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FILM AND DIGITAL TIMES

Art, Technique and Technology in Motion Picture Production Worldwide

Matty Libatique, ASC on *The Prom*

FILM AND DIGITAL TIMES

Art, Technique and Technology

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It's written, edited, and published by Jon Fauer, ASC, an award-winning Cinematographer and Director. He is the author of 14 bestselling books—over 120,000 in print—famous for their user-friendly way of explaining things. With inside-the-industry "secrets-of the-pros" information, *Film and Digital Times* is delivered to you by subscription or invitation, online or on paper. We don't take ads and are supported by readers and sponsors.

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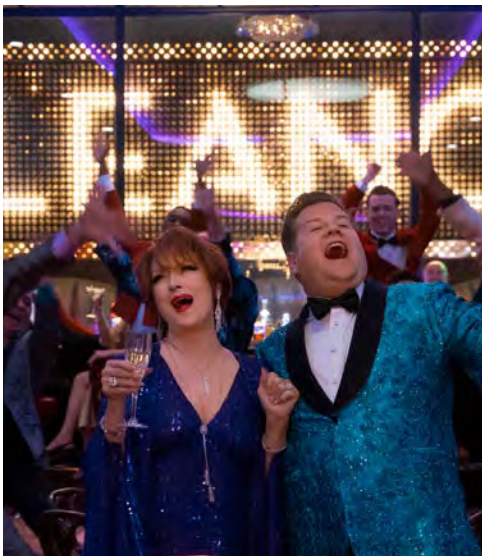
About the Cover Photo

Cinematographer Matthew Libatique, ASC on *The Prom.*

On the cover, Matty Libatique is lining up a shot with a Leitz 29mm T1.8 Prime on a Camtec Zero Optik finder.

Photo: Melinda Sue Gordon.
Netflix © 2020

The Prom—directed by Ryan Murphy, starring Meryl Streep, Nicole Kidman, James Corden—is about down-on-their-luck Broadway stars who shake up a small Indiana town as they rally behind a teen who wants to go to the prom with her girlfriend.



Matty Libatique, ASC on *The Prom*

Matty Libatique, ASC recorded on Zoom.

Matty Libatique, ASC uses lenses the way a sommelier pairs wine glasses to balance the look and taste of various vintages and help "tell the story" of a memorable meal. Matty seems to revel in trying out different lenses and different brands. This discussion revolves around his recent work on *The Prom*. Filming began around the end of November 2019. But like the many different lenses and cameras he uses, this story is not just about working on *The Prom*, directed by Ryan Murphy, with Meryl Streep, Nicole Kidman, Kerry Washington, James Corden and company. Matty takes us on a journey of lenses, cameras, lighting, the future of the industry, early days as Ed Lachman's assistant, cinematography for Zoom meetings, and more.

Jon Fauer: Your lighting is really good on this Zoom session. You deserve an ASC award for best Zoom cinematography.

Matty Libatique: I have had plenty of time to work on it.

Good single source sidelight, nice background focus fall-off, rich contrast and color.

I'm using a Fujifilm X-T3 connected to an Elgato 4K Cam Link. It converts HDMI to USB that goes into the computer. I'm not messing around.

A DMG Lumiere SL1 on the camera right side?

No, that's a window. Available light. That's why I only do day calls.

Haha. Next question: are you mostly shooting Full Frame or Super35 lately?

Mostly Full Frame. *The Prom* was on ALEXA Mini LF, as was *Don't Worry Darling*, the film I just wrapped. It's interesting, there are two worlds in Full Frame.

Panavision has such a large library of glass, and a lens team led by the great Dan Sasaki, that you can actually take what they have, be inspired by it, change it, tweak it, pull minimum focus closer, or put minimum focus farther away. You can do things to create your own look. And serve the Large Format.

The PL and LPL world is a different situation. The PL mount Super35 world consists of a vast inventory of glass that already exists. Many people are getting in the game of tweaking those PL lenses. It's more of a wild, wild West; it's a free-for-all about what covers and what doesn't and what satisfies the artistry. I've had conversations with Ed Lachman, ASC recently about this. We stay in touch. He's a mentor and a friend and I was his assistant. He's looking forward to being able to get the new Super35 4K camera from ARRI when it comes out, maybe next year, and then use lenses that he liked so much in the past: Cooke Panchros, for example, maybe even Lomo, and have so many options available.

That is a reason I have a love-hate relationship with Large Format right now. I do not have a favorite lens set. I do not have a favorite glass. I need as many choices as possible going into a film because the film dictates the glass to me. It's not the other way around. It's not because of the technology that I choose a lens; I respond to the lens because of what it brings to the aesthetic.

Nicely explained. But do you agree that we have recently seen the arrival of many new Full Frame lenses? Don't they offer you more choices than maybe a year ago?

Absolutely. I'm using a set of Tokinas that cover Full Frame right now. The latest Leitz Prime set is fantastic and I used those on *The Prom*. The Canon K35 primes, of course, saturated the market in terms of their use. I know there are ZEISS Supreme and Radiance sets that cover Full Frame. Recently, I used some Falcons, developed by Kavon Elhami and Camtec. They ended up covering about 85% of the ALEXA 65 sensor, and they cover the full sensor of the ALEXA Mini LF.

During the Covid lockdown, Blackmagic lent me one of their Pocket Cinema 6K cameras. I was doing drills, as in, how many setups can I get done in a day all by myself. It was like an exercise: can I do six shots right now? What six shots? How fast can I do them? Can I change filters? I was thinking: could this be the future for me? I had no idea.

Meryl Streep As Dee Dee Allen in Broadway sequence in *The Prom*. Photos by Melinda Sue Gordon, Netflix © 2020.

What camera and lenses did you use on *The Prom*?

The camera was an ARRI ALEXA Mini LF. I think this was the first feature where I used the Mini LF. The lenses were Full Frame Leitz Primes, Camtec Falcons and Tribe7 Blackwing7 Primes. Also Angenieux EZ Zooms.

How did you get the Leitz Prime set? *The Prom* was last year and Leitz Primes must have just come out, still with wet paint?

The way I got them is an oddly full-circle story. I did the short film *Wake Up* with Olivia Wilde in the fall of 2019. Rainer Hercher at Leitz was able to provide a test set. The combination of Leitz Primes and Sony VENICE was fantastic, especially in low light. I liked the way they opened up; they were fast. I was dealing with disparate levels of light from windows that I couldn't control and I was moving very quickly. I liked how the Leitz Primes handled highlights. In that short, I also mixed Blackwing7s. I wanted to see whether I could mix them together.

Typically, I haven't used just one set of lenses on a film in six years; I've mixed them. To me, every situation requires different tools. I learned that from Ed Lachman. I have to say that I never understood why you would painstakingly pick a lens set and then find yourself in a situation where that set wasn't actually performing the way you wanted it to.

Working for Ed Lachman as an assistant involved lots of running. He'd call for a lens set that was still in the truck. "We should get the K35 Primes," he'd say. So I'd run. And soon after: "Are my Panchros on the truck?" I'd reply, "Yes, your Panchros are on the truck." And then I had to run to get them. There would be one hero lens set that everybody thought we were shooting the movie with, but then Ed kept switching lenses. I learned that from him. There's no way I have to adhere to the so-called tradition of having to stick with one set of lenses for the whole movie.

On *The Prom,* and in general, do you have a lens plan when you're prepping? As in: this scene is with this lens, that next scene is with that one, depending on mood, scene or script?

Sometimes it's predetermined. I go in with a plan of knowing how I want to shoot. For example, on *The Prom* I wanted the world of these narcissistic Broadway actors to be associated with the Leitz Prime look: glitzy, glamorous, expensive. But I wanted aberrations when it came to the Indiana scenes; I wanted it to be a little raw, to feel more realistic. It's hard to do. Sometimes, depending on the situation in the Indiana scenes, I would use the Falcons, but in some of the more theatrical scenes, I would use the Blackwing7s because I wanted to take advantage of what they did. That was the planned combination.

And then, when it actually came to shooting, I would improvise based on things that worked and didn't work. So, it's a combination of putting a plan together and then as time goes on, augmenting that plan based on what works or doesn't work.

The opening number in front of the Broadway theater was with Leitz Primes?

Yes, the Broadway scene was with Leitz Primes. Their color rendition is great. Then towards the end of the movie, as things come together, it transitions back to those lenses. If you look at the last scene of *The Prom*, there are very few lens aberrations. It becomes clean again; it's getting back to a stylized look. It's like a celebration. I wanted the film to start somewhere. I wanted to transition to another place and then I wanted to have it all combined in the end.

The camera moves were excellent.

There was a lot of Steadicam; Ryan loves Steadicam. We had two great operators: Scott Sakamoto and Andrew Mitchell (who did most of the Steadicam.) Matt Stenerson was our First AC.

Was the opening night Broadway exterior shot on location?

The exterior was shot on a makeshift backlot in Downtown LA where our production designer Jamie Walker McCall built an amazing exterior one-block replica of 44th street.

And then you're night, interior, Sardi's.

Looking out the Sardi's windows, we see the Schubert Theater.

Meryl Streep and James Corden as Barry Glickman in Sardi's scene.

You can probably tell it's not New York because the real Schubert is offset from Sardi's and we have them literally across the street from each other. This was all entirely built on stage at Paramount.

Ryan Murphy, our director, wanted to have a very old, tungsten-lit feel, so we had a lot of tungsten lights. There's very little LED. There are LEDs in some of the posters, behind the posters and things that we could hide. But the rest of the scene was all lit with tungsten fixtures.

The sign outside the window is real. They built the front of the Schubert Theater for the exterior. The Schubert marquee was dismantled and rebuilt back on stage after we finished doing the exteriors. Some of the light was motivated by the Sardi's sign. Anyone familiar with being at Sardi's knows the feeling of seeing that green neon and I just wanted to call it out.

You can see the soffit in the ceiling. There are several runs of Light-Gear LiteRibbon RGB LEDs up there. My programmer's name is Scott Barnes; we've worked together forever. The color palette was magenta, aqua, cyan and a kind of purple. I gave him some guidelines along with the music; that's most important. What you see is largely a few fixtures hung on the side of the chandelier to create a pool of light in the center, but everything else was coming from the bounce off the ceiling.

Outside the window, there are movers. I had to use very hard light and expose it accordingly because I had water dripping down those windows. I wanted to see if I could create shadows on the faces. You can see it on Andrew Rannells in the waiter jacket. So a lot of what you see in that haze is really just an errant mover. That's creating hard light, it's backlighting Nicole in the foreground.

L to R: James Corden, Nicole Kidman as Angie Dickinson, Andrew Rannells as Trent Oliver and Meryl Streep in Sardi's set.

Matty Libatique on the Sardi's set with cool gloves, Leitz 29mm T1.8 Prime, a Camtec Zero Optik finder, neon, movers and lots of tungsten light outside, rain on the window. Photo: Melinda Sue Gordon, Netflix © 2020.

Were you using real neon or LED?

That's a good question. Whatever was neon was real neon. It would have been more expensive to actually use LED ribbons and have them shaped. I remember it definitely was neon because I had no control over it.

Again, there's rain and the presence of green light. I matched the Sardi's sign just to make sure that I had the light in the right place. I was using a portion of the ceiling ring. Soon after this, Barry started to sing and we moved into another performance. I had to build in lighting that was going to accommodate that. I was trying to play the faces in a place that seemed natural in terms of exposure and level, but still see the people and then have the capability to be able to not get caught because soon after this, I was moving the camera around the entire space again, and then Barry started to sing his next number.

Was that Sardi's number a Steadicam move?

It was a combination of Steadicam and a little bit of jib arm work. The previous number, outside the theater, was a combination of MovieBird crane and Steadicam.

The colors and skin tones were terrific.

Yes. The soft fall off, the color rendition. Here's the thing I learned: water on the window. How could I do that scene without having to justify water on a window? I love the way that window looks.

Did you use any diffusion?

I was using a device that Camtec developed called the Color-Con. I contributed to the design.

Do you remember the Lightflex, Panaflasher and Varicon? Then imagine, instead of the entire thing being a large piece of glass in front with a hot light at the top, it's a filter tray that fits in either a 4x5 or 6x6 mattebox. It is controlled via DMX by a wireless system that Camtec developed. More than a hundred RGB LED emitters surround the filter in the filter tray. And you can isolate left, right top and bottom. Originally it was basically a reaction to what I tried to do on *Straight Outta Compton*, where I was trying to flare the lens. It never worked that way because the emitters were too close to the glass.

The Color-Con requires a filter with a texture that the LEDs can catch. You place the diffusion filter of your choice into the filter tray, and then you can bring up a percentage of light to flash the shadows.

I used a Tiffen Glimmerglass as the base filter inside the Color-Con. Depending on focal length, I used a ¼ or ½ Glimmerglass. You have to learn how to use it. If you're not getting quite the effect, then you know you're pumping the LED intensity up too high. Sometimes I would put a heavier filter inside. If I wanted to be more subtle, I would go with the lower grade Glimmerglass.

In the Indiana scenes, I guess the lenses were Blackwing7 Primes? Windows and highlights seemed to go hazy.

It was a combination of Blackwing7s and Camtec Falcons in the school. Oddly for me, the hazy flare was one of my favorite qualities, but also what I think might sometimes limit the set for me. You know how it is. We're making movies for people, but we're also making movies for our peers. And every time you see that distinctive stamp everybody knows what you're doing. It worked for the particular scenes, the school, for example. This is where I feel they worked best.

James Madison High School set, Indiana.

Were these the original Blackwing7s?

Yes. It was literally Set 001 that was delivered to Kavon Elhami at Camtec. I had the whole set: 27, 37, 47, 57, 77, 107 and 137.

And the Leitz primes?

I had the 18, 21, 25, 29, 35, 40, 50, 75 and 100 mm.

The scene with Nicole Kidman and Jo Ellen Pellman in her home didn't flare as much.

I used the Leitz Primes and Angenieux Full Frame EZ Zooms.

Really? What was the reason for working with EZ Zooms?

On the Steadicam, we would sneak focal length changes as we went along. The sequence was in the house set. I remember it being difficult to be wide enough and tight enough. I had a lot of fun with those lenses: the Angenieux EZ-1 45-135 T3 and the EZ-2 22-60 T3. They created something that's very useful for mobile cameras. I often do a lot of Ronin and MoVi gimbal shots. In this film, we had a lot of Steadicam and those zooms have become invaluable. Just having the quality of glass that they've been able to create is good. It's about, "Can I fit this glass into the language of the look I'm using for the film and not have it bump." It's been a nice addition when I've needed a zoom.

Did you plan in advance what lenses you were going to use in this scene?

In this case it was a matter of focal length. For example, if we're doing almost the entire performance in a moving master, where one focal length cannot accommodate the entire scene, then I would use the Angenieux EZ zoom.

Jo Ellen Pellman and Nicole Kidman in Grandma Bea's house set.

The Mall: actual location in Northridge, CA.

Did you decide that on the spot, at the moment?

Yes. Because when I'm prepping I really don't get a sense of how big the set is.

What light fixture was blasting through the window?

That was an ARRI L10 LED (10" Fresnel, 510 W), and SkyPanels above a soft ceiling in the set at Raleigh Studios Hollywood.

What about the mall scenes?

This is another case where it was a combination of Camtec Falcons, Blackwing7s and the Angenieux EZ zoom, depending on the shot. The low mode Steadicam shot was done with a 20mm Falcon with mostly natural light. We had some fixtures up in the skylight. It was just horrifying. There are few things more banal than mall lighting. It was a real mall. It was open. We were dealing with people in the background and we didn't have a lot of options. But it's a great number.

Another scene with a great camera move was in her bedroom.

Ryan and I talked about what we could do with this scene. We ended up laying track, put wheels under the bed and pulled it away from the wall. Two grips started spinning her around in the middle of the room.

The whole time it was about how we would we handle each number? Where are we in the film? What is the progression of things. At this point it was about her making the big decision and communicating to the world who she was. We wanted to have a sense of Broadway, so this is what we came up with. This was actually the Angenieux EZ-1 zoom again.

I was going to guess it was a Blackwing7.

That's a 20K hitting the lens and I was shooting it as wide open

Emma in her bedroom.

Prom finale. Center: Arianna deBose as Alyssa Green and Jo Ellen Pellman as Emma Nolan.

as I could as well, so all those glass elements were contributing to that flare. We used four SolaFrame 3000s by High End Systems, as well, for more spread in the small space. The previous version of those lights wouldn't have been able to spread out as much.

Please talk about the big studio number at the end.

A lot of it was shot with the Leitz Primes. We were using so much color. The trick was trying to not lose the faces in the color. So, augmenting it with white light helped. I'm a big fan of adjusting the color temperature of the camera to find the right balance. If you look at our camera reports in the data books that we kept, you'll see color temperatures change constantly.

When I know there are going to be a lot of different colors, first I try to evaluate the white point of the lighting units. Then I try to consider how much I need it to be in one direction. Typically, at the beginning of the scene, the camera assistant will ask, "Where do you want to set it?" I'll say 4500 K. Sometimes I do 4,000 if I don't want it to be as warm. Maybe I do it at 3,500, and then 5,500. It's really about considering how much disparity I want between the colors.

Did you have to compensate for the different lenses in grading?

I had to adjust a little bit for some of the lenses. The Camtec Falcons were different than the Leitz Primes for sure, but I didn't mix those. But I noticed about 500 degrees of Kelvin difference between them. These are subtle differences, and I just know how to deal with them.

Are the Leitz Primes cooler than Blackwing7s?

The Blackwings are certainly warmer. Especially when they get hit with a light and flare. The Camtec Falcons flare out broadly. I remember with early Cooke S4 lenses, we had to flag them a lot to avoid too much flare. They reacted differently.

For example, if you were on a show using Panavision Primos and then you had an S4 set, the S4 would take the light and spread it over the image a little more. So that's what the Falcons remind me of.

What was great about the Leitz Primes was that I could include a window and make it look really natural, even if it was an artificial setting. What I learned, when I shot with them the first time, was how they would look even when I couldn't control the exterior light and perhaps it might not have been the right time of day. Maybe I didn't have quite enough light on the interior. How were they going to handle that? And so I put the Leitz Primes through their paces and they allowed me to light in such a way where I could blow out the windows and make it look almost...accidental.

Did you use any tungsten lighting aside from the opening Broadway sequence?

I used almost all LEDs. The only tungsten I used were the 20Ks outside a window. Sometimes I'd set the camera at 4000 or 4500 color temperature and use the 20Ks as sunlight. Typically, the 20K lights are 3200 to 2800 color temperature. I'll use them as a sun and sometimes I'll use them in day exterior and let them be warm.

SkyPanels?

A lot of SkyPanels and DMG Lumieres. Also, lots of Litegear, Litepads, Litepanels, 4Ls and 2Ls, 4Ls and 2Ls. I used a lot of LED.

How much time did you spend on grading?

We were grading during COVID times. I was prepping *Don't Worry, Darling* at that time—around October 2020. It took about three to four weeks of grading, just because my time was limited and Steve Scott was also doing two things at once and also because we were remote. He was at home. I went to Company 3 in Hollywood and were dealing with each other on speaker phone.

You graded remotely from home?

No, I went to Company 3 in Hollywood to watch on a calibrated monitor. Steve Scott had a remote Lustre setup at home.

Getting back to the camera. Did you set up any LUTS?

Well, that's interesting. I did set up a LUT with Steve Scott. I liked the LUT that we created on *Birds of Prey*. I liked the look, the satu-

Prom finale. Matty Libatique, ASC. Photo: Melinda Sue Gordon, Netflix © 2020.

ration, but when I analyzed it against previous LUTS that I used, they required so much light. So I shot some footage and did over and under exposures, just like an old-school film test. I brought these to Steve and asked him to re-rate the underexposure a stop higher, apply the LUT and then tweak that shot to match the LUT of the normal exposure. And then that was our LUT. I basically made the same LUT more sensitive by cheating it. Then I applied it and got back to the light levels that the camera would actually have required if I didn't use a heavy LUT.

And how did you rate the ALEXA Mini LF? What ISO?

ISO 1280 most of the time. I'd switch to 800 every once in a while.

The opening night exterior was at ISO 1280?

Yes. That being said, there was a lot of tungsten going on there, and a lot of the augmentation was at the end of the street. I had 360s quad split to different colors. I had them aim from one area to another so that there would be a little augmentation of color and a bit of life in the shadow areas.

Did you shoot Open Gate ARRIRAW?

Yes. I had done three straight anamorphic films. For *The Prom*, Ryan loved the idea of shooting in widescreen 2.39:1. But I just didn't want to shoot anamorphic again; I was tired of it. And the other thing was that there were so many people in the shot—it would have framed nicely, but I didn't want to be in a place where all of a sudden I had to choose focus between them. I've grown weary of people shooting shallow depth of field when there are four people in the scene and you don't know whom to see. There's a responsibility. I don't want people to think about focus when you're supposed to look at the entire group. That was one of the first decisions I made: to go spherical 2.39:1 instead of anamorphic.

In the days ahead, will movie theaters still be relevant or will streaming be all that's left?

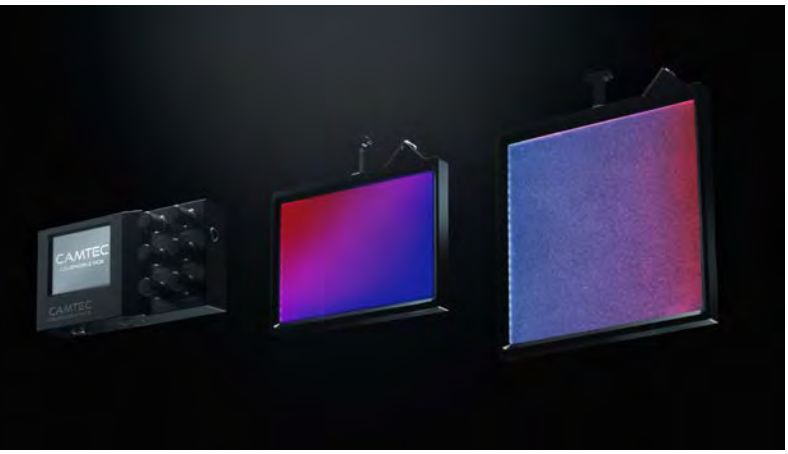
I equate theaters with restaurants. Obviously, many people miss restaurants, but they also miss theaters. I do think theaters will be viable in the future, but I don't know whether they will have the same business model as before. There might be less of an expectation from them and it might be a little more symbolic in terms of what the box office means.

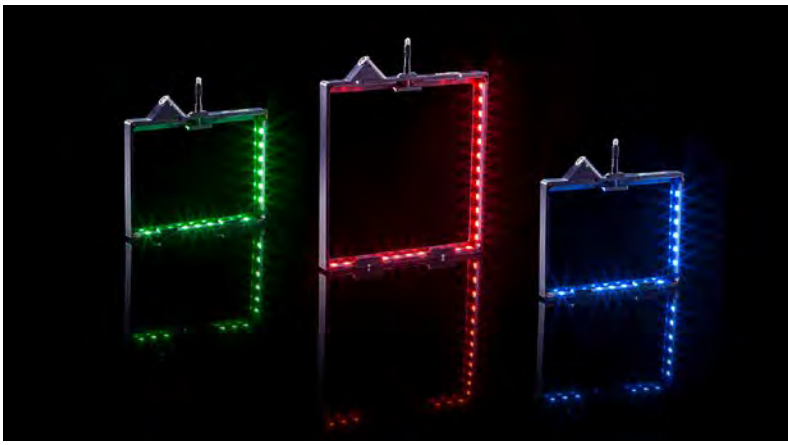
Perhaps movie theaters will be more like Broadway venues, a special event or a chance to go out.

So many things have happened. There's no putting streaming back into Pandora's box. I'm not a business person, but I can imagine that theatrical runs will be shorter. Marketing is going to pivot promotion of films to make them events.

I also think that Netflix, HBO, Amazon and Apple will work towards theatrical runs in the name of cinema. Because they are tech companies from Silicon Valley, they have the power and the resources to be able to pull it off. That would go a long way toward appeasing the artists they want to be in business with and making them feel like the business cares about them. It could be a rebirth of a business that's been beholden to the studio system for so long. If it were the other way around and we were relying on Universal, Warner Brothers and others, I don't know if theaters would be viable, but ironically, the streamers are the ones who might help.

Camtec Finder, Color-Con 2 and Lenses on *The Prom*





The word Camtec jumps out on cover of this edition. Matty Libatique is holding a Leitz Prime in a finder I had never seen before. To follow up about the finder and the Camtec Color-Con that Matty also mentions in his interview, Kavon Elhami, President of Camtec, explains:

Camtec Finder on Cover

When Matty started on *The Prom*, I was evaluating a Full Frame finder from Zero Optik at the time. I showed it to Matty and he liked it. I asked Alex Nelson, Founder and Owner of Zero Optik, if Matty could hang on to it, and he agreed.

Camtec Color-Con

We were working on a variable color contrast device at Camtec a couple of years ago and showed it to Matty. It still had wires dangling all over the place. He was immediately drawn to it and made valuable suggestions on the design.

Color-Con works as a filter tray into which you put an effect filter. RGB LED lights surround the filter along the edges on all four sides. The concept is to put any diffusion, fog or effect filter you like in the tray—anything for the light to bind onto. It works especially well with white speckles. For the first version, the whole assembly was one light, so you either adjusted intensity or color as a whole. Matty used that version often on *Venom* and A *Star is Born.* After that, he said, "It would be really cool if I could control each one of those LED pixels individually."

Color-Con 2

So, with that in mind, we started working on the Color-Con 2. It is interesting because you can control each pixel individually. Matty's team helped to find a way to control it. And then we went ahead building a unit as a custom, wireless way of controlling the Color-Con 2. Basically, his DMX operator dials in the parameters. We have 4x5 and 6.6x6.6 versions. The 6x6 tray has about a hundred LEDs all the way around. He can control each one of those LEDs as if it's a separate light on set, for example, in a concert or musical number.

Since then, we've made a simplified manual control box (see photo above), and that is a way for other people to get used to the Color-Con that is not as complicated. It is well-suited for commercials. On both versions, you can select the individual LEDs, or you run them as a chase-light sequence, or you can grow and shrink the effect. You can have a little blue from one side and a little red from the other side. The wireless version is geared to features films where you have a DMX board technician programming it into the overall lighting system.

Color-Con Filters

Matty has been using Tiffen Glimmerglass the most. Because he's using a few different Glimmerglass strengths, we outfitted him with multiple trays that have these filters already built in so he can quickly change them on set. In addition to Glimmerglass, we also like Color-Con with Tiffen White Pro-Mist, Fog and Low Contrast. As long as it catches the light, many of these filters work nicely.

Lenses and Looks

We are often asked about the different looks of the many lenses we provide, not just on *The Prom*, but in general.

The Camtec Falcons are rehoused, true vintage glass that Camtec has carefully tuned and detuned to match each other and make a consistent 12 focal length set where every lens focuses as close as possible. The inspiration for these sets were the Kowa Cine Prominars with their special fall-off, unique colorful/shapely flares, and beautiful skin tones. The problems with the Cine Prominars were that they don't cover Full Frame. So we went after making a set of lenses with those same qualities that do cover these new larger sensors. We are actually working on a second series of this set now where we've take some of our modifications even further. Larger apertures, even closer focus, fun stuff like that.

The Blackwing7 Binaries on *The Prom* were the first two sets: 001 and 002. They are modern lenses engineered with that vintage look in mind. They have a beautiful falloff to them with a very interesting reaction to light. The Blackwing7s Matty used on *The Prom* are the original Binary tuning. These Binary lenses produce a strong internal barrel flare which gives a fun rainbow effect on screen that you see a number of times in the film.

Matty also used Leitz Primes lenses on *The Prom*, saying, "I want clean and contrasty on this one." This is the opposite of what he usually does; he usually wants to break it down and deconstruct the scenes. Clean and contrasty is why we quickly suggested the Leitz Primes. Of course, it's Matty, so you always want to give him something special. They were brand new. Some focal lengths were not even in serial production. Rainer Hercher at Leitz was very committed to getting them in our hands quickly enough for Matty to use on *The Prom*. Some of the focal lengths were loaners and pre-production models from Leitz, some of them were ours, and then as we started getting our own, we wanted Matty to use them all.

MYT Works Rover 360 Pro

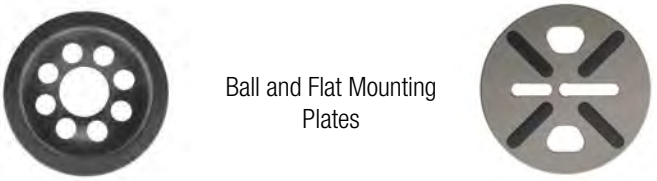
The MYT Works Rover 360 Pro is such a finely CNC sculptured device, it deserves a spot in the MoMA Design Collection. Meanwhile, it will take pride of place with the best of camera packages.

The new Rover 360 is a modular micro dolly with multiple configurations of flat and ball head mounts, various wheels for different surfaces, handles and risers. It is a precise device for tabletop camera moves, a low angle freewheeling skater, a versatile slider with track or without, and a dolly with rear, crab or roundy-round steering modes.

The Rover 360 can glide your camera millimeters above the ground. Many ⅜-16 and ¼-20 threads provide convenient mounting points. Indexed distance marks on the Rover 360 Pro's axles make circular moves a breeze. The calibrations determine the distance from the center of the Rover to your object. Picture this: a smooth, circular tabletop product shot dance around a glistening bottle of Abbaye de Vauclair Rubis beer. Set the index marks of the front and rear axles to 23". Then, measure 23" from the center of the bottle to the center of the Rover. Roll camera.

EXT. GRAND CENTRAL STATION - DAY. Shafts of sunlight stream onto the main lobby. Long, super-low angle tracking shot leading a panting bulldog pulling a person toward the gate. Attach four larger-diameter solid foam wheels, flat camera plate and long handle for a super-smooth ride. Rover weighs about 3.5 lb and carries camera payloads up to 65 lb.
mytworks.com

Rover 360 Pro



Ball and Flat Mounting Plates

Front View

Circular move set to 9" from center of Rover to object

Modular Hi-Hat

Large Wheels and Hi-Hat

Extreme Low Angle and Tabletop Handles
(shown with SIGMA fp)

Chris Menges, ASC, BSC on *Waiting for the Barbarians*

Chris Menges, ASC, BSC, cinematographer of *Waiting for the Barbarians,* with Mark Rylance as the Magistrate.
All production photos © Fabrizio Di Giulio. www.fabriziodigiulio.it

Jon Fauer: The last time you and I spoke was for *Extremely Loud & Incredibly Close*. It was the cover of the Film and Digital Times September 2011 edition. To begin our discussion of *Waiting for the Barbarians*, do you mind talking about technical things?

Chris Menges: No, no. I'm a photographer and cinematographer.

***Waiting for the Barbarians* looked absolutely beautiful. I noticed that you used Cooke 5/i primes. I guess we can "blame" most of the look on you, but would you mind talking about how and why you worked with Cooke 5/i lenses.**

The problem we had, believe it or not, was a 37-day shooting schedule and the fort, our principal location, was on the North side of the Atlas Mountains. Any cinematographer will know that being on the North side of a mountain is not necessarily the best place to be. The light is very volatile, It can be cloudy and dark at one moment and quickly change to bright sunshine in the next moment. In terms of symbolism, it's a fantastic choice of location because in the snowy mountains dwell the barbarians, ever present but not seen.

I chose the Cooke 5/i primes for two reasons. They are, I believe, quite forgiving. They are mellow in contrast, color and sharpness. But most important is the fact that the 5/i lenses are T1.4 and that extra speed was vital to completing the 37-day schedule.

Coupled with the ARRI ALEXA SXT and the ALEXA Mini, the Cookes performed remarkably well. They don't have—God forbid I would say this—the slight hard edge that some other primes have, and they have the speed. As I said, they're much more forgiving. They join in telling the story; they make a commitment.

The other lenses we used throughout were the superb Angenieux 24-290 and 28-76 Optimo zooms which gave us the versatility that you need to bring to the job.

The ALEXA SXT and the ALEXA Mini were brilliant because they gave us a little bit more exposure (in sensitivity) as well as really good contrast. They gave us great ability with color. It's kind of like a relationship really, isn't it? The ALEXA performed very well.

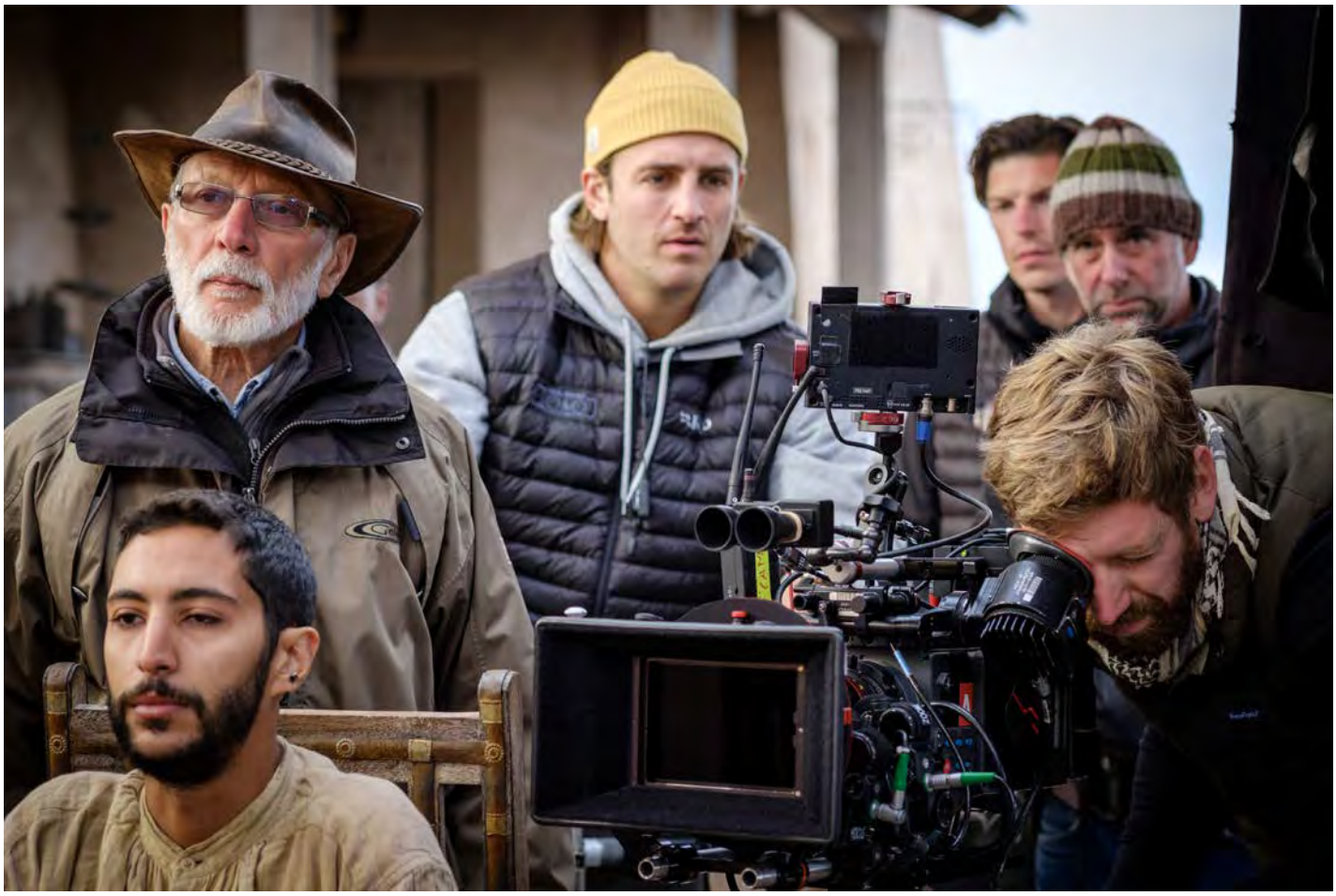
We went with a 2.39:1 spherical aspect ratio. We didn't go anamorphic, which for this film was better because we needed the extra speed. Furthermore, I didn't want the refractions and flares that the anamorphic lenses might bring. We wanted clarity and lenses that matched. Basically, the Cookes were terrific. The most important thing in this scenario was "fast."

Because you had lots of candle light and oil lamps?

And the tight schedule.

Was there a difference in matching between the Cooke primes and Angenieux zoom?

I would never mix them in the same scene because they're emotionally different. What the Optimos did brilliantly was make us



L-R: Chris Menges, cinematographer; Youssef; key grip Jac Hopkins, 2nd AC Paul Snell, 1st AC Olly Tellett, A-camera operator Sebastian Barraclough. Photo © Fabrizio Di Giulio.

very fast when we were doing exteriors. But when we came into interiors, then the only choice was the Cooke set because of their speed. The thing about candle light and oil light is that, in fact, the light is very hard and sharp because the source is minuscule, very tiny, like a quarter of an inch, if that. Of course, we all romantically think of candlelight as being rather evolving and soft and beautiful, but in fact, it's not. It was very important to have the Cooke lenses because of the wide aperture that we needed. It was to find a way to try and create the ambience of candle light and to try and bring, in purely technical terms, a part of light that worked for the scenes. Certainly we're there to serve the performance and the telling of the story.

It seemed that your candle light scenes were nevertheless quite "romantic." They did not have a harsh feeling.

I think so. After I made a film called *A World Apart* with Barbara Hershey in 1988, I read the book *Waiting for the Barbarians* by the South African writer J. M. Coetzee. I hoped it was going to be my next project. Unfortunately, it would be some time until it would become my next project, but I suppose I'm just trying to say that wanting to be involved in telling Coetzee's story was very important to me. Just a little bit of history: around 1986, there was an early attempt to film it and I was asked to direct it. But it did not happen.

Later on, in 2000, I worked for Sean Penn and Michael Fitzgerald, the producer on *The Pledge.* Michael Fitzgerald, believe it or not, had acquired the rights to the *Barbarians* book. I then did another film with Michael, *The Three Burials of Melquiades Estrada,* with Tommy Lee Jones as the director. During this time, we talked a lot about why I thought Coetzee's *Barbarians* was such an important work. Nothing came of that until 2018 when Michael got the finances together and Ciro Guerra was going to be the director; they asked me if I would come on board.

Let me give you a bit of background of what I felt as a DP. To me, it's a really angry film, and a passionate film—it's about colonialism and the suffering of indigenous people. I had spent time in the Amazon with Adrian Cowell, working with the Kreen-Akrore in the Mato Grosso of the Brazilian Amazon and with Orlando Villas Boas working with indigenous people.

I'd spent time on a documentary film with Adrian Cowell and George Patterson in the mountains of Nepal where we joined up with some Khamba guerillas who crossed into Tibet where they ambushed a Chinese convoy. My very first job, at the age of 22, was spent in South Africa with a Bolex to be a gormless person, a clueless student, to capture apartheid in action during the time of the Rivonia trial in 1963 for the current affairs program *World in Action*.

To me, *Waiting for the Barbarians* was all those stories coming together, albeit in a fictional story written by Coetzee. I'm just trying to say that I have a certain passion as a filmmaker, as a

WFTB Crew, L-R: Olly Tellett, 1st AC; Jac Hopkins, key grip; Paul Snell, 2nd AC; Seb Barraclough, camera operator; Jonathan Spencer, gaffer; Chris Menges, cinematographer; Ben Appleton, DIT.

cinematographer, a certain care about this story. There's a certain passion involved in this. It's not just not just a job. It's a passion. Does that sound pretentious?

It sounds admirable. I'm neither a psychologist nor a critic, but it seems that there's a certain thread through your work, capturing stories of incredible suffering but often in quite beautiful ways. I'm referring to your work as cinematographer of *The Killing Fields, The Mission, Rude Irish* as well as some of your documentaries.

I think the film I like a lot is *A World Apart,* the South African story by Shawn Slovo. It went to Cannes in 1988 and got a Grand Jury prize along with Best Actress Awards for Barbara Hershey, Linda Mvusi and Jodhi May. It was important to me as a film about redemption and success. It wasn't just about suffering. It was about people fighting for their freedom.

I like that Coetzee's book is devoid of emotional exploitation. It could be about the Chinese and the Tibetans today, or the British and their empire, or the Belgians and their empire, the Americans and Mexico. In a way, it's about the history of repression under colonialism.

In *Waiting for the Barbarians,* the Magistrate is living on the edge of the empire, under the Atlas Mountains, quite at peace with the world around him until Colonel Joll turns up and starts saying, "Well, those barbarians up there, we've got to sort them out." It never really occurred to the magistrate that the indigenous people in the mountains were anything other than nomadic tribes. Colonel Joll believes that putting things in order means it's about torture and murder. So it was an important assignment for me as a DP to get the chance to work on this story.

Did you operate the camera yourself?

No, I'm 80 now (and there was a fair amount of Steadicam work). Seb Barraclough with us as the A-camera and Steadicam operator. We brought a wonderful crew from the UK. Olly Tellett was the key focus puller and set everything up. Paul Snell was the second AC. Ben Appleton was the DIT. The gaffer was Jonathan Spencer. Our 2nd camera was operated by Ciro Guerra's brother-in-law David Gallego, assisted by our Moroccan focus puller Mouna Khaali. She and Olly were both excellent in their craft. We were in good hands with our location manager, Youssef Abagourram. He took us to some of the locations where David Lean his great film *Lawrence of Arabia*. And we had a lovely Moroccan crew. It was a difficult shoot because of the time constraints, but we had a lot of fun.

Where did you rent the equipment from?

Our gear came from Panavision in London. They were truly amazing. I don't know why, but they let us have everything we needed. They knew we needed two cameras. They gave us two sets Cooke 5/i lenses. They give us two sets of Optimo zooms. They provided two ALEXA bodies, including an ALEXA mini. They treated us like we were good people and I'm sure it was all down to Olly Tellett, my number one focus puller. Hugh Whittaker and Charlie Todman from Panavision set it all up. They were so generous. I promise you, if it had been a normal film, the bill from Panavision would have been twice the price. They were wonderful and they made the film possible, because how many films have you and I worked on where you've got two cameras and you don't have two sets of lenses, so you're always borrowing and begging. Nothing like that. We got everything we needed. They really spoiled us.

Chris Menges and Seb Barraclough. JDC Finder and Optimo 28-70 Zoom. Photo © Fabrizio Di Giulio.

Seb Barraclough and Jonathan Spencer. ALEXA, Angenieux 28-70, Ronford-Baker 43" Slider. Photo © Fabrizio Di Giulio.

Did you use all focal lengths of the Cooke 5/i Primes? And some might ask: *Waiting for the Barbarians* is a period piece—why not use vintage lenses such as old 1930s Cooke Panchros?

Yes, we used them all. The whole lot.

The thing to remember is: don't forget the focus puller. You might have some beautiful old glass, but the distance between infinity and the next focus mark is minuscule. You need to think about the focus puller who's got to feel the image. I always think when you're shooting, the focus puller's conception of the shot is really vital and the lens needs to provide some access to play with. For me the 5/i did that and had the speed.

How did you manage dailies on location and final grading?

We had a really good DIT, Ben Appleton, who would would run dailies for me in his spare time, it was beyond the call of duty. He was ready to give up his evenings to show us what we'd shot. Ciro didn't see rushes very often. He accepted what he saw on the monitor on the set, but I find it quite reassuring to see what we've captured. I like dailies. Grading was done in Rome. Nazzareno Neri was the DI colorist from LaserFilm in Rome. We were, technically-speaking, an Italian film. The scenes in the magistrates' bedroom were done at a villa in Rome during the last week of our 37-day shoot. Nazzareno is really good; he's worked with Vittorio Storaro on *The Sheltering Sky, Little Buddha, Caravaggio*. And Vittorio doesn't take any (expletive deleted).

I understudied with Vittorio on *Agatha*. I did a second unit for him on *Reds*. I like his work, commitment and passion. When he was working with Michael Apted on *Agatha,* Christian Wangler, sound recordist phoned me up and said, "Chris, you've got to come to our set on *Agatha* because this man is really shooting interesting things. I dutifully went along and indeed he was shooting interesting things using light in interesting ways. I always thought that when I worked for Miroslav Ondrícek on *If*, the Lindsay Anderson film. Miroslav educated me on so many important things about what it is to be a DP. What it is to be DP is to anticipate, plan and plot. That's what he taught me. When I got my first feature film as a DP, which was *Kes,* it was very much Miroslav Ondrícek who was there beside me in spirit because of everything he had taught me on *If*. Did you ever see *If*?

Of course. It's iconic. A film by Lindsay Anderson with Malcolm McDowell, subversive students sitting on a prep school roof. Speaking of prep, how did you prepare for *Barbarians*?

We discussed the emotions and importance of the scenes and what they meant to the screenplay. Ciro and I talked with the art department, the First AD, and we came up with the best schedule that was possible. And then we ran like (expletive deleted).

I can imagine. I guess you might have been planning shots around the sun and the time of day. Was that done on the spot or in advance?

Sun charts, compass bearings, set-ups and schedules are things that you plan; they can't happen without your planning them. But what you can't plan for is what God will do in terms of whether it's sunny this morning, but it's not sunny that afternoon. You just have to wing it really. I suppose the most important lamp for me was the ARRI 6K HMI PAR (Arrisun 60), which is an immensely powerful beam of light. With the right lens and filter, I was able to continue the day when the daylight was falling. There are lots of scenes that are actually shot that way when the sunlight was gone. They don't always work, but the thing is, can you get away with it?

Chris Menges, ASC, BSC and B camera operator David Gallego; Angenieux Optimo 24-290, Ronford 2015 head. Photo © Fabrizio Di Giulio.

How far was the location from your hotel?

It was about 35 minutes away, a reasonable distance that gives you time to think about what you're going to do. We stayed in a great hotel in Marrakesh.

It was better than your time in the Golden Triangle of Burma—Myanmar—I think you slept in tents for a year?

A year and a half, stuck in Burma, being chased by the Kuomintang. That really wasn't funny. Sometimes doing documentaries is not very funny. I remember, one of my first jobs was for World in Action when I was about 22. Michael Parkinson and I got instructions from the office in London to fly to Zanzibar. We first went to Dar es Salaam and found an Australian pilot who was prepared to fly us there. Two days earlier, there had been a coup in Zanzibar. Michael found this pilot in a bar and asked, "Will you fly us there?" The pilot said, "I'll take you in, providing the moment the wheels touch down, you jump out with your gear." The next day, Michael and I were in the plane. As the plane touched the runway, we jumped out, the pilot took off and three Jeeps came bounding towards us with these really angry looking soldiers. They promptly arrested us and put us in prison. I don't know what I'm talking about, but documentaries can be really revealing, but dangerous.

Your early days almost remind me of the cameraman character in *The Honourable Schoolboy* spy novel by John le Carré. I expect you moved from documentaries to features when you grew tired of sleeping in tents or prisons?

After working for *World in Action* and Adrian Cowell in Tibet, Brian Probyn, a cameraman I'd worked for as an assistant, asked if I would operate for him on *Poor Cow*, which was Ken Loach's first feature film. Ken asked me to photograph the film *Kes* (about a boy who spends his free time caring for and training his pet kestrel). That was my first film as DP.

During the making of that film, Ken and I worked out a shooting scheme in which we would always stand back from the performance. We would stay outside the circle of the performance. And we would always use light from natural sources, such as lights coming through windows. I used Cooke lenses on that first feature film in 1969; Eastman negative was 100 ASA at that time.

The idea was that the light would be democratic and we would light the room rather than the people. We would never ask people to hit marks. We would be subservient to the performance of the actors and the kids in *Kes*. It was the most enjoyable shoot I've ever had. There were no drama queens. It was just serving Barry Hines' book, just a wonderful experience. It was love of a story and Ken chose the wee kid from a class where Barry Hines, the writer, had worked as an English teacher. Ken went into this classroom in Barnsley, in Yorkshire, and picked out David Bradley. That's a most amazing skill to choose an actor like that.

What camera and lenses did you use in your documentary days?

The camera was an Eclair NPR. If I was really on the run, everything was handheld. I would use the Angenieux 25mm f/0.95 prime or the Angenieux 16-44 f/0.95 zoom because they are so fast. If I had plenty of light, I would use the 10:1 Angenieux 12-120 f/2.2.

I remember shooting *Chicago Streets* (1975) with the fire brigade, directed by Harley Cokeliss. We didn't have any lights. We did everything on the run. We rode on the fire engines through the city every night. And basically we filmed everything with an f/0.95 Angenieux lens. The problem with the f/0.95 lens is it is a 25mm focal length. Now, how are you going to tell a story with just one 25mm lens? The only way you can do it is by tracking and panning. So we developed a sort of scheme to tell the story by developing shots. That was quite a good education for feature film work.

02:34. This is the Magistrate's study, high up in the fort. The shaft of light comes from a window high above, with a 6K ARRI HMI PAR whacking in from the top. This was about 11 o'clock in the morning. The sun establishes the time of day. The only smoke is from the oil lamps. We tried to make it as real as possible. Beyond the window was a courtyard; we were on the second floor. Against the far walls in the courtyard, I had three 20x20 Ultrabounce frames on which I aimed the strongest HMIs that we had, which I think were 12Ks.

For dark interiors such as these, we used Cooke 5/i primes, often at T1.4. As mentioned before, we shot in a 2.39:1 aspect ratio with spherical lenses. We didn't go anamorphic because we needed the extra speed and I didn't want refractions and flares. I wanted clarity and lenses that matched. The Cookes were terrific: mellow in contrast, color and sharpness. The most important thing in this scenario was "fast." And, in an emotional sense, Cooke lenses are very good story-telling lenses.

02:49. This is the same scene. Essentially, this is bounced light. It's a difficult thing sometimes, on location. If you were shooting in a Georgian house in London or Dublin, you would have the most amazing windows where you could create beautiful light. But in the fort, there were little square windows and the problem with tiny windows is it focuses the light. So, by putting three 20x20 Ultrabounces outside, some 20 feet away from the window, we were able to create this kind of energy in the light.

The detail is by Crispian Sallis, the art department's delicate touch. You're no good as a DP if you don't have a good designer—the one who can make it work for you.

16:06. We're shooting with a Cooke 5/i, probably 35mm. It's basically lit by the oil lamps that you can see in picture and one little hidden LED lamp.

We had a slight problem with wind inside the building which was a fortified farmhouse built about 1840. The problem with candle-light is wind. I tried to soften the hard candle light and deal with the wind. It was a balancing act.

23:29. In this exterior, you've got the sun completely naked, shining hard, but you've also got the walls of the fort which are reflecting all that light. That helps. Sometimes it was too much fill light and we had to use a lot of negative fill, black solids and fabric to try and slow it down.

It was probably the Angenieux zoom because we were running on these scenes. The crew were truly magnificent.

24:35. This shot is the most important shot in the film, really.

It is lit from the same window of the Magistrate's study but it's a different time of day. This is the inner dialogue of the Magistrate which is so important to the book and so important to the film. As we discussed, the book is a dialogue about complicity, empire, cruelty and the suffering of indigenous people and how the Magistrate comes to terms with it. And that's the core of the story.

27:21. Our Cooke 5/i lens is absolutely wide open, T1.4. This is quite a beautiful scene between Star and the Magistrate. The main lighting comes from the candles you see in the shot. There's one lamp deep behind the Magistrate to give some depth. Then we have a panning shot of Star as she comes from a mirror to the Magistrate.

You can see three candles. They have double wicks. There is quite a bit of light on the wall behind the candles. We fought very hard so that there would be no wind to make the candles flicker. The ALEXA and double wicks worked. You've just got to get the circumstances right.

59:27. These shots were "stolen" at magic hour. This is the wide shot. We had three cameras working and we shot in sequence. We had a wide camera, a close camera and a camera hidden inside the tent. My idea was that we would never achieve continuity if we were to separate the setups. But, if we did them all at once as dusk came, we would have continuity of all three angles. It was a way of the three cameras helping us to capture the magic moment by shooting at the same time.

All of this was fire light, oil lamps and God.

1:00:00. The Girl is sitting outside the tent and the Magistrate is writing in his journal with a little oil lamp. She goes and joins the soldiers by the fire.

Olly and Ben were quite adamant that we needed to retain rich black levels and so we were very reluctant to move above 800 ISO.

Well, we've seen films where the ALEXA has been rated at 3,200 and there might have been a tendency towards the image going gray. That was what we were fighting.

Dash Dot Dot / Dash Dash / Dash Dash Dot.

That's Morse code for DMG — as in DMG Lumiere.

And now, DASH is the brilliant new pocket LED light fixture from DMG Lumiere by Rosco. Unlike many other iPhone-size LED lights, this one is housed in a rugged aluminum housing that can endure most production scenarios.

A brief background. You're probably familiar with DMG Lumiere's MIX family of 1.4" thin LED lights: SL1 Mix, Maxi Mix, Mini Mix. And do not forget the tiny MIXBOOK digital swatchbook that doubles as a nice micro light. They can all be controlled with the myMIX app for iOS, Android and APK.

DASH is tiny (5" x 3.1" x 1.1") but powerful (up to 35 footcandles at 3.3 feet / 380 Lux at 1 meter.)

DASH On Set

DASH comes with a set of magnetized beam shaping accessories: flat diffuser panel, dome diffuser, eggcrate, and a gel holder. Mounting accessories include a baby stand spigot, magnet mount and ¼-20 thread.

Mount it on-camera as a Obie light (eye light). Diffuse it with the DASH Dot or a larger frame. Do I hear sewing machines working on DASH Snapbags? It's great for under dashboard car shots: DASH dash. Dash has an internal, rechargeable battery; it can go almost anywhere.

EXT – CHASE SCENE, RUNNING ALONG CITY STREET – NIGHT. Attach DASH to the end of a boom pole held by an electrician.

Documentaries: light at night with DASH, not your iPhone. If it has a ringtone, it's probably not a reliably color-accurate light.

Interiors: DASH can be stashed almost anywhere. And so it goes.

DMG DASH Dot is a silicone half globe diffuser when you want a flattering, round Obie light. It's so pretty, you may want to include it in the shot as a practical lamp.

Attach four DASH fixtures together with the link system of the DASH Quad kit and you get a softer light.

DMG DASH comes in two different configurations:

DMG DASH Pocket LED Kit includes case, USB-C cable, flat diffuser, dome diffuser, eggcrate, light stand and magnet mounts, and gel holder. List price: $279 USD, €239 EU.

Quad Kit includes four complete pocket kits, a carrying case and a LINK accessory to configure and mount the four lights together. List price: $1,250 USD, €1,099 EU.

DMG DASH Specs:

Color mixing: has the same six-chip LED set found in all of Rosco's MIX lights. DMG DASH can create over 130 True Rosco Color gel matches and light output with high 95+ CRI and 90+ TLCI values.

Dimensions: 5 x 3.1 x 1.1 inch light

Control options: DMG DASH can be controlled with its onboard dials and menu or via Bluetooth using the myMIX app. You can adjust Color Temperature (White), 130 Rosco Gel colors, Color, Effects, and Source Match.

Weatherproof: Aluminum Alloy housing, outdoor rating for use in almost all weather conditions.

Steven Meizler on *The Queen's Gambit*

Steven Meizler, Cinematographer of *The Queen's Gambit.*
Photo by Phil Bray. Netflix © 2020.

In its initial month of streaming, *The Queen's Gambit* was viewed by 62 million households. These are Netflix numbers.

Director Scott Frank has brought so much excitement to a story about chess and a conflicted prodigy that the New York Times headlined Marie Fazio's review with "The Netflix show has reignited interest in the game and fueled demand for chess sets, accessories and timers." Reviews were quick to extoll the beautifully lit and masterfully composed cinematography of Steven Meizler. And so—

Jon Fauer: Everyone has been asking what you did to make *The Queen's Gambit* look so great. I hope we'll find out in this discussion. When and where did you start shooting?"

Steven Meizler: We shot mostly in Berlin. The exteriors for Lexington, Kentucky and suburbs were in Toronto and its surroundings. Everything else was in Berlin. We started prep and location scouting in May 2019. Then we started shooting in August: Toronto first and then we moved to Berlin from September to the end of 2109. It was an 81-day schedule.

What cameras did you use?

RED RANGER MONSTRO with the MONSTRO 8K VV sensor. We rented from Camera Ludwig in Berlin. Gareth Daley flew in from London and was there for prep and during the first week of shooting, just to make sure all the assistants and I were up to speed with the RANGER.

I actually had never used the RANGER before. I had always used the DSMC2 as our main cameras. I knew that the RANGER was a little bit more stable than the DSMC2 and also, it's quieter. I mainly used it for sound reasons. I like the size of the DSMC2 but I think the RANGER may be a little easier for assistants, especially attaching accessories. Having been an assistant myself I know how important that is.

I remember you were the first "God of Focus" in a Film and Digital Times article by Howard Preston for Issue 6 in June 2006. You were featured in a photo chasing after a Citroën DS on "Munich" with a wireless focus system.

Howard was describing the virtues of his new Hand Unit 3: "The most sought-after focus pullers have such highly trained eye-hand coordination and distance judgment that they know exactly how much throw of the focus knob corresponds to the distance they're observing. For these gods of focus, the ergonomics of the knob, its size, feel, precision, and repeatability are key to doing their magic. For those lacking such precisely calibrated wrists, design innovations and technology can help the merely mortal keep their eyes on the action while maintaining awareness of the lens setting."

L-R: Director Scott Frank and Steven Meizler playing chess while First AC Richie Masino observes. Photo: Phil Bray. Netflix © 2020.

But I digress. You traded in your Preston FIZ and Hand Unit for RED cameras as a DP a while ago. Do you prefer the RED DSMC2 modular style compared to the sort of SUV style of the RANGER?

As a camera assistant working with Steven Soderbergh for so many years, he was always looking for the smallest camera. That was one of the things that drew him to RED. We both learned it well and I enjoyed the modularity of the small camera. Using it as a DP in hand-held situations is especially helpful.

As a DP, I like to operate. You can get into tight spaces and cars and places that you really can't get to with other cameras. I know that ARRI has the Mini that's pretty similar in size and the Sony VENICE detaches head from body. Other cameras have kind of caught up, but in the beginning, it was RED leading the way.

When RANGER first came out, I asked Jarred Land why they designed a camera much bigger than DSMC2. He said that in rental situations, where almost every rental house does things differently, RANGER offered a more uniform and integrated camera body.

True. Even though companies such as Tilta and Wooden Camera make very good accessories, the way cameras are rigged can get mismatched. I think it definitely helped that the RANGER was integrated. It was smart for Red to do that. We rented the RED RANGER from Ludwig Kameraverleih in Berlin. I own a RED DSMC2 (with MONSTRO 8K VV sensor). We used mine for Steadicam and handheld work.

I assume you shot in 8K?

Yes, we shot in 8K REDCODE RAW 5:1 and finished in 4K HDR. Our base ISO was 800. I bumped up some of the low-light scenes to 1200 or 1600, but not a lot.

What lenses did you have?

We shot with ZEISS Supreme Primes, which I found really great. I had a Tiffen Black Satin 1 diffusion filter in front. I really like the ZEISS Supremes. I usually like a "smoother" lens, which it is. Working with Janusz Kaminski for many years, I appreciated that he was usually using ZEISS Ultra Primes and Super Speeds. I always loved the smoothness of those. I also like the small size of those lenses, especially the Super Speeds (80mm front diameter). I used Super Speeds on *Godless*.

But the Supremes are Full Frame, which is the format of *The Queen's Gambit*. The Supremes are sharp, skin tones are smooth, but it's the focus fall off that I really love—the softness of the focus as it falls off a face, especially when you rack to another person. Even though the Supremes are incredibly sharp, like on the actor's eye, they still have a really pleasing quality. The Black Satin filter on top of that was really nice for skin tones and highlights on faces.

Steven Meizler lining up an 85mm ZEISS Supreme and Chemical Wedding iPad finder on on Anya Taylor-Joy as Beth Harmon and Thomas Brodie-Sangster as Benny in episode 104. Director/Writer/Exec. Producer Scott Frank at right. Photo: Ken Woroner. Netflix © 2020.

I was guessing by the look of *The Queen's Gambit* that you were using ZEISS Radiance Primes.

No, they were ZEISS Supremes. You just have to really look into the light. You have to find the flare, it's always there. When you find the flare, it's really great. If it's not there, you have to light until you get more light intensity into the lens. You just go bolder.

Were you shooting wide open in those night interiors?

Yes, I was at T1.5 most of the time in those shots. I did tests with my gaffer Sascha Wolfram, who is a fantastic gaffer in Berlin. We tested with the Supremes wide open at T1.5, and then at T2.8. To be able to shoot at T1.5 and to really get that quality of light and darkness is a very beautiful thing. You don't get the same beautiful look at T2.8 and the falloff is different. It doesn't feel lit at maximum aperture.

For the closeups, was there a particular focal length you preferred or were you changing it up?

I liked the 35mm and the 25mm. One of the reasons we were using Large Format was to get very close to the chess board without having distortion.

If we were shooting Super35, the equivalent would have been an 18mm ZEISS Super Speed and it would look a lot different. Not having that distortion was a big part of it. Also, one of the reasons for going to Berlin, was that we were leaning toward German expressionism. For example, in the first episode, seeing the chess board on the ceiling, playing with light and shadows, elevates the scene. I have always been a big fan of *The Cabinet of Dr. Caligari*.

Did you have all the Supreme focal lengths on *The Queen's Gambit*?

We had the 21, 25, 29, 35, 50, 85, 100, 135 mm ZEISS Supreme Primes. I got the 21mm about halfway through the show.

We also had the Angenieux Optimo Ultra 12x Zoom for a few zoom shots. One of these, in episode 7, begins close up on Beth at a theater and zooms out to see Borgov watching from the back. I had a T4.2 on the Optimo, so I shot at 2000 ISO. There is a little grain, but it's not displeasing. I was happy that we were able to get that shot with the lens in such a low-light environment. I also have to give credit to the music; it also helps make the chess exciting.

You had nice gentle glows in the highlights.

The halation around lights is not as extreme as with Classic Soft or Double Fog filters, which have such an extreme halation around practicals. For example, in Mr. Shaibel's basement office, we see the bare bulb in the shot. I enjoyed how the Supremes reacted—I could shoot directly into that bright bulb. It was the main source of light. I had some additional lights in the background to lighten

"It would have be a shame not to have smoke inside," said Steven Meizler. Anya Taylor-Joy in episode 103. Photo: Phil Bray. Netflix © 2020.

the shadows, but the actors were essentially lit with that one light bulb. We had a string system so I could pull the light bulb in different directions to keep the light behind them.

Did you have smoke in that shot and other scenes?

I used a lot of smoke. Shooting in these huge chess halls, with such big windows and lights outside on Condors, it would be a shame not to have smoke inside.

Perhaps that is among the many compelling reasons you were nominated for a BSC Best Cinematography in a TV Drama Award. What more could one want? Bare light bulbs, lots of smoke, big windows. Seriously, your nomination is truly well-deserved.

Well, that's it. Working for Janusz for many years, in addition to ZEISS lenses, he used smoke so often. It was always about the smoke and backlight. It's a key to success.

It worked really well. The interesting thing about the light bulb was that it did not totally burn out. You could still see the color in it.

I was amazed by the latitude of the camera and surprised that it didn't just blow out; you could even see the definition of the tip of the bulb. I would give that credit to the MONSTRO sensor.

Did you establish a viewing LUT while you were shooting?

I don't work with a DIT on set. And I don't like to work with a LUT. I operate myself, so I'm used to the camera's 7-inch monitor and using the histogram on the monitor to know where I'm clipping highlights and seeing shadow detail at the low end.

Having graded HDR a lot, and especially on windows that are very hot, I know what information I'm going to retain and what I'm not going to have. Not having a LUT requires exposing properly, truly having all the information in there and then being able to do what you need to do in post.

That leads into the beginning of prep where my look begins to develop. I like to bring the actual camera, which is also why I like the RED DSMC2—because I use it as if it were a still camera—with two GDU (Global Dynamics United) wood handles from Jarred's company and a 7-inch monitor on top. I bring all the lenses with me to each location when we're scouting. Then, I go to Light Iron and start setting up a look with the colorist. To even go further, sometimes I'll go to location and since I know REDCINE-X PRO, I'll start grading it myself at night.

I feel that every second of production time should be spent on production and filming the actors rather than sitting in a DIT tent and grading because all that can be done later. It's like knowing your film stock. I'm treating the files as a film negative; I know where my information is and I know the camera. That's part of the craft.

Framegrab from Episode 101 in the orphanage: Isla Johnston as young Beth and Bill Camp as Mr. Shaibel. Netflix © 2020.

Of course, you need to have the trust of the director. It was a great collaboration with Scott Frank. He can really concentrate on the performance and he knows that I'm going to have his back when it comes to keeping the visual language consistent.

When you scout with your DSMC2 and grade during pre-production, I guess you are using the M as in Motion and not the S as in Stills letters in the camera's name?

Yes. I'm shooting video. I often grab stills and send them out as location guides for the production designer, location managers and others who are so key to the success of the show. I like to block the shots in advance so we can be more efficient when we arrive and also to develop the visual language of the project for myself and the director. I block out scenes to feel what we're going for. We're not going there on the day and then trying to figure it out without having a plan. This also allows the director and me to sometimes go off plan. I'm afraid there's not a lot said about that sometimes.

I'm not trying to flatter or embarrass you, but many colleagues have said that *The Queen's Gambit* looked better than anything else shot with Supremes. Why is that?

I think it's a combination. I have to give a lot of credit to the production designer Uli Hanisch and costume designer Gabriele Binder. I have to say Sascha got me into using a lot of negative fill; I hadn't used negative fill to such an extreme before and I think it helped in the blacks. I also want to say that the light in Berlin was amazing. We were shooting in the fall and the days were not long. But when the sun came out, it was always at a low angle in the sky.

Also contributing were those beautiful chess halls, being able to shoot low angle toward beautiful wide ceilings and to feel the space. I think all of those things added to it.

Where was the Mexican hotel location?

That was in Berlin. It was the lobby of a ballet theater. The art department added colors to the windows and pattern designs in between. It was a big task but helped because we did not want to see Berlin outside because it was supposed to be Mexico City. We adhered to a strict color palette going from the ward to the Wheatley house, to the Gibson hotel (Cincinnati), to Mexico City, to Las Vegas, to Paris and finally Moscow.

Was the opening scene in the Paris hotel also Berlin: she oversleeps, they knock on the door, she runs through the hotel?

That was in Berlin. I want to give credit to George Billinger and Christian Scheibe. George was the Steadicam and B camera operator and also our invaluable second unit DP. Christian was our key grip/ dolly grip. George was on a rickshaw with a Steadicam for those shots.

Did you bring a lot of crew with you from the US?

Just George and Richie Masino as First Camera Assistant.

Which brings us back to Howard Preston. I assume you must have used a Light Ranger, wide open, T1.5, Full Frame, depth of field less than a Queen chess piece?

Framegrab from Championship in Moscow, Episode 107. Netflix © 2020.

It's definitely challenging. Richie used the Light Ranger 2, which is an amazing device.

The show was exciting. Most people didn't think they would get excited by chess, but we were all on the edge of our seats watching it.

I think a lot of that had to do with the idea that we were showing it so much through Beth's perspective. Anya, as Beth, was incredible. Because we were with her so much, you have a singularity of vision, but you can change up the language for each tournament and still have a cohesiveness to it. What made it interesting was staying with her; she's the one constant throughout.

How did you light the big, wide shot in the final tournament scene?

We lit it very sparsely. It's a really big ceiling and I had some uplights for the corridors. I let the audience fall off and mainly used the source of the practical light bulbs to be the main source of lighting.

The early chess match in Cincinnati had a lot of light coming in from outside.

That was three 18 Ks coming in from outside the window. It was a location in Berlin, part of the sound studio where David Bowie recorded "Heroes."

There were interesting extreme closeups on the chess board with Beth behind it. Did you use diopters?

No, the Supremes focus very close. That was nice. And the Full Frame format allowed us to get a little closer and still have the view of it without our being actually as close as you would need for regular format. Our aspect ratio was 1.78:1, by the way.

You had a long period of prep, were the only DP, with only one director, for 7 episodes and a shooting schedule longer than most features.

The Queen's Gambit was three months prep and 90 days of shooting. To be able to find all the locations, to storyboard with the director and production designer, to build the sets—you need to have everything planned like it's one long movie.

I wish that TV and streaming would head more to that model. I see quality shows that have multiple directors and they just lose the vision that is unified and a look that's cohesive. If they don't have one director going through and they want different DPs, you just lose it. The projects that are succeeding have one director and one DP doing the whole thing. Scott Frank wrote and directed all the episodes.

Is this the new normal?

Yes. I think *The Queen's Gambit* benefited from being seven episodes rather than being a two hour movie. Many people have tried to get this movie off as a movie; Bertolucci wanted it, and many people were involved in trying to get it. Scott was very smart wanting to do it as a limited series.

I guess Netflix deserves a lot of credit for allowing you to do it this way?

They did. It wasn't a cheap electric budget and it wasn't a cheap art department and costume budget. I truly appreciate how Netflix supported us.

Did RED RANGER and the DSMC2 match completely?

Yes. They have the same sensor. Incidentally, that same chip is also in the Panavision DXL2. The DXL2 has Light Iron's color science baked in. But since I use Light Iron, that color science is available to me in post-production.

How did you do the grading?

We started grading in May or June of 2020 at Light Iron, New York. Steven Bodner was our colorist. It was strange because we had to start by doing it remotely from home with iPad pros. That was a little tricky in itself. I eventually got to see it on a Sony X300 4K OLED monitor at Light Iron Los Angeles in a sealed-off room. We had remote sessions of all the episodes with Scott Frank, our director; Michelle Tesoro, the editor; and Steven Bodner grading from his home—all in New York—and me in LA.

So you were grading at the height of the pandemic?

Yes. We also were doing a lot of Zoom meetings before grading, going over VFX shots that included our production designer, Uli Hanisch and the VFX supervisor, John Mangia. We viewed with iPad Pros for about three weeks and then about two weeks at Light Iron in LA where I went through each episode.

How did you get into the film business?

I grew up in Boston. I studied film at University of Rochester. A classmate of mine was Kramer Morgenthau. We're friends and actually knew each other then. There were only 13 film studies majors in our class. It was mostly film theory and criticism, which I loved. I drove to LA after college and started working as a receptionist and then a PA at Roger Corman's company. Then I got involved with their cameras: they had an Arriflex 35BL-4 and a Mitchell BNC. That's where I met Janusz.

Roger Corman launched dozens of successful careers.

I worked with many amazing DPs and it was a really creative time there in the early nineties. It was even better than a film school. When Janusz started getting offers for bigger films and took me with him, things went from there. I feel very fortunate that I was there at that time.

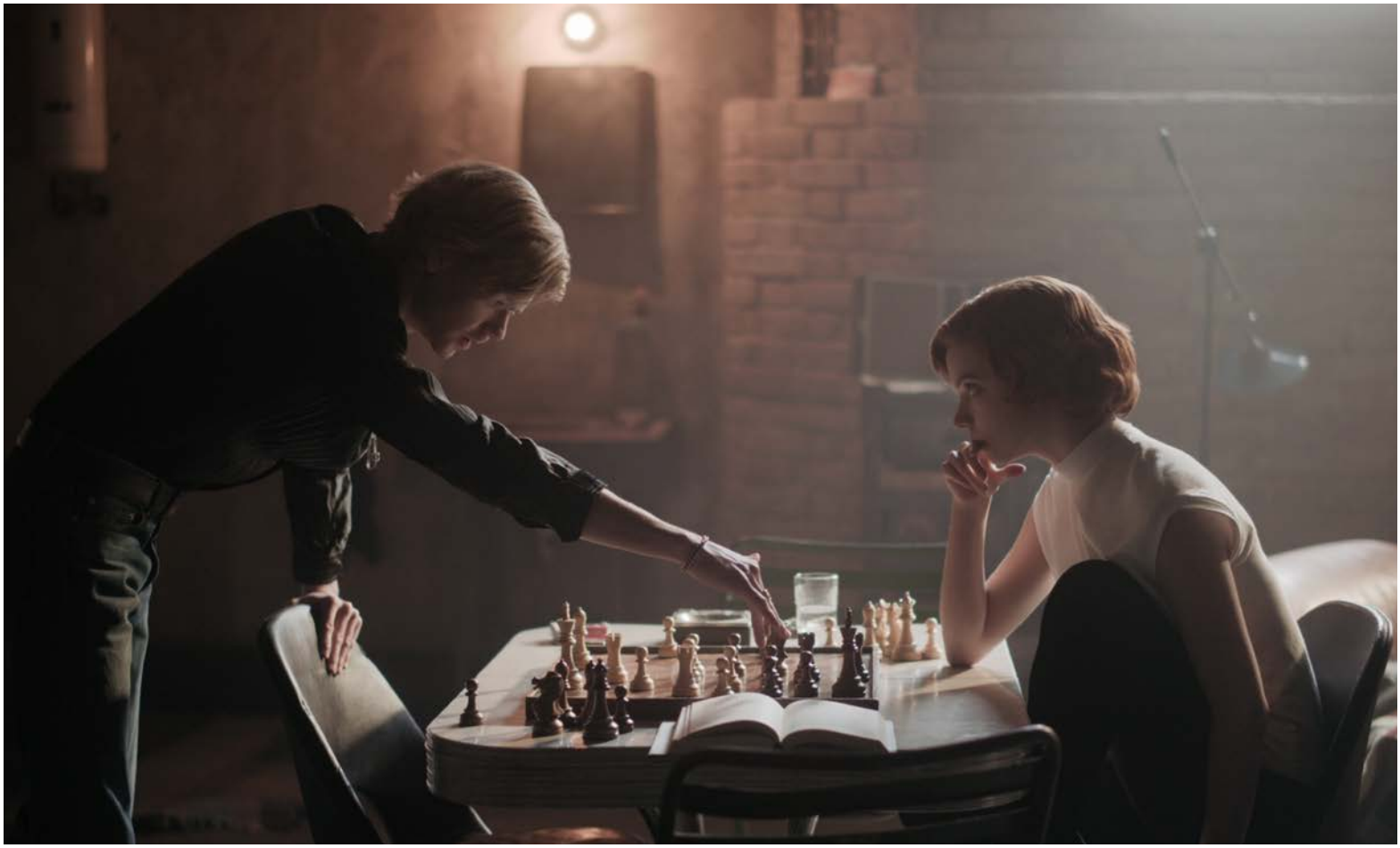
And here you are with *The Queen's Gambit* and widespread praise for how gorgeous it looked. Congratulations.

Framegrabs courtesy of Netflix © 2020.

Below: Thomas Brodie-Sangster and Anya Taylor-Joy in Episode 106.

Opposite, top: the hotel in Mexico, Episode 104.

Opposite bottom: Anya Taylor-Joy after tournament, Episode 107.



Steven Meizler, *The Queen's Gambit*

Steven Meizner, RED RANGER, ZEISS Supreme, Light Ranger 2, Berlin as Moscow in the last scene of the movie.

Richie Masino pulling focus. Photos by George Billinger.

R-L: Richie Masino, First AC and Key Grip Christian Scheibe.

Jon Fauer: In a February 2017 FDTimes article, we talked about focus at T1.3 with ZEISS Super Speeds and LR2 on the Netflix show *Godless*, also with Steven Meizler as DP. Now, in this latest "Gods of Focus" episode, let's talk about *The Queen's Gambit*.

Richie Masino: When Steven called me for *The Queen's Gambit*, he told me we would be shooting ZEISS Supremes with RED RANGER 8K Full Frame.

I naïvely thought my normal package as focus puller with the Preston Light Ranger 2 (LR2) would be all I needed. Once we started shooting, I realized Scott and Steven's look for the show was wide and close, shooting at a T1.5 - T2, and I was going to need a bit of extra help. I realized I needed the LR2W—Light Ranger 2 WIDE.

Why did you need another one, the LR2W?

The original Light Ranger 2, which I already had, covers an 18 degree field of view. The Light Ranger 2W has a 48 degree field of view. So, if you're shooting relatively close and wide, the focus overlay with an 18 degree field of view might only cover the center third of your monitor. The LR2W's 48 degree field of view will show all the focus areas across the full width of the screen.

This is especially important in Full Frame. So if I'm on a 35mm

Richie Masino and Scott Frank playing chess between set-ups.

Supreme Prime, the original LR2 would show only a narrow little overlay, and you have actors on either side of it. And all of a sudden, you're at a T1.5 and it's like, "Ouch."

That's when I called Alanna Berkson at Preston Cinema and asked, "Can you ship this thing to Berlin yesterday?" And when it got there it was truly a lifesaver because now those focus overlay bars were filling the whole screen in large format.

What do you do for longer lenses?

I carry both Light Rangers on the job. The W is for wide shots and the original is for lenses longer than about 85mm.

At T1.5 in Full Frame, you have miniscule depth of field.

As the sensors get bigger, the lenses get faster and the ISOs get higher, our job as focus pullers becomes increasingly more difficult. I've always been a true believer in anything that can help me do my job better and keep me out of the spotlight. I don't want anybody to look at me because we have to go again and do another take. It's always embarrassing, as the focus puller, when you have to say, "Sorry, I missed it. We have to go again."

What monitor are you watching to pull focus?

I watch the scene on a SmallHD 1303 monitor which is connected to the Light Ranger's video overlay unit. When I use the Light Ranger, I always keep my bars really dimmed down on the screen because I know what I'm looking for, and I can also check the actors' eyes as a sort of a redundancy thing for me. A lot of focus pullers like to keep their bars really bright, but I find that distracting. And the 1303 monitor works really well to let you see the actors' close ups.

Steven mentioned that he operates the camera himself.

Steven likes to operate the camera. He also likes to set the iris manually while he's setting up a shot. This adds an interesting concept to how the Light Ranger can work.

Whenever I auto-calibrate the lens with the Hand Unit, the focus and iris motors are engaged. Then, I disengage the iris motor so Steven can change the T-stop while he's lighting. But I still can use the slider on the Hand Unit to go to the same T-stop that Steven has set the lens and the Light Ranger still calculates the depth of field. For example, if he adjusts the Supreme Prime to a T1.5, I'll go to where it says T1.5 on the Hand Unit and the Light Ranger shows my true depth of field.

So, you're fooling the Hand Unit and LR2 into thinking the iris motor is engaged?

Yes. I have the lens motors engaged to calibrate both the focus and iris—and then I just disengage the iris motor.

Please tell us more about the ZEISS Supreme Primes.

The Supremes are really pretty. They have character to them. They feel a little softer, gentler and smoother where they should be. The Supremes flare really nicely. And when they get flared by a light, it doesn't blow out the frame. It holds up really well. It actually creates a nice, softer image, almost like you've thrown a diffusion in there. It's not overbearing or overwhelming in any sense. I'm really impressed with those Supremes, a really pretty lens with a lot of character. They have a little bit of fall-off, and that's what gives you the look.

Do you mean fall-off as in shading or focus?

By fall-off, I mean that your focus toward the edges of frame will fall off a little bit. As a camera assistant, you can see this when you project the lenses at the rental house, or when you look at them on a chart. You can tell that the fall-off is intentional. It's not like a mistake. It's there to give character, and personally for me, it's just the right amount. Supremes are easy on the eyes and they make beautiful images.

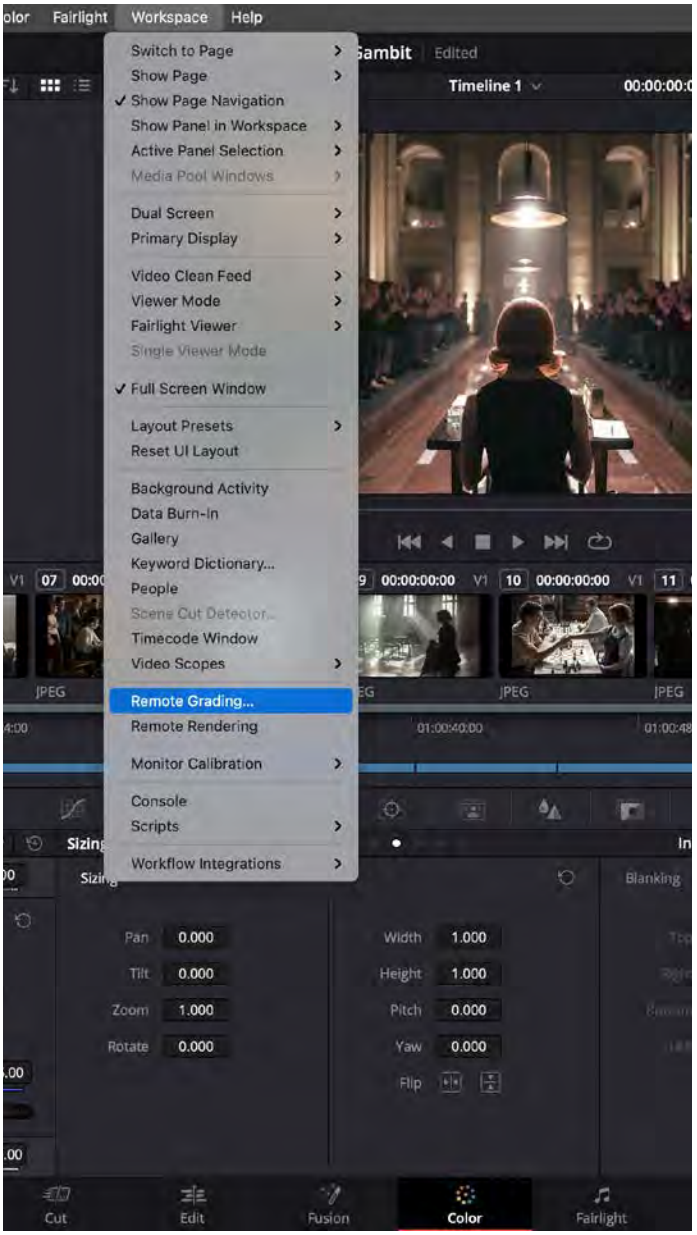
Who was making the call if, Heaven forbid, you buzzed focus?

Steven's operating off a little seven inch monitor. Scott's looking at the performance. So, if I say, "Hey, I missed focus here," we'll watch playback and Scott will decide if he's okay with it, or if he's not going to use that part, or if we go again. I don't want you to have to be in the editing room and say, "That would've been great, but..."

Everybody is saying that *The Queen's Gambit* looks so good.

I think it was a great collaboration in the beautiful lighting by Steven and gaffer Sascha Wolfram. Then you add Uli's production design and Gabriele's costumes. We had an amazing A camera dolly grip, Christian Scheibe, who is like a Zen master. He's really an extension of the camera. Between him and Steven moving the camera it was just beautiful. Amazing people with amazing talent made this picture and the collaborative experience really translated onto the screen. I am truly honored to have been a part of this collaboration and am very proud of the work we did on this picture.

Steven Bodner on Grading *The Queen's Gambit* Remotely



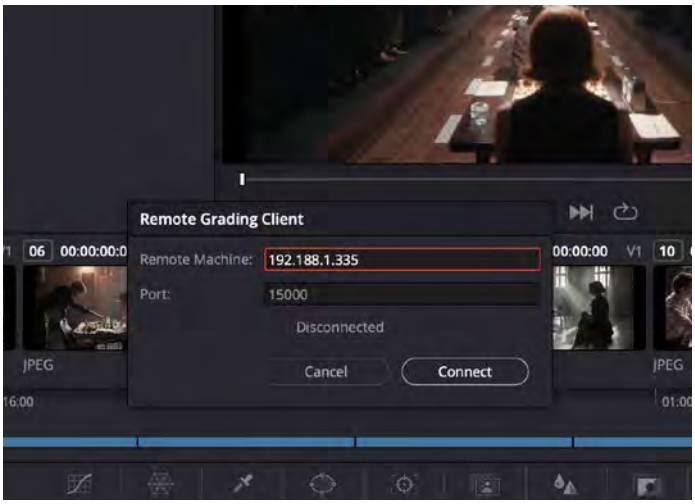
The Queen's Gambit *grading was done by Steven Bodner at Light Iron. Steven explained the remote grading process:*

Grading *Gambit*

I have a complete DaVinci Resolve Studio setup at home, running on an iMac Pro with 40 terabytes of external local storage on a RAID array. Resolve connects via Thunderbolt to a Blackmagic UltraStudio 4K Mini that converts the signal to SDI for my Sony X300 monitor. It is essentially a mirror image of my system in New York City. Our editor was conforming off the RAW files and by using HP RGS (Remote Graphics Software), he accessed the machine in our Manhattan office. He then sent the sequence to me, at home, via cloud-based Signiant Media Shuttle.

I downloaded the package from Media Shuttle onto my local storage, imported the DaVinci Resolve project, and just relinked the project to the current local storage. Then I graded it live at home. I was grading ProRes 2K proxies.

The original RAW files remained on the server in Manhattan. I was working with proxies.



To establish a Remote Grading session in DaVinci Resolve Studio: from the Color page, go to Workspace > Remote Grading.

Enter the IP address of the other machine. (You need to have this in advance.)

Someone has to be on the other end, on the other DaVinci Resolve Studio, to accept the "inivitation." Then the two machines are linked.

You have to be sure that both Resolves have the same session timeline and the same project files loaded. They have to be identical.

(These examples above are simulated and not from the real sessions.)

When it came time to do the actual review sessions with Steven Meizler, Scott Frank and everybody else, I used DaVinci Resolve Studio's Remote Grading capability and controlled the original RAW files that were on the Resolve system in Manhattan.

Zoom meetings going over shots with the iPad Pro

Prior to final grade, as mentioned, I controlled one of the Resolve systems in the Light Iron Manhattan office using Remote Grading from my system at home. We connected via Global Connect, and I just had to enter the IP address of the remote machine. The signal from the Resolve in the city was sent through a Steam Box to each of the iPads provided by production. The Stream Box app was loaded on all of those iPads. Before the sessions started, we sent a meeting ID for Stream Box and everyone could log in and then live-stream my Resolve timeline and grades to all of the iPads simultaneously.

Low Latency — minimal delay

The lag from what I was controlling on my end to what I actually saw on screen after the round-trip was really minimal. It was under a second. I have a 1 Gbps Ethernet line at my house for internet. The office, I believe, had at least a 10 Gbps line.

Client Monitors

A lot of our clients, and even grading suites, are happy with calibrated LG CX 55" 4K OLED consumer TV monitors. They cost around $1,499. Obviously, there' are going to be differences in the shadows, and they're not going to be perfect compared to a $30,000 Sony monitor.

PS: Steven Bodner is now Supervising Colorist at Picture Shop Post.

Blackmagic Pocket Cinema Camera 6K Pro

Blackmagic Pocket Cinema Camera Pro EVF

1280 x 960 3.68 million dot, 24-bit OLED with -4 to +4 diopter adjustment

Wednesday, February 17, 2021. There are many things to like about the new Blackmagic Pocket Cinema Camera 6K Pro. But if you only need three reasons to upgrade or buy one, here they are:

1. Optional (essential) 1280 x 960 color OLED viewfinder.

2. 5" LCD Monitor tilts up and down

3. Built-in Clear, ND.6, ND1.2 and ND1.8 filters.

Unless you have the enviable close-up vision of a 12-year-old prodigy pointillist painter, squinting at a camera's rear monitor held at arm's length in bright daylight may not be your idea of the best way to discern framing and focus.

Every camera should have an EVF. And so the 6K Pro does.

The thoughtful Blackmagic design team in Melbourne undoubtedly listened to the requests of DPs everywhere. They followed up on the very popular Blackmagic Pocket Cinema Camera 6K with features compelling enough to name it "6K Pro."

The camera body looks deceptively like its predecessors: reminding me of a morph between a mirrorless camera and a mini Darth Vader helmet. Maybe it's the carbon fiber ribbed handgrip, cooling fins or microphone grille.

This is not the same Pocket Cinema 6K (not-Pro) body. The 6K Pro is 1.04" inches taller, 0.41 inch deeper and 0.08 inches wider.

At 2.73 lb, it is 0.75 lb heavier, which is still amazingly lightweight.

The 6K Pro costs about US $2,495, only $500 more than the Pocket Cinema Camera 6K. And it still comes with a free copy of DaVinci Resolve Studio.

Pro EVF

For only a few dollars more—$495—the optional Blackmagic Pocket Cinema Camera Pro EVF is really not an option; it is an essential.

Unscrew a small cover on top of the camera and this 2.82 ounce, 1280 x 960, 3.68 million dot, 24-bit OLED EVF with -4 to +4 diopter adjustment adds 1.91 inches to the overall camera height. The EVF attaches to the top of the camera with a single connector. You can tilt it up to 70 degrees. Four different eyecups offer excellent choices and do not assume you are right-eyed.

Blackmagic Pocket Cinema Camera 6K Pro

Tilting Touchscreen Monitor/Menu

The 5" LCD touchscreen HDR monitor at the back of the camera has been improved. It is brighter: 1500 nits. Best of all, it tilts up 180 degrees from vertical to horizontal. This lets you handhold the camera conveniently at waist level or operate low angle shots without contorting your body to view the shot. The monitor also tilts down 47 degrees, which is great for high-angle ladderpod shots or holding the camera high above a crowd. Your neck and back will appreciate the camera designers' concern for ergonomics and your comfort.

NP-F570 Battery

The Pocket Cinema Camera 6K Pro uses a bigger battery for longer runtime: a Sony style NP-F570. It runs the camera for about 60 minutes when recording 6K RAW at 24 fps to a CFast 2.0 card and with the monitor at 50% brightness.

An optional battery grip/pack attaches to the bottom and extends camera run-time even longer.

(The Blackmagic Pocket Cinema Camera 4K or 6K uses a Canon-style LP-E6 type battery. It can run the Pocket 6K for about 45 minutes.)

Power

The included external AC power supply can run the camera and charge the battery simultaneously. The DC power connector on the camera left side locks to prevent the cable from popping out. Also, the USB-C connector can trickle charge the battery. This is helpful in a pinch to be able to use portable battery packs, mobile phone chargers or laptops to top up the camera battery.

Built-in 4-position ND Filter Mechanism

The Blackmagic Pocket Cinema Camera 6K Pro includes a built-in 4-position motorized ND filter assembly with Clear, ND.6, ND1.2 and ND1.8 filters (Clear, 2, 4 and 6 stops of light reduction).

Somehow they managed to squeeze an internal, motorized ND filter mechanism between the Canon-style EF mount and the Super35 6K sensor. This is a remarkable feat of engineering for a camera so small and so affordable. Almost everyone will want this kind of motorized ND on almost every camera to come.

The motorized ND Filter assembly consists of two clear filters and two IRND filters. There will always be 2 filters stacked together to maintain consistent back focus. When you choose CLEAR (no light loss), there are 2 clear filters in position. When you set ND.6 (2-stops) or ND1.2 (4-stops), there is a clear and one of these two NDs engaged. For ND1.8 (6-stops), the 2-stop filter is stacked together with the 4-stop filter.

The filters can be engaged and changed with the + and – buttons on the upper right rear side of the 6K Pro. You can set the menu to show how you'd like to see these filter settings displayed: as ND, stop reduction or fraction.

Blackmagic Pocket Cinema Camera 6K Pro

Layout of connections on Pocket Cinema Camera 6K Pro is slightly different than 6K. There are two mini XLR audio inputs

Blackmagic Pocket Cinema Camera 6K Pro

Pro EVF
1280 x 960 3.68 million dot
24-bit OLED with
-4 to +4 diopter adjustment

Pro EVF attaches here

EVF tilts up 70°

Choice of eyecups:

ND Filter selection + and – buttons

Blackmagic Pocket Cinema Camera 6K Pro

Sensor

The 6K, 6144 x 3456 Super35 format sensor measures 23.10 x 12.99 mm — same as the Pocket 6K Camera. Dual Native ISO settings are 400 and 3200 ISO. You can go up to up to 25,600 ISO.

Audio and Timecode

The 6K Pro Camera has two mini XLR audio inputs on the left side. (Previously, the 6K Camera only had one audio input.)

These mini XLR connectors, for professional microphones such as lavs or mini shotgun mics, are menu-switchable between +48 volts of phantom power and line level up to +14dBu. The two mini XLR connections provide two separate audio tracks without the need for an external mixer.

There are also four microphones built into the front of the body (behind the cool-looking perforated metal grilles). They are shock and wind resistant with an exceptionally low noise floor.

There's a built in speaker for playback and a 3.5mm headphone jack.

On the left side, above the XLR inputs, there is a 3.5mm audio input for a stereo microphone and a 3.5mm output.

The 3.5mm mic input also accepts SMPTE timecode from an external source on the left channel. Valid timecode is detected automatically and embedded in the video file as timecode metadata. So, you can jam-sync the camera's internal timecode generator by using, for example, an Ambient NanoLockit or Tentacle Sync unit. You can disconnect the jam-sync device, but as with any camera, it's a good idea to reconnect it occasionally during the day to minimize any timecode drifts.

XLR Input 1 or 2 can also be used for timecode in the same way. They provide a secure, mechanically locking connection. Unlike the 3.5mm input where timecode detection is automatic, the XLR input requires you to select XLR timecode input in the menu to enable detection.

Camera Body

The camera body is made of lightweight carbon fiber polycarbonate composite. The handgrip has convenient controls for recording, ISO, White Balance and shutter angle.

Data

Blackmagic Pocket Cinema Camera records 10-bit Apple ProRes files in all formats up to 4K or 12-bit Blackmagic RAW in all formats up to 6K. All models let you shoot up to 50 fps in full resolution (1.78:1), up to 60 fps in 6K 2.39:1 or 120 fps windowed.

Record to CFast and SD UHS-II cards internally.

The USB-C connector (expansion port) enables recording directly to an external flash or SSD drive. This is suggested for 4K DCI Blackmagic RAW 3:1 up to 60 fps and for longer recording times. Blackmagic has a support page with recommended drives: *blackmagicdesign.com/support/faq/59030*

Stills and Video

If you shoot both stills and video, the Blackmagic Pocket Cinema Camera 6K Pro (and 6K) have a still photo button for capturing 21.2 megapixel DNG still files. A camera icon appears briefly in the top right corner of the touchscreen display to let you know that you have successfully captured the still. Image files are saved to the STILLS folder in the root directory of the media to which you are currently recording.

Blackmagic Pocket Cinema Camera 6K Specs

- 6144 x 3456 sensor with 13 stops and dual native ISO up to 25,600.
- 10-bit Apple ProRes files in all formats up to 4K or 12-bit Blackmagic RAW in all formats up to 6K.
- EF lens mount, active and fully functional with EF enabled lenses.
- Built in motorized 2, 4 and 6 stop ND filters.
- Dual native ISO 400 / 3200. Up to 25,600 ISO.
- Adjustable, HDR 1500 nit LCD screen.
- Blackmagic Generation 5 Color Science.
- Optional (essential) Blackmagic Pocket Cinema Camera Pro EVF.
- Two mini XLR inputs with 48 volt phantom power.
- NP-F570 battery.
- Optional Blackmagic Pocket Camera Battery Pro Grip.
- Carbon fiber polycarbonate composite.
- Includes full DaVinci Resolve Studio.
- Blackmagic Pocket Cinema Camera 6K Pro US$2,495, excluding local duties and taxes, from Blackmagic Design resellers worldwide.
- www.blackmagicdesign.com

Vance Burberry: two 12K, one 6K, two 4K Cameras, No Waiting.

Vance Burberry. Photo by Nicola Goode, SMPSP.

Vance Burberry is a Cinematographer you want to call when it comes to complex, challenging and creative projects. His career covers a wide range of commercial, documentary and narrative projects, including lots of experience in underwater work.

Vance was at the new facilities of Otto Nemenz International in Culver City, getting ready for a job as one of the first DPs to try the new Blackmagic URSA Mini Pro 12K camera. He graciously shared his reactions.

Jon Fauer: How do you like Otto's new rental facility?

Vance Burberry: It's great—nine minutes from my house. I used to have to drive into Hollywood before. It's spectacular, an amazing facility. Actually, Otto provided me with my first camera as a DP back in 1986 or '87 when they were on Vine Street. So we go back a little bit.

I saw your KIA *Emmys Delivery Training* commercial that humorously focuses on delivering the statuettes to winners during the 2020 pandemic. I understand you were one of the first to use the Blackmagic URSA Mini Pro 12K cameras. Please give us some background about the job.

My wife, Lindha Narvaez, is a producer. She got a call from Glenn Clements, a Director we have worked with before. It was on a Thursday. He asked if she would produce this spot for them, to shoot on the upcoming Monday. She said, sure. It was going to be a one-day shoot with lots of setups, in-car, car-to-car and multiple camera shots with actors and dialog. The production companies were Done & Dusted and Lindha's Milkt Films.

I happened to be testing the new URSA Mini Pro 12K for Blackmagic in Northern California and it was pretty spectacular. So I thought this would be a great opportunity to actually try the camera in the real world. I checked in with the engineers in Australia asking if they felt comfortable about my using their camera on a job. They said, "Yes, sure." I said, "Good, then please send me another camera because I'll need two.

All production still photos by Lindha Narvaez.

We ended up shooting the job with two URSA 12Ks, one Pocket 6K and two Pocket 4K cameras. The results of the cameras were flawless.

To paraphrase the barber shops in New York, 5 cameras, no waiting?

We were at Auto Club Speedway, about an hour out of LA. It was 105 degrees there all day and the cameras held up fine. We put one on an Ultimate Arm for some of the car work doing hundred mile an hour passes car to car and they performed flawlessly. **Were these prototype cameras?**

Yes. They were prototype or pre-release cameras.

I suppose it helps to be Australian to get first looks at the latest Blackmagic cameras :)

I've been using their cameras for a long time and I love their approach to innovation. I feel they're looking at cameras in a different way and that always impressed me. I knew that they were growing in that area. They've only been doing cameras for seven years or something like that, but I really liked the way they were coming at it from a new perspective with camera design. So I kind of got on board with that.

I think the first Blackmagic camera I actually bought was a 4K cinema camera which was good. And then the URSA Mini Pro came along and then the 4.6K G2. The company continued to grow and develop their color science, their sensors and camera design. I've found them to make really great cameras.

As they evolve, they get better and better. I think it's going to continue that way. I very much enjoy being a part of it and testing their cameras and exploring what they're doing. It's really cool.

Do you work with Blackmagic on camera development?

They'll ask for my thoughts on various things that maybe they could do with the camera down the road, but really it's more of: get a camera, test it, and comment. I worked mostly with Tim Schumann there, and Hook on color science, and of course there's Kristian on the Pocket 4K and 6K side.

These are really smart and good people and they really love what they do. They are all about being innovators and that, to me, is what always stood out. Whether it's an engineer, a scientist, an artist, a cinematographer, there are always people who think outside the box and innovate and don't follow the roadmaps of other people. They're inspired, but they don't copy. It always stands out when you have these kinds of people doing this stuff.

I've spoken with almost everyone there, putting in my 2 cents worth. I'm sure I annoy them sometimes because I talk a lot with

them, but they're good people and I like them a lot. Obviously being Australian there's sort of a bit of an affinity because of the cultural mindset that we have. We kind of connect on that level.

I'm sure your comments are appreciated.

I've been doing this a long time. People know who I am. I've done a lot of different things in the past 36 years. That experience helps, coming out of shooting film, it does give you an understanding. You've screwed up so many times by this point, you kind of learn from those mistakes, right?

Too true. You said something interesting about Blackmagic—that they're coming at it from a different perspective or a different direction. I agree with you, but I can't put my finger on what it is they're doing that's a different point of view.

I believe they've done things backwards. They built a computer and then turned that into a camera, rather than building a camera and then adding a computer. The user interface for example, is really fantastic.

You go into other cameras and it's like you need a degree in computer science to navigate through the layers of menus. I believe a lot of that comes out of the broadcast side. So now we've got these overly-complicated menus. Maybe that's because I'm an old film guy, but I just wanted a nice clean negative, light it well, expose it properly. [Vance's phone rings again.]

If that's your camera assistant calling urgently from the checkout floor, feel free to answer.

No, that's the executive producer on another project down the road.

Well, it sounds like you're busy if you keep on talking to me rather than answer a producer's phone call :)

I sat on my butt for five months doing absolutely nothing during lockdown except teaching underwater cinematography classes via Zoom. Now it's just been nonstop lately.

Good. You were quoted somewhere as saying that you didn't want to hear about more Ks or bigger or larger pixels.

I refused to shoot digital for a long time. I would only shoot film. I turned down digital jobs until the ALEXA came along. I still think its image quality is stunning. I didn't think I'd need higher resolution, that it was all about Ks. It's about image quality. If somebody had said, "We're going to have a 12K camera," I would have been concerned that the image was too harsh.

You look at the skin; you don't want to see the pores. You don't want it to be so sharp that it takes you out of this magical world that film is supposed to be. When you're storytelling, you're look-

Vance Burberry with URSA 12K on an Ultimate Arm with Angenieux Optimo 4.7x 17-80 T2.2 zoom, Preston FIZ, Teradek Bolt.

ing for images to take an audience on a journey that often is not real. You're creating these worlds visually.

When I first heard about the Blackmagic URSA Mini Pro 12K, I was skeptical, honestly. I'm asking why 12K? But then, as I learned the camera, the over-sampling made sense. I remembered when we used to shoot 35mm film and transfer it to NTSC at 525 lines. It was "high resolution" 35mm motion picture negative, but because it was 35mm, the higher quality image always looked better than, for example, 16mm footage.

Taking that mindset with this 12K camera and its unique RGBW sensor, you've got an equal number of red, green, and blue pixels plus there are white pixels. I don't know quite how best to explain it, but let's say it's 12K resolution that's not harsh. It has all that detail and information without being painfully sharp.

It's sort of like film. You imagine a digital version of film. I'd shoot close-ups on an actress and have all this beautiful detail, but it's not harsh. It actually has sharpness and softness at the same time, if that makes any sense. It's got a beautiful quality to it. Before that, if you said I'd get a 12K camera, I'd throw something at you.

It does make sense. It may be a similar analogy to looking at a book of paintings that has been printed with very fine dots, as opposed to being on news print where you see the structure.

I've always said that digital is like painting with acrylics and film is like painting with oil.

There's a depth and luminosity to oil that acrylic paint doesn't have. I think the new URSA 12K camera has really grasped that concept of a film-like quality. The pixels are so fine, but they are not harsh. It's quite amazing. They're onto something, we'll give them that.

I heard Blackmagic was working on the sensor for at least three years or more, and it's not a trivial thing to design and build your own sensor. It's really expensive. So there certainly is a commitment.

Yes. And I think Grant is the genius behind it all. He's an innovator and thinks outside the box; he doesn't want to hear comparisons to other cameras. He wants it to be his camera done his way. And I think there's a lot to be said for that. I love that kind of mindset.

I don't want to put words in anybody's mouth, but it seems with this camera, Blackmagic is testing the waters for the very high end.

I agree. They have spent all this time developing the sensor and getting it to a place where they've got this incredible camera. I'm really hoping the next step is taking that technology and then building a high-end cinema camera for us.

How about the viewfinder?

I had a Blackmagic viewfinder, with the regular configuration.

Then Otto Nemenz kindly built me a custom viewfinder support, basically an ARRI style viewfinder support bracket. The viewfinder is fine, it's bright. You can manipulate it a lot. But I rarely use any kind of EVF because it hurts my eyes. I usually operate off a small onboard monitor.

Do you operate yourself?

Yes, most of the time. I'm an old school wheels guy. I can operate off the monitor—it's a framing tool. I'd done so much remote camera work with Technocranes and helicopter work and so forth. Operating off a monitor is pretty normal.

I understand you had a very short turnaround. How did you grade the footage from all the cameras?

We shot on the Monday before the Emmys. We color graded for 4 hours on that Friday. All cameras recorded Blackmagic RAW. On the URSA 12Ks, I was actually shooting at 8K.

Did you work with LUTS?

Generally not. I usually use Blackmagic Extended Video. I grade the RAW footage with my colorist Marshall Plant, whom I've been going to for 15 years at OLIO Creative in Santa Monica.

How did you get started in this great business?

Very interesting. Long story. I was actually born in England. I moved to Australia when I was very young. I consider myself Australian because that's where I grew up. I was on my own at 14, got a part-time job in a theater, ended up working with the lighting department, got really into it and started learning about lighting. But, I couldn't really make any good money at that. So I started doing rock and roll lighting design, like styling clubs and touring. I landed up touring America in 1984 with INXS as their lighting designer and then the Go-Go's. On what turned out to be their final tour, they asked if I'd like to come and take over.

Then I came off the road, worked for a stage in Hollywood and they wanted someone to build a concert lighting system that they could rent, which I did through light and sound design. And one day I just happened to walk on a stage and they were shooting a James Taylor video and somebody said, "We need a lighting electrician. Do you know anyone?" And I said, "I know lighting." The next thing I'm a set electrician. It was interesting because heavy metal was getting popular, and nobody in the film industry knew about trusses, moving lights, concert lighting, dimmers, that whole world.

I latched on and became the guy with that. I became a gaffer in Hollywood, ended up doing a lot as a gaffer with a director named Nigel Dick. I ended up shooting a little video for Angela Winbush called "Angel." I did a video for Was (Not Was) called "Walk The Dinosaur." I did "Welcome to the Jungle," "Guns N' Roses" as gaffer and also as a camera operator. And the next video I did was "Sweet Child of Mine," as the DP and that kind of moved my career up from there.

What lenses were you using on the Kia Emmy spot?

On the URSA 12K, I used Cooke S4/i primes. I've always liked them. That glass has been around a long time now. They've got a

really nice quality to them. And when you have the opportunity for a flare, the flares are really pleasing. They've got a beautiful quality to them. I also had Angenieux Optimo 17-80 T2.2 zooms.

We had a Blackmagic Pocket 6K, with a Wooden Camera PL Mount modification, for drive-by shots. Inside of the vehicle, we had a couple of Pocket 4K Cameras. They are MFT (Micro Four-Thirds) format. I have a set of modified, cinevised Voigtlander Nokton lenses that match nicely and flared very much like the Cooke S4/i primes. They were mounted in the inside the vehicles and transmitting video with Teradek Bolt back to Video Village while I was mostly working the Ultimate Arm.

Do you have your own lenses?

I don't own lenses because I use so much different glass depending on the project. I'm really particular about that. I'd rather rent the glass, own a few Blackmagic cameras and support gear.

Well, that keeps Otto Nemenz, Fritz and Alex happy too.

Yes, I love that place. They're so great. They're a fantastic company. Just the best people. I've never had any worries with the quality of the gear. It's always looked after, it's well-maintained. They have my back, no matter what. I can't speak highly enough of them.

Do you keep your camera at Nemenz?

No, I keep my Blackmagic cameras and underwater gear in my garage at home. I've been talking to them about the new Blackmagic URSA Mini Pro 12K camera a lot. It's really good.

Joshua James Richards on *Nomadland*

Cinematographer Joshua James Richards on *Nomadland* with AMIRA, Ultra Prime, OConnor, Anton/Bauer.

Jon Fauer: How did *Nomadland* begin for you?

Joshua James Richards: Chloé Zhao and I have had a collaboration; this is our third movie together. She was initially approached by Francis McDormand and Peter Spears with the book. Once she had the idea about casting real people as nomads and putting Francis at the center, we both got excited. It was something that felt like a new challenge, something we haven't seen recently in American cinema. It was a wonderful opportunity to make a road movie through all these incredible parts of America that we'd fallen in love with during our experience here.

Tell me about the equipment that you used?

We shot with the ARRI ALEXA Mini and ZEISS Ultra Primes. We also had an AMIRA. It was a one camera shoot, but we'd always have two cameras available. The Mini on a gimbal and the AMIRA ready to go, sort of handheld, on the Easyrig or mounted to the car for driving shots. The name of the game was to keep things as small and as nimble as possible. We needed to keep this low fat. The crew was kept to the essential minimum. We interviewed crew the same way you cast actors. You're looking for temperament, experience, enthusiasm. With the equipment, we didn't have time for big rigs. We didn't even have a dolly. We used equipment that allowed us to move quickly and to be extremely flexible. It could seem almost consumer level.

I don't think I would call two ARRI cameras consumer level :)

I'm referring to the grip order. We used a RigWheels Cloud Mount camera vibration isolator system on the car. It's just a suction kind of thing. Our grip, Nick Lundstrom, is extremely experienced but was willing go and play this game with us. It was all about moving as quickly as possible. In what we called the magic hour hustle, when that sun's setting exactly where we want it, you have a 20-minute window, you have that common enemy in the elements and it really brings people together.

Nothing like magic hour. Where did you get the equipment?

ARRI Rental LA. I've always worked closely with them. I can't help but feel a debt of gratitude going all the way back to NYU film school; they've been helping me out. I did three years in the graduate film program at NYU and then I went and shot "Songs My Brothers Taught Me" with Chloé. Technically that was my thesis.

I was guessing Nomadland had to have been shot with a small crew traveling nimbly. And yet your cinematography was very elegant, smooth, gliding. It was a pleasure to watch.

Thanks. I felt liberated. Because I knew it was a film about movement. We wanted the audience to feel as if they're moving through this landscape with Fern. From the beginning, and I can't stress enough how well it worked out, having that Ronin 2 gimbal constantly accessible was essential.

Would you call it documentary style?

I'm hesitant to call it that because Chloé is an incredibly conceptual filmmaker. The look and what she's going for is very designed. There was a big prep period where we met all of our nomads and potential cast, we spend time on the reservation and Chloé begins to understand what she can get from these first-time actors. Not non-actors because they're acting, and better than many professionals. It's as truthful and honest as it gets. But Chloé has really planned that. It's not about showing up and seeing what you get. The shot list is precise. We draw diagrams. The feeling is of verisimilitude, or reality, but that's a testament to the environments that Chloé has created. Nothing's by accident.

Did Francis McDormand have lines? Was *Nomadland* scripted?

L-R: Director Chloé Zhao, Joshua James Richards on Easyrig, Francis McDormand on *Nomadland*.
Photos courtesy of Fox Searchlight Pictures. © 2019 Twentieth Century Fox Film Corporation.

Very scripted. As for the others, for example, Swankie talks about her kayak trip. Then Chloé would sit with Swankie and they would talk about how she's going to deliver it. But it needs to come from Swankie because that's where the money is. Why cast these real people if you're just going to throw some lines in front of them and tell them what to say. You want to feel the richness of their vocabulary and the way they say things. And also get the camera as close to them as possible, using three different lenses: 16, 24 and 32mm Ultra Primes. Getting inside the action and putting the audience into these worlds and making them feel completely real and lived in, that's really the sweet spot.

I would not have guessed that you used prime lenses. You had to move quickly, you probably had a lot of setups and yet you still were able to use primes rather than zooms.

It was out of respect for the image. I didn't want to observe these people from a distance. I want you to feel as if you're living it with them. When I see a zoom or telephoto go up, I feel the camera, it doesn't feel new to me. It was all about taking these beautiful Ultra Primes to make that world feel as vivid and as striking as possible, to really define the characters and the textures of each landscape. I got used to shooting with ZEISS Super Speeds on very low budget shows with no light. Then I advanced to Ultra Primes as a natural progression.

Yeah. Tell me your progression. How did you get into film?

I was in London telling everyone I wanted to be a filmmaker. And they're like, yeah, right. I slept on peoples' couches. Then I volunteered for a medical trial to earn enough money to go to film school. I wouldn't recommend that. I did my NYU application during the five weeks of the trial in the hospital. At the end of five weeks, they gave me enough money for a trip to New York for the college interview. I was accepted. Going to film school changed my life.

That's a novel approach to get into film school.

You've got to do what you've got to do.

Were you always interested in films?

I grew up wanting to be a painter and a photographer. I watched a lot of movies. At a certain point, I realized I was watching them from a different point of view than my friends. I started to fall in love with the art form. My dad showed me westerns growing up and I was a big Charlie Chaplin fan. Carl Dreyer's *Joan of Arc* is a film that changed my life for some reason. I've always been a people watcher and cinematography allowed me to focus on the human face as a job. That comes quite easily.

How were you DP on *Songs My Brother Told Me* while at NYU?

I met Chloé at NYU and she told me about a film she was doing in the heartland of America and I would've done anything to be on that job. I would have been a runner, made coffees, whatever.

She was a classmate?

She was a few years above me. She was doing the Sundance labs and all that. And I rode her coattails. She was exactly the kind of person I hoped to meet at film school. Someone from a totally different world, who saw the world very differently.

How was Chloé's world different from yours?

Chloé came from Beijing. I came from the UK. One thing we had in common was that we didn't really feel like we had a sense of place anymore. As a result, every film we've made since then has really been about identity. The people you find in the heartlands are steeped in identity. They know exactly who they are. And that really interested me.

Nicol Verheem and Teradek at Sci-Tech Awards

Nicol Verheem

Teradek Bolt 4K LT transmitter (left) and receiver (right)

Saturday, February 13. The Academy of Motion Picture Arts and Sciences honored 55 individuals and 2 companies in a virtual Scientific and Technical Awards (Sci-Tech) presentation. Several of these recipients are well-known to FDTimes readers.

Nicol Verheem is the Founder & CEO of Teradek and CEO of Creative Solutions.

Jon Fauer: Congratulations on receiving a Sci-Tech Award. Comments?

Nicol Verheem: What stands out, and something that we would like to recognize, is this: As you know, we combined Teradek and Paralinx, two small California companies; added a company from North Carolina, SmallHD, run by two big bearded guys; Wooden Camera in Dallas, run by husband and wife; and then Amimon in Israel. These were initially all fairly small by themselves. This is now Creative Solutions, a real melting pot of people and products. These companies all have very different cultures, but we managed to combine them into something that was so much stronger than the individual elements.

If you look at CS, we are actually a model of strength in diversity. We want to recognize that great things can be done even by humble people from humble beginnings when your goal from the beginning is to achieve unity. In building Creative Solutions, we're not trying to dominate the industry, we just want all of us to work together.

"Eendracht maakt macht." That was the motto of the school I attended in New York City—Collegiate School. It is the oldest school in the United States, founded by the Dutch in 1628. The motto on the wall we passed every day was "Eendracht maakt macht" — in unity there is strength. I wrote about this last month with reference to the L-Mount alliance, but now you can tell me how to pronounce it properly.

I grew up with that motto! It was the motto of South Africa, printed on all our coins. Did you know it's still on Brooklyn NY's seal and flag? The origin is in the Latin phrase "Ex Unitate Vires," which translates as "From Unity, Strength." It is very similar to "E Pluribus Unum," which means, "From Many, One".

It's a continuation of the same theme. We take many seemingly insignificant pieces and put them together into something remarkable. You take the technology from Amimon and add it to the applications that Teradek targeted. We were never that successful until we had their technology; similarly they were not successful on their own. But once we put the two together and united our efforts, it became something that was much more meaningful than going at it separately.

What does the Sci-Tech award mean to you and the company?

It's a huge honor for us and yet it's quite surreal. But I do have to point out that the way the award is bestowed to individuals was a concern to us. We didn't want to name just a few individuals because by implication you're going to miss so many people who also played a role. It's a bit bittersweet because they didn't award Teradek, they awarded just three individuals.

Of course, we respect that, but there is a whole team of people who contributed to this endeavor over more than a decade. In the end—I as the founder of Teradek. Greg, the founder of Paralinx, and Ilya the PhD—are the only people who were recognized. However, there are many more who worked on this product for a long time to get it to the level where it is.

Nonetheless, it's a massive privilege to receive this recognition and it's extremely rewarding to us because it means we actually did make a meaningful difference. I keep going back to that one word, meaningful. If you look at the wording that the Academy uses, they give this award to someone who has contributed to the advancement of filmmaking in significant and lasting ways. That quote is almost worth more than any plaque or certificate—just

Teradek Bolt 4K Max transmitter

Teradek Bolt 4K Max receiver with SmallHD Monitor

to think that we made a meaningful difference to an industry that we love. That is the real reward. And that is luckily something we can all easily share.

The unselfish part of me, which as I grew older, became the bigger part, gets a real kick out of sharing this. It so happened that my Mom—who is also an avid reader of FDTimes and has all the copies—saw your post. She sent me an email to say that she still hasn't calmed down and that she forwarded the news to cousins and nieces whom I haven't heard from in years. They actually all got in touch. My mother-in-law, a lovely lady, reminded me of the old expression, "Behind every successful man, there is a great woman." But what she actually said was, "Behind every successful man, there's a highly skeptical mother-in-law."

I'm sure your mother-in-law kept asking, as did mine, when you were going to get a real job?

Exactly. She's glad we finally got somewhere with Teradek.

On February 1st, 2020, you and I were at BSC Expo, having dinner at 110 Taillevant in London and I remember you had just been asked to present to the Sci-Tech committee. That was our last dinner or foreign trip before everything shut down. You discussed making a video, which I hope you will post online.

I posted it on our blog: *youtu.be/jUNwu6QNZ2o*

But I have to tell the story in full. I got notice while we were in London. Having applied, we now had to submit something to be considered. The presentation was to be two days from then, basically one day after I was going to be on an airplane back from London to California. I only had this one evening to prepare a submission, which could be written or a slide presentation. Except, as you know, I have real difficulty presenting to large audiences. I absolutely dread public speaking.

So I had to prepare the presentation that night in my hotel room, on my laptop, before jumping on a plane early the next morning. I only had access to whatever I could google that was in the public domain: no fancy graphics, no BTS, nothing else. I decided to build a Keynote slide deck and to record it as a video file to remove the pressure of public speaking. Except I didn't have a microphone. I didn't have a camera. The only lighting was from the dreary hotel room lamp. I didn't have any nice BTS pictures or fancy animations. So, I decided to just do it as a narration over a set of still photos in Keynote. I am proud of the output, given what tools were available.

I didn't want to make it too much about us or even the product. I wanted to give credit to the distinguished people who paved the way: Maxwell, Marconi, Shannon. Not many people know Maxwell, but he arguably had a more profound impact on modern life than Einstein did. It's remarkable.

I put the script as notes at the bottom of each slide and read through it as I advanced in a single take and saved it as a .mov file. The story went like this:

"Teradek Bolt is a wireless radio transmitter. It transmits uncompressed video with no delay up to two miles away. It all began in 2010, when we realized there was a big opportunity in untethering the monitor from the camera.

"Digital cinematography had really just started, with the RED One and the Canon 5D Mark II, and cinematographers were eager to use cameras in new and far more flexible ways. Cameras were continuing to move to Steadicams, dollies, jib arms and cranes; drones were taking off. But coax cables were holding things back. It wasn't good enough. "Heaviside is the guy who invented transmission line theory, the principle on which coax cables are based (and this was one of my worst subjects at university). So we developed a miniature wireless transmitter, small enough to mount even on a DSLR. It was capable, sturdy, yet still affordable. This was the Cube, but we had one big problem. It had a small, but noticeable delay—not much, just five or so frames—but we knew this was

Marius van der Waat

Dennis Scheftner

holding it back. It wasn't good enough.

"And this is when we discovered Amimon. Amimon's technology managed to send uncompressed video over a wireless signal without any delay, but the product wasn't meant for cine production, it was meant for living rooms. So even that wasn't good enough. The range was too short and there was no support for SDI or metadata or 24 frames per second.

"That's where things picked up speed. Teradek and Amimon worked closely together to refine the technology and create the Teradek Bolt. Finally, it was good enough. By now 100,000 systems have been sold, and hundreds of thousands of productions globally have benefited from cameras being freed from their cables."

Nice. And no Academy award is complete without profuse thanks, ideally before the music cuts you off.

I'll read my note of thanks. I'm honored and delighted to accept this award on behalf of everyone at Teradek. I would like to thank the Academy members and the committee for recognizing this achievement. It is not every day that an engineer gets any credit. We have to thank Maxwell, Marconi and all the scientific giants who made this remarkable technology possible. We have to mention Deanan Desilva at RED who introduced us to Amimon.

At Teradek, we have to thank Dennis Scheftner who designed the first, and every Bolt, since 2012, and also came up with the name "Bolt."

Dr. Ilya Issenin for doing some dark magic to make it work, and Richard Billett for testing and supporting countless crews on site.

Marius van der Watt for overseeing all of engineering development, over many generations.

Greg Smokler, for always representing the way actual filmmakers actually use the product (Greg's interview appears in a separate post); and dozens more of our hard-working team.

Richard Billett

We have to thank beta testers like Joshua Gitersonke and Jamie Metzger who helped shape the product over many years.

Thanks to Vitec for the financial support to build Teradek into the global brand that it has become.

But most of all, we have to thank the customers: the tens of thousands of camera crews, Steadicam and drone operators, DPs, DITs and First ACs who helped us build a product that has impacted the industry we love in a meaningful way. Maxwell would be proud.

Greg Smokler on Teradek's Sci-Tech Award

Greg Smokler

Greg Smokler is Vice President of Cine Products at Teradek.

He grew up on film sets in Hollywood. Early days involved working with his father, cinematographer Peter Smokler. Greg graduated with a BA from the University of Massachusetts Amherst in 2003. His career as a Local 600 Camera Operator was interrupted when Paralinx – the wireless on-set camera monitoring company he co-founded – was acquired by the Vitec Group. Today, Greg is responsible for Vitec's Creative Solutions Cine business unit, which comprises Teradek, SmallHD, and Wooden Camera. Greg lives in Los Angeles, CA with his wife Marissa and twin sons Albert and Martin. Greg talked about the Sci-Tech Award:

Jon Fauer: Your Sci-Tech Award is inscribed and described: "…for the development of the ruggedized Teradek Bolt wireless video transmission system for on-set remote monitoring. The Teradek Bolt system features a frame-synchronized back channel for real-time camera control, an error-resilient timecode channel and integrated production metadata, which have led to its widespread adoption in motion picture production." Can you please translate that? And what is a frame-synchronized back channel?

Greg Smokler: The Bolt transmits the camera's video wirelessly to a monitor. Before the Bolt, wireless video was really a specialty tool that was mainly used by Steadicam operators; it would transmit over UHF radio to be viewed on a 3" black and white Sony Watchman. The Bolt, for the first time, brought extremely robust, long-range full HD wireless video to nearly every film camera on the planet.

The back channel on Bolt is a continuous bi-directional signal from the receiver back to the transmitter. It's basically the receiver talking to the transmitter, saying the connection is still excellent, or "hey, the connection is bad; let's change to a clear channel."

In his interview, why did Nicol say that you and Paralinx were arch rivals when you were separate companies?

Our two companies were definitely competing. When we started Paralinx in 2012, we were completely focused on how the professional camera crew would be using the gear, while I'd say Bolt was more driven by engineering and technology.

What were the differences?

Bolt was superior technologically, and Paralinx was known for ergonomics and simplicity. Many Hollywood professionals chose Paralinx as a tool that fit seamlessly in the way they worked rather than the one with the highest specs. When we became part of Teradek in 2015, the spirit of Paralinx became part of the evolution of the Bolt product.

Give us examples please.

Paralinx had the ergonomic features that camera people would really understand, like the intuitive way to mount onto a camera, or pass-through battery plates that allow you to connect the receiver to a monitor—simple things that made life easier on set. Ultimately, once Paralinx became part of Teradek, the Bolt evolved as a synthesis of the two—enabling it to become even more popular around the world.

Wrap-up comment?

When I started my own company, I was still shooting small industrial commercials and music videos, while working on Local 600 camera crews. I had no idea that making these products would lead me on a journey into technology and design, and I certainly had no idea that we would ever be so lucky as to receive the honor of a Sci-Tech award.

None of this would have been possible without the incredible hard work of my co-conspirator Tim Malooly and our SEAL Team of ex-Paralinx pirates, the leadership of Teradek founder Nicol Verheem, and the creativity of the Teradek Engineering team led by Dennis Scheftner, Richard Billett, and Marius Van der Watt.

Sci-Tech Plaque. Photo © A.M.P.A.S.

Amimon at Sci-Tech Awards

L-R: Amimon Sci Tech Award honorees: Guy Dorman, Dr. Zvi Reznic, Prof. Meir Feder, Ron Yogev.

Feb. 13, 2021. The Academy of Motion Picture Arts and Sciences Scientific and Engineering Awards honored Dr. Zvi Reznic, Prof. Meir Feder, Guy Dorman and Ron Yogev with A.M.P.A.S. Plaques. The recipients were commended for "the development of the Amimon wireless chipset which enables untethered, high-quality, on-set encrypted digital video monitoring with sub-frame latency.

"By using novel extensions of digital data transmission and compression algorithms and data prioritization based on error rate, the Amimon chipset supports the creation of systems with virtually [basically] unrestricted camera motion, expanding creative freedom during filming."

Effectively, if you have a Teradek or ARRI or almost any other wireless video system for motion picture production, there's an Amimon chipset inside.

Read FDTimes Issue 92 about Amimon and a company visit after acquisition by Vitec and Creative Solutions in November 2018.

Meanwhile, back at the Sci-Tech Awards, Dr. Zvi Reznic replied to some questions.

Jon Fauer: In a press release, you said, "We would like to thank the Academy for honoring us with this Award. When we started Amimon in 2004, we knew that the challenge of low latency video transmission was high but we were ready for it. What caught us by surprise was the type of markets that we ended up serving. We started with consumer products and ended up in endoscopy, in drones, and on movie sets, where our technology has made a substantial impact." Were you aware of the Academy's Sci-Tech Award as you were developing this product?

Dr. Zvi Reznic: It is a great honor for us to receive this award. Usually, only the people who develop the technology are aware of its level of sophistication, while the users are simply enjoying its merits. In this case, the Academy realized that what is simply described as "low-latency robust wireless video" encompasses an enormous set of innovations, robustness layers, and creative engineering. We are grateful for that.

We knew that this award existed, but we were still surprised to receive it. When we first met people from the production industry, more than 10 years ago, they told us about the need for wireless video on movie sets. At that first meeting, they also told us there were Oscars for technical achievements and that our technology could be a candidate for such an award in the future. At that moment, we thought that this could be a nice outcome, but later, we totally forgot about it.

Can you please explain why "the type of markets you ended up serving" caught you by surprise?

When we started Amimon, we were focusing on consumer electronics and mainly flat-panel TVs. With flat-panel TVs, people often go to great lengths to hide the video cables and often bury them inside the walls. We provided a chipset that could eliminate these cables.

We had some early successes, including with Sharp, Sony and LG. But we then realized that from a business point of view, there were better opportunities for us in other exciting markets that could be generally called "professional markets." These markets include endoscopy, installation, film/TV production, drones and remote machinery.

Did those markets change over the years?

Those market indeed changed over the years. Our first non-CE (consumer electronics) market was endoscopy. This started almost from the very beginning of Amimon when we were approached by Stryker, who has been our customer ever since. The second one, actually adjacent to CE, was installation or retro-fit: replacing an existing cable with a paired video transmitter and

Amimon is located a few miles away from Herliya Yacht Harbor in Ra' annah, in the building shown below.

video receiver, equipped with an Amimon chipset. And later, when we decided to pivot away from the CE market, around 2012, we focused more on the film/TV production industry through our partners at Teradek and in drones. But the film/TV production industry has been our biggest success, mainly due to our partnership with Teradek.

Where is the cinema industry heading in wireless video?

One change that is already happening is the move from HD (1080p) to UHD (4K). The Amimon chipset, as well as Teradek Bolt systems, already support that.

Without revealing NDA matters, where is Amimon heading?

The next generation of Amimon products extend the zero-latency and high robustness of our existing technology to products running on any IP network. Our systems will run on any IP network: cellular, WiFi and the public internet, with close to zero delay. There are endless applications for that, including cloud gaming, remote machinery, driverless vehicles, remote production, live events and more.

Additionally, we intend to keep up with the industry in terms of resolution. So when the production industry will be ready to adopt 8K, we will be there with something.

About the Awardees

Dr. Zvi Reznic is Amimon Co-Founder and Chief Technology Officer (CTO). He co-founded Amimon in 2004. He received his PhD in Electrical Engineering from Tel-Aviv University, a Masters Degree in Engineering from Cornell University and a BSc from Tel-Aviv University.

Professor Meir Feder is Chair of Information Theory, School of Electrical Engineering, Tel-Aviv University, and a Visiting Professor at the department of Electrical Engineering and Computer Sciences at Massachusetts Institute of Technology (MIT). He holds an ScD degree from MIT.

Guy Dorman is Amimon's Algorithms Design Manager. He joined Amimon in 2006. He received a BSc (1997) and MSc (2005) in Electrical Engineering from Technion – Israel Institute of Technology in Haifa.

Ron Yogev is Amimon's Vice President of Research and Development. He graduated with a BSc in electrical engineering from Ben-Gurion University in 2001.

The Business of the Business: Jon Fry, MD CVP

Jon Fry, CVP Managing Director, in his study.

The email was intriguing: "CVP has some big changes: New approaches post Brexit, a new office in Europe and new solutions for customers."

The Oliver Twist in me wanted more. Jon Fry emerged on screen, on Zoom. The inner Alfie in me took over:

Jon Fauer: What's it all about, Jon?

Jon Fry: There has been lots things going on. We've been on quite a journey. If I rewind a year, let's go back to BSC Expo in January 2020, which is probably one of the last trade shows that any of us attended.

Where we had a good discussion over dinner at Berners Tavern.

The industry was booming at that time. We talked about all of the exciting things that were going to happen; how fundamentally we were going to cope with it all; how exciting it was going to be; looking at trends; and speculating about what was going to happen here and there. Then the coronavirus situation hit us and everything changed. From that point on, we almost got the opportunity to hit the reset button. All the distractions of everyday business were no longer there and we were able to look inwardly at our business and say, "What is happening? Let's review all of our processes. Let's take advantage of the time we've now been afforded and make the changes that we probably needed to have made many years ago. Let's find the sole objective of making our business better and of focusing more of our attention on our customers." It was a fairly unusual, unique, unfortunate position that afforded us time that we've never had before. In a way, there was some positive that you can take from that, albeit in circumstances you would never have wished for.

Please give us some examples.

Silly little things, like our team of technical consultants. We have seven technical consultants who are there purely to advise on a potential purchase by any one of our customers. They've been saying to me for years, "We want to take some time to review all of the kit that we have available to demonstrate, do a complete stock-holding, stock check, look at the processes that we have in place for how we distribute that product and send it out to our customers, and then fundamentally strip it back and start again." They've always said to me, "We need a month or two of no-demos to enable that to happen." My answer to them always has been, "You can't have two months of no-demos because our industry doesn't stop." Well, it did, and they had it, and they've done it, and they've done a complete refresh, and that's enabled things to happen.

How did the rest of your team cope with working during the COVID lockdowns?

Everybody was sent home and entrusted to get on with their jobs without anybody keeping an eye on them, and what a phenomenal bunch. They all got on with it and they did it. We created a

Common Room for online events. We did one-on-one demos via Zoom and different platforms for our customers. The engineers still had to come to the office to work because people's kit still needed attention. When you're the only authorized repair center for something in the UK and it needs to be fixed, you've got to fix it because there is still work going on. Ultimately, we got the opportunity to review everything and we got far better at doing things as a result of that. Also, we had to adopt some new behaviors that I think we'll carry forward. So that was 2020.

How is 2021 shaping up?

Last year, everybody collectively had been saying, "I can't wait for this year to be over, because next year is going to be a really good year." We woke up on January 4th and came into the office, sat down, looked at our business and asked, "Okay, so what's happened over the Christmas period?" Brexit had happened. That came as a real surprise to us all, because we've "only" had a three-year run-up to this. I don't think anybody in the EU or in the UK knew just how complicated Brexit was until you had to deal with it. Naively, I think I just kind of considered it as a, "What is the duty implication of this? Surely, the only thing that could change is the amount of tax imposed on imported equipment. Well, largely that's true, but the intricacies of all of that have been far more complicated.

A few hours later on January 4th, we said, "Right, we have left the EU now. We need to understand what the impact is going to be for our customers. What does a purchase of a product look like to CVP when made from France? How can we deliver it? Can we deliver it exactly the same way as we did before?" What it actually does mean, having left the EU, is that we are no longer constrained by the duties that the EU applied.

We've revised the listings of our products that come into the UK. For the majority of those product categories, commodity codes and the countries of origin, we've reduced the tariffs predominantly to zero. On the face of it, there's an advantage to the UK consumer now because, for example, a lens that might have had a 6.7% duty tariff applied to it because it was originating in China now arrives in the UK with zero tariff and that means it should be 6.7% cheaper. We're thinking, "Okay, that's great." But a customer in the EU still has to pay their established CET (Common External Tariffs).

One of the things that we decided to do on January 4th was to cover the cost of the duty and shipping, above a certain amount, for a limited time, if there was a tariff to be applied to anybody that we would normally sell to in the EU.

You can afford to cover that in your margins?

It's a trade-off. We can't afford to cover it in margins long-term, but we also can't afford to lose customer business, so we're relying on, at some point, our suppliers passing on the duty savings, which will enable us in the UK to advertise a lower UK price, which when duties are applied correctly to the sale, will still mean that the EU isn't paying an inflated price, which they would be currently. Look, it's with one intention and one intention only. We want to ensure that our customers are not penalized because the UK has left the EU. CVP has had to leave the EU, but we still want our customers to feel as if we are in the EU still, and trade with us as if we are in the EU still.

Is VAT the same in the UK as it is in the EU?

Unfortunately, VAT varies by country. It's a bit like different rates of sales tax depending on the state in the US. We've calculated the VAT based on the country we're shipping to. When you order something at www.cvp.com, you have to select your destination country and it calculates the correct VAT when you check out. As you can probably imagine, this has all been quite complicated because it requires a lot of IT infrastructure and changes to be made. It requires an enormous amount of data to be acquired, because for every single manufacturer and for every single product that that manufacturer produces, we need a commodity code and a country of origin. When you have circa 1000 manufacturers, and obviously a great deal more products and SKUs than that, the data entry is vast. It's been a long, drawn-out process.

It must have been a complicated endeavor.

Yes, but at the same time, I see this as an opportunity. If we can achieve a seamless continuation of trade into the EU, which is an important market for CVP, that's great. If it also means that we can potentially offer a cheaper price to the UK market, that supports the continual growth of the UK market cinema and TV industry, which I think is really important. It also offers us an opportunity into the rest of the world. Not because we're necessarily cheaper, but because we're putting a lot of tools in place, as you can see through the website. These tools are also available to our 20-strong sales people as well. They now have the online mechanisms for looking at what duties are applicable, what the VAT rates are, et cetera. If we put all of that in place, it enables us to fundamentally do the same for the rest of the world. We become far easier and far more transparent to do business with. That's a lovely opportunity. That's actually in the spirit of what Brexit was always about and it needs to be considered as an opportunity now. That's the way we're viewing it.

Thank you for explaining the economics of Brexit. I heard you were opening an office in the EU?

Yes, we are opening an office in the EU—in Belgium. We're not replicating what we have in the UK. It's not a big sales operation, not a big warehouse and stock system. For example, if a customer in France wants to purchase from us, we will sell and ship from the UK to CVP in Belgium.

Why Belgium, by the way?

If it's a transit point, it needs to be on the mainland. It needs to be fairly close to the UK. We had an opportunity with some premises in Belgium. It was a swift decision based on, fundamentally, convenience. It needs to be on the mainland, (it could have been Ireland), but we didn't want to ship goods from the UK across some water to Ireland, and then across some water back to mainland Europe. It's too complicated and environmentally unsustainable. So we just chose somewhere quick and easy and close on the mainland, so that the second part of the journey would be easy by road and any increase in the environmental impact of our initiatives would be minimized.

We ship the goods to Belgium, and as CVP Belgium, we land those goods. We pay the EU duties and we pay the VAT. The VAT goes on our deferral account. We claim the VAT back at a later date because we are reselling it elsewhere within the EU to an EU

CVP | ARRI Creative Space show room, Charlotte Street, Fitzrovia, London.

customer. In the end, the customer is the one paying the VAT. We are a registered CVP Belgium company. It's about seamless trade.

The other big news is that you are now managing director. Congratulations. What does that mean for you? Will you be Managing Director and Sales Director—combining both roles?

I've always had the title in sales, but I don't really do much sales direction. I'm lucky that most of the sales team manage themselves and they run their own P&L. They're all responsible for their own destiny and earnings, so they get on with it. Darren and Yevgeny, are on hand to offer true strategic sales direction. If they're working on a deal, they'll all put their heads together and work something out. I'll be involved if they want me involved, and I won't if they don't.

The entire sales direction is looked after predominantly by Darren and Yevgeny, with Darren taking a strategic sales lead and Yevgeny a strategic product lead. He's very much responsible for what we have in stock and why, and at what price. Those two guys have it covered and that frees me up a bit to take, I suppose, more of a managing director's role alongside Mansukh, our CFO, which is good fun. At the same time, we're all very involved. We're almost like a little unit that chips in wherever. We are a bit of a family, in a way. You know. You've spent a lot of time with us. We are a bit like that.

Many people are asking the same question: what do you think is the future for big trade shows?

I like trade shows. I like the networking. I think trade shows are great, because you get to go and see people you haven't seen for a long time and have a drink with them and share stories and news, and also meet some people that you probably wouldn't meet otherwise, and build much stronger relationships. I don't think you can get away from the strength of a relationship that is built when you meet someone face to face, so I'm still a fan of trade shows, but not necessarily to see equipment.

It's more for networking.

Yes. One of the reasons we built the two facilities in Central London—Newman Street and Charlotte Street Creative Space—was to offer an all-year-round trade show opportunity. Constant kit available for people to see, try, and test with other manufacturers' products offers a similar, if not better, experience than being at a trade show if you're going there to make a specific purchase.

I would like to see us doing far more scheduled one-on-one, two-on-one type demos. A higher volume, through those facilities, gives us the opportunity to be far more personal and understanding of our customers' wants and needs. It always troubles me when I get to the end of a particular event that we're doing, where 20 people have attended, and I can see a couple of potential customers who just haven't received the attention they probably deserved. When you go to talk to them at the end of the day, it's just a bit too late. It worries me a lot. Whereas, if you were to schedule a one-on-one demo in that scenario, you could open the conversation up more. You could find out more about what they're really interested in, and why they're here, and how they make their money, and how could we help them make more? What's their

real creative driver? We're just not finding these things out in the larger group environments.

Do you think that going forward, there will be more online Zoom meetings that might continue after lockdown?

We're already doing lots of those. I hope it continues. I think we actually have seven technical consultants who can't always be doing face-to-face demos in Newman Street or Charlotte Street, or wherever it happens to be. However, they can all be on Zoom doing demos; I would like to think we can encourage many more. And then we can tailor the demo to wherever you happen to be in the world. The two facilities we have in Central London are fantastic if you're in Central London. They're not much use if you're in the north of England or in Scotland, or in Australia.

Yes. Most crews are on location all the time. They're always traveling. What you propose could offer them a way to see the gear from a laptop in their hotel room. All these Zoom meetings have taught us a whole new way forward. Sorry, I interrupted you when you were saying how you were addressing new things in your business in the UK.

Yes, we were going to predict what the future holds. We know that the demand for content is there still. In fact, it's probably far greater today than it's ever been. I don't think anybody would deny that, and I also think that we're still very fortunate that the money is still there to afford this production because the desire means that it is there. Therefore, production needs to go ahead. However, I genuinely think there's going to be a shortage of equipment. If I bring this back to what we're here for at CVP, it is to furnish people with the equipment they need to create content.

There is a shortage in the rental houses already.

There is a shortage in rentals, I'm sure. I know what operators are like. They're all looking at what they can purchase next. Combine that with the fact that in 2020, we saw a lot of exciting new products product launched into the market.

It's continuing now, in 2021.

A lot of people want to purchase new equipment. One of the biggest challenges is their ability to raise the funds to do so. No one is particularly awash with cash, because we've all been through a tough time. The banks don't have much appetite to lend because they have a tendency to look backwards at past performance when making a decision about someone's affordability. Which is a good way of doing things in the past, except when the last 12 months isn't looking good for anyone. We've thought about what we can do to help. People weren't buying kit. We've got kit on the shelf ready for people to buy, but they can't get the money to do so, so what can we do to help them with that? Now, the first thing we can do is look at what existing assets they have and help them to get some value back on those. If you're wanting to upgrade your camera, what are you upgrading from and how can we assist you with that?

The other thing is really looking at more flexibility in terms of the way we finance, and how can we work with our lenders, the funders, the banks, and give them a bit more reassurance and stability in the offering that they're able to make to a customer whose finances probably don't look as nice as they would like them to. To that end, we have set up Creative Vision Finance, or CVF.

In this two-part effort of CVP, can you first expand on what you meant by upgrades?

We've always done trade-ins and we've always bought used equipment. We are also offering to help customers sell their equipment on consignment. This provides an opportunity for a potential purchaser to get pre-loved equipment if they don't want to buy new.

We also can help customers with bank loans. The reason we can work with the banks is because the cameras, lenses and equipment that we sell are strong assets. They're not consumables. They're not products that are out of date within six weeks and superseded. We need to give the banks reassurance that these assets are valuable and we will help them should there be any problems with those assets moving forward.

We're doing a lot of work behind the scenes, as well, to ensure that there are mechanisms and finance options available to customers that reduce the monthly expenditure, therefore reducing the demands on cash flow to enable them to get things going. We've worked with banks on things like payment holidays, zero percent finance and operating leases. All of these types of things fundamentally mean the customer has the opportunity to reduce their monthly payments, which maybe gives them the kickstart they need to get the finances flowing again, because we know the industry is strong enough for that to come back.

And CVF?

Creative Vision Finance was created purely with the intention of being there as a sales tool and a mechanism to facilitate more sales because we recognize there's a need for this. More and more, banks are coming to CVP and asking, "Will you stand behind a particular deal? Will you offer some support for the asset?" As I mentioned earlier, we can do that, but it also means we're taking all the risk. So, if we are going to take the risk, then we should get the surrounding rewards and the benefits. Consequently, we'll do it as a finance company ourselves, and we'll charge a commission because it's a service, and it has a value.

I think that the resulting effect will be that we will probably just sell more gear and do more business because often the only way an individual will get the finance and the money to do that deal is through our finance company.

Right, it is difficult for most DPs and crews, not to mention major companies, to borrow from banks. They know you and there's a level of trust, so it's a good idea.

Also, I'd like to expand more on the opportunity of an operating lease. It's a lease with a balloon payment, the same way we can do with cars. A valuable camera, as an asset, is no different than a valuable car. It holds a decent value after three or four years. We know the value of it, as a dealer. We will purchase it back from the bank funding the lease at the end of the lease at an agreed price. Consequently, CVP can stand behind that whole deal and make it work.

Furthermore, we're financially stable ourselves as a company. Therefore, the bank has every confidence to know that we're still going to be there in three years' time. We'll buy the asset back for the value that we say, and we'll re-market it effectively. That means we can offer an operating lease, where it has been difficult to offer in our market before.

Downstairs at CVP / ARRI Creative Space.

Good point. Are you seeing new markets, new customers, especially producers and production companies?

Production companies, or the production industry, have always rented equipment and will continue to do so. It is often those who really look at production as a long-term project that purchase their own equipment. Natural history, for example. Natural history producers, find it's difficult to justify a rental if the project means that the kit's going to be gone for a year and a half.

They own their equipment?

Mostly, yes. Natural history production companies largely purchase their own equipment.

It may depend on whether the production company or owner wants to remain involved with upkeep and maintenance. Once upon a time, Paramount, Universal and the major studios had their own camera departments and their own vast inventories of equipment. Maybe they don't want to be bothered with it anymore. Or they prefer to consider equipment as OPEX (Operating Expenses) rather than CAPEX (Capital Expenses).

If I were a production company and had the opportunity to lease my equipment and give it back at the end, and not worry too much about maintaining the camera department and rotating my equipment, and who's going to manage it, I would consider that maybe that was worthwhile doing. On the other hand, for features, high-end commercials, streaming and TV series, the present infrastructure of extremely competent rental companies provide service that production companies would be quite challenged to match.

That brings us to the question of trends. In this evolving world of CVP, EU, UK, CVF, will people still be able to afford high-end cameras and lenses?

I still think it's the last opportunity for the really top-end cinematographers to make their mark. I really believe that we need to maintain that real super-car opportunity for people. It should carry a premium price. It should be the thing you can only do when you reach that pinnacle and you're working on that project, that affords that quality.

Do rental houses in the UK feel the same way?

Most rental houses in the UK, provided they can actually get the money to do so, would love to be keeping and investing heavily into high-end, really expensive glass. There is a problem. If we see the erosion of the pricing of lenses, at some point it's going to be a toss-up of, do I rent it? Do I buy it? It's going to become accessible for all, and that's not a situation our industry really wants. Our industry must be maintained because it can be differentiated by true excellence. Therefore, we need to keep exceptional glass coming through that is very expensive and time-consuming to manufacture and costs a lot of money.

That's encouraging to hear about the high-end, not just for lenses but also for cameras. We see that in automobiles, clothing and the latest fully-festooned Mac Pro that is similar in price to an ALEXA.

It's very important for the future of our industry. We need to keep pushing the boundaries. We need to still put the best tools into the hands of the best creatives in the world and then say, "What can you make? Keep blowing us away." Why not?

Tokina Cinema Vista 40mm

Tokina Cinema Vista 65mm

And now there are nine Vista Prime lenses from Tokina Cinema. Popular focal lengths of 40mm and 65mm were recently added to the series. They all have a maximum aperture of T1.5 and an area of definition—beyond-full-frame—of 46.7mm. Vista Primes exhibit almost no image breathing while focusing. The shimmable, interchangeable mount is available in PL, EF, MFT, E and LPL. tokinacinemausa.com

Focal Length	40mm				
Aperture	T1.5 - T22				
Optical Design	14 Groups 15 Elements				
Minimum Focus Distance	0.45m (17.7")				
Max. Macro Magnification	1:7.99				
Focus Mode	Internal Focus System				
Aperture/Iris Blades	9 Blades				
Front Diameter	114mm				
Filter Size	112mm				
Mount	PL	EF	MFT	E	LPL
Image Circle Ø (mm)	46.7	46.7	40.8	45.6	46.7
Overall Length (mm)	160	160	183	186	168
Length from flange (mm)	146	154	179	180	154
Weight (kg)	2.24	2.32	2.37	2.41	2.39
Weight (lb)	4.94	5.11	5.22	5.31	5.27

Focal Length	65mm				
Aperture	T1.5 - T22				
Optical Design	13 Groups / 14 Elements				
Minimum Focus Distance	0.69m (2'3")				
Max. Macro Magnification	1:8.59				
Focus Mode	Internal Focus System				
Aperture/Iris Blades	9 Blades				
Front Diameter	114mm				
Filter Size	112mm				
Mount	PL	EF	MFT	E	LPL
Image Circle Ø (mm)	46.7	46.7	40.8	45.6	46.7
Overall Length (mm)	161	161	184	187	169
Length from flange (mm)	147	155	180	181	155
Weight (kg)	2.29	2.37	2.42	2.46	2.44
Weight (lb)	5.05	5.22	5.34	5.43	5.38

Tokina Cinema Vista Prime set: 18, 25, 35, 40, 50, 65, 85, 105 and 135 mm — all T1.5.

AJA T-TAP Pro

March 2, 2021—Grass Valley, CA. AJA Video Systems releases T-TAP Pro. It's small, sturdy, silent and sits inconspicuously between your Thunderbolt 3 computer output and the HDMI or SDI of a 4K monitor or TV.

Nick Rashby, President, AJA Video Systems, explains it succinctly: "T-TAP Pro was developed for production professionals who require the highest quality video output wherever they're working. "This robust and powerful device enables monitoring and output of high bandwidth 4K/UltraHD and pristine HDR content directly from your laptop or desktop computer, with the power and convenience of a single Thunderbolt 3 cable."

It's about the size of a small box of Lipton Instant Soup Mix: 5" x 5" x 1" — and weighs about 8 ounces. Best of all, it is silent. There is no fan to rouse the sound recordist in search of the noise ruining whispered words in a dramatic, critical close-up.

AJA T-TAP Pro is the key to connecting a Thunderbolt 3-enabled Mac or PC to an external monitor's 12G-SDI or HDMI 2.0 input for 4K or HD viewing.

For example, you're a colorist, grading in 4K. Many post production suites already use affordable consumer LG OLEDs like the 55-inch LG CX 55 or the 77-inch LG CX 77 as client monitors. If you are grading remotely, at home, these TVs are as attractive as they are affordable. They have HDMI inputs (not SDI). So, the T-TAP Pro is the go-between from computer to TV.

Picture this: you're on set reviewing dailies or rough cuts with a Thunderbolt3 enabled Mac or PC running an NLE or playback app. Connect AJA T-TAP Pro between computer and monitor. As mentioned earlier, T-TAP Pro is silent because it does not require a fan.

T-TAP Pro is compatible with Apple Final Cut Pro; Adobe Premiere Pro, After Effects, Audition, and Character Animator; Avid Media Composer and Pro Tools; and more.

AJA technology partners, including Colorfront, are working on support for T-TAP Pro on Colorfront Express Dailies, Colorfront On-Set Dailies, Colorfront Transkoder and Colorfront Streaming Player.

T-TAP Pro manages audio in the multi-channel embedded SDI and HDMI streams. You can plug headphones into its standard 3.5mm stereo connector to monitor analog audio or connect to an external analog audio mixer.

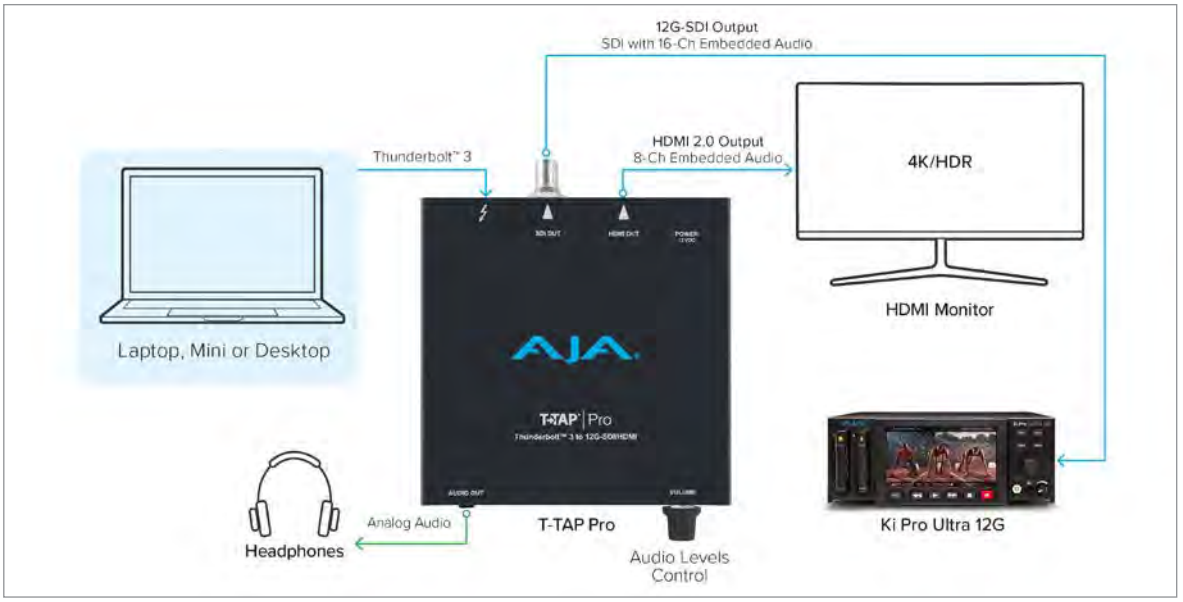
T-TAP Pro feature highlights include:

- Thunderbolt 3 input (single cable).
- Silent-running for quiet on set.
- 12G-SDI and HDMI 2.0 simultaneous output on both connectors.
- 4K/UltraHD/HD output over SDI and HDMI up to 60p over a single cable.
- up to 4K 10-bit and 12-bit 60 fps uncompressed 12G-SDI video output.
- up to 4K 10-bit 60 fps uncompressed HDMI v2.0 video output.
- HDR support for Hybrid Log Gamma (HLG) and HDR10; Dolby Vision via the AJA Software Development Kit (SDK); HDR signaling over both HDMI and SDI.
- up to 16-channel embedded SDI audio output.
- up to 8-channel embedded HDMI audio output.
- Front panel audio levels reference displa.y
- 2-channel 3.5mm headphone output with rotary knob adjustment.
- Because T-TAP Pro devours more power than the Thunderbolt bus can provide, an external power supply is provided. Included power supply, 18W Max.
- T-TAP Pro is available now for $795 US MSRP via AJA's worldwide reseller network.
- AJA Control Panel software application shows how the T-TAP Pro is configured and lets you make changes.
- www.aja.com/products/t-tap-pro

AJA T-TAP Pro

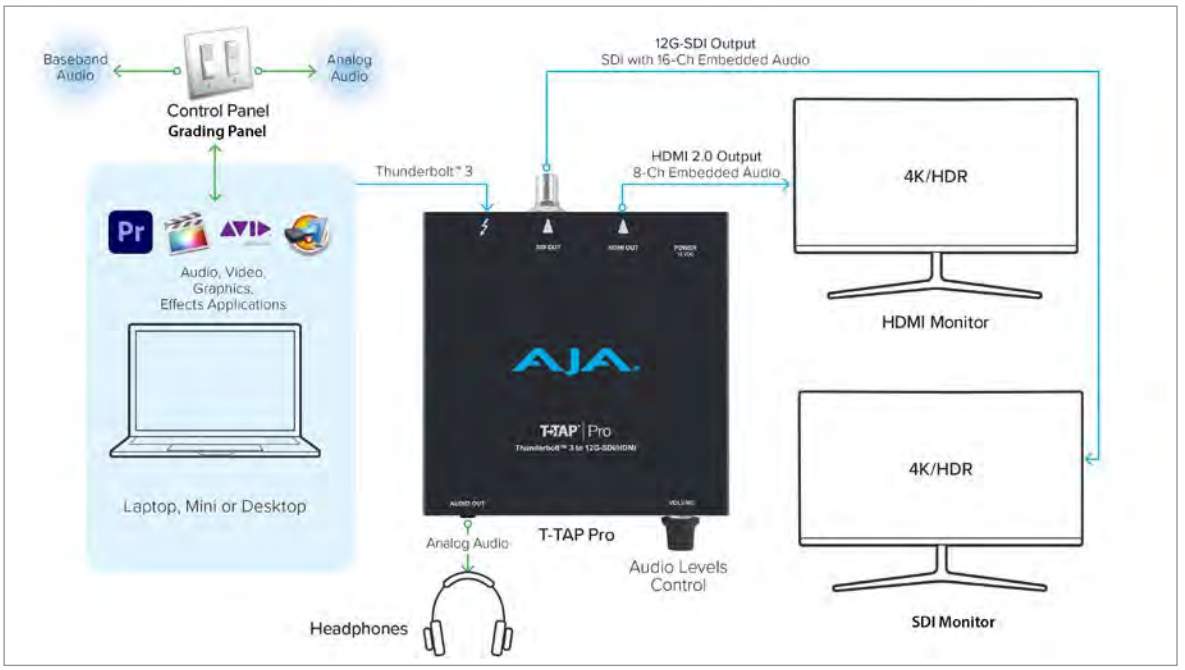
T-TAP Pro on set for video assist and viewing on an UltraHD/4K Director's HDMI monitor.

(simplified example)



T-TAP Pro in a post production suite for grading or editing and viewing on an SDI monitor and, simultaneously, an UltraHD/4K Client monitor.

(Simplified example. In practical terms, a number of post houses are currently using LG CX 55" 4K OLED consumer TVs as client monitors.)



AbelCine and Motion Impossible's AGITO

Pete Abel

Rob Drewett

Andy Nancollis

Jee Lee

Rob Drewett, CEO, and Andy Nancollis, CDO, are the co-founders of Motion Impossible and creators of the AGITO modular remote dolly system. Pete Abel is CEO of AbelCine, with locations in New York, Chicago and Los Angeles. Jeff Lee is Director of Education at AbelCine. We talked by Zoom.

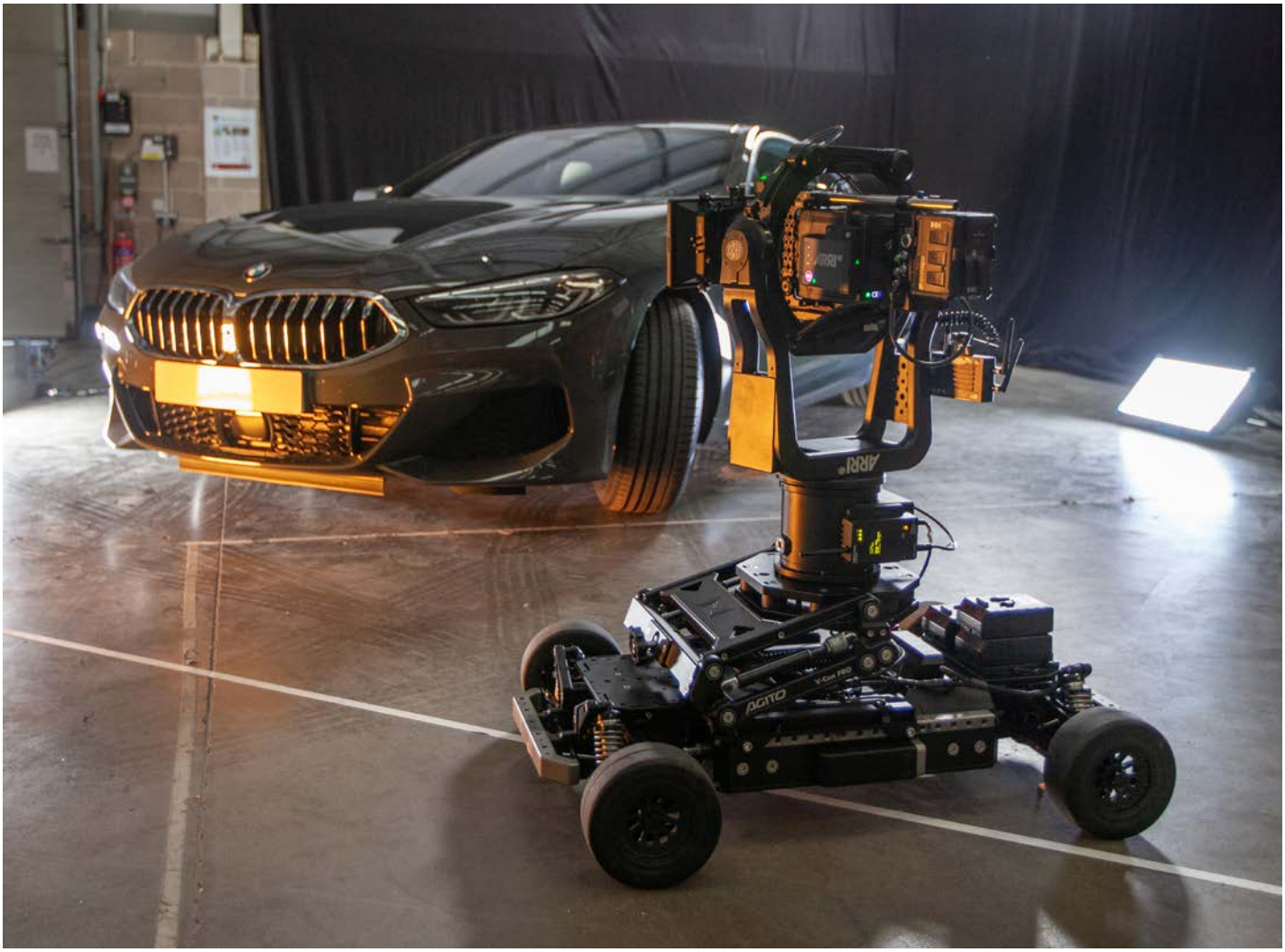
Jon Fauer: I'd like to learn more about the AbelCine and Motion Impossible AGITO adventure. Rob, how did you get started in this business?

Rob Drewett: How did I start off dreaming up this crazy idea of how we move cameras?

I was one of those kids who left school not really knowing what I wanted to do. All I knew was I wanted to work outdoors. I became a greenkeeper, and a few years later moved from the grass to the canopy and trained up as a tree surgeon. After a few life-changing events, I decided to go traveling, found scuba diving, and trained to become a dive master. Not wanting to be an instructor, I mixed my passion for photography and scuba diving and became an underwater cameraman.

After many years of traveling the globe working on countless boats and watching many David Attenborough programs, I wanted to move from underwater to topside, so I sought a career as a BBC wildlife cameraman. Failing to break into the wildlife filmmaking scene, I shot a documentary as part of a four-man crew setting the world record for going around the world in a power boat called "Earthrace" in 60 days, 23 hours and 49 minutes. On the back of that success, I moved to Bristol where the BBC Natural History Unit is located. I worked for a couple of independents and then managed to get a cameraman bursary (scholarship) with the BBC NHU (Natural History Unit). That was the golden ticket to the industry for me. I learned a lot, but what I wanted to do was take that feeling of filming underwater and bring it topside to have movement free from gravity.

I trained on Steadicam, played with Easyrigs—any way I could to get the camera moving as fluidly as it did underwater. Then gimbals came along, which set the camera free again for me. I used them extensively on *Planet Earth 2*. But I wanted to push the envelope and had an idea of putting the camera on a remote control car to film animals. There were some other RC things for cameras, but they were mainly designed for the tarmac as two-wheel drive vehicles. They were great for speed, but not for nice, slow dynamic shots in the woods or in the jungle. So, I left a message for the chairman of a local RC car club. Andy Nancollis phoned me back and said, "Who's putting you up to this? It sounds like my perfect job! I've been a product design engineer for 20 years. If you put your money in, I'll put my time in, and we can make the first system."



AGITO with ARRI SRH 360 Remote Head, ALEXA Mini LF, 21mm Signature Prime.

Within four weeks, we had a prototype. It got a bit of attention at the Wildscreen Film Festival, and we made some promo videos. Many people came back to us seeking a way to use this new technology. Some called it Shin-cam because it filmed at the level of people's shins. We wanted to move the camera up higher, so we put a post in the middle.

Andy Nancollis: At this point, Rob was in the treetops somewhere in South America when we got a call to put a 360° camera at eye level on the rover. The fixed post made the footage really wobbly. So we did a lot of testing with traditional gimbals, but they obscured the footage. Instead, we came up with a new concept for stabilizing a VR camera. Then we got a job for Universal Music, designed the rig, got the prototype made, put it in a suitcase, flew to LA, took it out of the suitcase, and hired a gyro from a local hire company.

Rob: That company was AbelCine.

Andy: We knew what this gyro did, but we'd never used one. We stuck it on the rig in front of Megadeth and the whole entourage at Universal Music. Our video was part of their album launch that year. Having something that worked, we went back and productionized this prototype.

Rob: We moved into our first-ever location because we had been working in a barn outside my house.

Andy: We got the production design of it done in 2017 / 2018. It was called Mantis 360. We were probably the only people in the world doing this, so it quickly became popular in VR shooting whenever a virtual reality camera had to be moved.

Rob: Andy and I have always tried to work out the best ways of moving the camera and stabilizing it. Traditionally we used gimbals, and then we went to the gyro. We've now gone back to gyro-stabilized heads with the new AGITO.

We had been talking to people in traditional film production to find out what they would do with a remote dolly system. Initially, we put the prototype in a case and realized that it weighed 32 kilograms and at this point it was just an empty shell without any motors. Now, for me, everything that I want to do is about getting on an airplane. When you arrive at the destination airport, you've got your equipment, and you're off to go filming. So everything had to go on an airplane. 32 kilograms, or 70 pounds, was the limit.

We sort of had a Eureka moment where we removed one end and chopped the center out and used different drive-ends. We developed the whole concept of a modular dolly system, which has helped to distinguish us from everything else that's out there. It's now a modular system. People could start to see a good return on investment because suddenly it's not just a system they can put on

AGITO modular design

rails, but a system they can freely move about. More people started to see how it can create different ways of filmmaking within all walks of the industry—on features, TV, commercials, concerts or live entertainment. They started to see a really good channel for the AGITO.

Jon: What year did the AGITO take the form it is in now?

Rob: It was released in January 2019.

Jon: Are you agnostic as to what remote head you're using?

Rob: Absolutely agnostic. Yes.

Jon: Who packages the remote head?

Rob: We sell a lot of AGITO systems with ARRI SRH-360 remote stabilized heads. We've sold a G1 combination and DJI Ronin 2 gimbal stabilizers as well. The idea was not to make our own head because so many people were doing it. Our idea was actually to market something that people didn't have, which was a way of moving those remote heads.

Pete Abel: As you know, we are also equipment agnostic. Whatever the creative people need and want, that's the system they should use. That's been our philosophy from the beginning. With the AGITO being camera and head agnostic, we're always going to recommend what's going to best serve the creative purpose. The second thing to consider is the pragmatic side: logistics and portability through airports, especially now, or a return on investment and being able to use the tool in a wide variety of applications. That's what I really like about the design approach of this team. There is creative intent first, but the design has got to make logistical and practical sense as well.

Rob: The whole design concept evolved. We learned a lot since the Mantis days where the RF was embedded into the system, and we could only use one bandwidth. Now we have modular RF to the point where you can put your own RF in if you need to.

Andy: When you're on set, the one constant and forever grief is RF. If you make it modular and optional, you shed the pain a little bit.

Jon: So, there are four wireless systems? There's the AGITO itself, the remote head, wireless lens control, and video.

Rob: Those are the main ones.

Jon: Andy, how did you get started in this business?

Andy: I had no knowledge whatsoever of this business prior to meeting Rob, but my background is product development and consultancy. Consultancy means I've had exposure to all sorts of industries: aerospace, automotive, toys, industrial machines. Working in TV and film is the longest I've ever done one project.

Rob: I think that's what's helped us. Andy, you've had so many different jobs and different projects that you've taken a bit from everyone. The way you make products is like a genius at his computer. You don't just know how to design something, you know how it's going to be manufactured as well.

Andy: The trick about being a consultant is that you become a specialist in an industry really fast. You have to be a sponge to take on everything your customer is saying to you really quickly. The bits of information that stick are the ones that are common, and what is common to everybody's problem is how do I make that? So, the "how do I make that" stuff is what you carry in every project. Every time you do a project just expands your "how do I make this," and the toolbox just grows bigger and bigger.

Jon: Your market, I understand, has mostly been broadcast, sports, and events. Do you see AGITO getting onto film sets?

Pete: Yes, you're right—the initial interest in AGITO was from sports and live production. The big surge in AGITO interest now, however, is based on the current production demands and the distancing requirements related to the pandemic, and much of this is coming from commercial and film production.

Our industry tends to put production tools into certain buckets. If it looks like a dolly, it's a dolly, right? Sure, AGITO functions very much like a dolly today, but what really struck me is that the design principle is not tied to the way we've worked in the past, but rather what it could be, in terms of how we move the camera.

AGITO with scissor arm and Monster Claws wheels

AGITO on track with carbon fiber tower

The cinema side of the industry is traditional in its approach to how sets work, how pieces of gear work, and whose job is what. What I like about this collaboration and the Motion Impossible team is how they break these paradigms with AGITO. The goal is to create the best creative pathway, period. I think that's what opens it up in the cinema production world in terms of its ability to be on a set, in the hands of a DP, as comfortably as it is currently in the broadcast and live market.

Andy: If you want an example, consider how you control a robotic dolly. Our first generation product had an RC handgun controller, which is OK, but also is not fine at all, because how you drive an RC race car hides inside a world of deep, complex menus that you spend all of your hobby life trying to figure out, and how the hell do you get to that setting again, but you've got an hour between now and the next race, so it's normal to spend a lot of time tinkering. When we came to deciding how you control the AGITO, we wanted something where everything you need is at your fingertips for instant access. Time on set is far more valuable and pressured.

Rob: It was about who is actually going to use this equipment, because we appreciate how hard it can be for people to break away from pushing a dolly, which they trust, to putting something new in their hands. The easiest, earliest adopters of this are probably going to be the younger generation. Why? Well, they've had PlayStation controllers in their hands from an early age.

We took that sort of ergonomics, of what you're used to, and put that concept into the controller. The whole point was that it had all the functionality at your fingertips, and no touchscreen. We didn't want a touch screen; we wanted to have knobs and buttons and the ability to change things without having to move your hands away from the controller.

Pete: Rob, could speak to the other ways of controlling the system that are cinema-centric or cinema-friendly?

Rob: We have two-wheel, four-wheel, and crab steering all in one system. That is done with a switch of a button on the top of the controller. You have the ability to change your deceleration or acceleration—how it starts, how it finishes. We have encoded motors, both front and back, and it actually moves very similarly to how a dolly does. All of this is repeatable. The chassis, if it's not on tracks, is free moving. And if you're moving a free system, to be repeatable, you need to have spatial awareness with sensor feedback, and this is the future vision for the AGITO.

Jon: What heights can you achieve?

Rob: We can go up to two meters (6.5 ft) in height, over people's heads, with the tower. We have risers as well.

Jon: Can you do an up and down move?

Rob: Yes, the carbon fiber tower moves up and down remotely. The stroke is 700 millimeters (2 ft), and you start off from about chest height all the way to above eye level.

Jeff Lee: It might be worth noting that the way to control the tower height right now is via the master controller. But a future development might be a knob, which is something that dolly grips will be comfortable or familiar with.

Rob: There are a few things that we're doing to enable the replication of the work that dolly grips do now within the system.

Jon: That's a good point. If we consider the ARRI SRH-360 remote head, in the beginning it was controlled with a joystick control. But many high-end operators preferred traditional wheels, and they were added.

Andy: The beauty of it is that because it's modular, we designed a control that we think is appropriate. But we can build the controller in any shape that anybody wants. If there's a commercial case for building something that people are more familiar with, absolutely. The point for us is not about shutting things off, it's about providing more options.

AGITO controller

Rob: Offering a new way might still be quite nice for people to use as well. And that's about education.

Pete: That's specifically where Jeff Lee and the AbelCine team come in—education. We are assisting Motion Impossible in whatever capacity they need us in terms of the design and delivery of AGITO operator training programs.

Rob: Every time we make a sale, we train the operators. We are soon to announce AGITO Academy. The more people know about the system and how to operate it, the more we'll see them adopting the technology and productions calling for it.

Pete: There are many similarities to other new technologies we've helped bring to market in terms of first creating industry awareness and then market adoption. Remember the early days of Phantom high-speed cameras in the US? We realized early on that we needed to train operators on the proper use of this new tool. Similarly with AGITO, in order to use this tool, to maximize its creative capabilities, you need to understand its technical underpinnings and become an expert in its operation.

This goes back to Rob's earlier point about the return on investment. In the US, we usually achieve greater adoption when we're creating more opportunities for the workforce. When gimbals came out, the MōVI classes that we worked on with Freefly were extremely popular. Yet they didn't take away from the appeal of the Steadicam at all. In fact, our Steadicam classes are always full, because it's a different tool. We feel the AGITO will follow a similar trajectory. Taking Motion Impossible's lead, we will help create the education through Jeff Lee and our training team.

Jeff Lee: Other than the fact that it's a sophisticated tool, we want to make sure all the productions are successfully serviced and there are no equipment issues where people might say, well, the reason the shoot didn't go well was because of the gear. We want to make sure that folks are empowered and can put this on their résumé, put this on their reel and say, "I am an AGITO Academy graduate. I have the knowledge to be able to get additional work outside the current circle of skill sets." We see this as a tool that is not replacing anyone's job. It's literally adding to your repertoire.

Of course, it's relevant now with COVID, and it will still be relevant in the future. A director can say, "I want to move the dolly track six inches closer to the actors." In a traditional environment, the grips have to pull the track over, level it, shim it again. That takes time. Whereas with the AGITO, it's just simply, "Let's drive six inches closer," and we're done and the shot's accomplished. That's what it's about: mobility, flexibility and protecting those jobs as well.

Jon: If you're on a traditional film set, typically you would use tracks for a dolly move. Is the AGITO as steady on its wheels with a stabilizer as it would be on tracks?

Rob: Sometimes it's more stable because it has a stabilized head. It depends on the terrain. We shot an ARRI promo a couple of weeks ago where we had the ALEXA Mini LF on the AGITO with the ARRI SRH-360 remote head. We were using ARRI Signature Prime lenses.

Jon: Are there safety devices to stop the AGITO if you are getting too close to an actor?

Rob: Yes, that's all coming soon with our new AGITO brain. It basically adopts the technology of a mini Tesla.

Andy: At the moment we're relying on operator skill. But the plan is for semi-autonomous intelligence to start to make much better safety decisions for you. We've got safeguards in there. With the AGITO, you've got the dolly grip as driver watching where the chassis is going. The camera operator is focused on the camera. And of course, the focus puller is, well, focused on the focus.

Jon: Are you working with dolly grips to get this accepted in the feature and motion picture production world?

Rob: That's what we want to accomplish with the AGITO Academy. We're a hundred percent behind getting grips involved. We are also talking to directors and producers so they can see what a cool tool it is.

Pete: Creativity and economics—you've got to marry both. I think getting folks jobs, getting them behind the effort and saving production time, will help to save money. And that gets everyone behind the effort. We love the idea that as the AGITO brain gets smarter and more functional, the whole system improves. That's exciting for everyone.

Andy: My wider perspective is to look at other industries. Robotics is here one way or another, and all industries are struggling with ethics of the human being replaced by the robot and that whole argument. But what's really true is it just changes what the human is doing. In these cases, it's not about putting someone out of work, it's about giving them a cool new tool to use. It gives them something different to do, a new improved way to work. You know, robotics is coming, there's no stopping that. These tools are here now, and they're only going to get bigger and better.

Rob: Or smaller and better.

abelcine.com

motion-impossible.com/products/agito/

Chrosziel Compact Zoom Motor for Angenieux EZ 1 and EZ 2

Control your Angenieux EZ Zoom lens with the rocker control built into your Sony FX9.

Chrosziel's CDM-EZ-Z2 makes this possible. It is a tiny lens motor assembly that attaches directly to three pre-existing tapped threads in Angenieux Type EZ zooms. The 2.5mm hex-headed screws are captive so you won't go scrambling with a magnifying glass when you attach and detach.

This is an excellent setup to benefit from FX9's ergonomic handgrip with built-in zoom rocker control.

The CDM-EZ-Z2 (let's call it C-EZ as in "see—easy" for short) is not like a traditional zoom lens servo control with motors for each lens barrel. This is for zoom only, the way it was "meant to be" for solo handheld camera operators shooting documentary style, not ENG.

As mentioned, the C-EZ has just one motor for the zoom. Focus and iris are left for the operator to adjust manually. The FX9 camera's multi-function handgrip connects with a Y-cable to the Sony Multi Connector on the FX9 and then to the "LANC" input of the C-EZ. Another cable connects C-EZ to the battery's D-Tap.

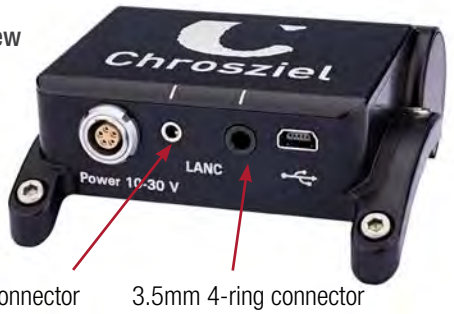
The C-EZ works with Sony's FS5, FS7, FX9 and FX6 handgrips. You can also connect an external LANC zoom controller.

C-EZ is beautifully machined with smoothly rounded edges in a rugged aluminum housing. It measures a mere 3" x 3" and weighs 6 ounces.

Price is approximately $1,726 which is a steal for something that will add grace to your smooth moves and elegance to your EZ1 and EZ2 Angenieux lenses.

chrosziel.com/dealer-network/

Top view



2.5mm 3-ring connector for Sony FS5, FS6

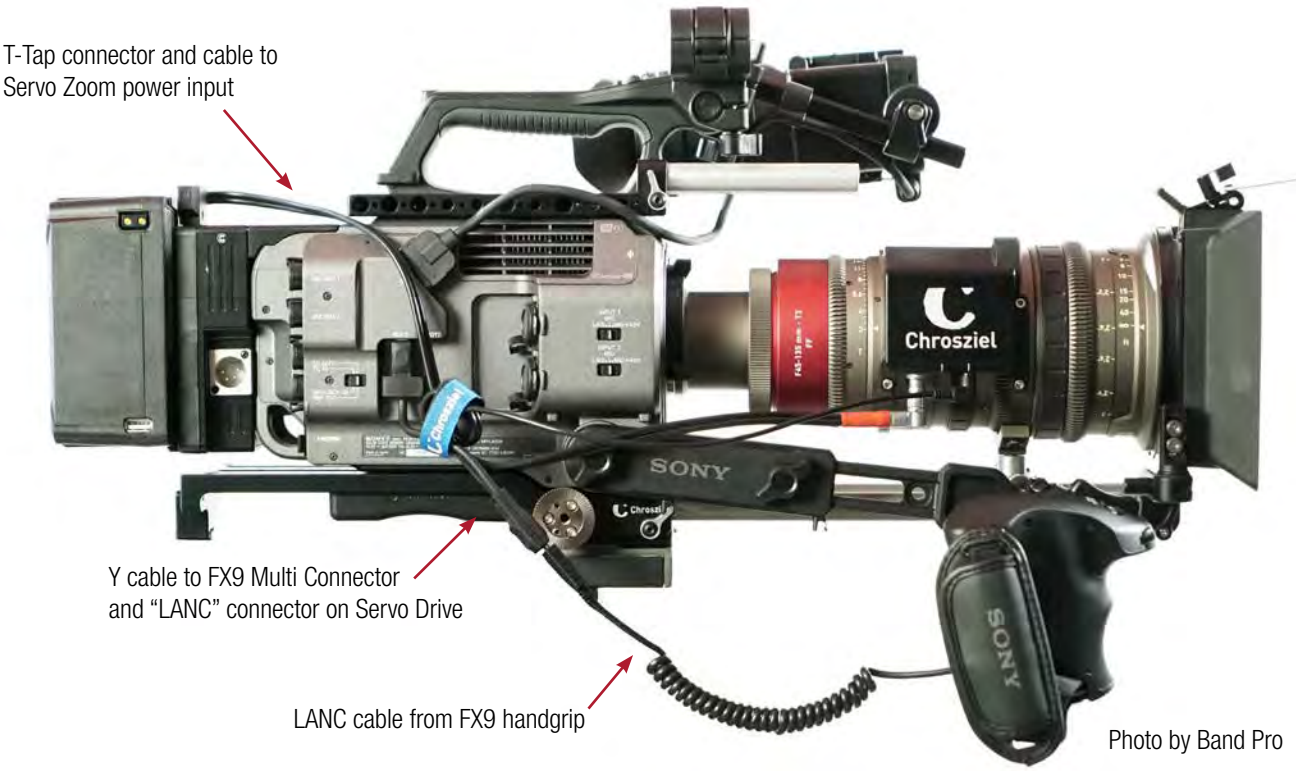
3.5mm 4-ring connector for Sony FX6, FX9

Bottom view.
This side sits flush against EZ zoom lens.

Zoom drive gear

Three 2.5mm screws

Chrosziel CDM-EZ-Z2 on Sony FX9



T-Tap connector and cable to Servo Zoom power input

Y cable to FX9 Multi Connector and "LANC" connector on Servo Drive

LANC cable from FX9 handgrip

Photo by Band Pro

Louma 2 Stories: Paul McKenna

1. The base of the Louma 2 being wheeled on its way to the location.

2. The boom had to operate through a narrow opening adjacent to the chapel.

3. City on a Hill. Telescoping push-in with camera close to the ground.

FDTimes contacted Loumasystems and Empire Production Support (EPS), the Louma 2 agent in New York, about their recent Louma 2 jobs. Paul McKenna (co-owner and manager of EPS) talks about an interesting location:

Paul McKenna

Recently, I worked on a sequence for a TV Series inside a small church in upstate New York. The only access to the location was through a small door and then up 8 steps on the inside leading to our location. (See Figure 1.)

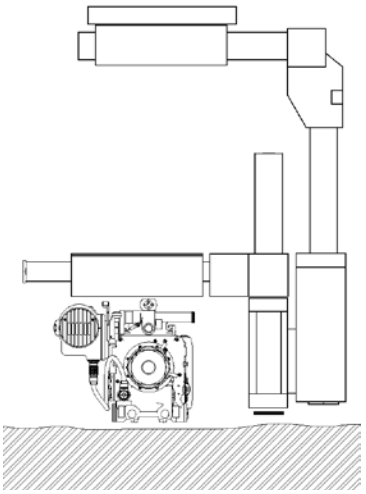
I discussed the shots with Key Grip Peter Bulavinetz, owner of Dynamic Grip Works, and the request was for the Louma 2. The only way to bring the crane inside was to dismount it. I had a 4-hour earlier call to take apart the Louma 2 and build it in the church. With the help of the rigging grips, led by Robbin Park, we dismantled the crane outside, which took us about 30 minutes. Then we carried everything inside and rebuilt the crane. This took about an hour. Once inside, we had a very narrow space to shoot through with the crane. (Figure 2.)

Then, we had to switch from underslung to overslung to get higher shots at times. That process takes 5 minutes to change modes. It allowed the camera lens to achieve a higher angle and took into account the restrictions we had with movement. Everyone was happy with the short amount of time it took to switch. Filming in this location lasted for two days. We took the crane apart at the end of second day. We did not need an additional day to get the crane out. This saved the production money because they did not have to budget for additional gear rental and technicians, not to mention location fees.

The design of the Louma 2 allows the crane to be carried in pieces. It can be dismantled in half an hour, then carried into difficult locations and reassembled again on the other side. Other cranes of this size would not allow this to be done as easily without disassembling major components and would take much longer. Each individual telescopic beam can be removed by releasing a few simple attachment points. I have been in scenarios where taking the arm apart to get into tricky locations was a last-minute decision. There are always a lot of impressed looks from crew along with an occasional question, "How did you get this in here?" Those are always the most enjoyable questions. They are really statements!

On another job and another story, the Louma 2 was on a TV show, *City on a Hill,* and the Director of Photography, Joe Collins, requested a telescoping push in as low to the floor as possible. We inverted the tilt plate so that the camera would be held from its upper part. (Fig. 3.)

Additionally, as the support rods of the tilt section were still sticking out lower than the bottom of the camera, we were able to slide and raise them (another versatility trick of the Louma 2), so that the camera was indeed the lowest part of the setup to the ground. (Fig. 4.)



4. Tilt rods have been raised up so that the camera was the lowest thing to the ground.

The Louma 2 is a most versatile crane. I never feel like something is going to be thrown at me at the last minute on any job that I cannot achieve. Its size is great for the run of a show. The head that comes with the crane is very rigid and the telescope is extremely smooth, allowing the crane to be used in most cases without the need for an additional stabilized remote head. It's a win for the shooting crew, as well as the production budget.

Louma 2 Stories: Paul Agostineli

Above: Louma 2 low profile hard wheels.

Left: The Louma 2 inside the Jersey City Loews Theater.

Paul Agostinelli, Remote Crane Technician, discusses his recent production with Louma 2 on Dickinson, *an Apple TV+ series starring Hailee Steinfeld as the young poet Emily Dickinson, described in the New Yorker as "a figure in some emo Brontë fever dream."*

Paul Agostinelli

For one of the upcoming episodes of the Apple TV+ Series *Dickinson,* our location was inside the Loews Theater in Jersey City. During the scout, we noticed that we would have to use the low-profile hard wheels in order to enter through a low door. On the day of the shoot, however, we learned that the threshold of the door had been raised higher than originally stated. The low-profile hard wheels were no longer sufficient to fit the arm through the door frame.

So, I decided to take off the counterweight's upper structure to get into the building. This allowed us the extra few inches needed to fit under the door without having to modify the threshold or take the arm off the base. It was relatively quick and easy, as all the parts of the crane have been designed to be quickly disassembled.

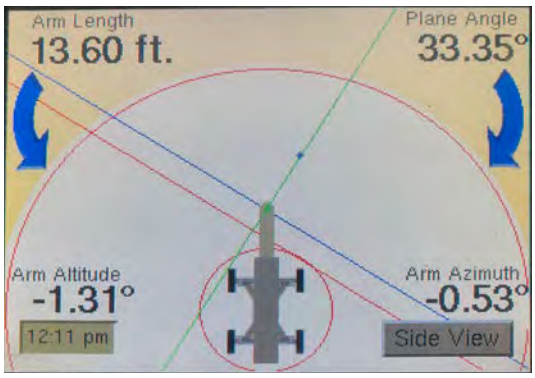
Some of the more challenging shots we did inside were of actors in theater boxes on the second level. We had the base on the floor of the theater and the arm up in the air as the camera panned about 45°. We needed to push straight in on axis from medium shots to closeups in midair with no direct access to the camera. Coordinating the telescope, pan, and tilt of the arm without assistance from the Louma's built in Planing mode would have been very difficult to do precisely in this position. By placing the camera at our first position with the crosshairs centered on the actors' faces, I turned on Point and Plane mode and the dolly grip simply had to swing the arm slowly for the push in with the Louma 2 compensating for the arc automatically. Everyone was very happy with the results.

What is Point and Plane?

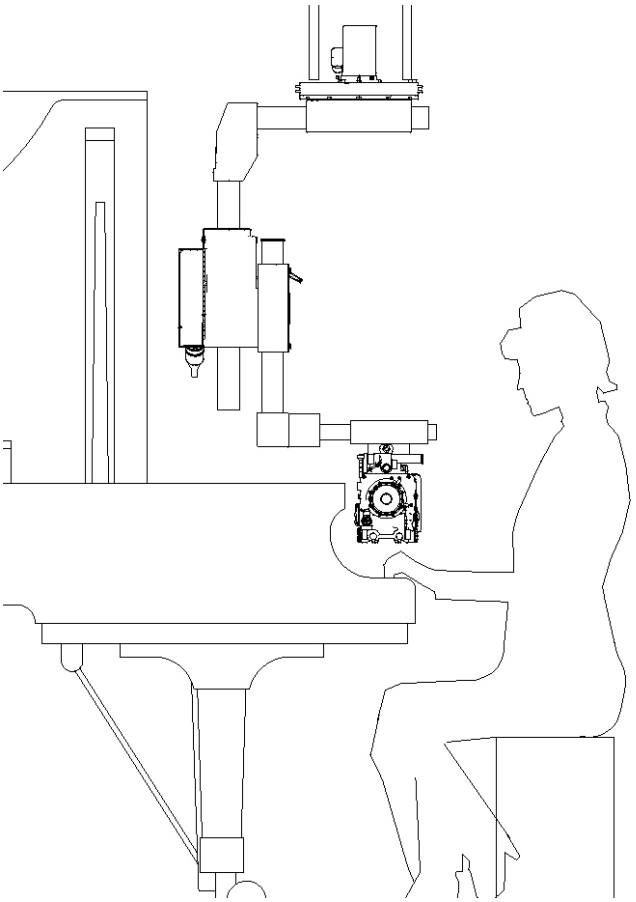
Point and Plane mode is a unique feature of the Louma 2. It is an instant, automatic trajectory compensation that links the pan, tilt and telescope of the arm as well as the pan of the remote head to keep the camera on a straight path. For setting this trajectory, you just have to aim the camera's cross hairs at the point you want the camera to go. You then push the Point and Plane mode button, and you are all set. When the grip pans the arm towards the subject, the telescope and the Louma 2 remote head self-adjust to create a linear trajectory.

Obviously, there is a watchdog surveillance system that prevents you from activating this mode whenever your direction of aim is too close to the axis of the telescope (to stop, in this case, the telescope from jumping forward when the grip pans the arm).

In the menu, there are other ways to set up this trajectory. For example, enter point A and point B and the Point and Plane mode is the fastest when your setup allows it. The word "Plane" is used because the camera stays on the vertical plane that you have defined. So, it is much more than just a "line" trajectory.



Louma 2 Stories: J.M. Lavalou



Jean-Marie Lavalou is the co-founder and co-inventor of the Louma remote crane system. He and his partners were awarded a Sci-Tech Oscar statuette in 2005 for their pioneering efforts and credits that are pages long. J.M. Lavalou is, naturally, also the Managing Director of Loumasystems. He discussed recent adventures.

Jean-Marie Lavalou

We are regularly confronted with exciting cases usually related to moving the camera in difficult locations or unusual spots. But, once in a while, there is the very special case where the technical task to solve the move is also at the core of the shot.

For these kinds of shots, technique and storytelling are intimately linked. If you succeed, these setups are very rewarding and can even offer great moments of Cinema. They can contribute to the cohesion of the entire crew and everybody on set can feel that something very special is happening. The crew and the audience remember these shots for a long time.

In Paris, we were lucky to experience one of these moments on the movie *Mon Inconnue (Love at Second Sight)* directed by Hugo Gélin and shot by Nicolas Massart. The movie is a romantic comedy with a Sci-Fi twist: the story of a man and his wife and a sudden switch in a parallel universe. In the beginning, the man is a celebrity, a famous writer, and the woman is a student. Then, in an exotic space-time warp, the man becomes a nobody and the woman is a famous and exalted pianist.

The scene we had to shoot happens when the man, in his "nobody status," attends a piano recital of his beloved ex-girlfriend (whom he is trying to re-seduce).

The director Hugo Gélin was very kind to say a few words about the shot:

"I used the Louma 2 to achieve a particular sequence. The idea was to have a very wide shot at the beginning and finish on a close-up. For this, I needed to start as far as possible at the back of the stage area of the Odeon theater in Paris with the camera aiming towards the audience. In the center of the frame, between the camera and the audience, was the actress Josephine Japy at the piano, playing Chopin's *La Fantaisie Impromptue*.

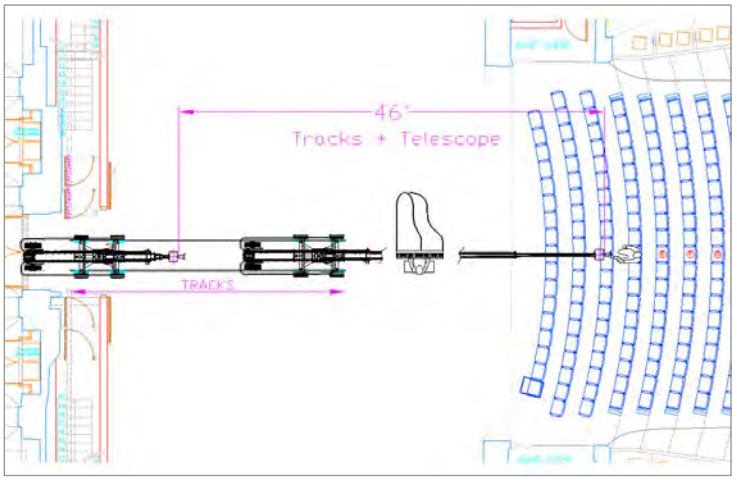
"The shot is a 'simple' tracking move that starts from the very back end of the stage, glides towards the actress, passes above the piano and her hands as she is playing, then leaves her and continues the movement towards the audience, getting closer and closer to the actor, François Civil, seated in the middle of the orchestra. And I insisted on finishing in a tight close-up.

"The Louma 2 allowed us to do this shot without VFX (except the audience enlargement). The idea was to show not only the amplitude and the force of Chopin in that huge theater but also the intimacy and fusion between the two characters, all in that one single movement. The Louma 2 allowed me to do that and it was a great moment to live on the stage."

With Cinematographer Nicolas Massart, we looked at different options including placing the base on the side in the middle of the travel and using a Planing mode, but it was not possible because the raised cover of the grand piano got in the way of the arm. So, we went for a combination of tracks and the full range of the telescope and a tiny bit of a zoom towards the end of the shot. The whole thing combined seamlessly.

J.M. Lavalou, cont'd

To make the task even more challenging, the director wanted the camera to pass 2 inches above the hands of the pianist. Having the camera in its usual place by the side of the Tilt unit would have been too wide. The remote head would have hit the side of the piano and disturbed the pianist. So, we attached the camera underneath the base plate and placed a counterweight in the upper portion of the Tilt to keep the Tilt axis balanced and fully operational.



Framegrabs courtesy of Zazi Films.

Mon Inconnue directed by Hugo Gélin.
DP: Nicolas Massart.
Louma 2 crane technician: Paulo Rodrigues.

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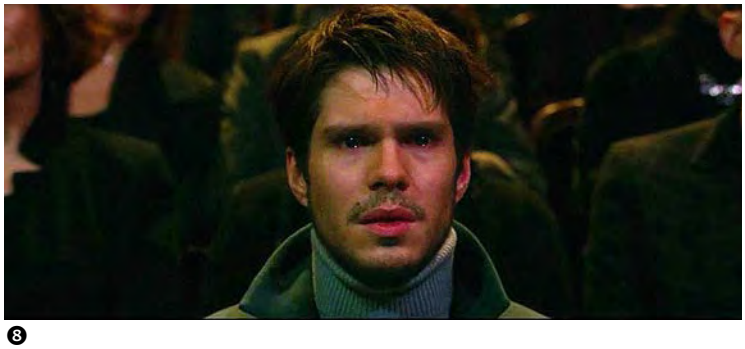

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Sony Cinema Line's FX3

VENICE FX9 FX6 FX3

And now there are four.

The FX3 is the latest addition to Sony's growing Cinema Line. Cameras seem to be multiplying in the Cinema Line at an impressive rate: VENICE, FX9, FX6—and now—FX3.

Sony explained the concept on Sept 2, 2020: "Cinema Line will deliver not only a coveted cinematographic look but also enhanced operability and reliability. The series will extend beyond traditional cinema camera form factors." Sony surely foreshadowed the FX3.

What Sony next revealed—on February 23, 2021—definitely "extended beyond traditional cinema camera form factors." The ILME-FX3 does not look like a typical cine camera at all. It has the appearance of a ruggedized Sony interchangeable lens mirrorless E-mount alpha series camera whose viewfinder has been sliced off in the service of a solid and symmetrical body.

As for enhanced operability and reliability, the FX3 has an abundance of ¼-20 mounting points threaded into its unibody magnesium shell over a stainless steel skeleton. This cage-free design begs you to mount this camera anywhere—in all kinds of places where a single mounting point and add-on cage wouldn't dare to thread.

FX3 will be free to range almost everywhere because it is small, light and ergonomic; common wisdom is that the best camera is the one you always have with you.

The teaser in the days preceding Sony's FX3 launch on February 23 showed a lineup like the Cinema Line photo above — but with the FX3 tantalizingly replaced by the words "New Alpha." I didn't quite get it until Sony's Mark Weir patiently explained the obvious: all cameras in the Cinema Line have Sony E-mounts. Even the VENICE. Lurking underneath its removable PL mount, VENICE has a lever-locking E-mount. So, let's spend some hands-on time with the FX3.

Sony ILME-FX3

Some FX3 details are similar to a7S III:

- 10.2 Megapixel Full Frame sensor for video.
- 12.1 MP for stills (Yes, you can shoot stills as well.)
- ISO 80 - 102,400.
- Maximum ISO of 409,600.
- S-Cinetone Picture Profile. Matches VENICE and the other Cine Line cameras.
- 15 or more stops of Dynamic Range with S-Log 3.
- Phase Detection Auto Focus with face and eye tracking.
- XAVC S-I All Intra 4:2:2 10-bit internal recording.
- Other recording formats including XAVC HS.
- Up to 120 fps in 4K. 240 fps in HD.
- 16-bit RAW output via full-size HDMI type A connector.
- 5 axis IBIS - In Body Image Stabilization with Active Mode.
- Dual CFexpress Type A or SD card slots.
- Touch screen monitor.

Other details are new and unique to FX3:

- The Sony FX3 is even smaller than an a7S III.
- S-Gamut3 and S-Gamut3.Cine Color Space.
- S-Log3 Gamma.
- 10-bit 4:2:2 HLG available in all recording formats.
- Internal cooling fan provides unlimited recording time. (a7S III records up to 60 minutes in 4K at 60 fps.
- Exposure control while shooting video with direct control of iris, shutter speed and ISO.
- Zoom rocker controls E-mount servo zooms as well as primes using Clear Zoom.
- Five ¼-20 threads on three sides.
- XLR inputs on removable audio module handgrip. Three more ¼-20 threads on the handle.
- Magnesium alloy body with rugged steel skeleton.
- The Sony ILME-FX3 is available in March 2021 for around US $3,899.99.

FX3 XLR Top Handle and Audio Module

In the Cinema Line lineup on the previous page, you might ask why the top handle of the FX3 is not shown as it is for the other cameras?

It's because FX9 and FX6 require their top handles to support the viewing monitor. But the FX3 monitor is built into the rear of the camera body.

By the way, VENICE's EVF is part of its top handle system.

And so, stripped down, bereft of its top handle, mic and faux-fur windscreen, FX3 shrinks to a size even smaller than an a7S III. You will like this minimalism for professional results in places where unobtrusive, tiny, lightweight or riggable are the operative words. A tiny stereo mic built into the body will grab adequate audio.

Audio Module: 3 Channel Audio Input Controls, Auto/Manual Gain, Audio Levels, Line/Mic/+48V Phantom Power, Low Cut Switch.

The XLR Handle Unit slides onto the Multi Interface Shoe (looks like a hot shoe) on top of the camera and is secured with two ¼-20 thumbscrews. The handle and microphone come with the camera. You can remove the mic from the handle but the audio module is permanently attached. It has two full size XLR/TRS audio inputs.

You can imagine that third-party machinists are already thinking of simple top handles that look like this and—cut here—omit the audio module.

Sony FX3: New Alpha

Which Camera When?

The main way to distinguish between the four Sony Cinema Line siblings is by how you will work with them.

VENICE is for large family gatherings: when you're working with a focus puller, camera operator (or you're working as DP/Operator) and full size camera crew.

FX9 is the documentary darling: lightweight and comfortable when resting on your shoulder.

FX6 is the handheld polymath, eminently hand-holdable, compact and happily outfitted with accessories for all kinds of situations.

FX3 was designed for times when, as Greta Garbo said, "You want to be alone." It excels when you are a one-person band.

FX3 Design

Let's imagine an early design meeting when the FX3 might have been initially conjured up in a meeting of Sony product planners, engineers and designers. The following is dreamy fiction.

An astute product planner begins the discussion by bemoaning a common practice worldwide in which users confine their Sony mirrorless cameras in all manner of cages.

The engineer explains, "Exoskeletons are added because users want to add accessories or mount our cameras in different ways on many moving objects: cars, boats, drones, rigs, gimbals."

Let's assume this fictitious product planning team is familiar with the nascent a7S III. "What if we just chop off the viewfinder of the a7S III?" someone dares suggest.

Gasps can be heard in the room. There is a very long silence, longer even than a Pinter pause. Perhaps it is also noticed that SIGMA dared a similar concept with their deconstructed fp camera.

"What if people still want an electronic viewfinder on this camera?" a stylist asks.

"If they want an EVF, they can get the a7S III," the product planner declares. "And if they want the smallest Alpha series Full Frame E-mount camera dedicated to cinematography, with a stainless steel skeleton inside and lots of mounting threads outside, well here's the camera for those users."

Approximate actual size

FX3 views with FE 20mm f/1.8 lens

FX3 Solo

This is the camera you want when you go solo. Testing FX3 on a frigid and bleak Long Island beach, social distancing is not a problem. There's not a soul to be seen. For many shots, a tripod is not even necessary. With Active Image Stabilization turned on, the FX3 is like a tripod in the sky. I even jump up and down while shooting, not only to stay warm, but also to see whether the images stay steady. They do. I picture FX3 on films like *Return of Free Solo*.

I can also imagine this camera on non-solo, big productions. With their many mounting points, a dozen FX3 cameras could work on running shots. EXT. CAR CHASE - DAY or NIGHT. FX3 on hood, close on driver. Another FX3 on passenger. FX3 outside passenger window, over on driver. Reverse on passenger. Another CU from below, hands clenched on steering wheel. You get the idea.

If the screenwriter can imagine it, you probably can shoot it. On drones, rigs, stunts, action shots, hostile environments, aerials, underwater. And because FX3 doesn't look like a scary big camera, it might venture where you wouldn't dare use one of those.

E-mount lenses abound. They don't get much better than the Sony G Master series (24mm shown at right). If you want to go smaller, lighter, more affordable, with half the financial pain if the lens becomes expendable, for example, in a stunt gone wrong, you could try the FE 35mm f/2.8 Sony/ZEISS. Or the FE 55mm f/1.8 Sony/ZEISS shown below on an FX3 with its pivotable touchscreen monitor in solo reporter/camera operator position.

FX3 with FE 24mm f/1.4 G Master

Sony Alpha. Partial Timeline of E-mount Cameras

NEX-5
May 2010

First E-mount interchangeable lens APS-C camera. 14.2 MP 23.4 x 15.6mm CMOS sensor. 1080i AVCHD and 720p MP4.

FS7
September 2014

Cinema Vérité, E-mount Super35 25.5 x 13.5mm sensor, X-AVC I 3840x2160 10-bit 60 fps, Smart Handgrip.

FS5
September 2015

Sony Minima. E-mount Super35, 3840x2160 8-bit 4K QFHD. OLED viewfinder in back. Variable ND.

FS7 II
November 2016

Lever Lock E-mount, S35, Electronic Variable ND, Improved Handgrip and EVF.

α7R
Oct 2013

Full Frame 35.9 x 24 mm, 36.4 MP 7360×4912 CMOS sensor. MPEG-4, AVCHD and XAVC S 1080p full-pixel readout video.

VENICE
September 2017

Top of the Cinema Line. 24.4 MP 6K 6048x4032, 36.2 x 24.1mm, Full-Frame and S35 sensor, Dual Base ISO, PL mount, Lever Lock E-mount. 8-step internal ND.

α7R IV
July 2019

60.1 MP 35.7×23.8mm sensor, 4K 3840x2160 30 fps video, new Auto Focus algorithms, 5.76-million-dot OLED Finder, Full-Frame E-mount.

FX9
September 2019

Full Frame and S35. New 19 MP sensor. Fast hybrid phase-detection and contrast Auto Focus. Lever Lock E-mount. **Cinema Line.**

α7S III
July 2020

10.2 MP 4K full pixel readout in all modes. Up to 10-bit 422 internal recording to CFexpress cards, Full-Frame. E-mount.

FX6
November 2020

10.2 MP Full Frame sensor, ISO to 409,600. 120 fps in QFHD. Alpha style E-mount. **Cinema Line.**

α1
Jan 2021

50.1 MP 35.9 x 24.0 mm sensor. 4K 120 fps 10-bit 4:2:2 or 8K 7680 x 4320 30 fps 10-bit 4:2:0 XAVC, XAVC S internal recording. Full Frame E-mount.

FX3
Feb 2021

10.2 MP 35.6 x 23.8 mm 4K full pixel readout in all modes. Up to 10-bit 422 internal recording to CFexpress cards, Full-Frame. E-mount. **Cinema Line.**

Sony α7S III compared to...

5.1 x 3.8 x 3.2" (LxHxD) / 128.9 x 96.9 x 80.8 mm. 21.3 oz / 604 g.

9.44 million-dot EVF and 2.95" 1.4M dot touchscreen monitor.

Top view of a7S III: summon cine mode from the top dial.

Sony FX3

5.1 x 3.1 x 3.3" / 129.7 x 77.8 x 84.6 mm. 22.6 oz. / 640 g.
Overall height is reduced because there's no EVF on top.

1.4M dot touchscreen monitor with similar layout as a7S III.

FX3 is already in cine mode. Top is flat with cage-free design.

FX3 has cooling vents at the bottom

α7S III compared to... FX3

Similar connectors on both cameras: Full size HDMI Type-A output, Multi/Micro USB and USB-C (tethering, file transfer, charging battery).

Both cameras' touchscreen monitors have similar layouts and details. Top row mostly shows recording details. Bottom row has exposure information.

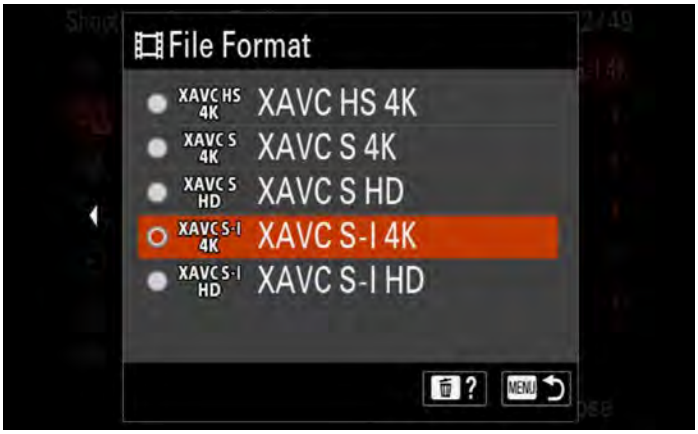
Both cameras have dual slots that accept new high-speed CFexpress Type A Cards or SD Media Cards (UHS-I/UHS-II SDXC/SDHC).

CFexpress Type A card (left) and SD card (right).

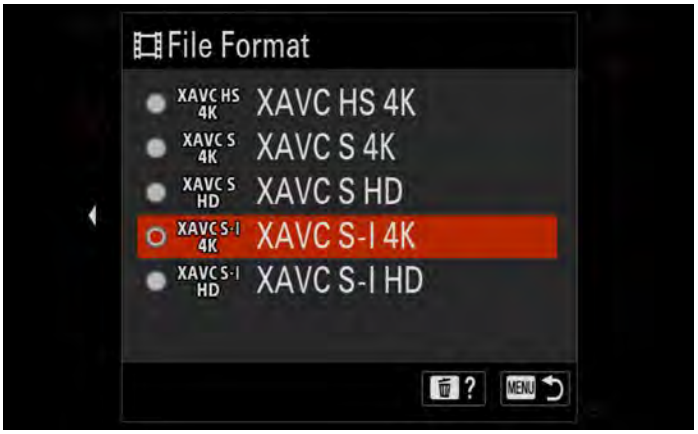
Sony α7S III Menus are very similar to... Sony FX3 Menus

a7S III menus are easy to navigate: 3 column layout.

FX3 menus also have a 3 column layout.

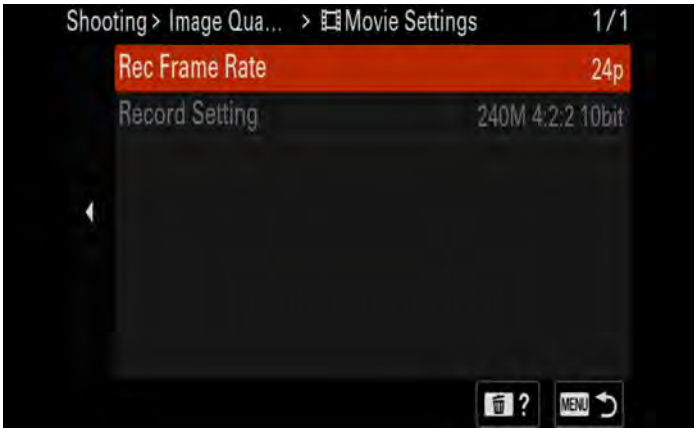


a7S III: XAVC S-I 4K Inter Frame File Format selected.

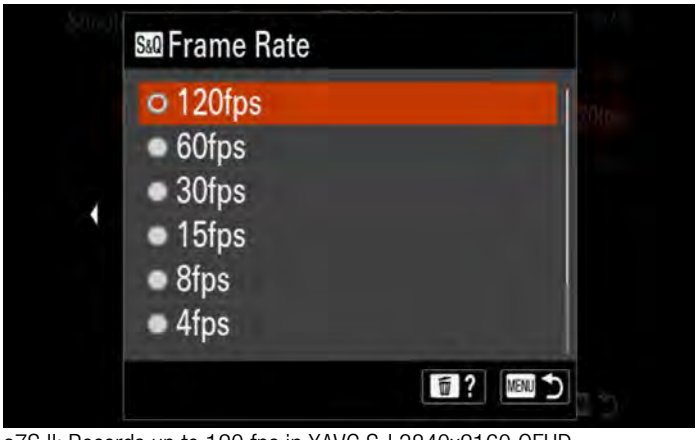


FX3: XAVC S-I 4K Inter Frame File Format selected.

a7S III: Recording Frame Rate: 24p = 24 fps.



FX3: 24p Recording Frame Rate selected.



a7S II: Records up to 120 fps in XAVC S-I 3840x2160 QFHD.

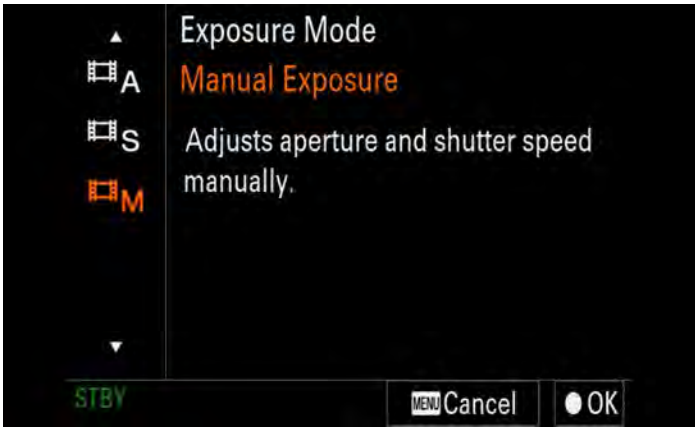
FX3: 120 fps in XAVC S-I 3840x2160 QFHD selected.

FX3 Menus in Detail - Some Suggested Settings

1. Let's setup an FX3. Format media here.

2. Say yes to shading and aberration compensation on enabled lenses.

3. Shooting Mode > Exposure Mode.



4. Choose Manual, Shutter Priority, Aperture Priority or Program Mode.

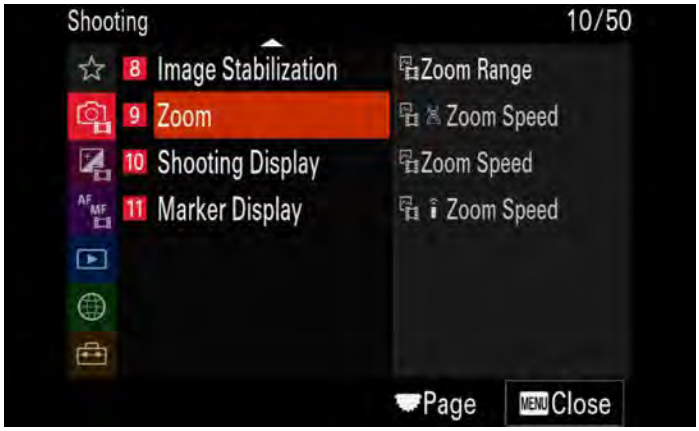
5. Audio Recording Settings.

6. If you want sound, be sure to turn Audio Recording On.

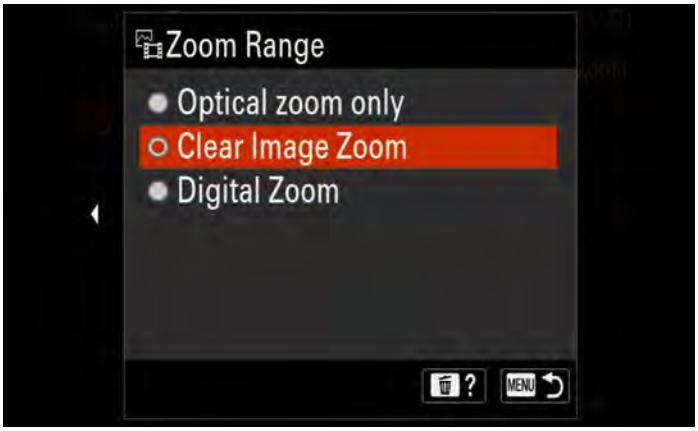
7. Keep Image stabilization on—unless your pan moves drift.

8. Standard is for most situations. Active is like a tripod in the sky.

FX3 Menus



9. Clear Image Zoom gently moves in or out with a prime lens.



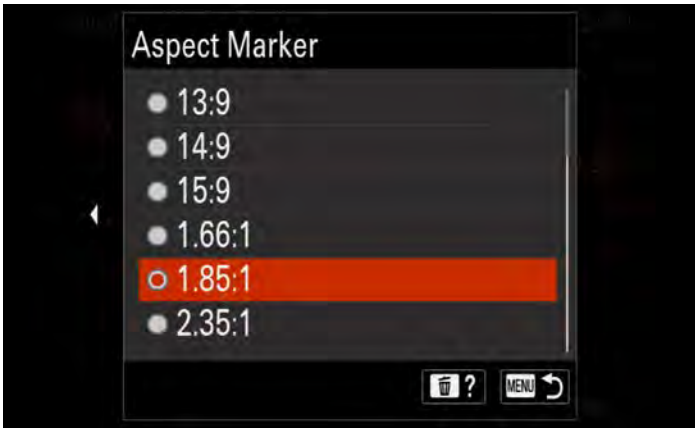
10. Use the zoom rocker in front of the Start/Stop switch.

11. Shooting display is for grid lines or no distractions.

12. REC Display On shows red lines around frame when recording.

13. Marker Display is where you will set frame lines.

14. Marker Display ON (otherwise you will not see frame lines.)

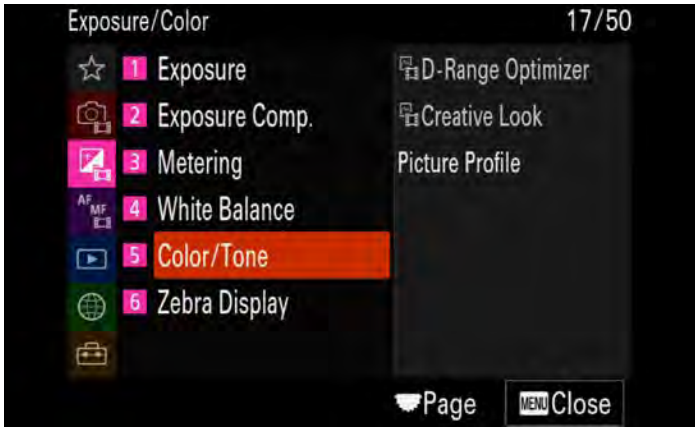


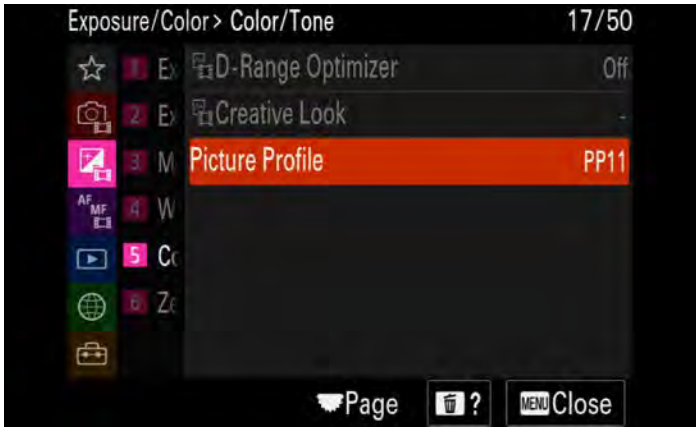
15, 16. Choose your frameline aspect ratios here. Hopefully a future firmware update will enable user-defined ones like the wonderful FX6 has.

FX3 Menus

17, 18. Metering Modes include Spot, Center, Entire Screen Avg, Highlight... also Multi (multi-pattern) that measures multiple areas within frame.

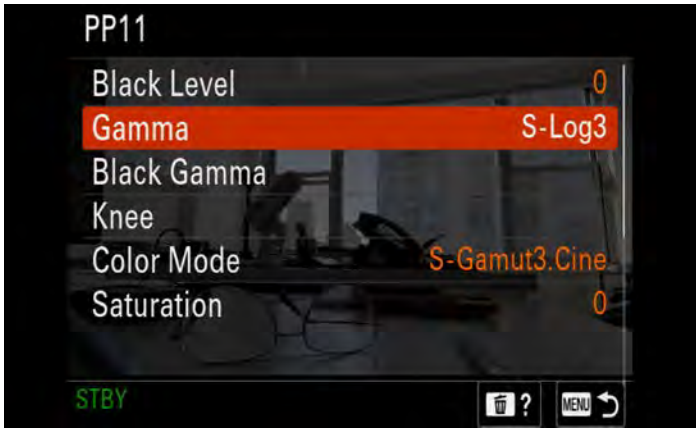
19, 20. White Balance. Many choices: Auto (AWB), Daylight,Shade, Cloudy, Tungsten, Fluorescent, Flash, Underwater Auto, Color Temp Direct Input.





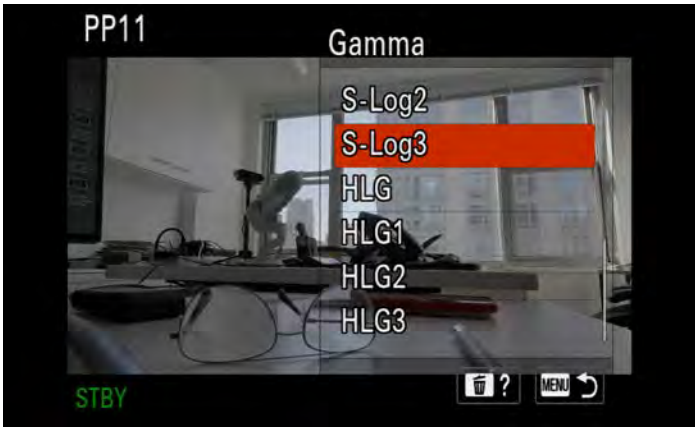
21. Color Tone is the gatekeeper menu for gamma and gamut settings.

22. Begin with Picture Profile. PP11 by default is S-Cinetone.

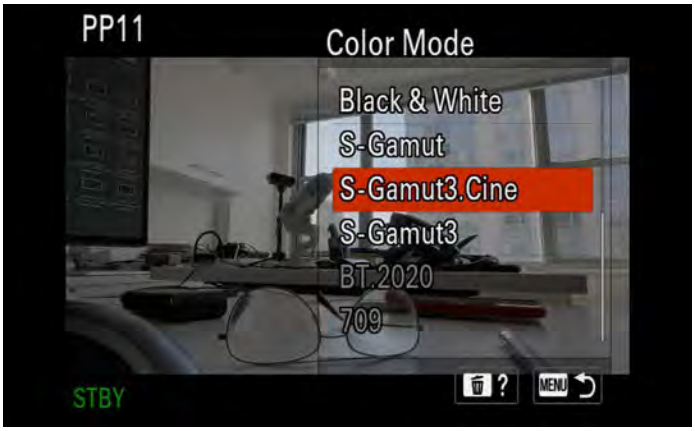


23, 24. PP8 by default is S-Log3, S-Gamut3.Cine. But you can assign PP1-PP11 any way you like. We have selected PP11 and now go to “Gamma.”

25. Scroll down the list of Gamma choices.

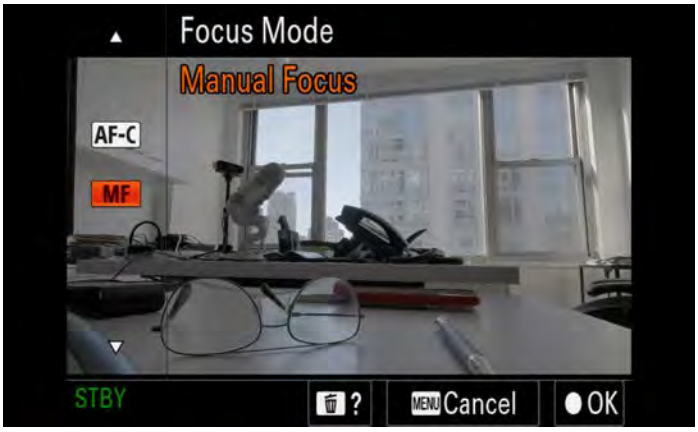


26. A bit further down the list, we have S-Log3. Pick that.

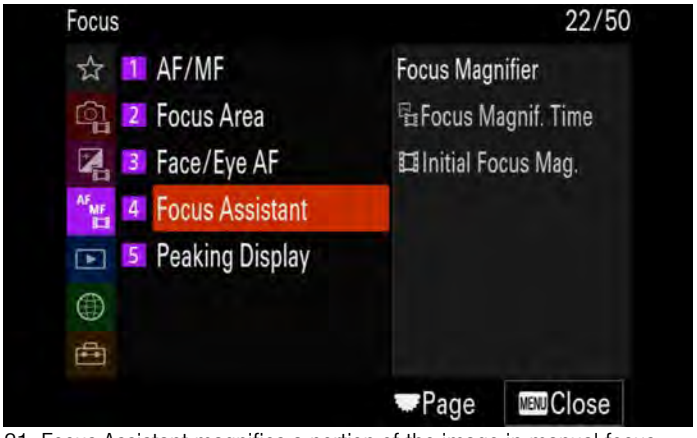


27. Now that Gamma is set, choose a Color Mode: S-Gamut3.Cine.

28. S-Cinetone is the usual default setting for Picture Profile PP11.



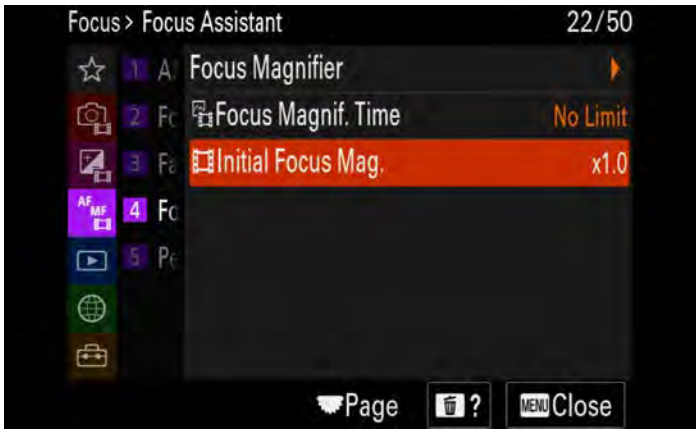
29, 30. AF/MF. Autofocus gets more sophisticated with each FX: point to focus, point and drag to follow, eye autofocus, etc with E-mount enabled lenses.



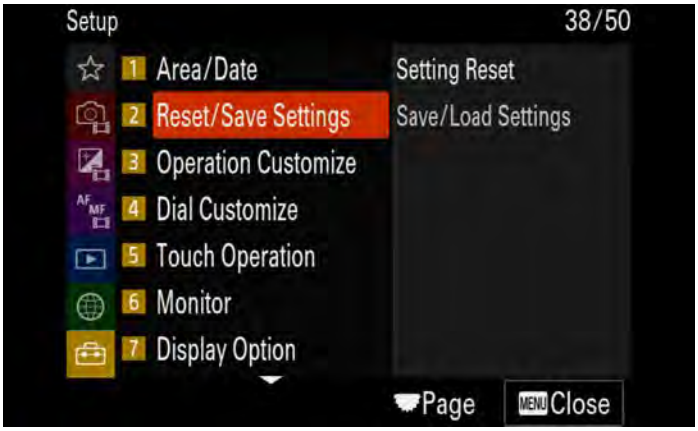
31. Focus Assistant magnifies a portion of the image in manual focus.

32. Select area to magnify in manual focus.

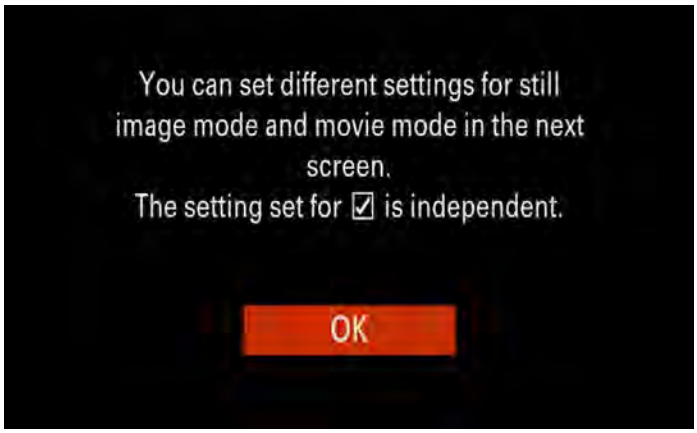
FX3 Menus



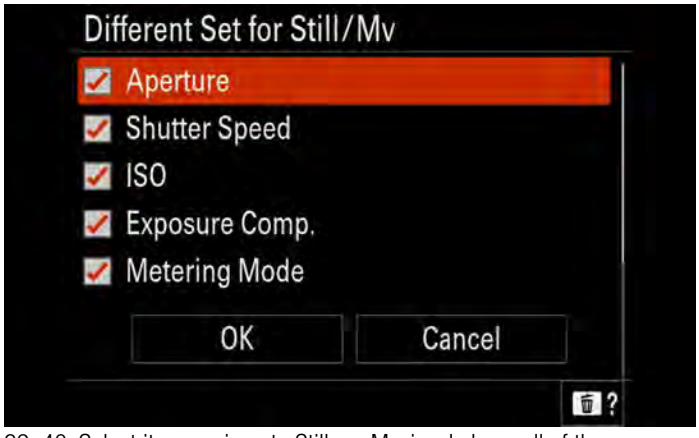
33, 34. Set initial focus magnification ratio. Magnification ratios are 1x and 4x. Focus Magnifer is assigned to FX3's button 5 by default.



35, 36. When all else fails, reset. Initialize resets to factory defaults, to the date/time prompt. Camera Settings Reset clears temporary custom choices.



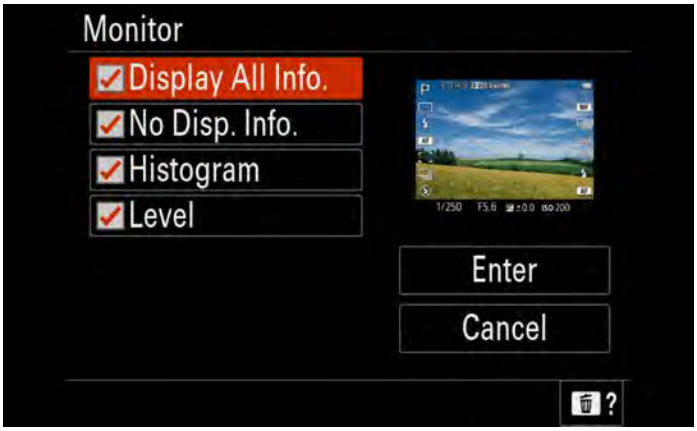
37, 38. Here you can say yet to having separate settings for stills and movies. Yes, you should choose to have different settings.



39, 40. Select items unique to Stills or Movies. I chose all of them.

52. Monitor display settings.

FX3 Menus



41. Choose what information to see on the monitor.

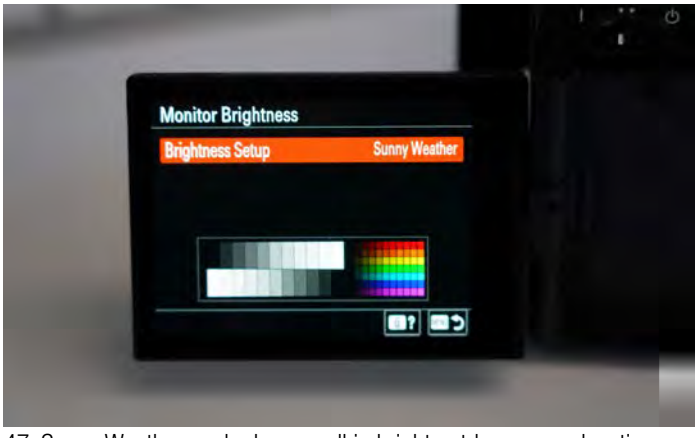
42. Record video with the shutter button: On or Off.

43. Assigning ISO to Control Wheel in back.

44. Touch operation enables touchscreen control.

45. Monitor settings for brightness and resolution.

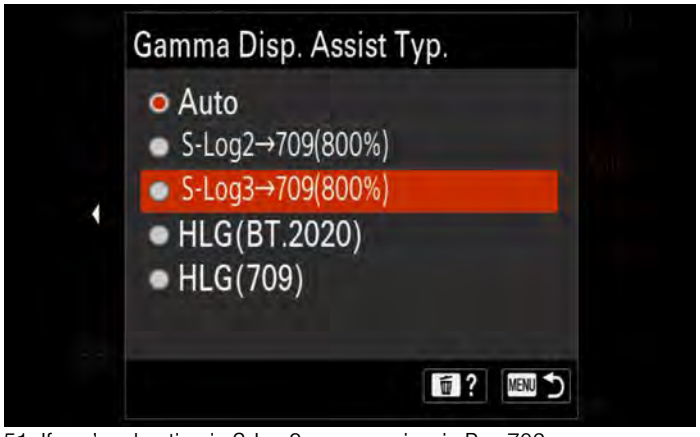
46. Monitor Brightness.



47. Sunny Weather worked very well in bright outdoor snowy location.

48. High quality display eats up more battery but is worth it.

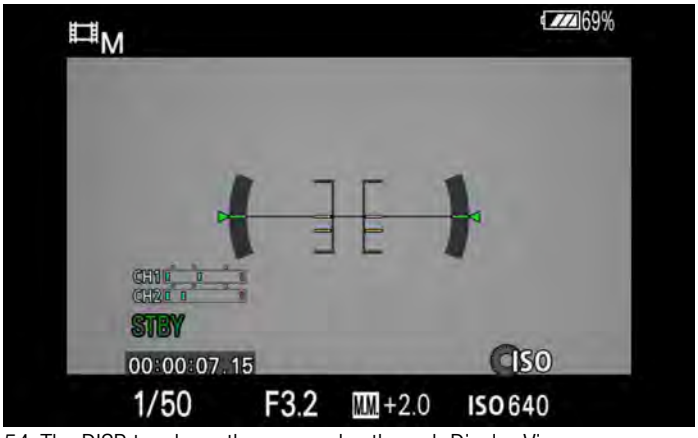
49, 50. Gamma Display settings are under Display Options. Select ON and then choose gamma type and look.



51. If you're shooting in S-Log3, you can view in Rec.709 on screen.

52. Display HLG as BT.2020.

53. Our choices are displayed on the monitor like this

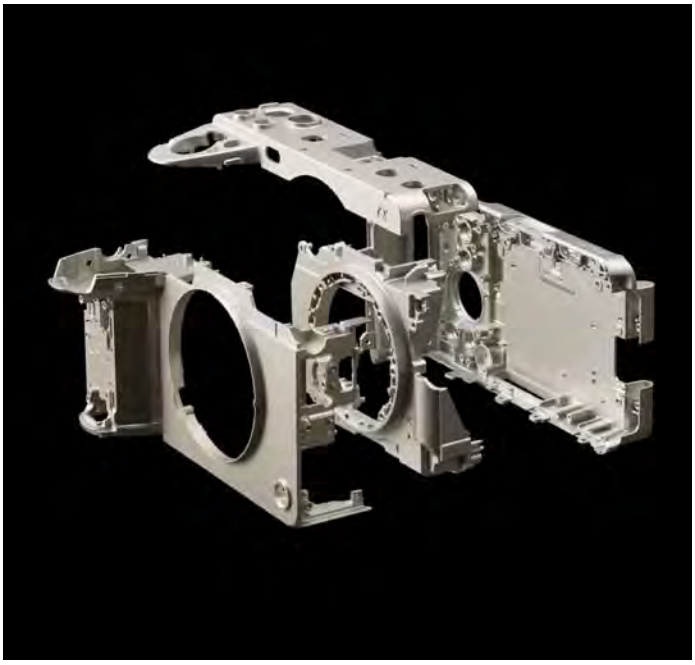


54. The DISP toggle on the rear cycles through Display Views.

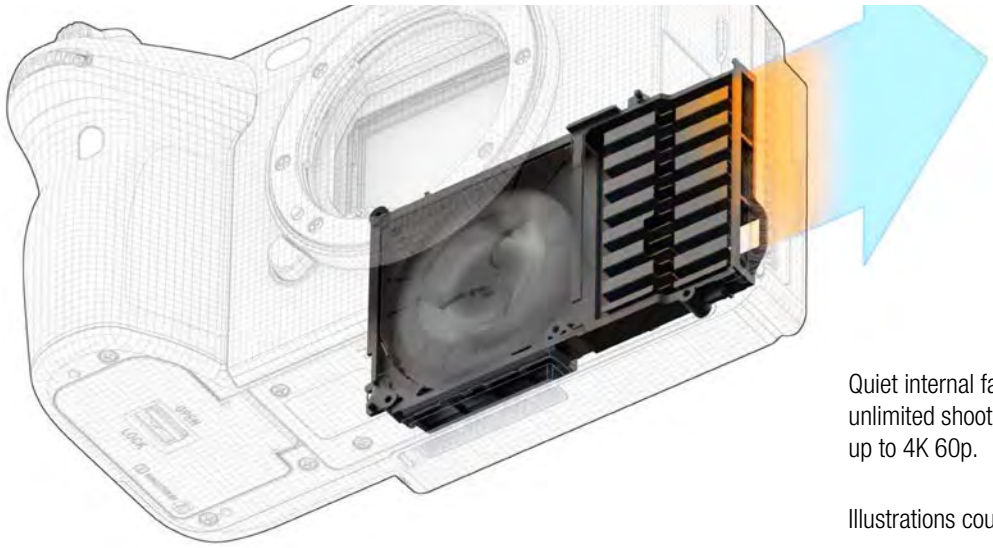
55. Shooting Display > Emphasized Record ON shows red frame.

56. Recording while viewing all parameters.

Weather sealing for dust and moisture resistance.



Magnesium body (lightweight and strong) with a reinforced stainless steel skeleton for secure mounting to 1/4-20 threads.



Quiet internal fan enables unlimited shooting time up to 4K 60p.

Illustrations courtesy of Sony.

FX3 S-Cinetone

FX3 footage will match its siblings in the Cinema Line.

S-Log3, S-Gamut3 and S-Gamut3.Cine provide post-production flexibility.

S-Cinetone, introduced with the FX9 and included on FX6 and FX3 (and now a7R III), is a profile for productions that prefer a finished look rather than the "camera negative" paradigm of, for example, S-Gamut3.Cine and then grading in post.

S-Cinetone is covered in Sony's Whitepaper (*tiny.cc/S-Cinetone).* It can be summarized as follows:

Consider S-Cinetone as a shortcut to completion that can possibly skip, or at least shorten, the process of grading. It is intended for productions with limited time and budget who want beautiful images "right out of the can."

Sony developed S-Cinetone to build on VENICE's color science and to provide pleasing, natural skin tones. The base curve of S-Cinetone is BT.709, but it has higher contrast in the low luminance levels and lower contrast in the high luminance levels. Highlight areas look smooth and details are retained. Low-light areas of the gamma curve have enhanced contrast and retain shadow detail. Objects look clear and rich. Black levels are lower than traditional video, but not clipped.

Sony Cinema Line Review: VENICE, FX9, FX6, FX3

Sony VENICE
shown with Angenieux Optimo Prime 32mm T1.8

VENICE has a 36.2 × 24.1mm 6042 × 4032 sensor. It can record 6K Full Frame or windowed 4K DCI Super35. High frame rates abound (for example, 4K 2.39:1 to 120 fps). As already mentioned, VENICE has an E-mount underneath its PL mount. VENICE body is $39,000. A nicely outfitted VENICE camera package, with OLED EVF, anamorphic upgrade, Full Frame upgrade and AXS-R7 external 4K recorder, costs around US $58,900.

Sony FX9
with Sony FE PZ 28-135mm f/4 G OSS Lens

Sony FX9 has a 35.7 × 18.8 mm, 6K Full Frame 6008 × 3168, 24 MP sensor. It records Full-Frame and windowed Super35 to 60 fps, both in 4K DCI 4096 × 2160. A 7-stop electronic variable ND filter works in auto or manual modes. Dual Base ISO 800/4000. Outputs: 4K 12G/6G-SDI and HDMI. Default S-Cinetone Look matches VENICE. User definable 3D LUTs. Record HDR in S-Log3 or HLG. FX9 runs around $10,999.

Sony FX6
with Sony F EC 16-35 T3.1 G
(SELC1635G) Cinema Lens

Sony FX6 has a 35.6 x 18.7 mm 4240 × 2236 10.2 MP sensor. It records Full Frame DCI 4K and windowed Super35 HD 1920 × 1080 in XAVC-I 4:2:2 10-bit DCI 4096 × 2160 up to 60 fps with about a 5% crop of Full Frame. Also XAVC-I 4:2:2 10-bit QFHD 3840 × 2160 up to 120 fps with about a 10% crop when output RAW or at 100/120 fps.

The FX6 has a base ISO sensitivity of 800 and a high sensitivity of 12,800. Like the a7S III, it can achieve an astonishing 409,600 ISO. With S-Log3 at ISO 640, the FX6 was tested to more than 15 stops of dynamic range. The FX6 is available now for US $5,998.

Sony FX3

Sony FX3 is the smallest and lightest Cinema Line camera so far. The Full Frame sensor measures 35.6 x 23.8 mm—with 10.2 MP for video and 12.1 MP for stills. It records Full Frame QFHD (UHD 4K) 3840 x 2160 up to 120 fps in 4K and 240 fps in HD. Recording modes include XAVC S-I 4:2:2 10-bit with data rates to 600 Mb/s. HDMI output offers 4K 4264 x 2408 16-bit up to 60 fps.

ISO ranges from 80-102,400 with a maximum of 409,600. S-Cinetone Picture Profile matches VENICE and the other Cinema Line cameras. Phase Detection Auto Focus with face and eye tracking. FX3 is US $3,898.

Steven Manios Sr. 1938-2021

Steven Manios Sr. 1938-2021.

Steve Manios Jr (left) and Steve Manios Sr (right) with early Optimo 28-76 at Cinec in Munich, Sept 2006.

Steven Manios Sr., industry legend, optical wizard and former owner and president of Century Precision Optics, passed away on January 3, 2021 from complications of COVID-19.

Steve's fifty-year career in Hollywood was the stuff of legends. He was part of an esteemed group referred to as Hollywood Royalty. Steve innovated and developed many lenses and optical devices. Among these were wide-angle lenses and adapters, swing-tilt and telephoto lenses, extenders, macro attachments and more. Most of these became essential ingredients of camera and lens packages on film and TV productions. If you think rehousing lenses for cine is new, Steve was doing it more than a half century ago. Fittingly, his company was Century Precision Optics.

Steve was awarded several U.S. patents. He earned the respect and friendship of many top cinematographers and rental houses. His work in adapting the Canon 150-600 still photography zoom lens for cinema applications resulted in Century Precision Optics receiving a Scientific and Technical Achievement Award from the Academy of Motion Picture Arts and Sciences in 1991. In 2016, Steve received the Society of Camera Operators' (SOC) Distinguished Service Lifetime Achievement Award.

In the second issue of FDTimes, published July 2005, I wrote: "Is there a lightweight, handheld zoom lens that makes it as easy to shoot documentary style in 35mm as in 16mm? Up to now, the choices were Century Optics/Canon 17-35mm T3 conversions, 16mm zooms with doublers, or Panavision's LWZ2 17.5-34mm T2.8. Lightweight, handheld 35mm zoom lenses are in the works by Angenieux/Manios Optical." That was the Optimo 15-40 T2.6, at 4.4 lb / 2 kg. The first working model was shown in November 2006. It was followed by the 28-76 T2.6, delivered about a year later.

These small, light, rugged and sharp lenses became de rigeur for handheld, Steadicam, remote-heads, rigs, car mounts and wherever size and weight of the zoom are critical. They were honored with a Sci-Tech Award on Feb 7, 2009. The Academy wrote, "With focus and zoom functions that can be easily controlled by either the operator or focus puller while filming handheld, these lightweight zoom lenses demonstrate a very high degree of engineering, supporting both ease of use and quick interchange." Steve Manios, Sr. was lauded for his original concept and vision getting these lenses off the ground.

Steve taught me so much. He was on top of the telephone speed dial. Steve was one of the original advisors in setting up and guiding Film and Digital Times when we launched in early 2005. Before that, I was a frequent customer of Century Precision Optics telephoto lenses. I think it was those long lens shots in *The Endless Summer* that helped inspire my career. I bought my first tele lenses from Steve when I was still in school. Later, my favorite was his Canon 150-600 cine modification. No trip to LA was without a visit to Steve at Century Optics, often accompanied by a delicious lunch at his favorite restaurant nearby. He will be missed.

His son, Steven Jr wrote the following: "Steven Manios Sr. was born September 4, 1938 in Athens, Greece. His family survived Greece's Great Famine of 1941-2, which took the lives of 300,000 people. At age 12, following his father's illness, he left school and began working. At 19, he moved to Los Angeles where he became an apprentice to Chris Condon, a family friend and owner of Century Photo Supplies. He started out sleeping on a cot in the back of the machine shop, but went onto become a skilled optical craftsman and, in 1973, bought the company from Condon.

"Over the following decades, Manios developed the company, renamed Century Precision Optics, into a major supplier of specialty optical equipment. The Tele-Athenar telephoto lenses were widely used in filming action sports and wildlife, including Bruce Brown's *The Endless Summer* (1966) and the TV series *Wild America* and *Hawaii Five-O*. The company created a custom relay system used in shooting model sequences for the first *Star Wars* movie. They also developed specialized lenses used by the U.S. military and NASA for testing and tracking, and by auto manufacturers in crash tests. Wide angle lenses were developed for underwater cinematography.

"Under Manios' leadership, Century Precision Optics continued to develop innovative products into the 1990s. Manios sold the company to Tinsley Laboratories in 1993 and remained on its board of directors until 1998.

"Around 2004 Steve Manios had an idea for a new high quality, wide angle, short zoom lens that he felt was needed for hand held and Steadicam work in the movies. He approached his friends

Denny Clairmont, Philippe Parain, Steve Manios Sr, Edith Bertrand and Dominique Rouchon (L-R) at Angenieux event in April 2008 at NAB.

Andrew Steele and Steve Manios Sr.

at Angénieux with his concept and funded the design and initial manufacture of what became widely popular Angenieux 15-40 T2.6 Optimo zoom lens. This lens then became the first in Angeniex's award winning Optimo and DP Series of zoom lenses.

"Steve Manios Sr is survived by his children Athena, Steven Jr. and Dina, and seven grandchildren."

Dominique Rouchon, Deputy Managing Director, Angénieux International Sales-Marketing & Communication, said about Steven Manios Sr, "The whole Angénieux team was so sad when we learned the bad news. For me, Steve was a dear friend and a mentor. He was an Angénieux intimate for many decades.

"When I joined Angénieux 33 years ago, his company called Century Precision Optics was the Angénieux cinema distributor in the US. He made the 25-250 HR lens a big success in Hollywood and contributed to the specifications of the famous Optimo 24-290, in collaboration with Denny Clairmont, another very dear friend whom we lost in 2020. Otto Nemenz was also part of the approach. Three legends of the industry with Angénieux for a legendary lens!

"Then in 2005, we joined our forces with Steve to propose the Optimo 15-40 lightweight lens to the market. He supported the project financially and commercially with his son Steven Jr. When you think about the success of the 25-250 HR that the young generation still uses as a vintage lens, the Optimo 24-290 which was manufactured for more than 17 years, and the Optimo 15-40 and 28-76, we can be proud of what Angénieux and Steve Manios achieved together during decades of collaboration. It shows the strength of friendship and partnerships in the cinema industry. Steve was the kind of person you expect to live forever, so it is a shock. He will be deep in our hearts forever."

Andrew Steele, Technical Managing Director of EMIT in Paris, wrote, "Steve Sr. was the first of the EMIT suppliers I ever met back in 1991. I had just left the Navy. I have always thought of Steve Sr. as my Mentor and Friend. He taught, explained and encouraged me during my early days when he was Century and continued to do so throughout my career."

Elisabetta Cartoni wrote:

In April 1982, after NAB, my Dad, Guido Cartoni and I were in Los Angeles. An Italian rental house was looking for a Century Precision Optics Periscope. Our dear friend Ed Di Giulio drove us to Burbank Boulevard in North Hollywood and introduced us to Steve Manios Sr. It was an immediate click, after 2 minutes the 3 men—Ed, Guido and Steve—were immersed in a technical conversation. I was witnessing one of those rare moments when quality brains get together and start imagining and creating. What a treat!

Since that day, Steve became a dear friend. The Manios Family adopted the Cartoni family with the most easygoing and warm welcome. "Una faccia, una razza!" Steve used to say, hugging me as a younger sister.

I have lost my friend Steve and I am heartbroken. We've had almost 40 years of sincere warm friendship, wonderful partnership, great talks, great barbecues and dozens of NAB shows in Las Vegas. Dear Steve, you've left us in a state of emptiness but you will always be in our hearts.

Century Precision Optics Swing Shift System for Clairmont Camera.

Century Precision Optics Series 2000 telephoto lenses.

Jeff Cree 1951 – 2021

Jeffrey Allen Cree passed away on January 13, 2021 at home in Santa Clarita, California. He was born December 10, 1951 in Modesto, California, the youngest of three children. Jeff's sister Kathy Wyman recalls, "Life in Modesto was like the George Lucas film *American Grafitti*. Of course, George Lucas lived in Modesto as well. But we didn't drag race. We weren't allowed."

Instead, Jeff put together a ham radio station in a room attached to the garage. As a student, he also helped set up KDHS radio station at Downey High School in 1967. Jeff attended Junior College in Modesto, and then a technical school in Arizona. He got an FCC radio license. Returning to California, he began his first job at KGO, an ABC owned and operated TV station in San Francisco.

Jeff's good friend and colleague George Lang remembers, "A lot of people owe their careers to Jeff. I first met Jeff in 1971; I was a freelance NABET stage manager on news shows and was a vacation relief director. Working really hard and waiting for the show to start one afternoon, I sat down in a makeup chair and fell asleep. All of a sudden from behind, I heard, 'Hey princess, it's time to do the news.' That was Jeff and he saved my job. That's how we became friends. Jeff advanced to work as a main engineer at KGO. He was always brilliant."

Next, Jeff traveled the world as an ABC news cameraman. His exploits became legendary and as George Lang says, "Almost all of them are true."

Jeff joined Sony in San Jose, California and then moved with the Sony team to New Jersey. George Lang continued, "Jeff was a God to all these early digital cinema productions. Whenever someone was doing something cutting edge or brand new, they went to Jeff. He was teaching Al Giddings, Francis Ford Coppola, George Lucas, James Cameron, Vince Pace, and was on a first name basis with them all."

Jeff's next excellent adventure began at Band Pro Film & Digital in 2002. Being on the road so often was certainly a strain on family life and Jeff's three previous marriages. But, as Band Pro's Chief Technology Officer, he was supposed to settle down in one place– that is, except for numerous trade shows and continued travel.

George Lang explained, "Sony was happy about Jeff's joining Band Pro. He worked with them on developing new cameras and traveled frequently to meet with Sony engineers at headquarters in Japan. Everything about Band Pro and Jeff were revolutionary at the time: cutting edge and creative. They were among the first to embrace digital cinema and developed Digi Primes and Digi Zooms with ZEISS. Jeff was not shy about his accomplishments. You could pick up phone anytime and he would be there to help."

Amnon Band said, "I would have not been where I am today, Band Pro would have not been here either without Jeff. He changed us forever. Jeff had the organizational skills and tools for any situation. He was a legend and a good friend."

In 2008, Jeff met Janet Quibuyen. They married in 2012 and lived happily together in a large, new house in the Los Angeles suburbs. Janet said, "Jeff lived nine lives, each one to the fullest." Jeff's last words were in her arms while they were talking.

Jeff was an SOC member – Society of Camera Operators. He was a friend and was always there with technical help on anything you wanted to know. He was also the invaluable person at every trade show we attended together and was always there to lend a ladder or give advice. Jeff wrote interesting articles for FDTimes. And I will never forget Jeff and Amnon Band carrying bottles of Veuve Cliquot to the 10th anniversary of FDTimes in Tokyo.

Cindy Boyatt, Jeff's niece (Kathy's daughter) said, "Jeff was a great uncle. When he came home to visit us from his frequent trips, he would regale us with stories about his adventures. He would bring us souvenirs and take us to Disney Land and he had press passes. He rode with us on roller coasters. He had an adventurous spirit; he was a kid at heart and loved to play with the cousins, nieces and nephews. He was such a good person when you could get some time because he traveled so much. I couldn't have imagined living a life with such adventures and that's all anyone could want or hope for."

Kathy Wyman concluded, "We are so proud of him and to hear from many of the people he talked about. We always wondered whether he was embellishing all these names and stories and whether these things really happened. It has been gratifying to find out they did and to learn what all his friends and colleagues wrote and said."

Jeff Cree (at left) on location in Tahiti.

Jeff Cree remembered by Vince Pace, ASC

CERTIFICATE

It's certified that Jeff Cree made 4 dives in the "MIR"-1 submersible on the slope of Bermuda Island on the dates 17-18/7, 28-31/7, 1991 for preparation the equipment for filming the "TITANIC" wreck and made valuable contribution to movie and video production, and to the development of original underwater technique and operation

July 1991

captain A.M Koroboy

Head of expedition A.M. Sagalevitch

Above: Certification of Jeff Cree's four dives in the MIR-1 Submersible.

At left, Vince Pace is sitting on the deck, third to the right of the life preserver. Jeff Cree, with mustache and SonyT-shirt, is directly behind him.

by Vince Pace, ASC

Digital Cinema would still be in its embryonic stage today if Jeff Cree had not come along to champion its value to cinematographers around the world. Jeff was the one who could tweak the analog pots in a digital camera to give Al Giddings and many others the look they were after. Sony was smart to embed the ability to tweak the camera through menus and the Sante Fe workshops were born.

I will never forget Jeff providing me a chance to understand the menus from the master himself. We were in a large suite high above Los Angeles. He had a refrigerator sized case with a UniHi recorder and a wave form monitor hooked up to 1-inch chip HD camera. Jeff had the camera pointed out the window to the LA skyline. The enormous monitor image was stunning. After giving me his version of the spec sheet on the product and allowing me to compose several different shots that he tweaked to perfection, Jeff turned off the monitor and had me set up a shot. He walked me through the waveform monitor step by step to tweak the picture based on its electronic signature. He then turned on the monitor which displayed a cinematically crafted image. Jeff said, "Go ahead Vince, and try it yourself". We did that exercise for hours.

Jeff was one of the first to demonstrate a digital paintbrush for every cinematographer interested in learning the new technology. I was one of those fortunate to be schooled by Jeff, but even more fortunate to call him one of my friends. I bunked with him on Russian research vessels, hostels in Costa Rica, and many a boat in international waters that were questionably seaworthy.

Jeff always had this commitment to get the shot and make it special. For that, I am eternally grateful and lucky. It gave me the confidence to make it happen. I hope someday there will be an awards category in Cinematography that recognizes the digital pioneers and Jeff Cree's name deserves to be at the top of the list. I know Magic Hour will that much more interesting now that Jeff is at the controls in heaven.

I, more than most, was influenced by Jeff's talents. Underwater was a category where cinematographers were looking for longer loads and more control over their image in remote locations. I was fortunate that the benefits of digital imaging were not simply in the area of "the look;" it was more broad in the sense of instant gratification on location and longer times spent underwater. It was a small group of us back then: Al Giddings, Blue Planet's adoption of HD and the ability to train several 16mm underwater cinematographers in this new medium, to working with James Cameron who wanted to get a taste of 24p. I was very fortunate that Jeff Cree gave me a seat at the table which eventually became a new path for cinematographers.

We developed the Pacetech office in Burbank and Cameron bought half the company and made it Cameron Pace. We had a pretty good operation going. We were almost across the street from Band Pro.

The photo above was an expedition for a CBS show called *Titanic: Treasure of the Deep*. The Soviet Union would end six months later as the Russian State was born. When we screened the show in Burbank, Al Giddings invited James Cameron to come. Cameron was impressed with the footage and soon after we were headed back out again for the film.

The opening of *Titanic: Treasure of the Deep* was done by Walter Cronkite. He introduced himself to everyone on the crew and shook our hands. I'll never forget the voice: "In the summer of 1991....." After the third take he looked up at us and said, "Gentlemen, this will be my last take since my voice is going....let's make it a good one." After that take he shook all of our hands, said thanks, and left. He was a class act, as was Jeff Cree.

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CAMERAS BY OTTO NEMENZ
transvideo
IB OPTICS

Co-Producers

TERADEK RT
AATON DIGITAL
ORCA
P+S TECHNIK
THE STUDIO B&H
sachtler
Manfrotto Imagine More
Mole-Richardson Co.
matthews studio equipment

Associate Producers, Rental Houses, Media and Production Partners on previous page