.

Academy Film Archive at the Pickford Center for Motion Picture Study.

The Academy of Motion Picture Arts and Sciences released a comprehensive 75-page report last November summing up current practices and costs for archiving content that was produced and/or mastered in digital format for cinema release. "The Digital Dilemma" report was co-authored by Academy Science and Technology Council Director Andy Maltz and preservationist Milt Shefter.

Some 70 archivists, technologists and studio executives were involved. The consensus was that digital media is still a comparatively volatile medium, because the data degrades and new formats and standards are constantly evolving.

While preserving a priceless heritage for future generations is a powerful incentive, there is also a substantial financial imperative for effective archiving policies. A recent New York Times article cited a study by Global Media Intelligence stating that about one-third of the $36 billion dollars in annual revenues earned by the studios comes from re-releasing films to the TV and DVD marketplace.

A vast majority of studio movies made for the cinema are originated on film, however it is estimated that as many as 70 to 80 percent of them are mastered in digital intermediate (DI) format at resolutions ranging from HDTV to 4K. The film negative, intermediate and YCMs are generally archived, but Shefter cautions, "It is important to understand that the DI files are not an archival medium that you can take off the shelf in five to 10 years. According to industry vendors, they should be migrated to new files every four to five years. Current movie studio practice is to record the DI to YCM separations and use them as the preservation record. However, only that version (the DI or digital master) is recorded out to film. All the other digital records are left to whatever practices that studio uses."

Shefter observes, "I worked for CFI lab in Los Angeles for years early in my career. We had edited films from the *I Love Lucy* and other Desilu television programs in our vaults. Some of those 50-year-old programs are still syndicated on television. If you want today's TV programs to be seen by audiences 50 years from now, it is important to commit to proper archiving of both the original film and the digital master files." HD

hdtv Forum

by STEVE SECHRIST

Samsung's 31-inch OLED-TV

Steve Sechrist is an editor/analyst at Insight Media, a technology based media firm specializing in large format and micro display and related industries.

Sony gained a lot of attention recently with the release and sale of its XEL-1, the first OLED-TV (Organic Light-Emitting Diode), albeit an 11-inch model that sells for $1700 in Japan. At their massive booth at CES, Samsung devoted a king's ransom worth of real estate to show off its latest OLED-TV offerings which includes a 14-inch and a (now you're talking) 31-inch AMOLED (Active Matrix OLED) display in the booth.

Both panels were supplied to the Samsung Electronics America group by Samsung SDI based out of Gyeonggi-do, Korea. We were told by Sr. manager Tae Ill Yoon that the panels are currently made at the Tong Nang factory, and both sport a whopping full-HD (1920 x 1080) native pixel resolution (with an amazing image on the 14-inch that is a strong contender for "best image of the show").

Other specs the company was willing to divulge include a contrast ratio of 1M to one, a color gamut of 107% of the NTSC standard and brightness of 550nit. Most impressive was the less than 2 cm thinness and 40% less weight than comparable sized (current generation LCD's.)

It is safe to say, from the exhibit, that Samsung does have some form of mass production process in place. In fact Yoon said that his boss, Dr. Dong Hyae Kim will be presenting a paper at this year's SID conference on their breakthrough process. He also confided that it was using a "cell encapsulation method" and not based on Sony's new manufacturing process called "Micro Silicon" technology. That process uses a diode laser thermal annealing process (dubbed dLTA for short) to create micro crystalline silicon TFTs.

But beyond the short-term mass production and OLED material questions we may

have for Samsung, the presence of these OLED displays go much further in validating this emissive technology as perhaps the long-term future of large display flat panels.

Just a few booths away, the Sharp folks would not entirely agree, as they were showing their vision of the "near-future" with their ultra thin 1-inch LCD's which they say will be integrated into mainstream displays produced at the 10th generation (10G) fab scheduled to go online in 2010.

The 1-inch LCD from Sharp is considered by many to be a direct response to the emissive OLED technology threat and the company is demonstrating the ability to push the limits in thickness, brightness, weight and power consumption. In-short, almost every area the "emissive" camp claims a competitive advantage over LCD's "gating-light" technology. And they are doing so with a track record of mass production, high yields, and above all profitability.

Make no mistake, the future of large display TV is here today. It's just that no one knows exactly what that technology will be. HD

HD Achieving New Heights

by Tom Hallman

Amazing aerial cinematography: It's everywhere, from the latest reality TV show, to the most recently opened blockbuster movie. The concept of gyro-stabilized cameras mounted to helicopters dates back to the 70's. The introduction of stabilization technology at that time was about the elimination of vibration and the need to mount the camera to achieve desired angles. Today, the evolution of the technology is about achieving the EXTREME - pushing steering limits, incorporating latest digital payloads and dealing with demanding production requirements.

The advancement of HD has offered huge advantages for the aerial industry. Not only significant savings of time and money on production - shooting 1 hr tapes instead of film's max 11 minutes - but the quality of the stabilized images through HD payloads has produced some of the most impressive final images ever captured from the air.

One aerial stabilized equipment provider has kept their innovative focus and has quickly responded to new developments in the digital cinema camera market. Pictorvision (formerly the Wescam entertainment division) was able to make the necessary modifications to their equipment to accommodate HD payloads and most recently the ground breaking new RED camera package.

With only a few days notice, Pictorvision integrated the RED ONE, including both the Angenieux HR 25-250mm and the Cooke 18-100mm zooms into their Wescam 36" Film/HD system. Camera functions were accessible and fully utilized from within the helicopter to take advantage of all the amazing features the RED had to offer for the production of a Ford commercial. Working with Spy Films, the RED was easy to install and the system performed flawlessly.

Coincidence? They received their second request that same week to shoot with the RED for Collaboration Factory in the production of a promotional video for Stanford University. Once again the system proved flawless.

With RED's first flights successfully logged, the team at Pictorvision is confident it will experience many more flights in the very near future. HD

Tom Hallman is President of Pictorvision, www.pictorvision.com, email: inquires@pictorvision.com, 1-800-876-5583.

Every good day starts with Pictorvision, the RED One and a good cup of coffee.

hdtv THE CONSUMER FRONT

by DALE CRIPPS

Oscar Night 2009: Dripping in Deliciousness

HDTV Magazine

Dale Cripps is the publisher of HDTV Magazine, the first publication in the world dedicated to the consumer of High Definition programming and hardware, and the founder and president of the High Definition Television Association of America. hdtvmagazine@ilovehdtv.com

I went to a slasher/musical movie tonight – you know, *Sweeney Todd* – and you will be happy to know that this is not a review of that movie. It is a review of the digital theater in which the movie was played. More accurately, it is about an idea which came to me at a Carmike digital theater here in Corvallis, Oregon. (Carmike builds in mid-size communities and all of their auditoriums in Corvallis are equipped with a Christie DLP motion picture projector and very good audio).

It's no secret that yours truly is a big fan of electronic cinema. I wrote my first essay on the subject in 1988 and have published extensively on its evolution and potential since then. If you are a showman who has considered having a world full of electronic cinemas at your disposal, you know how spectacular your creative vision becomes. It's like the best book you ever read. You can't put it down.

So, I am sitting there waiting for the movie to start. Several hot looking digital commercials play until the last for this year's Oscar Awards show.

"Wow," I thought as a rush swept over me, "That is absolutely fantastic! I can come all gussied-up to this theater on Oscar night and with our movie-loving community watch the Awards Show live on a big, big theater screen! I'll bet Carmike throws a fabulous 'Oscar party' for us in the lobby after the show. Man, this is going to be fun!"

To my bitter disappointment I realized quickly that the commercial was for E Channel's Red Carpet TV coverage. You know, "tune-in and see Joan Rivers doing her thing. Damn! But wait a minute; this idea is too good to just toss away. While I am sure it's too late to arrange live feeds to the 1800 or so digital auditoriums in our country this year, I definitely want to see that show hit all 4800 (by then) digital theater screens next year. The theater's lobby party can lead us in to a late night showing of the Oscar awarded movies. It can stack up to be a new annual cultural event for every movie-going community. Now, let's see….should this be by formal 'invitation only' or something for which you buy a ticket…or just free - like a national celebration? I can see the marquee now:

Oscar Awards Show Tonight - Live From Hollywood…in 3D!!

If that doesn't get people back into your theaters, what will? American Idol in 3D? Er…well, now that you mention it, yeah!

And, for the after-awards party you just might serve up some delicious Miss Lovett's Meat Pies made, thank you, from the soulless suits who just can't believe that a new era of greatness is coming to Hollywood. Yum, yum! HD

James Mulryan DP, copyright jwmulryan 2008

Fields of Fuel

by William Wheeler

Winning the Audience Award for environmental documentary at the Sundance Film Festival, *Fields of Fuel*, turned out to be a huge hit with audiences. Directed by environmental activist Josh Tickell, *Fields of Fuel* is a film about bio-diesel, a fuel made from vegetable oil such as corn or soybeans but can also be made from agricultural product like grass and algae. America is engulfed in an oil war, the environment is being destroyed and gas prices have gone through the roof. The main focus in this movie is that it explores the different possibilities for our gasoline crisis, primarily focusing on "bio-diesel".

While shooting *Fields of Fuel*, the director and cameraman James Mulryan used several 16Gb P2 storage cards and then downloaded the files to Proavio's Studiorack S4 portable storage array as the shoot when along. The Studiorack S4 proved to be a critical component for *Field of Fuel*'s P2 HD workflow. With capacity limited to 16GB of storage, P2 workflows require a more permanent, solid & secure storage solution that offers high reliability and necessary speed to copy or backup P2 HD media on location.

"I believe there will be a huge market for large portable storage in the near future," said director James Mulryan. The Studiorack S4 helped the director store the raw P2 media and backup content all within his backpack. Currently, James Mulryan uses two terabytes of hard drive space within the Studiorack S4 set up in RAID 5 for added security and support.

"You are now allowed to take everything from desktop to a real travel possibility," states director James Mulryan. HD

In 2006 James Mulryan field directed and co-photographed Inside Supermax, *a portrait of female prison guards for the Learning Channel. He is currently directing and shooting a profile of Jack LaLanne for the LaLanne family archives. He began shooting* Fields of Fuel *in 2005.*

Photo courtesy of the Smithsonian Channel

Nature Tech
in High Definition

by David Royle

Rhinoceros beetles are proportionally the strongest animals on the planet, able to lift 850 times their own weight - equivalent to a human lifting a 65-ton tank!

As we prepared for the launch of the new Smithsonian Channel, we had the opportunity of a lifetime to take one of America's greatest and most loved institutions off the Mall in Washington and into the homes of people across the United States.

One of the first programs we chose for our launch came from the remarkable Natural History unit built by Walter Koehler in Vienna. It's a series called *Nature Tech* and it features some of the most jaw-dropping images of natural wonder that you will ever see.

The program just received the Panda Award for "Best Limited Series" from the Jackson Hole Wildlife Film Festival in Grand Teton National Park, Wyoming.

ORF's three-episode series *Nature Tech* examines a new field, bio-memetics. It's an extraordinary, visually rich exploration of the inspiration that scientists and inventors draw from the wonders of nature.

It stands out from the pack because it delivers on the promise of new technology, and of HD, by letting us see our world in a new way. Producers Steve Nicholls and Alfred Vendl used state-of-the-art CGI and ultra high speed, time lapse and scanning microscopy techniques to explore the cutting edge of this new science in outstanding images.

For the first time, you can watch and appreciate the artistry of a goshawk – a bird that has perfected the art of aerobatics. The filmmakers capture the hawk close up as it swoops and twists in front of the camera, and they slow it down 100 times. No detail is lost, and you get to see, not just told, how the elaborate flying mechanism of birds work. When you watch a barn owl fly, you finally understand how it is able to hover, silently, as it waits for its prey to emerge in the dark below. You watch the wings change shape, and see how these subtle shifts enable this bird of prey to hang in the air as it pinpoints its target.

Photo courtesy of the Smithsonian Channel

The Goshawk's legendary acrobatic skills provide new inspiration for aviation engineers.

They filmed the slow motion with Super 16, using Vision 2 material that was transferred to HD. For super slow-motion, a sophisticated system was used that can shoot up to 40,000 frames a second and stores the images as jpg's in HD quality. The system is specially designed for extremely fast action. It captures digital images constantly, so when the record button is pressed it actually saves the data from 8 seconds *earlier*. No moment is lost.

The same wonder is created when the viewer sees that much despised, but underrated, creature the cockroach scurry across the kitchen table. Its ability to cover 50 times its body length in a second is a marvel of nature. Just how marvelous is demonstrated when we watch the cockroach in slo-mo on a treadmill and then scientists struggle to emulate it with robots – celebrating when they create a robot that scuttles at a mere 15 times its body length.

But it's the specially developed time-lapse SEM (Scanning Electron Microscope) techniques that astonish most. This is the expertise of Dr. Vendl of the University of Applied Arts in Vienna. It is simply mind-blowing to see what really happens as an otter cracks open a shell. An SEM zoom, rotation and track movement captures the action in 4K magnification, generating 500 single frames in a range of 1/1000 millimeters. You will never view shells the same way again after you've seen the incredible latticework of this simple material and understand its complexity.

Such wondrous revelations are exactly what we hope to bring to the viewers of our new HD channel. HD

David Royle is Executive Vice President for Programming and Production at the Smithsonian Networks. Visit SmithsonianNetworks.com for more information about the Smithsonian Channel's programming.

Tips hd

by B. SEAN FAIRBURN SOC

One User's Notes on the F23

B. Sean Fairburn, SOC
Director of Photography,
Role Model Productions,
LLC. rolemodel@
earthlink.net
Seanfairburn.com
818-621-3912
Local 600,
Agent Steve Jacob,
323-460-4767

In the field of HD cameras there have been solid improvements over the past 8 years or more that have made the images better and better. I must say that the F23 is by far the biggest leap in quality and functionality in one form factor I have ever seen.

I am working on a feature that is shooting F23 in Shreveport and although there is a good-sized budget, $30 Million, the producers want to maximize every penny. That started with the F23 and a good set of Fujinon Cine Zooms and Primes. Next was the choice to shoot 4:4:4 and 23.98.

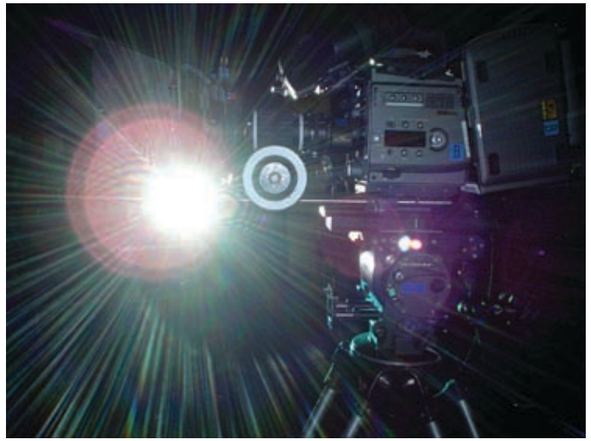
The Camera gives you some basic options. They fall into two categories: first, film style using cine mode and SLOG gamma curve; or second, custom mode allowing you to choose other options like color space and hyper gamma curves or custom curves.

Now don't for a second think that if you are filming out you MUST use cine mode. That is not the case. Whatever you shoot will film out fine.

Cine mode is a very safe mode where it's difficult to damage the image. Custom mode allows more control of the image to get the look you want as you shoot.

I chose custom, "Normal" range (not extended) and DCDM (instead of wide or 709) which is a color space option built into the new version of software made from the DCI (Digital Cinema Initiative) Digital Cinema Distribution Master(DCDM). This insures that the color will look correct on all HD discs and HDTV sets as well as projection and iTV or any other digital medium.

The film out will now look the same as the digital master. Let's face it the film can hold everything I give it but the DCI sets a color standard for all digital medium to create accuracy. The DCDM color looks exactly like what my eye sees. The camera is extremely quiet and noiseless in the blacks and throughout the picture. There is an amazing camera hiding behind these images and I am having a blast working with this camera on this feature. I will have more in the next issue. HD



Hiding in the light is an amazing camera if you take the time to look for it.