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American Cinematographer

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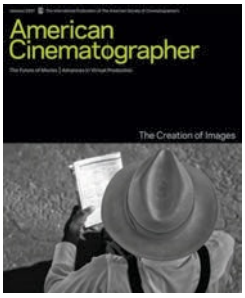

On Our Cover:
A photo taken by John Simmons, ASC at the Santa Anita racetrack in 2019, shot with a Sony a7R III and a 50mm Leica lens. (See page 34 for Simmons' article on the need for inclusive hiring practices.)

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Features

Departments

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We launch into 2021 with an expanded online education initiative and discussion series.

Society's Education Program Goes Online

The ASC Online Master Class made its debut in 2020, allowing students worldwide to participate in a virtual version of the Society's signature education program, featuring recorded demonstractions and live, interactive discussions. Instructors in the first three sessions included ASC members Larry Fong, Jacek Laskus, Charlie Lieberman, Erik Messerschmidt, M. David Mullen, Phedon Papamichael, Roberto Schaefer and Lawrence Sher. We'll soon be bringing video content from these classes to theasc.com via a new subscription offer. You'll find all updates regarding our 2021 sessions at **theasc.com/asc/education/master-class**

All-New Clubhouse Conversations

Our online discussion series — featuring ASC members interviewing other leading cinematographers about their current projects — has relaunched for the new year. Participating interviewers and subjects have included Society members Martin Ahlgren, Gonzalo Amat, Gary Baum, Paul Cameron, Jeff Cronenweth, Steven Fierberg, Grieg Fraser, Adriano Goldman, Shelly Johnson, Kira Kelly, Charlie Lieberman, Stephen Lighthill, Patti Lee, Karl-Walter Lindenlaub, Erik Messerschmidt, Donald A. Morgan, Polly Morgan, M. David Mullen, James Neihouse, Rodrigo Prieto, Alik Sakharov, Armando Salas, Aaron Schneider, Steven V. Silver, Lawrence Sher, John Simmons, Eric Steelberg, Checco Varese, Amy Vincent and Colin Watkinson. Every new episode, as well as our entire 2020 program, can be watched at **ascmag.com/videos/clubhouse-conversations**

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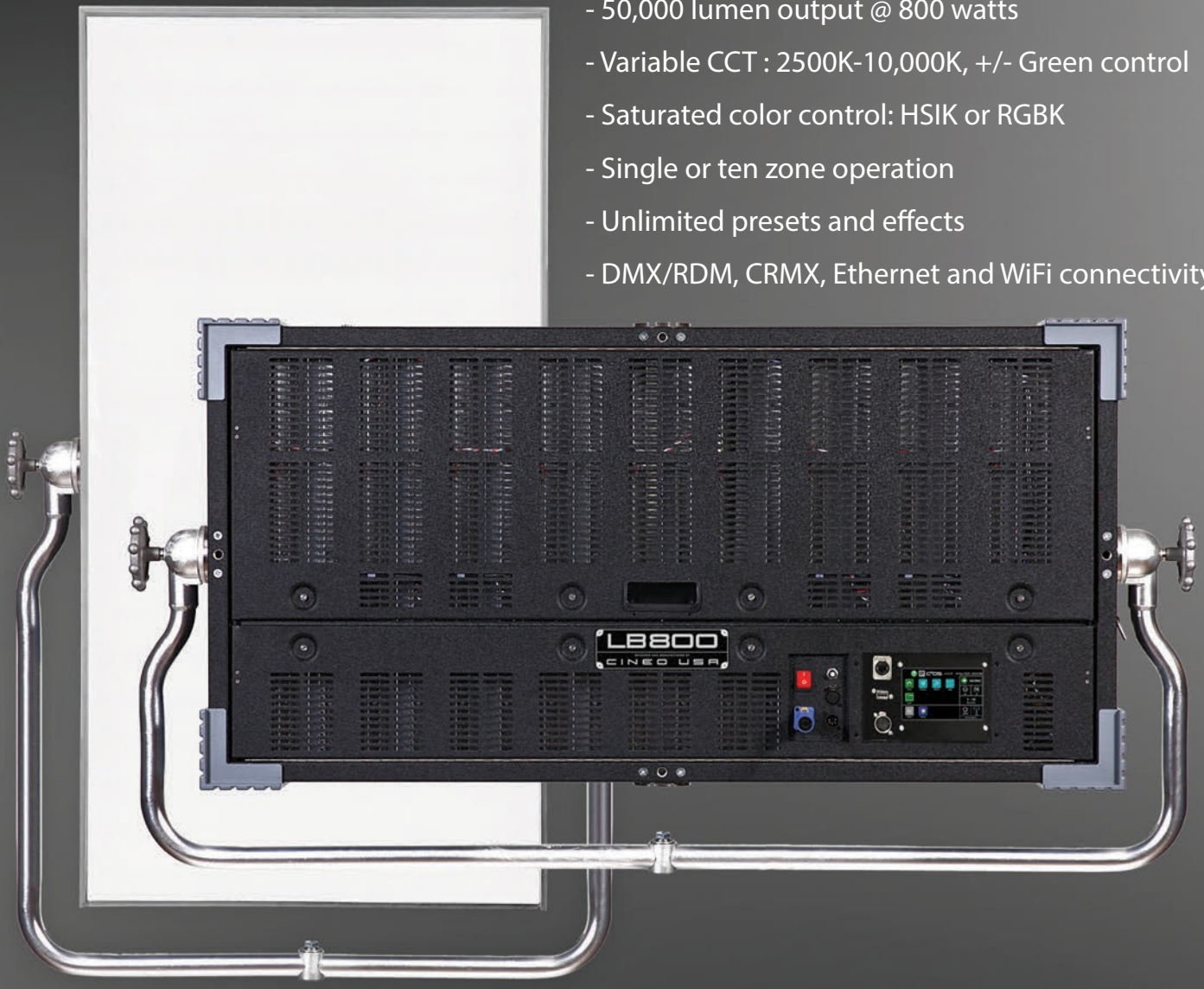

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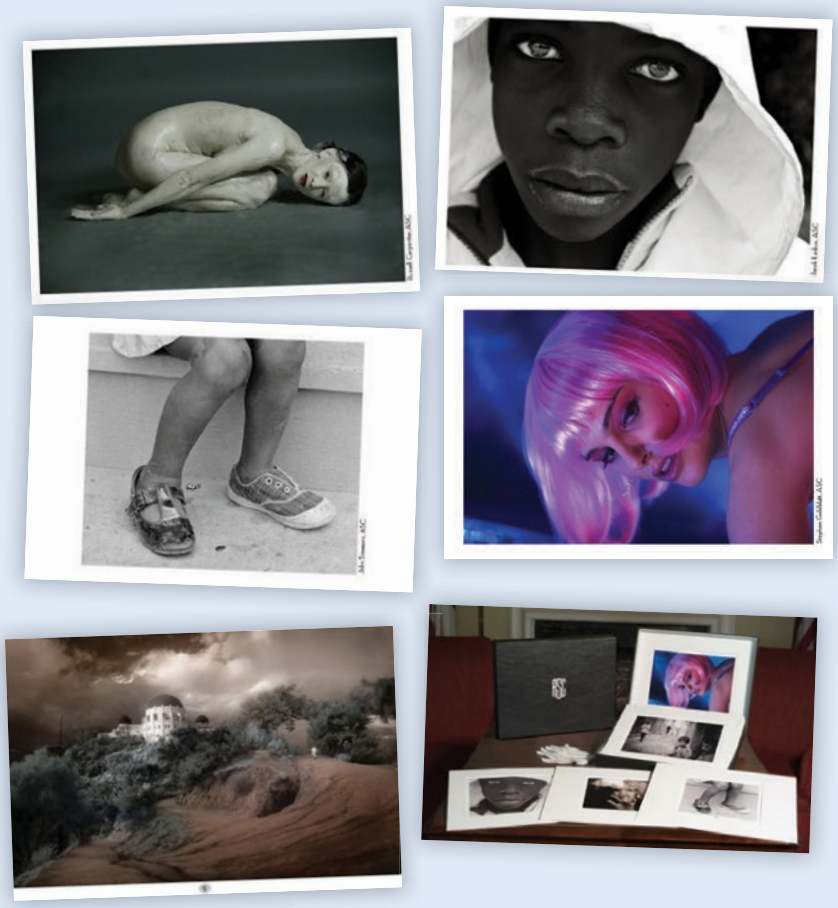

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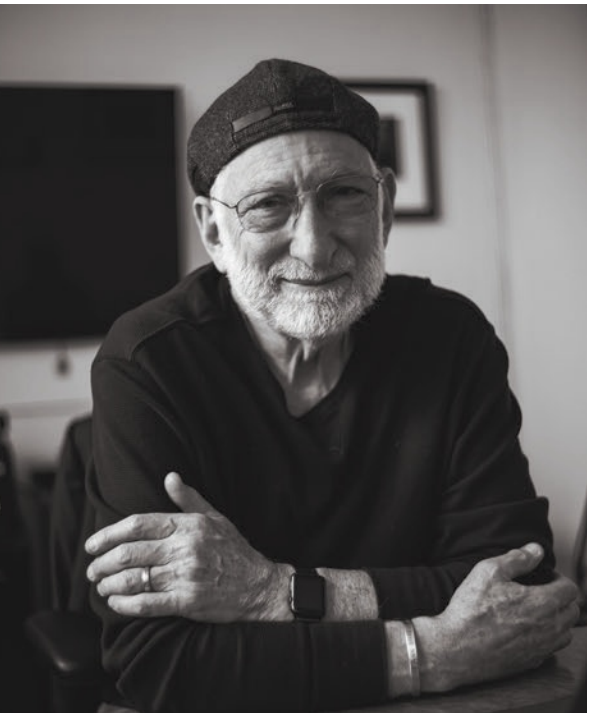

PHOTO BY MICHAEL M. PESSAH, ASC.

WITH THIS ISSUE OF *AMERICAN CINEMATOGRAPHER*, as we begin the one hundred and first year of the magazine, we rededicate ourselves to the soul of cinematography: the creation of image.

We celebrate with an image on the cover made by one of our own, Johnny Simmons, ASC. An image of wonder and curiosity of a single moment. Like all great images, it is both explicit and implicit at once.

At this moment, January 2021, remember that the story, and storytelling itself, began first as image-making with crude scratches on rock walls, and evolved to verbal stories often told around campfires. Our modern campfire is the movie theater. We are fearful that one of the casualties of 2020 — when so many of our leaders failed to respond — could be our movie theaters. We hope not. Much will change as a result of 2020. Some things will disappear, others will return modified by lessons learned during these past months: different, but better.

At this moment of our new-look magazine, we will try to talk less and give you more to look at; instead of many words, we have chosen the W. Eugene Smith picture "The Walk to Paradise Garden" to illustrate this column and our moment together. I will let Mr. Smith speak of *his* moment, while recovering from severe wounds as a combat photographer, when he took this picture:

"While I followed my children into the undergrowth and the group of taller trees — how they were delighted at every little discovery! — and observed them, I suddenly realized that at this moment, in spite of everything, in spite of all the wars and all I had gone through that day, I wanted to sing a sonnet to life and to the courage to go on living it…".

"'The Walk to Paradise Garden' is an image of hope, emerging from darkness…"

The "Garden" picture became the closing image in the Family of Man exhibit at MoMA in 1955. It is an image of hope, emerging from darkness, from a photographer who had seen much darkness. His message, repeated so often in this current year: We are in this TOGETHER. As cinematographers, committed to learning, to teaching, to making images that do bring us together around the campfire, we should now sing a song to life, have the courage to face our changed world and make great images of the family of man in our time.

Stephen Lighthill
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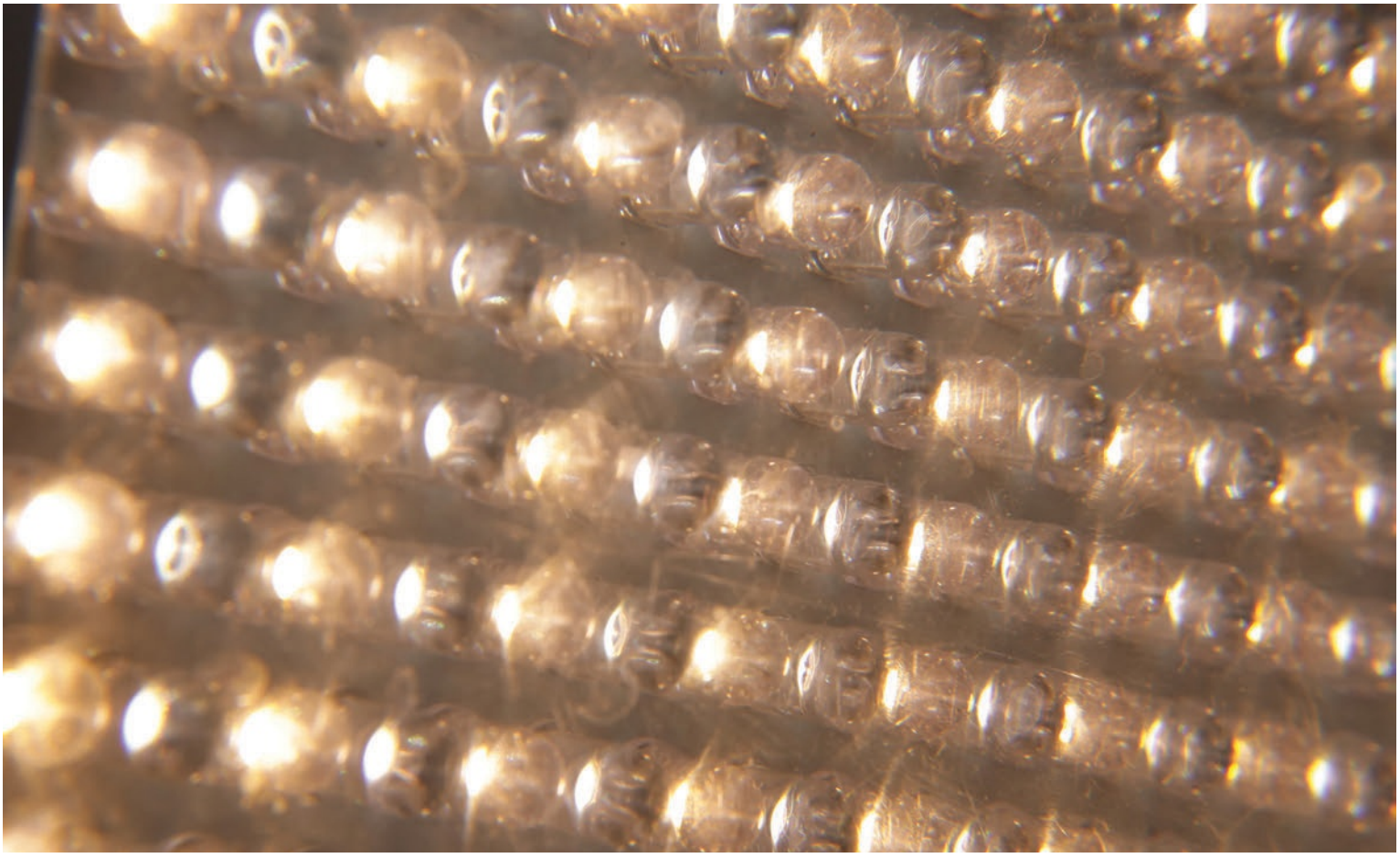
Shot Craft
by Jay Holben

LEDs: The History, Concepts and Tech Behind the Future of Lighting



The traditional "dome"-shaped diodes of a bi-color fixture, featuring both daylight (appearing clear/white) and tungsten (yellow).

As LEDs are now essentially everywhere across the filmmaking landscape, it's a good idea to have a grounding in the history and science behind them, so when challenges arise or problems crop up, you'll be armed with the whys as well as the hows.

Central Concepts

To get a better handle on potential issues when using LED fixtures, it's important to understand the concepts of color spectrum, color gamut, the Planckian black-body curve, correlated color temperature, and the various methodologies by which LEDs generate colored light.

What Is Color Temperature?

We should start with an understanding of what "color temperature" actually means. With a natural incandescent light source — such as the sun, fire or a traditional tungsten filament — the light contains a smooth combination of all the colors of the rainbow (red, orange, yellow, green, blue and violet). Sir Isaac Newton demonstrated this when he passed natural sunlight through a prism and separated it into its spectral components. This conclusion dovetails into the work of British scientist Lord William Thompson, 1st Baron Kelvin, who developed the Kelvin scale, which starts at absolute zero (-273.15° C), the point at which all molecular activity stops (which has thus far been proven mathematically impossible for any material to actually achieve).

Later, German physicist Gustav Kirchhoff introduced the idea of the perfect "black-body radiator," which is a theoretical material that neither reflects nor refracts light. As you slowly apply heat to this radiator, it would start to glow — first red, then orange, yellow, white and blue. This combination of the light-spectrum and Kelvin-scale concepts started the early formation of the idea of color temperature:

relating the color wavelengths of full-spectrum light to the physical temperature of a black-body radiator on the Kelvin temperature scale.

Around the turn of the century, the work of another German physicist, Max Karl Ernst Ludwig Planck, took this combination of concepts even further and defined what would become known as the Planckian locus (or curve), which connects the concepts of the Kelvin scale, the black-body radiator and the color gamut of human vision. Through the work of these three men, we have what we now know as the color temperature (or Kelvin color temperature) scale.

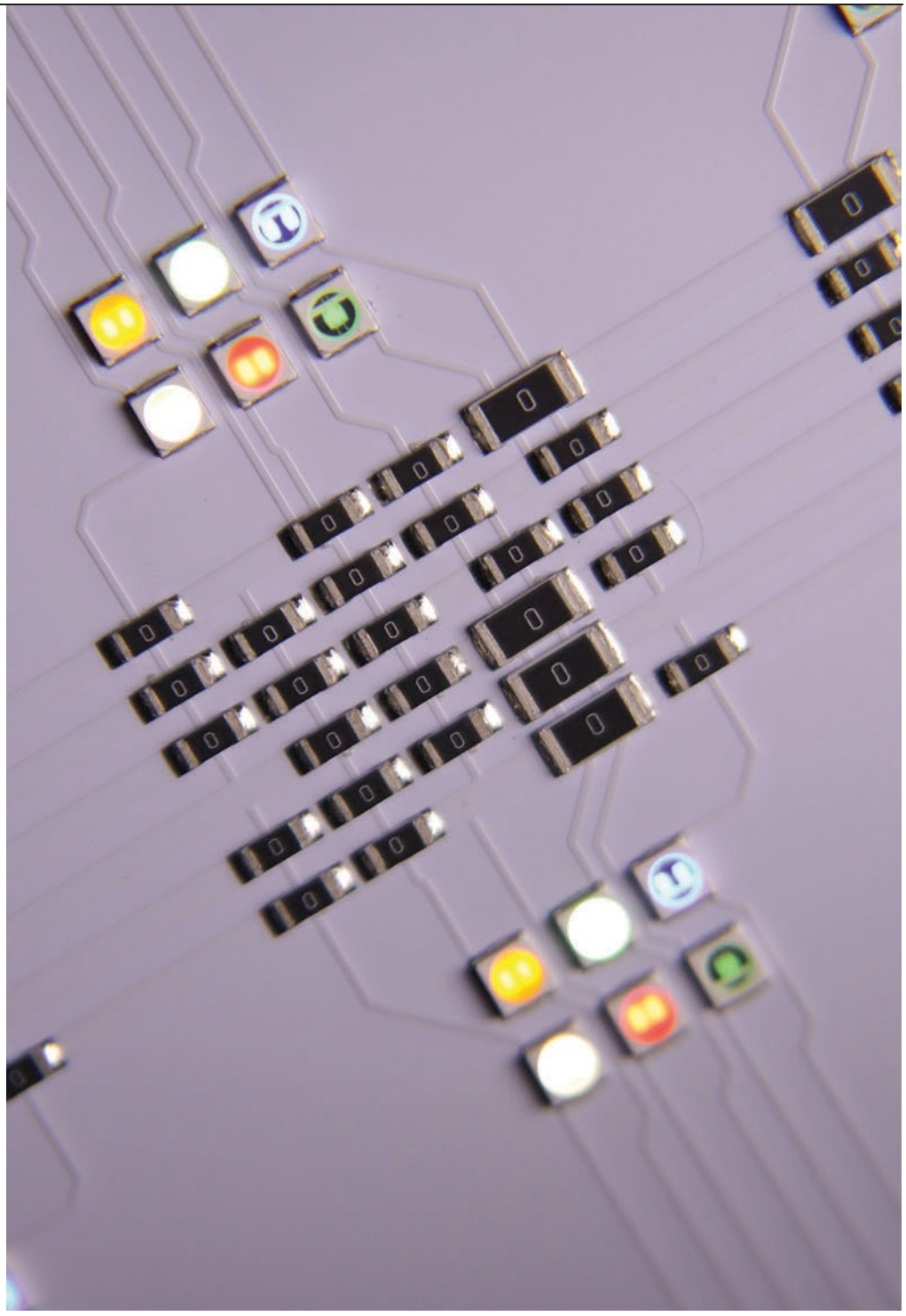
The Kelvin scale, as we'll call it for our purposes, runs from zero to about 20,000K. A tungsten incandescent filament burns at around 3,200K on this scale (in the orange-red area), and natural sunlight combined with ambient skylight is around 6,500K (in the blue area).

From the advent of color film to today, it has been crucial that a specific "white point" be defined when capturing a photographic image. While the human eye and brain are incredibly flexible when it comes to interpreting colors, and can see a wide variety of light as "white" or "natural," film and digital sensors are not as flexible and need to have a defined target of "white" to render the colors of the world as our eye sees them. Hence, we landed long ago on those two numbers — tungsten at 3,200K and daylight at 6,500K (the latter sometimes set at 5,500 or 5,600K, depending on whom you're talking to).

CIE 1931

To define the full range of colors that are visible to the human eye, we turn to the CIE 1931 XYZ color space, the product of several years of testing and study by the International Commission on Illumination (a French organization also known as the *Commission Internationale de l'éclairage,* or CIE), published in 1931. This is a graphical representation of the visible portion of the electromagnetic spectrum, aka "light," which exists from about 400 nanometers to 700 nanometers — the range of wavelengths (or colors) of light that can be perceived by the human eye.

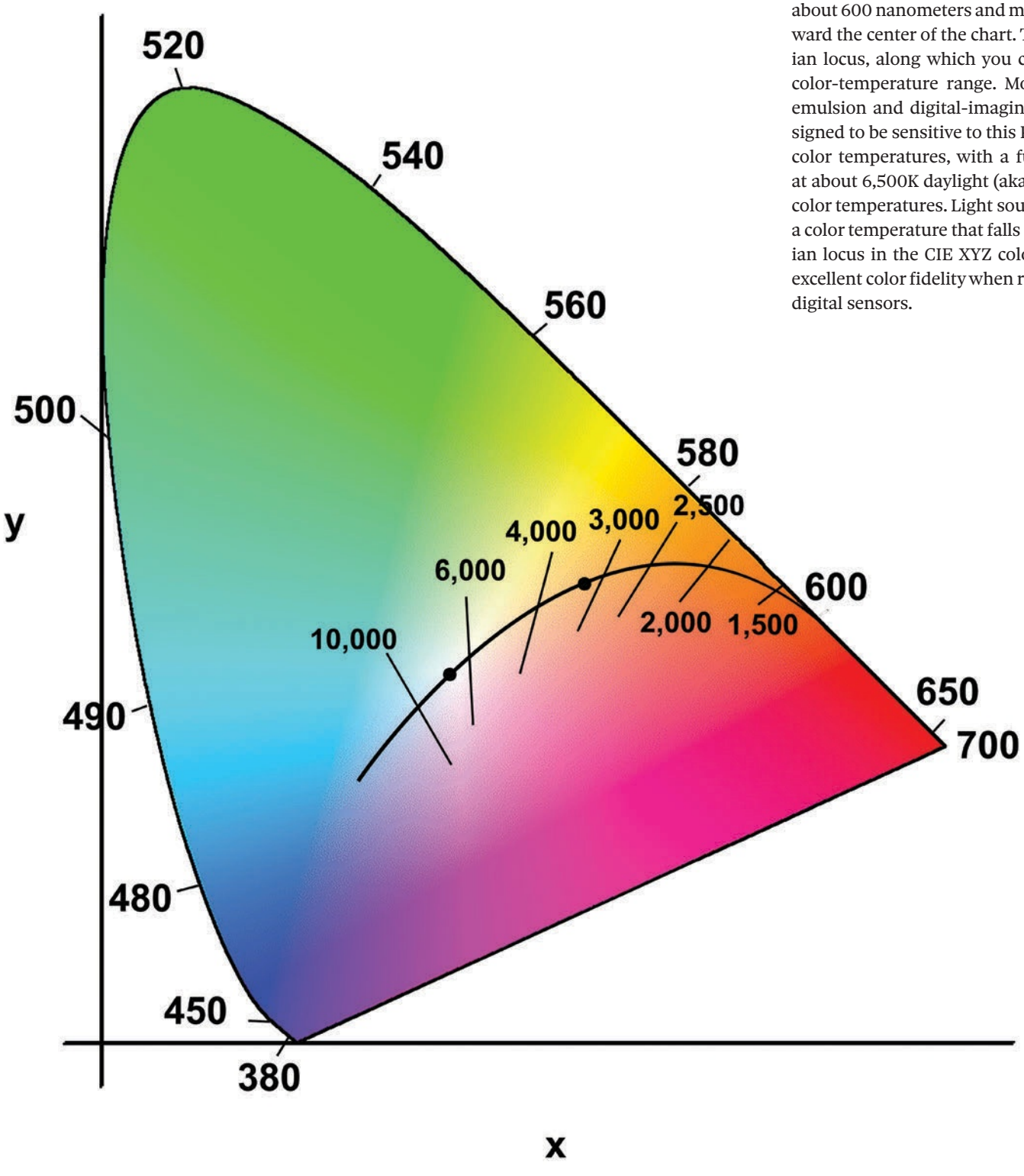
This semi-ellipse-shaped representation starts with deep violet in the bottom left and runs through all the colors of the rainbow on the outer edge (blue, green, yellow, orange) to finally hit red in the lower-right-hand side. A significantly large portion of the top of the semi-ellipse is made up of green wavelengths, since that is what the human eye is



Modern saturated color diodes — red, lime green, blue, amber and white.

One of the extraordinary benefits of LEDs is the ability to achieve multiple colors in one fixture.

CIE-XYZ 1931 color gamut diagram illustrates Kelvin temperature (outer edge), Planckian curve (lower third) and correlated color temperatures (lines across curve).



most sensitive to. Toward the center, the colors merge to create secondary colors. The lower third is the point where all the colors mix additively into white light.

Tying It All Together

Along this lower-third portion of the CIE graph, starting from the far-left side, we can find the plot of a specific curve of colors starting at about 600 nanometers and moving in an arc toward the center of the chart. This is the Planckian locus, along which you can see the Kelvin color-temperature range. Motion-picture film emulsion and digital-imaging sensors are designed to be sensitive to this Planckian curve of color temperatures, with a fundamental basis at about 6,500K daylight (aka "D65") or 3,200K color temperatures. Light sources that generate a color temperature that falls along this Planckian locus in the CIE XYZ color space will have excellent color fidelity when recorded by film or digital sensors.

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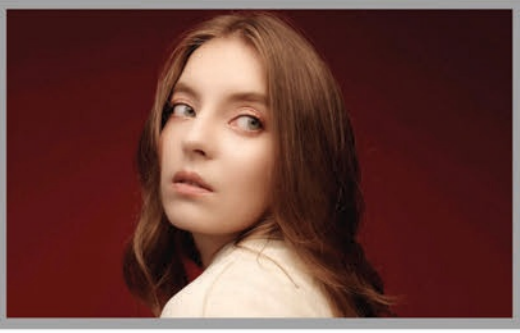

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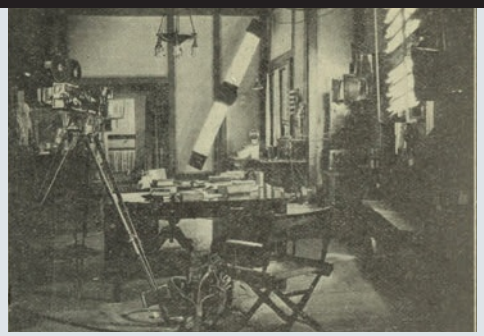
A Bit of History



While early, extremely slow orthochromatic film stocks required the intensity of natural daylight to create an exposure, the need for flexibility and variety — and, of course, the option to shoot at night — led to the speedy introduction of artificial sources. It began around 1900 with mercury-vapor tube lamps from Cooper Hewitt, a technology that was used in street lighting at the time. Carbon-arc flood lamps entered the ring toward the end of the first decade of the 1900s, but by the 1920s, panchromatic film and sound recording necessitated an end to the green-blue mercury vapor fixtures and noisy carbon-arc sources in favor of tungsten illumination — or "Mazda lights," as they were called by General Electric. These had been in use in the real world since about 1909, but it wasn't until the early to mid-1920s that they were adopted for use in motion pictures.

In 1934, Mole-Richardson introduced the Fresnel lens to incandescent sources. Simultaneous to this development, carbon-arc sources were retooled for better color rendering on color film, but they were mostly phased out in the 1950s. Also in the 1930s, fluorescent lighting came into vogue for industrial applications. By the early 1950s, fluorescent technology was being used in television studios, but was phased out with the rise in color photography.

From the *AC* Archive: A look at Hewitt-Cooper mercury tubes in use in a studio in 1922 (left), plus vintage lighting ads from 1937 (top middle), 1932 (right) and 1991 (bottom).

The need for flexibility and variety led to the introduction of artificial lighting sources.

During the 1960s, Osram introduced hydrargyrum medium-arc iodide (HMI) sources into filmmaking, which were slow to come to the U.S. because the conversion from 50Hz to 60Hz took some time. Fluorescent lighting made a comeback in the 1980s and '90s, pioneered in no small part by gaffer Frieder Hochheim, who later founded Kino Flo and became an ASC associate.

Though the industry had brief flirtations with plasma lighting in the 1990s and 2000s, it's the evolution of LED technology that's leading the way into the future.

At each of these technological milestones, the American Society of Cinematographers was there to investigate the viability and efficiency of these new lighting sources. Each of these new tools also spurred intense discussion and examination by the Society to facilitate their integration into film production.

As *AC* subscribers now have digital access to all 100 years of the magazine's coverage, you can dive in whenever you like!

Types of LEDs: The Big Three

Bi-Color Emitters

One of the extraordinary benefits of LEDs is the ability to achieve multiple colors in one fixture. Instead of having to swap between tungsten and HMIs or change out tubes in a fluorescent fixture, a single LED can produce both daylight and tungsten colors. The bi-color units are also purported to be able to — through a mix of the two colors — re-create any Kelvin temperature between 3,200K and 6,500K.

But not quite. As noted above, the Planckian locus is a *curve*. If we have two colors of diodes in a fixture, then we can create two points in the CIE color space (each has its own X/Y coordinates), but as we blend between them at various intensities, we can only travel on a *straight line* of colors between the two. This means that as the two blend toward the middle of their respective color temperatures, they get further away from the locus and, hence, shift more toward magenta and away from the color fidelity of being on the locus. Correcting this, in most cases, requires adding gel, either plus or minus green, to shift the color back onto the curve. (See "Problem and Time-Tested Solution," page 20.)

RGB Emitters

A step beyond a bi-color unit is the RGB LED fixture, a single unit that works on the additive color system and simulates the full range of the visible spectrum through the combination of red, green and blue light. (See Shot Craft in *AC* Jan. '20).

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Problem and Time-Tested Solution

A full-spectrum source (such as natural light, firelight, tungsten filament) has a consistent combination of all colors of the rainbow. In contrast, simulated sources — such as LEDs, fluorescents and HMIs, which produce "correlated color temperatures" ("CCTs") — often don't have a smooth spectrum, but rather spikes of colors that combine to create a simulation of full-spectrum light. The trouble arises when you are photographing an object whose color falls in an area where the spectrum is deficient — in the troughs of the spectral spikes — and you end up with inaccurate color representation. What's happening here is the color temperature isn't falling exactly on the Planckian curve. In fact, CCTs actually fall along intersecting perpendicular lines to the curve. If the CCT is above the curve, it has an excess of green, and if it is below the curve, it has an excess of magenta. This is the "plus green" or "minus green" factor that we've been talking about for many decades in regard to HMIs and fluorescents, and now LEDs — and is the raison d'être for the so-named filters, gels and dial-in settings, which bring errant temperatures back onto the curve.

Though it's argued that a tri-stimulus system creates only spikes of primary colors, not a full spectrum, the system's defenders submit that since digital cameras, especially the Bayer-pattern color filters, are only sensitive to narrow bandwidths of red, green and blue, the spectrum produced by the RGB fixture can match the sensitivity of the camera and produce accurate colors.

RGB+ Emitters

Feeling that RGB isn't enough to create accurate colors, some manufacturers will add additional diodes into their array to blend and "fill in" holes in the spectrum created by the color mix. This generally starts with a "white" diode, which is actually a blue diode with phosphors to create a daylight color temperature. (See sidebar, below on right.) Some will further add an "amber" diode to fill in the warmer end of the spectrum. You'll see these fixtures denoted as RGB+W or RGB+AW or sometimes as RGB+WW, the latter of which denotes added daylight and tungsten diodes.

There are other LED companies that are going even further and adding *more* colored diodes, specifically lime green, cyan and deep red. The tradeoff, of course, is there can only be a finite number of diodes in any particular fixture, so overall intensity is sacrificed in favor of a smoother spectrum.

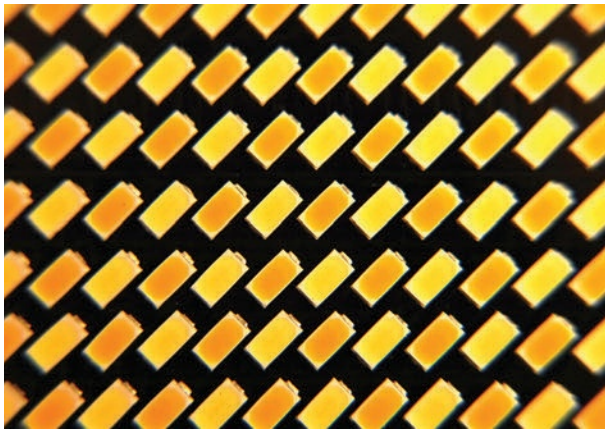
The Perks of LEDs

Dimmability without color shift is a significant benefit of LED fixtures. Many have integrated DMX or Multiverse capability to eliminate external dimmers and reduce cabling, and some are battery operable for total portability. Power consumption is significantly less than tungsten or HMI, and the heat generated from LED fixtures is negligible compared to incandescent and HMIs, so the need for air conditioning is also substantially reduced.

Further, some LED fixtures can be "pixel-mapped," so that the fixture's "zones" — independent sections of the fixture's LED array — can create separate colors. The more zones there are, the higher-resolution an image can be created. In some fixtures, each cluster of RGB+ LEDs can be independently addressed to collectively create an image, similar to a television screen. This feature can make pixel-mapped fixtures an ideal complement to virtual-production techniques.

All of these factors are leading more and more productions to turn to LED fixtures. Though color fidelity remains a key concern, manufacturers are continually advancing their technology to meet market demand, and improving the fixtures' intensity and accuracy in terms of color representation. There are a vast array of options, from soft panels to hard Fresnel and bright sources. Manufacturers with excellent product to choose from include Aputure, Arri, Astera, Cineo Lighting, Creamsource, Digital Sputnik, ETC, LiteGear, Kino Flo, Quasar Science and Rosco.

This primer in LED history and tech is intended as preparation for next month's installment of Shot Craft, which will present various approaches to, and implementations of, LED sources.



Phosphor-coated daylight and tungsten diodes.

Motion-picture lighting technology has been evolving since the genesis of the art form.

Motion-picture lighting technology has been constantly evolving since the genesis of the art form. So, while many may lament the inconsistencies and imperfections of today's LED sources, they should understand that this technology is just one more phase in the evolution of motion-picture lighting, and that *every* phase has had its bumps and pitfalls before a given source could be fully understood and widely used in photography.

The blue-diode LED paved the way for use as a legitimate "white" light source, thanks to innovations developed by Shuji Nakamura, Isamu Akasaki and Hiroshi Amano, who were awarded the Nobel Prize in physics for their efforts. The envelope of the blue diode can be coated in various phosphors to re-create convincing blackbody-simulating wide-spectrum light, which in turn allows us to have tungsten- and daylight- colored LEDs — with tungsten phosphors being arguably the more accurate of the two.

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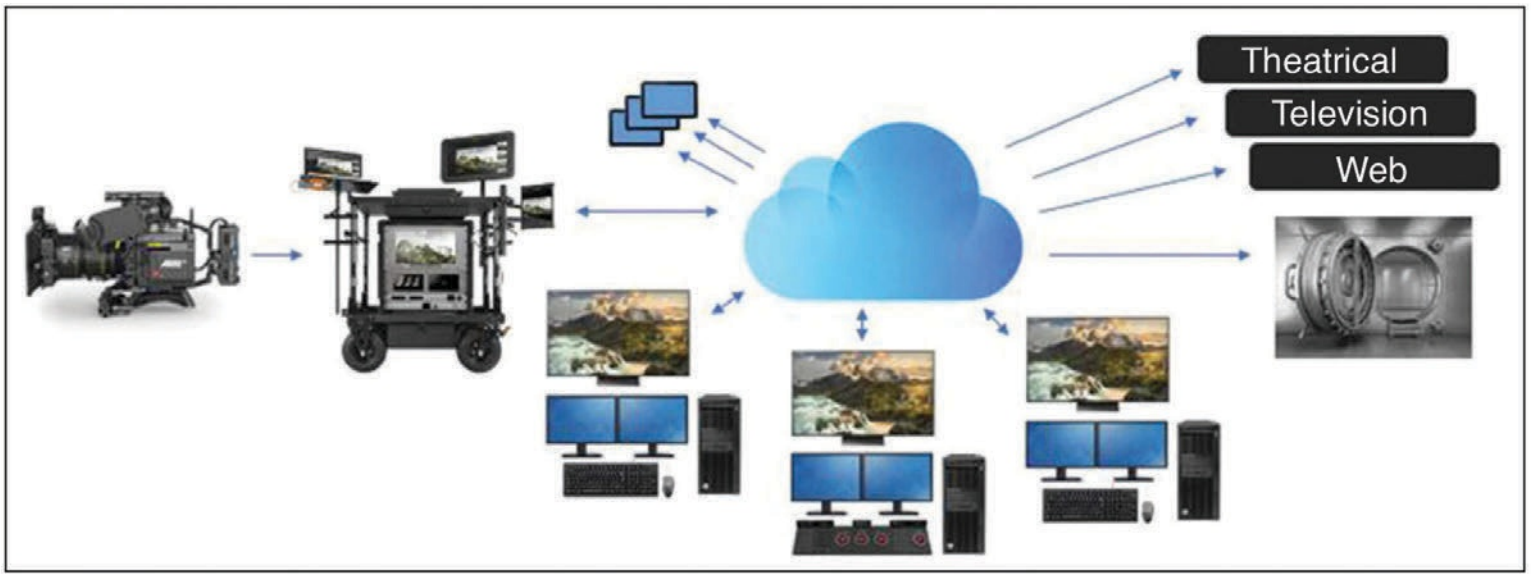


A cloud-based production and postproduction model, discussed in the Motion Imaging Workflow Committee section of the MITC report.

State of Technology

The annual ASC tech report offers keen insight.

The ASC's Motion Imaging Technology Council (MITC) recently published their 2020 Progress Report in the pages of the esteemed *SMPTE Motion Imaging Journal*. The 19-page article in their September issue was the 14th such collaboration with the organization's publication. The 2020 effort — offering a professional overview of current (and future) motion-imaging technology — was overseen by MITC Chair Curtis Clark, ASC and the council's secretary and director of research, ASC associate David Reisner.

Clark noted in his introduction that cinematographers must have a strong grounding in "the film-based photographic system to effectively practice the art of cinematography," as well as in the essentials of digital image capture and workflows. As the modern digital environment has made things more complex, he adds, "the traditional value of the cinematographer's creative contribution needs to be reinforced. This includes practical knowledge of, and experience with, the creative possibilities enabled by the new digital imaging canvas ..."

Reisner said in his comments, "Without dismissing or diminishing our photochemical history, current movie techniques, technology, equipment, delivery, and display all stand firmly in the digital realm. As such, and driven by creative interests of filmmakers and manufacturers, audiences' demand for HDR [high dynamic range], and growing awareness of WCG [wide color gamut], the development of new techniques and products continues to grow quickly."


American Society of Cinematographers
Motion Imaging Technology Council Progress Report 2020

Introduction

Secretary's Comment

The following excerpts represent just a sampling of the issues addressed in the MITC report by its committees, subcommittees and working groups:

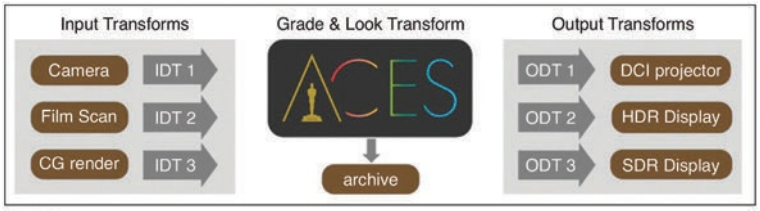
Camera Committee

Chair: David Stump, ASC; Vice-Chair: Bill Bennett, ASC; Vice-Chair: Richard Edlund, ASC; Secretary: David Reisner

As the year progressed, almost all the cinema camera manufacturers were embracing the concept of "full frame" sensor cameras, having a sensor approximately the same size as a typical 35mm still-film camera: 24mm x 36mm. To handle the amount of data being generated by these larger image sensors, manufacturers are implementing some form of compression of the recorded image data, while several others also offer either uncompressed or compressed raw data options as well.

Also among the items addressed by the committee are advances in HDR, in particular the cameras' ability to now accept and apply HDR look-up tables (LUTs), which enable on-set HDR viewing using suitable HDR-capable monitors.

Reported on as well is the increased prevalence of cameras generating internally, and accepting from external sources such as lenses, extensive metadata that is embedded with the image, and audio data in the master recording. In cooperation with the MITC Metadata and Lens Committees, the Camera Committee is requesting that postproduction software designers retain that metadata throughout the processing chain; currently, many



An ACES imaging path from the Cinematographer Quick Start Guide (QSG), part of the ACES Subcommittee section.

tools either strip it off, or otherwise ignore it, and do not pass it through.

Joint Technology Committee on Virtual Production

Chair: David Morin; Vice-Chair: Michael Goi, ASC, ISC; Vice-Chair: Mike Sander

The year 2019 was a watershed year in virtual production, with the development of a new virtual-production workflow called in-camera visual effects, and the publication of *The Virtual Production Field Guide* by Epic Games. In its introduction about the "Origins of the Real-Time Revolution," the field guide recognized the work of the Virtual Production Committee when it stated: "In 2009, members from the ASC, Art Directors Guild (ADG), Producers Guild of America (PGA), International Cinematographers Guild (ICG), and Visual Effects Society (VES) formed the Virtual Production Committee. The committee shared case studies about film and television projects leveraging virtual production, and produced many of its initial definitions. This field guide builds on the committee's work along with recent advances in real-time computer graphics, which are making virtual production even more accessible to filmmakers today."

Digital Intermediate Committee

Co-Chair: David Reisner; Co-Chair: Joshua Pines; Vice-Chair: Lou Levinson

In response to concerns that the widely used American Society of Cinematographers Color Decision List (ASC CDL) may have had an issue as its use has migrated into the HDR and wide-gamut world, we are happy (and relieved) to report that applying the ASC CDL saturation operator math to images in ACES AP1 colorspace does not cause any additional artifacts in content above and beyond the known limits in the AP1 colorspaces. This is true both for the coefficients currently in use and for a range of reasonable alternatives.

It has come to our attention that the level of complexity and choices for production, postproduction, and delivery here in the second decade of the 21st century are beginning to get out of hand. In our last couple of meetings, we began to discuss what we feel are critical issues for creative content realization. There is still quite a bit of chaos and misinformation in our community about the issues surrounding HDR and WCG capture and use. We believe that our committee has the knowledge and experience base, as well as a highly regarded, one-step-removed objectivity that this space seems to cry out for. We will be working first to identify and define real issues in generally accepted terms, and then toward a consensus as to recommended practices to address the needs of state-of-the-art visual storytelling.

What will be required to foster the creation and control of image that the ASC, and indeed the industry, in general, will require as we move forward? We hope to be on the leading edge of that discovery.

The complete MITC 2020 Progress Report (and others) can be found at theasc.com/asc/committees/reports

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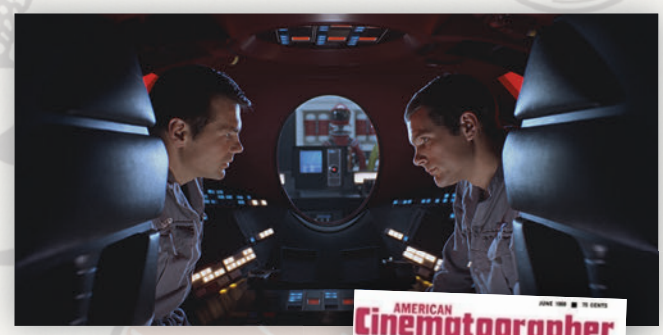
Len Powers, ASC details his collaboration with iconic comedians Stan Laurel and Oliver Hardy. (*AC* Oct 1929)

Read about the production of *Citizen Kane* as described by Gregg Toland, ASC himself — revealing his visual approach to one of the great examples of expressive cinematography. (*AC* Feb. 1941)

In an exclusive *AC* interview, Alfred Hitchcock explains his methods of working with cinematographers, production designers and editors. (*AC* May 1967)



Read our exclusive interview with Stanley Kubrick as he details his meticulous approach to the sci-fi classic *2001: A Space Odyssey*. (*AC* June 1968)

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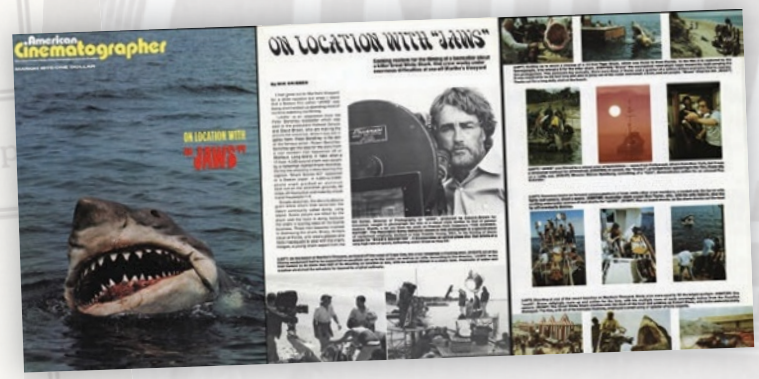

Go on location with cinematographer Bill Butler, ASC and director Steven Spielberg as they shoot *Jaws* — complete with numerous exclusive photos from the set. (*AC* Mar. 1975)

Douglas Slocombe, BSC and Steven Spielberg discuss their close collaboration on *Raiders of the Lost Ark*. (*AC* Nov. 1981)

Darius Khondji, ASC, AFC describes the inspirations and creative choices behind his expressive camerawork in David Fincher's shocking thriller *Seven*. (*AC* Oct. 1995)

John Mathieson, BSC discusses his Oscar-nominated camerawork in *Gladiator*, explaining his collaboration with director Ridley Scott. (*AC* May 2000)

Emmanuel "Chivo" Lubezki, ASC, AMC takes a naturalistic approach to create his Oscar-winning camerawork in *The Revenant*. (*AC* Jan. 2016)

Roger Deakins, ASC, BSC discusses his exceptional camerawork in the sci-fi sequel *Blade Runner 2049* — winning him his first Academy Award for Best Cinematography. (*AC* Dec. 2017)

Chasing a Dream in India

Michal Sobocinski, PSC empathizes with a musician's quest for perfection in *The Disciple*. By Stephen Pizzello

Photos courtesy of Zoo Entertainment.

The pursuit of mastery in any art form can be a rewarding and fulfilling experience, but the Indian film *The Disciple* details the hard realities of an uncompromising commitment to excellence.

Inspired by his father, a guru, and the disciplined traditions of Indian classical music, Sharad Nerulkar (Aditya Modak) has devoted his life to the goal of becoming an enlightened and soulful vocalist. But as the years go by, the sacrifices he makes, the hardships he endures, and the indifferent response to his singing take a heavy toll on his spirit.

The Disciple was directed by Chaitanya Tamhane and executive-produced by renowned filmmaker Alfonso Cuaroń. The acclaim Tamhane received for his first feature, *Court*, led to his selection for a Rolex-sponsored protégé program, which in turn allowed him to shadow Cuaron throughout prep, production and post of the latter's autobiographical feature *Roma*. When Tamhane was considering cinematographers for *The Disciple*, Cuaroń's frequent collaborator Emmanuel Lubezki, ASC, AMC endorsed Polish cinematographer Michał Sobocinski, PSC, whose evocative period imagery helped the 2017 feature *The Art of Loving* win the Polish Films Competition at the Camerimage festival and led to his selection as one of *American Cinematographer*'s Rising Stars of Cinematography in 2018 (*AC* Feb. '18).

Sobocinski has cinematography in his genes. His grandfather, Witold Sobocinski, PSC, worked as a director of photography for Andrzej Wajda and Roman Polanski on projects including *The Promised Land* and *Frantic*, respectively; his father, Piotr Sobocinski, PSC, received an Oscar nomination for his work on Krzysztof Kieslowski's *Three Colors: Red*; and his brother, Piotr Sobocinski Jr., PSC, is also an accomplished cinematographer whose most recent feature, *Corpus Christi*, earned an Academy Award nomination for Best International Feature Film.

He had already been shooting commercials in India for several months when Tamhane reached out to him by phone, not realizing that Sobocinski was already in the country. The two met, along with producer Vivek Gomber, who gave the cinematographer a copy of the script.

Sobocinski, a guitar-shredding rocker in his spare time who also plays piano and drums, says the central drama of *The Disciple* held immediate appeal for him, both as a musician and a visual artist. "I didn't know much about this form of Indian music, but for me the story addressed a very universal subject: the fading of a dream," he says. "I could relate to the main character's struggle, which is familiar to anyone who pursues a career in an artistic field. If you really want to succeed, it's almost like becoming a monk, but it doesn't always work out. You could spend 20 years trying to be the best DP in the world, but if you don't have it, you won't make it."

Preceding pages: Sharad Nerulkar (Aditya Modak) devotes himself to mastering the intricacies of Indian classical music in *The Disciple*. This page, left: As a young boy, Sharad follows in the footsteps of his musically inclined father. Right: Cinematographer Michal Sobocinski, PSC (left) with director Chaitanya Tamhane.

The story arc of *The Disciple* allowed Sobocinski to craft a gradually evolving look, and a key part of his strategy was lens selection. His main camera was the Arri Alexa Mini, which he paired with different lenses as the main character's journey progressed. For the first half of the movie, when Sharad is a young boy and a young adult still filled with idealism, Sobocinski employed a Cooke Anamorphic/i SF (Special Flare), to lend the imagery a more romantic look. During the film's "second movement," when Sharad becomes disillusioned, he switched to spherical lenses (Arri/Zeiss Master Primes) to create a more clinical look with less depth of field and to imply that "the reality of his situation is coming into sharper focus — his life has become more workaday and less 'hopes and dreams.'"

As a Polish cinematographer shooting a Marathi-language film in India, Sobocinski was uniquely positioned to bring an outsider's eye — and an empathetic perspective — to the project. However, he cautions, "that can also be dangerous, because you might be drawn too much toward creating beautiful imagery. India has great sunsets, and it's a country filled with beautiful colors and women wearing beautiful saris. Those types of things could drive your attention to visual elements that are not as important for a film like ours, which focuses on a character who's struggling in his everyday life. On this project, the director was looking for more of a naturalistic look."

In fact, he says, the production had to be careful with its color considerations, given India's hierarchical society. "When Chaitanya and I first started talking, I would give him a color palette I thought would look good, but he said, 'You know, people in India come from various cultural backgrounds. So common citizens who live like this and only earn this much money would never have walls painted this color.' I think it was actually very brave of him to hire a Polish DP who wouldn't know all of these cultural differences. But film is a universal language, and for me the biggest success of this project has been hearing from Indian people, and especially classical musicians, things like, 'That is how I remember my childhood,' or 'That's how it was when I performed this certain raag.' Hearing those kinds of comments is very gratifying to me, but also hilarious, because the first Indian classical-music concert I ever saw was when I was prepping for this film!"

Shooting the musical sequences required some very long takes. "The basis for the music showcased in this film is improvisation, so the performers — none of whom were professional actors — had to actually perform the music. They were not lip-syncing; we recorded on set. Some of the shots were such long takes and so wide that we couldn't really cheat their hands or the performances. So it was very hard on the performers; some of the shots were five to seven minutes long, and we sometimes did 30, 40 or even 50 takes. After I set up all of the lighting, we would do the rehearsals, but once we started shooting, it could take another six or eight hours before we nailed a particular performance. If they made a mistake, we would have to start all over again from scratch. I controlled all of the lighting from an iPad because I couldn't really go into the set and tweak the lights between takes. The performers were very focused, and we didn't want to break their concentration."

The musical performances, as well as other sequences in the film, were designed to look very low-key and naturalistic, but they actually required some elaborate lighting setups, as well as the occasional deployment of sophisticated camera-movement systems. "Chaitanya wasn't looking for big shafts of light coming through windows, or hazing up the interiors with atmosphere," Sobocinski says. "He wanted to make it look real, but I told him, 'Look, we're not making a documentary — that's why you have me here.' I wanted to create the character's world. So there was actually a lot of lighting involved in making it look 'real' — we had

SkyPanels rigged up in every single room to make it look as if the lighting was just coming from the sources that are visible in the frame.

"Chaitanya's first film was designed to be completely static," he adds. "That's his language and his preferred style, but I'm a big fan of wide shots and movement. We finally agreed on moving the camera not only during the musical performances, but not like we were shooting a music video; we went with the idea that the camera would start moving to reflect moments when our main character was feeling spiritual and getting into the vibe of the music. In one scene, for example, he's listening to [musical guru] Maai's recordings while recording some tapes. The camera is constantly moving as the music plays, but it stops abruptly when he presses the 'stop' button on the recording machine. It's like he's leaving the ideal world and returning to the real world."

Another key sequence, in which the character stops abruptly in mid-performance and walks offstage, was accomplished with a motion-control Technodolly. "The character is coming full circle, and it's his high peak as a performer, so we wanted to convey that visually," Sobocinski says. "We wanted a circular movement, but it had to be really slow. It couldn't really be achieved with human hands or a crane, because the performance lasted for maybe five minutes. I watched a lot of Tarkovsky films when I was younger, like *Stalker*, and he would do these beautiful, super-wide shots that would last for 10 minutes and end in a close-up. That's the sort of feel I was after — to show that something was changing within the character, but very subtly, like it might happen during a meditation. If the camera was moving, we tried to move it very gently and seamlessly — that particular shot was a fairly significant move, requiring the other people in the frame to bend out of the way as the camera was creeping through, but within the film, you don't really feel the mechanical complexity. It seems very smooth."

Scenes of Sharad riding his motorcycle on near-empty streets, while listening to a musical guru's recorded lectures through ear buds, were shot in slow motion via a truck-mounted crane with an Arri Alexa SXT to maintain raw format while shooting high speed on a gyro-stabilized head. One of the shots follows directly behind the character on his bike, but gradually rises up into the sky as if to share the spiritual uplift he experiences through the guru's teachings. It's the peak of Sharad's musical career, and the highest he gets — though the moment occurs only halfway into the film. "There's almost never a situation like that in Mumbai, where there isn't a single car or even a rickshaw on the street," Sobocinski notes. "Because we were shooting in slow motion, we needed a lot of light, so I was lighting up half a mile of the road with lamps up on buildings. Closing down those streets, even at 2 a.m. or 4 a.m., was nearly impossible!"

India's incessant traffic also required crewmembers to plan well ahead while traveling to and from locations that the production was always in danger of losing at the last minute. "In India, it's crazy how much paperwork you have to do to secure a location, and even then you never know what's going to happen," he says. "Filming there can be very unpredictable. And getting to the set can be a challenge because of the traffic, which can affect scheduling. You never know when people will actually get to the set! To do one sequence we shot at a lakeside location, we just stayed there overnight so we could avoid the traffic, shoot first thing in the morning and get the light we wanted for the scene."

All of the effort has paid off on the festival circuit — *The Disciple* won the FIPRESCI critics' prize and Best Screenplay Award at the Venice Film Festival, as well as the Amplify Voices Award at the Toronto International Film Festival and the Best Film Award at the Lisbon & Sintra Film Festival. "I'm super happy and thrilled about what's happening with our movie," Sobocinski says. "It was a film made for the sake of art and for the sake of moviemaking, and it was something completely different — the kind of artistically independent project that may only come along once or twice in a lifetime." ⓪

The Artist's Struggle to "Succeed"

In his own comments about *The Disciple*, director Chaitanya Tamhane offers, "The film explores the tension that exists between the theoretical conception that the protagonist has of what an unconditional artistic pursuit should be and his innate, bodily desire for success, fame and validation. We live in an increasingly individualistic, result-oriented society where worldly success is equated with happiness and failure is stigmatized as the inevitable fate of 'losers.' A capitalist society, with all its machinery and propaganda, conditions an individual to not only cherish certain materialistic values, but convinces him or her that there is no other way to exist with dignity. One of the illusions of such a narrative is also the idea that, if you really want something, and you really strive for it with all your will, you will eventually achieve it — as though not achieving is as good as not trying, or even worse, not existing. We are constantly bombarded with success stories of exceptional individuals and high achievers. Either these fairy tales of the hero's journey or the excessively tragic tales of doomed individuals are the only stories that seem worth celebrating. But the life stories of 99 percent of humanity do not exist in either of these extremes. *The Disciple* is about what lies in-between, from the perspective of an individual who is, at once, the victim and a believer of this illusion."

Revisiting Manderley

BSC member Laurie Rose shoots a new version of *Rebecca*. By Phil Rhodes

Photos by Kerry Brown, courtesy of Netflix.

In 50 years, the dawn of the streaming broadcasters might be remembered as another golden age of cinema. Right now, the fight for dominance is funding a huge range of productions that demand carefully applied craft and also, increasingly, the big guns of modern production technology: larger sensors, HDR, 4K and beyond. Sometimes, though, that drive for high-spec moviemaking meets a simultaneous desire for classical pictures that evoke a period setting; bringing those two elements together became the responsibility of cinematographer Laurie Rose, BSC on *Rebecca*.

Daphne du Maurier's novel — on which this production is based — follows the young new wife (played by Lily James) of a wealthy widower (Armie Hammer) as she uncovers dark secrets about his late spouse, Rebecca, under the stern glare of forbidding housekeeper Mrs. Danvers (Kristin Scott Thomas). Rose describes the source material as "a venerable piece of English literature. I've always liked a bit of du Maurier, and I especially enjoyed what my fellow BSC member, Mike Eley, did more recently with *My Cousin Rachel.* The writing is so fantastic."

Though *Rebecca* — airing now on Netflix —would shoot mainly outside of London, *AC* found the production unit hard at work in a location off Tudor Street on the balmy night of August 3, 2019. In the scene underway, James' character visits a doctor during her investigations into the wife who preceded her, in an attempt to clear her husband's name. A small corner of London had been taken 80 years into its own past, this time a SkyPanel S360-C suggesting steely moonlight from its perch atop a cherry picker and an array of PAR cans simulating the historically warm glow of receding streetlights.

Alfred Hitchcock's 1940 screen adaptation, photographed by eight-time Oscar nominee George S. Barnes, ASC, took the Academy Award for best black-and-white cinematography that year. "I hadn't seen the Hitchcock *Rebecca* for some time," Rose says, noting that his prior collaborations with this adaptation's director, Ben Wheatley — which include the features *Free Fire*, *High-Rise*, *A Field in England*, *Sightseers* and *Kill List* — were not at all typified by somber period drama. "My love of film stems from my mum being a big fan of the '30s, '40s and '50s eras of filmmaking, but when Ben and I started talking about *Rebecca*, it might have seemed a bit off our path. And yet that's what made it such an interesting prospect — to be able to get some budget and also work with Working Title. It was a different world for us to exist in."

The movie's world comprises three distinct parts, all set in a 1930s milieu of wealth and privilege but ultimately yielding very different looks. "There's the summer holiday romance at the beginning, all set in the South of France, when [the couple's relationship] is meant to be idyllic, charming and beautiful. Then they crash back into the U.K. for the second part of the story — the wetter, dreary, more Gothic part when Mrs. Danvers arrives, and we've got the character of the old house and a kind of ghost story. The third part, which is quite short, is when our new Mrs. de Winter undergoes an emotional change, grows up and develops a darker side. It's the detective story where she takes control of her destiny, for good or bad."

Preceding pages: Maxim de Winter (Armie Hammer) shares a passionate moment with his new wife (Lily James) in *Rebecca*. This page, left: Director Ben Wheatley (far left) and Laurie Rose, BSC (at camera) angle in on their stars. Right: As the relationship progresses, Mrs. de Winter finds herself living in the shadow of her husband's first wife.

Rebecca was shot on Arri's Alexa 65, a new camera to Rose. "I'm very excited about it," he says. "Russell Allen and Simon Surtee at [Arri Rental] London were very helpful and couldn't do enough for me." While the camera's huge 6.5K sensor provided a generous canvas, Rose treated it as a foundation, upon which he could build period-appropriate imagery using several techniques. "More and more, with bigger sensors and higher resolutions, I want something a little bit vintage on the front of a digital camera. I want character, texture and soul. I do that with a bit of onboard ISO. I shot *Rebecca* at 1,280 or 1,600, because the big sensor has so much latitude. It can handle that high-ISO approach, which puts a bit of grit into the images."

To aid in his pursuit of a less clinical picture, Rose chose Arri's Prime DNA lenses, which the company describes as being based on "vintage optics from different historical periods." Shooting ArriRaw at 5.1K removed some of what Rose calls the "wild edge artifacts" of the DNA lenses; the show's B camera, an Alexa LF, recorded in 4.5K Open Gate, also in raw. Special permission was granted by Netflix to frame for a 2.39:1 aspect ratio, as opposed to the 2:1 ratio the distributor usually prefers. Rose operated the A camera personally, with James Layton alternating B camera and Steadicam.

"The DNAs are an ongoing project for Arri, and they are somewhat tuneable to taste," Rose notes. "I had a couple of 50mm and a couple of 80s; one was a red-dot variant. It had a little engraved red dot and it had the most beautiful sweet spot and falloff and flare aspects that were a world apart from the rest of the set — it was one that I'd go to really regularly. Our go-to lenses were the 35, 40 and 80mm. I'd go to the 80 because it just looked stunning. I almost asked if I could just have a whole set of red-dot variants."

There is some mystery behind the lenses. "We were talking about the tuning, and when I asked Arri what they'd done with the red-dot variants, they said DNA stands for Do Not Ask! There's an element of experimentation, and that's what's lovely about those lenses."

Rose put the finishing touch on his camera setup with Schneider's Hollywood Black Magic filters. "I really like them, but I only used them very sparingly. You don't want to overdo these things — eighths and quarters only. Coupled with the DNAs, which are quite textured and interesting vintage-feel lenses with modern mechanics, the filters really gave me the look of 'holiday romance' that I was going for [in the early scenes]. Lenses and filters only added to the Alexa sensor rendering dreamy skintones and color."

Beyond the tech, Rose expresses his clear respect for the show's Oscar-nominated production designer, Sarah Greenwood. "Sarah designed *Atonement* and, more recently, *Beauty and the Beast*, *Darkest Hour*, many of Joe Wright's projects. There's just an astonishing amount of period detail [in those films]. The scope and scale, the lengths they went to, were astonishing. What I love most about production design is when they create these universes for us to prowl around in with a camera. It's a joy."

Rose adds that Greenwood was also heavily involved in the choice of locations, which included a variety of settings in both the U.K. and France. A sumptuous hotel seen early in the film was "a real Victorian hotel. It's an apartment building now, but it still has that area that was originally a lobby. It was a super-grand entrance hall that we filled with period fixtures."

The location presented its own problems, though, with "incredible windows that were good and bad. Immediately outside the lobby is a conservatory, a glass interior eating area with a terrace immediately beyond, where the couple have breakfast together."

Lighting this area was complicated by the local topology: "There's a 12-foot drop off that terrace into the street, which was crossed with a bridge — the same street you see in the show when their car drives up — and I had to light from that street. We had to get bigger machines than we normally get, truck-based cherry pickers." Other equipment included a SuperTechno 50 crane, transported to the Nice location from

Rose and the crew capture moments of the couple's life at Maxim's lavish estate, Manderley. Scenes set at Manderley were shot at several historic houses in England, with interiors and exteriors combined in ways that would lend the house a sense of "infinite scale," according to Rose.

a depot in Munich.

None of the hotel's interiors, other than the lobby, were actually shot in France. Scenes featuring Mrs. Van Hopper (Ann Dowd) were shot at Waddesdon Manor — a location so beautiful, according to Rose, that it "barely needed dressing. But a lot was shot in stunning heritage houses, where the caretakers are rightly wary of film crews. Often you're not allowed to use smoke, and I wasn't at Waddesdon. We could do that in France — they were less precious about that in the hotel — but I categorically wasn't allowed to use it in the apartment, which was tricky for continuity."

Rebecca has a plot that's overwhelmingly influenced by its setting: the fictional Manderley, an English country home that assumes almost mythical portent as the story progresses. Rose says Wheatley was intent on making Manderley feel labyrinthine and unknowable, so the house was constructed from "five or six locations that were pieced together to create this infinite scale for the setting. That was a challenge, because it involved a lot of travel. The sense of walking out of one room and into another was spread out over a lot of locations." Those locations included Cranborne Manor in Dorset, Osterley in west London, Mapperton in Dorset and Hatfield in Hertfordshire.

One of Hatfield's larger spaces was disguised with extensive flats for a party scene, but also provided grand hallways. "The windows were amazing," Rose recalls, "and there's a lot you can do without using anything at all. The interiors are relatively dark, so you have your contrast sorted out."

The house itself also offered some practical help, particularly in the library, "where we did a last-minute walk-through scene. Due to access I couldn't get any lighting into that room from outside, so we went with available light, but the room did have roller blinds that we could use almost as dimmers. My chief lighting technician, Julian White, would clip very lightweight diffusion or very lightweight blackout to the roller blinds. You can bring them down and reduce the light in the room, or have the light coming from the bottom of the window only — it's a fast and non-invasive use of controlling what you have at hand!"

Splendor aside, Rose and his team faced a need to make scenes set in England feel noticeably different than those set in France. But the weather in England, Rose recalls, was "not quite how we wanted it. We shot in high summer, but we really wanted the feeling to be autumnal, October, a bit more 'England.'"

Scenes at the high point of the story take place at a coastal location, represented by Hartland Quay in Devon, requiring Rose to light an entire bay. "We had a lot of firepower out that night," he says. "The cove was about two kilometers across. I had five 18Ks that were giving me a level on the cove, the biggest area I'd ever had to light. We also used a fantastic new system called TommyBars — an array of 16 8-foot LED bicolor tubes."

Deploying those tube arrays had some practical benefits. "Because they're without textiles, they don't act like a sail. Often you're building moon boxes with diffusion, and that's naturally subject to wind. Our concern of working on that windswept coast was solved with the weatherproof TommyBars, which gave me an overall ambient 'moonlight' along with the cove background. And then our heroine approaches the boathouse using an LED-supplemented oil lantern."

The globetrotting narrative finally reaches Cairo, punctuating a character point for James' unnamed protagonist. The setting is "a bedroom where she wakes up and walks across to the mirror. Her transformation is complete and you see her smoking; she's a character who's lost her innocence."

The filmmakers tried to find a location in the South of France that might double for an Egyptian bazaar, but the scene was eventually shot at the Leighton House Museum in Kensington, London. "Cairo is a greenscreen outside the window! We put in a single 24K tungsten unit, and we were luckily allowed atmos [smoke] to complete the sundrenched dusty heat."

Rebecca was finished by Goldcrest colorist Rob Pizzey, whom Rose considers "a long-term collaborator. He makes anything I throw at him look astonishing, so I'm in gratitude to Rob."

The production's shooting schedule was achieved over a relatively compact 50 days, and with such a breadth of locations, Rose describes the shoot as "very, very busy. We weren't at many locations for very long at all, which was a real challenge. I think the film has a certain pace and sophistication, though, and the story feels as if it covers a lot of ground. A lot goes on, and it all feels quite deep and profound." ◐

ALL PHOTOS COURTESY OF JOHN SIMMONS, ASC.

Hiring an Inclusive Crew: It's Our Responsibility

A Call to Action

By John Simmons, ASC

Ever since my early days working out of a grip truck, I knew that when I was in a position to make decisions, it would be my responsibility to assemble crews that looked like the world we live in. I wanted to help create environments where any 12-year-old girl, no matter what color she was, or any 12-year-old boy, no matter where he came from, would be able to walk onto my stage, stand in the doorway, and see the possibility of a future.

My career began while I was in undergraduate school at Fisk University, located in Nashville, Tenn., which is one of the oldest historically Black colleges and universities (HBCUs) in the country. I was taking still pictures and painting — it was a very embracing environment. While there, I met a man who would become my mentor, Carlton Moss, who was a film director, writer and historian. He wrote and starred in a picture called *The Negro Soldier* (1944), a follow-up to the *Why We Fight* series the U.S. government commissioned during World War II. It's about Black soldiers behind enemy lines in Europe, and it has been preserved in the National Film Registry of the Library of Congress. Carlton — without saying it — was an activist. He took a look at my photographs and said, "Whoa. You've got the eye of a cinematographer."

I had never heard that word before. I didn't even know what a cinematographer was.

A filmmaker named Ousmane Sembène — the father of African cinema — came to Frisk to screen two pictures he'd made, *Black Girl* and *Mandabi* (the latter based on his novel *The Money-Order*). Carlton brought him by my little 50-dollar-a-month apartment, and through a translator, Ousmane said the same thing Carlton had when he saw my paintings and photography. Before I knew it, Carlton was sending me a subscription to *American Cinematographer*, and shortly after that, he sent me a 16mm Arriflex S with a 400' magazine, some film, and written instructions on how to load the camera. The camera came from Roz and Cal Bernstein, who owned a production company called Dove Films.

After I graduated, with Carlton's help I received a scholarship to USC's film school; my application included a presentation of my work that I had done with him, and with the little 16mm camera. At USC, I was the only Black kid in the department. It was interesting considering I grew

Below: Early in his career, Simmons with then-camera assistant (now operator and cinematographer) Michelle Crenshaw. Right: Simmons and crew on the set of the Netflix series *Family Reunion*.

up on the South Side of Chicago — one of the most segregated cities in the country. I was around Black people all my life, and Nashville was just as segregated. So when I got to USC, it was a bit of a culture shock because it was a different experience doing my work and being the outsider.

Carlton also got me a job at Dove Films, where Vilmos Zsigmond, ASC, HSC was the resident cinematographer. It was 1976, and the finest cinematographers in the world shot commercials there: Haskell Wexler, ASC; Vittorio Storaro, ASC, AIC; Sven Nykvist, ASC; László Kovács, ASC, HSC; Jordan Cronenweth, ASC. Everybody that anyone could admire was a cinematographer for Cal and Roz.

On my first day of work, I walk onto the grip truck, no one is there, and I look at the grip box. It was covered with the most derogatory jokes and cartoons — about Martin Luther King Jr., César Chávez, Asian people from the Vietnam War — just horrible, derogatory humor. This was very different from Cal and Roz, who wouldn't even have grapes on the craft-services table because the United Farm Workers had gone on strike. When Styrofoam cups were found to be environmentally impactful, there were no more Styrofoam cups on the set. In the 1960s, Cal and Roz also hid Carlton in their home during the House Un-American Activities Committee investigations, when everybody was being subpoenaed because of their leftist views. Carlton got subpoenaed during that period, along with so many other artists and writers whose lives were destroyed, and they let Carlton and his wife live in their attic while they prepared their case.

So having this grip truck in front of their production company — with all these derogatory things inside of it — was obviously something they didn't know about.

I left that truck, went into the office, and called Carlton. I said, "I think you've made a mistake. Here's what I just saw." And he said to me, "Simmons, do you know any Black people making movies?" I said, "Nope." He said, "You like cinematography, right?" I said, "Yeah, I like it a lot. I love it." He said, "You want to be a cinematographer?" I said, "Yes."

And he hung up the phone.

I worked with those people on that grip truck for a couple years, and it was a very challenging environment. I didn't let it stop me — I just stayed. Because, like I tell all young people who come to me, if there's something that is a second choice to being a cinematographer — or any kind of artist at all — you should go for the second choice. Because the first choice presents obstacles, and the passion has to be greater than the obstacles.

And that's what I would tell myself. I saw that at the end of that road I would be able to do something that I really wanted to do. I could be a cinematographer.

During my time on the grip truck, there was a man named Jerry Posner, who never participated in the rest of the crew's humor, which consisted of one N-word joke after another, preceded by, "Hey, Johnny, you know this isn't about you — but I've got to tell this joke. You don't have to listen to it." But there would be nowhere to go. We'd be on the road, in another town someplace, and I would be listening to this crap. Posner would be in the back of the grip truck, never participating — he would just observe. Then one day, 20 years later, I'm at Warner Bros. Studios pulling into my parking space early in the morning, where it says on the side of the building, "John Simmons, director of photography." And there's Jerry Posner. He walks up to me and says, "I knew you'd be OK, because you stayed there. And now look at you. I don't know how you did, but you stayed. When they would say, 'Don't bother me right now,' when you asked a question, you would come back and ask the question later. And I knew that one day, I would see you and you would be OK."

Working on that grip truck was how I started in this business. And at the time I would also do PA jobs, and when I would drive onto the lots to deliver something, often it would be like being in the Deep South somewhere. I wouldn't see one person of color on those lots. And when I did see a person of color — a security guard or

PHOTO, THIS PAGE, BY KWAKU YOUNG. *FAMILY REUNION* PHOTO BY LARA SOLANKI.

another truck driver — they would be a block away, and we would wave to each other like, "Hey, man, I'm over here, too."

Because I came up through the civil rights era, I knew that during that period when I had to work with those people and put up with all the things that they presented to me — and they presented a lot — that they represented more than a film crew. They represented a picture of America. They represented something that had shaped the way people see us — and by "us," I mean "me."

There were times during that period in the early '90s when I would go onto a set, and I'd be checking out a stage, and a white security guard would walk in and ask me what I was doing there. And it would be my stage. I would have to say, "I'm John Simmons, director of photography." They would say, "Oh, okay. Just checking," as if they were going to ask the same thing of anybody that was standing there. But I have obviously been Black a long time, so I know what that kind of greeting is like: assume first, ask questions later. And it stayed that way for a long time. I'm not sure it wouldn't still be that way now, except my hair has turned gray. So now when I walk onto a set, people aren't looking at me like I'm about to steal something.

The first time I did get into a position where I was able to make some decisions about my crew, I was shooting a documentary for Carlton. It was called *Portraits in Black: Two Centuries of Black American Art*, to accompany an exhibit at the Los Angeles County Museum of Art. It was a very small crew. My two hires were Black people, and Carlton was teaching at Irvine University and had some students there that he wanted to give exposure to — and just as I'd envisioned, our crew looked like the world we live in.

I then started shooting music videos for artists like Stevie Wonder, the Whispers, Snoop Dog, Dr. Dre, Tupac, Naughty by Nature, Jessica Simpson and Fishbone, among others. For those crews, I made it a point to have a diverse mix of people. It wasn't by accident — I would seek these people out.

After the music videos, I started working for a company called the Film Syndicate, owned by Bryan Johnson. We did network promos and commercials. Bryan also liked the idea of our crew looking like the world we live in, so I hired women and other people from underrepresented backgrounds as assistants and operators. I made sure that everybody I could possibly represent would be there — that's always been a responsibility for me.

When I did my first multi-camera show, the studio assigned me a gaffer and a key grip because they had prior experience. My gaffer was a white guy — whom I still work with — and I told him my views on hiring. But, ultimately, people hire who they know. So he came to my show with only white guys, and I had to tell him that we could do the pilot like that, but we couldn't do the series like that. And it was a drag in a sense, because we spent a few weeks together with the guys he brought to the set, I liked them, and we had a good time. There was no reason why I couldn't continue to work with them — except that the crew was imbalanced. I

On the Cover

"'A Day at the Races' was photographed at Santa Anita racetrack in 2019. The elderly Black man watching the horses was what moved me. I usually take pictures that have a definite narrative. This photograph is all about composition — I was attracted to the graphics and space. To me, it's a powerful image that stands on its own without a story. I shot it with a Sony a7R III with a 50mm Leica Summilux. I purchased that lens in 1970."

— John Simmons, ASC

About the Artist

John Simmons, ASC grew up in Chicago and has had a prolific career as both a still photographer and cinematographer. He has collaborated with filmmakers including Spike Lee and Debbie Allen, and has photographed more than 25 television series, including *Roseanne* (2018), *Family Reunion*, *No Good Nick*, *Prince of Peoria*, *Men at Work*, *Good Luck Charlie*, *Dog With a Blog*, *All of Us*, *The Tracy Morgan Show*, and many others. Simmons earned an Emmy for his work on *Nicky*, *Ricky*, *Dicky & Dawn*, another two nominations for his work on *Pair of Kings*, and a third for *Family Reunion*. His feature credits include *Once Upon a Time … When We Were Colored*, *The Killing Yard*, *Collected Stories*, *The Gin Game*, *Asunder*, *The Old Settler* and the documentaries *Cool Women* and *Dark Girls*. His photographs are held in the collections of the Harvard Art Museums; the High Museum of Art; the Museum of Fine Arts, Houston; the Center for Creative Photography; and the David C. Driskell Center, University of Maryland. He serves as a vice president of the ASC and on the Board of Governors of the Television Academy. He is the co-founder and co-chair of the ASC Vision Committee.

Below: Simmons with Emmy. Right: On the set of Netflix's *No Good Nick* — Bill Colino Sr. and Bill Jr., Otis Burkes Jr. and Otis Sr., Dejon Ellis Sr. and Dejon Jr. "Good dads, great grips, looking out for the future," Simmons says. "I've worked with the dads for over 20 years now, and I get to keep doing it with all of them. How great is that!"

had feelings about them not being able to come with me onto the series, but more important than that was my decision to diversify my crew, and making a difference in this industry.

However, even being in the position to make hiring decisions didn't make things any easier or more equal. I was doing a commercial on a huge set, and I didn't have my regular crew to rig because we had just finished shooting something all night the night before. I was on set, working with some rigging crew, and the camera was in the corner because we were going to shoot a test that day. The camera assistant had put it together, covered it and left. So I uncovered it and was looking through the viewfinder — and a man, up in the perms, says to me: "Hey, buddy. Leave that alone." I didn't say anything. He said it about two or three times, and he finally crawled down a ladder and said to me, "I'm sure Mr. Simmons would not want to see you playing with that camera." I said, "You know Mr. Simmons?" He said he did, so I said, "Well, it must be a different one, because I'm Mr. Simmons."

Another time, I was making this picture called *Once Upon a Time ... When We Were Colored* down in North Carolina. It was a Black story with many Black actors. The crew was pretty balanced, like it should be. My department heads were people of color. My focus puller was Michelle Crenshaw, who is now a camera operator and cinematographer. One day on set, we were filming a scene that involved a Klan march. Since I had something like five cameras shooting that day, I had to operate one of the cameras. I was sitting on my camera, and someone says to me, "Hey, man, don't play with that — get off that camera." It felt like my past all over again.

Those are just two examples. I can't tell you how many times I've been asked not to mess with the camera when I'm in charge — or be questioned about why I was on the stage by myself.

There can be all of the studio mandates for inclusivity in the world, but the only way to change the industry is for every person to take complete responsibility for it.

The main thing about the movie and TV business is expedience. You never have enough time to get something done. You're always behind the clock. Because of that, you establish a crew, and a crew is like your family. So, if I'm talking to a guy who has never had any Black people working for him, and all he's had with him are the people he knows, and those people work well together — they have all the shortcuts down, they know all the language, all the abbreviations, everything that makes things happen quickly with the least amount of conversation — the last thing they want to do is disturb that family. And they also know they are supporting people's lives. I understand that. But it's also perpetuating the lack of inclusion.

Change can begin with the cinematographer, because we are in charge of the crew, and the gaffer and the key grip also have to get on board. This is not for diversity, but for inclusion. To change the industry and fix the current imbalance, cinematographers have to be concerned about changing the world, evening out the balance, making this place accessible to everyone, and providing dreams and opportunities for people. And that means that somebody on that crew is going to have to go someplace else. Cinematographers are going to have to open the door and let someone new in. It might not be easy for people to do that, but it's necessary. And when they do it, perhaps they will be criticized for it, and I'm sure it will be a big decision — but it's what I do, and I'm asking you to join me.

The ASC is a product of the industry — it's not the industry. When a cinematographer is considered for ASC membership, they are judged by members on their body of work. It's only at the interview with the candidate that you actually get to see the person and you know whether they are Black, white, Chinese, et cetera. After that interview, the candidate's work

Simmons and his *Family Reunion* team.

goes out to the entire membership body, and they just become another cinematographer. The problem with the business — and one reason why there is a small number of Black people in the ASC — is that we don't have the opportunity to gather the body of work that allows us to present it, to be equal in that way to the other members in the ASC.

I've taught cinematography at UCLA for 26 years, and every one of those classes was about inclusivity, simply by virtue of the people who attended; it has always been a diverse group. Working with 28 people per year for 26 years, the numbers add up — and I've also mentored many of them long after they've left the classroom, which I consider a very important thing to do. Some of these filmmakers have become quite successful in the field, and even become ASC members themselves — but I know firsthand from seeing their work that there are a lot of brilliant cinematographers whose only obstacle to success is this lack of opportunity.

The Black cinematographers who are now ASC members have been fortunate to gain a body of work. When director Tim Reid hired me to shoot *Once Upon A Time ... When We Were Colored*, which was a big feature film for me, it opened a lot of doors. When French director Euzhan Palcy made *The Killing Yard* at Paramount, she insisted on a Black cinematographer, so I was able to gather work. Bryan Johnson at the Film Syndicate gave me commercials. So I was able to present a body of work, which had a lot to do with destiny, luck, and the way I've conducted my career, no doubt.

"There can be all of the studio mandates for inclusivity in the world, but the only way to change the industry is for every person to take complete responsibility for it."

My career has been built upon people who backed me as I was coming along, who wanted me to be successful — Lenny Hollander at F&B Ceco, ASC associate Robert Keslow of Keslow Camera, director Debbie Allen, and director Spike Lee, to name a few. I stand on the shoulders of so many people who trusted me, and gave me opportunities and equipment, and shared their knowledge.

I got into the Local 600 union because of a woman named Shirley Moore, who had an organization called ABET — Alliance of Black Entertainment Technicians. She called me up one day and said, "Johnny, the union door is open. You need to get over there, show them your days and check stubs, and let them know that it's time to go to work."

Confronting this problem of lack of diversity, the people who have benefited most from the efforts are white women. Right now, many positions in the industry have been filled by women, but people of color are still being left behind. And while it's wonderful that women are getting more opportunities, it needs to be acknowledged that much of that change has taken place because of the efforts of Black people and other people of color — and things are changing very slowly for us.

Even cinematographers from countries outside of the U.S. — from locations such as Europe, Latin America and Asia, for example — were typically able to hone their skills in an environment where they were not minorities. They weren't being looked at as someone who was intruding on an established system. Right now, a lot of white women are being hired, rather than women of color, and that is likely because that is more "comfortable" to some people. They are hiring people they are accustomed to being around and seeing. When people step forward and hire us, it's a big deal. But that's not to say that it wasn't a struggle for those women to get to work, either, because many men were not quick to prioritize gender parity in hiring. I've always prioritized hiring women of color on my crew, even back in my music-video days when misogyny in rap lyrics may have been uncomfortable.

Activist Vernā Myers has said that diversity is being asked to come to the party, and inclusion is being asked to dance. As people make these decisions to bring people of color onto the set, it has to be clear that it's an inclusive situation — that we're not just trying to create statistics. It has to be that we're actually trying to make a

NAUGHTY BY NATURE PHOTO BY LAMONT CRAWFORD.

Above: On the set of the music video for "Uptown Anthem," which Simmons shot for the hip-hop trio Naughty by Nature.

difference. Because nobody wants to work in an environment where they aren't welcome, and their contributions aren't important.

When Cynthia Pusheck, ASC and I founded the ASC Vision Committee with then-ASC President Richard Crudo in 2016 — and when that committee spawned the Society's mentorship and scholarship programs — our purpose was to help underrepresented cinematographers reach their goals. An important part of that process continues to be raising the awareness of people in decision-making positions — not only of what needs to be done, but why these decisions are essential to the progress of our craft. And with that knowledge comes responsibility.

There are cinematographers who have fully made a choice to create change, like Alan Caso, ASC. When he was honored in 2018 with the ASC Career Achievement in Television Award, he spoke bluntly and honestly about the advantage of his white privilege, and everybody listened to him. He got a standing ovation. He was honest with his position in the business, and he changed his crew. He hired women and men of color — he was very inclusive in his hiring.

As we move forward, the question becomes: Who's going to feel bad about their previous hiring practices and lack of inclusivity, and use that feeling to make a tangible change? Who's going to feel compelled to take responsibility to change things? The answer will determine whether the wall of faces at the ASC Clubhouse stays what it has been for the past 100 years, or if it becomes a portrait of the faces that represent the world we live in — a place where that 12-year-old girl or boy, now grown up and creating images of their own, can see their face, too.

I ask — what will the filmmaking and cinematography profession look like 100 years from now? Maybe it's time to get it right.

One person can make a difference. Be that person. ◊

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Cinema in the Age of Covid

As the pandemic rages on, exhibitors maintain optimism while betting on the future, and distributors hold their cards close to their vests.

By Steve Chagollan

The constraints imposed by Covid-19 on the theatrical movie experience have been in place for so long now, certain cinematographers are concerned that complacency will set in and a new paradigm of home viewing will take its place.

"I'm really worried about what's happening right now changing the whole perception of what the experience is like of seeing something on the big screen with an audience in the theater," says Phedon Papamichael, ASC, GSC, the cinematographer of such acclaimed features as *The Trial of the Chicago 7*, *Ford v Ferrari and Nebraska*. "People just might get used to it."

Mandy Walker, ASC, ACS, whose live-action extravaganza *Mulan* (*AC* Sept. '20) was seen primarily in living rooms in the U.S. as a result of Covid, is more hopeful that the shared, big-screen experience — the optimal format of filmmakers for more than a century — will survive and thrive into the future, despite competition from streamers like Netflix and Amazon. "The moviegoing experience is still special and important in our culture, whether it's a blockbuster or not," she says. "What the streamers are offering is fantastic, but there's room for both. And I'm hoping, like everybody else, that [theaters] can survive and that the crowds will come back."

Certainly this is what John Fithian, president and CEO of the National Association of Theater Owners (NATO), believes. "We haven't had a single reported outbreak at any movie theater anywhere in the world," he told *AC* at the end of October. "And we've been open for months." But since then, a third wave of the pandemic has arrived, with the number of cases and deaths spiking around the globe as of late November.

And while some businesses have thrived during these bleakest of times, theater chains have been especially hard-hit by the two-steps-forward/three-steps-back restrictions imposed on non-essential businesses. Fear of exposure, transmission, or unmasked strangers who get too close has continued to keep people largely at home and away from theaters, and it's impacting the movie business like no previous crisis. For every optimist like Fithian, there are others like Jeff Bock, box-office analyst with Exhibitor Relations, who take a more wary stance. "There's a big hesitation [by] audiences to [visit] enclosed spaces with strangers [in] questionable ventilation," said Bock. "These are the three red flags scientists and doctors have been telling us [to avoid] for the last eight months. And guess what — theaters hit all of those."

Yet chains have taken the initiative to install safety protocols that include upgraded air filtration systems, automatic seat blocking, non-contact transactioning, mandatory masks, and regular health checks for their employees. They are still not seeing the kind of audience turnout they're aiming for, though. A further financial barrier is that two of the biggest U.S. markets — Los Angeles and New York City — are still closed. Within the markets currently operational, the issue remains that there is a significant shortage of product to offer potential theater attendees.

"Most distributors kept postponing their movies because they want 100 percent of the markets to be open," says Fithian. "I've essentially argued to them that they can't wait for 100 percent — because if you do, that'll be next summer, when a vaccine is available and working, and people feel comfortable going back en masse and the government feels comfortable having everything open. We've tried to encourage distributors to go with their films when the majority of the markets are open."

But Covid — which has extended its tentacles into every nook and cranny of society — is not just affecting business as we know it; its impact will continue to reverberate long after a vaccine is FDA-approved and widely distributed. A lot of the changes taking place in the industry are not so much a result of the pandemic as they have been accelerated by it. Streamers such as Netflix and Amazon are no longer "disruptors," as they were commonly called less than two years ago, but mainstream players — much like the studios of Hollywood's golden age.

Right now, it's looking as if the one-size-fits-all theatrical "window" model will become as outdated as the self-serve salad bar. Theater chains, which could very well be bought out by content producers no longer constrained from owning theaters by consent decrees, may have to change the way they do business in order to thrive in the future.

The Short-Term Money

Opinions among theater leadership range from pessimistic to bullish when it comes to the future. Given NATO's estimate that close to 70% of small- and mid-sized chains might be forced to close or file for bankruptcy if revenue declines continue — and that theaters still in operation are restricted to 25%-to-50% capacity, but are only filling a fraction of those seats — Ted Mundorff, president & COO of Pacific/ArcLight Cinema, is one executive who's not willing to bet on the short-term health of brick-and-mortar moviegoing. Indeed, the bulk of Pacific/Arclight's employees have been furloughed, and all of the chain's screens are dark. "The box office is so low, and the individual theaters are just not performing to a level [where] you can even break even," Mundorff says. "To open up and operate in this environment, these theaters are losing more money than they were staying closed. And I also don't believe opening in New York or L.A. changes things."

In October, largest chain in the U.S., AMC, warned investors that it

PHOTO COURTESY OF NETFLIX.

Opened in 1922, the restored Egyptian Theatre in Hollywood has been home to the American Cinematheque since 1998. The facility was purchased in 2020 by Netflix, which will use it for premieres and screenings.

Hugo (Asa Butterfield) and Isabelle (Chloë Grace Moretz) enjoy the theatrical experience in director Martin Scorsese's ode to silent film, *Hugo* (2011), featuring Oscar-winning cinematography by Robert Richardson, ASC.

might have to file for Chapter 11 bankruptcy if unable to secure additional sources of liquidity.

Yet — providing there are movies in release to drive ticket sales — AMC Entertainment CEO Adam Aron remains optimistic, even with the current capacity restrictions. "You have to put those numbers in perspective," he told MSNBC in October. "Theaters aren't typically full. Our industry is a church built for Easter Sunday. Last year, when AMC sold more tickets than any cinema chain in the world, we only sold 17 percent of our seats. A capacity limitation is not the issue for us — it's making sure we have blockbuster movies that will appeal to [audiences]."

Aron likened AMC to a "new-car dealer, and there haven't been new cars that have been manufactured."

Adds Fithian, "The capacity limits are not our biggest challenge. It's different than a Broadway playhouse. The business model for Broadway [is that] you've got to sell out a fairly tight auditorium with small seats crammed right next to each other.

"We don't sell out very often even in good times — [maybe] Friday and Saturday night. But with these capacity limits, it's easy to spread those viewers out over more showtimes and days of the week. So the capacity is not our issue; our issue is [the availability of] movies."

Upgrading the Experience

Most of those interviewed for this story feel that in terms of technology, the major theater chains are largely up to speed, and have made remarkable strides in recent years, even if widespread 4K projection remains a long way off.

Upgrades have been key in keeping up with the Joneses and getting people off their couches. Regal reportedly invested $12 million to renovate its 21-screen complex at the Irvine Spectrum Center in Southern California's Orange County. AMC recently built a brand-new 37,000-square-foot venue with nine screens, recliner seating and immersive Dolby Cinema technology in L.A. County's Porter Ranch. Even the DGA, a proponent of the big-screen experience, has gotten into the act, with a "reimagining" of its flagship theater at its L.A. headquarters, which now offers Dolby Atmos sound, 70 Meyer speakers, and the ability to project via Dolby Laser Vision or 35mm and 70mm film prints.

Papamichael points to the basics for commercial showcases: "The image and sound quality have to be superb."

Peggy Rajski is dean of Loyola Marymount University School of Film and Television and a producer of such indie classics as John Sayles' *The Brother From Another Planet* and *Matewan*. She won an Oscar for the short *Trevor* and founded The Trevor Project, a large non-profit organization dedicated to LGBTQ suicide prevention. "You have to have pristine, state-of-the-art quality projection and sound to get people out of their homes," she says.

Rajski adds, "The ArcLight Cinema was the first iteration of making going to the movie theater a bit easier. You paid a price for that, but [when I go to the ArcLight] I don't stand in line. My seat is selected for me. You don't have to worry about showing up early. That kind of approach will continue. Also, more sophisticated dining options make it a real night out."

One step further, Alamo Drafthouse — an early introducer of in-seat dining — has rolled out a nationwide program where patrons rent out an entire theater, with optional food and beverages served by mask-wearing staff. Drafthouse senior director of venue experience Kristen Wheaton said in a statement, "In just the first few weeks, we booked over 700 groups at just a handful of theaters."

Francis Ford Coppola, whose director's cut of *The Godfather Part III*, titled *Mario Puzo's The Godfather, Coda: The Death of Michael Corleone* is due in theaters sometime in December from Paramount, thinks we were better off when the studios owned their own theaters, and can do so again. "Let's face it," he tells *AC*. "Apple could buy any movie company they want; they could buy a half dozen fantastic theaters.

"Netflix recently bought [the Egyptian Theatre in Hollywood, longtime home to the American Cinematheque]," he notes. "The owner/producers of the future are also going to own theaters. And those theaters will be more like the real cinema palaces of old, rather than [places] where you walk in and see 20 minutes of commercials — which, by the way, the theater owners promised you'd never see."

Streamers vs. Theaters

While going out to the movies is a relative bargain compared to, say, a night at the opera or a Lakers game, there are those who feel that the wealth of options from streamers, premium cable services and networks like AMC and FX have made leaving the home even tougher for

PHOTOS COURTESY OF THE ASC ARCHIVES.

A product of the Thomas A. Edison labs, the Kinetoscope was the first motion-picture exhibition device to utilize sequential images printed on a strip of perforated film driven by sprockets and an intermittent movement.

those on a budget. (The average cost of a movie ticket in 2019 was $9.26.)

Bock feels theater owners need to be more aggressive about making their rates more competitive. "This is about how you spend your free time," he says, "and the price point for theaters is $15 for one movie, let's say. That's an entire month of Netflix."

"The big challenge will be with family entertainment, given how expensive movies can be and how much people have gotten attached to being at home," says Rajski. "We've also already gotten to see how exhibitors have adjusted to the landscape before Covid — things like package deals, where you can go unlimited for X-amount per month."

Fithian notes that subscriptions were starting to catch on before the pandemic, "and I don't think the trajectory was known yet when we had to shut down, so let's just see what happens when we come back up strongly. We're open, but we're not open strongly yet."

Streamers as the Emerging Specialty Platform

One thing that could be said of the more successful streamers, such as Netflix and Amazon, is that they've become a haven for filmmakers with singular voices — much like the director-driven New Hollywood of the 1970s, and the indie boutiques of the ensuing two decades.

Netflix alone has signed talented filmmakers such as Martin Scorsese, David Fincher, Alfonso Cuarón, Spike Lee, Nicole Holofcener, Damien Chazelle, Bong Joon-ho, Shonda Rhimes, Ryan Murphy and Dee Rees, while Amazon has struck deals with Todd Haynes, Steve McQueen and Richard Linklater, among others. At a time when the majors are leaning more toward franchise properties and superhero mash-ups, going out to the movies is becoming a harder sell to those seeking more nuanced fare. "The streamers are willing to take chances on adult dramas," says Bock, who feels such projects no longer draw as much studio backing. "It doesn't make sense to the bottom line at the box office."

The growing speculation is that with the exception of rising players like Neon and A24 — the companies behind the recent Academy Award Best Picture winners *Parasite* and *Moonlight*, respectively — some of the more established art-house labels are losing the turf war to streamers. "That's exactly what we're moving towards," says Bock. "The pandemic [has] accelerated that paradigm, [which] will be carved out of solid marble going forward."

Adds Mundorff, who established his exhibition bona fides with the art-house theater chain Landmark, "My biggest fear of streamers living side-by-side in the world of exhibition is that specialized theaters [may] go away. They're the most vulnerable. I don't see Imax theaters going away.

"Specialized film tends to attract an older audience," he adds, "and the older audience is going to be the slowest audience to come back to movie theaters, if they do in fact come back."

Fithian recognizes that while the tide appears to be turning, there's also the effect of the pandemic to consider. "There are trends in that direction, and we want to defeat those trends. We want movies of all sizes and genres, appealing to all demographics, playing theatrically."

Mundorff, too, maintains a glass-half-full outlook. "I've never been a believer that home streaming or home entertainment is going to stop people from going to the movies," he says. "We can go back to 2018, which was the greatest year ever for the [domestic] box office [with a take the website Box Office Mojo pegs at roughly $11.9 billion], and the greatest year for commercial and specialized [filmmakers], which I was at the time [with Landmark]. I point out to people, 'Guess what existed side by side [with us that year]? Netflix.'"

Josh Greenstein, president of the Motion Picture Group at Sony Pictures, doesn't view the streamers as stepping on anybody's toes. "Those companies are fantastic, and what they're doing has been incredible," he asserts. "They're certainly a disruption for the television business. But we have different businesses, and we can live side by side in harmony."

In fact, Sony did business with Apple TV Plus when Covid made it too onerous to release their feature *Greyhound* in theaters last June, and sold its distribution rights to the streamer.

Like Greenstein, Jim Orr — president of domestic theatrical distribution for Universal Pictures — is bullish on theatrical, and points to the eight titles Universal, at the time of our interview, was releasing into theaters between Halloween and Christmas. "I think the question is whether exhibitors and the streamers can coexist, and the answer is yes," he says. "The studios are often the producers for these streaming services, and the content will find its way to the appropriate venue. Every idea that

RIGHT: In 1902, Tally's Electric Theatre in Los Angeles became the first motion picture theater, which started out charging 10 cents a ticket per customer.

BELOW: Patented in 1897, the Edison Home Projecting Kinetoscope seen here was introduced in 1912. "Home PK" was a flop, selling fewer than 500 units, and was discontinued in 1914.

becomes a film has its own arc, depending on who's making it, how they want to exploit it, where the money's coming from, and so on.

"What we're looking to do is lean into the theatrical model, make it as robust as we can, and get as many moviegoers [as possible] into the theaters with our titles."

Window Dressing

It's important to note, though, that the "window model," as we know it, is shattering, at least in the short term. In response to Covid, Warner Bros. announced in early December that its entire 2021 slate will be available on HBO Max day-and-date with their theatrical release for a month, following the model it set for *Wonder Woman 1984*. Prior to that, Universal struck deals with AMC and Cinemark that allow the studio to call an audible after three weekends — or 21 days, for the former, and 17 days, for the latter — as opposed to being beholden to the traditional 74- to 90-day exclusive theatrical window. That "optionality," as Orr calls it, gives Universal the choice to leave a film in theaters, or offer it concurrently on PVOD.

Unlike Disney Plus, though, NBC/Universal's new streaming service, Peacock, was not conceived as the studio's PVOD platform. "Peacock was not built for transactional digital rental," explains an NBC/Universal spokesperson. "It's a premium tier service that is relying right now on library titles." It's that "right-now" part that leaves the future open to speculation.

And for Bock, theatrical windows will shrink, or disappear altogether. "The problem with these windows is that they're not structuring them correctly," he says of the prevailing contracts between distributors and exhibitors. "It should be based on box office. It should be based on a tiered schedule. 'If you're not making this much at the box office, theaters — sorry, [but] we're going DVOD on Monday.'"

Bock cites Disney Plus as giving the umbrella company the flexibility it needs to be nimble, pointing to Disney's decision to release its Pixar titles exclusively on its streaming service. "It shocked everybody," said Bock. "This is a Pixar film! That's a minimum of $750 [million] worldwide at the box office no matter what they do. That was a huge pivot from the biggest company making big movies right now.

"They have so much more product than any other studio right now that maybe they could play with these different elements. I don't think their Marvel films will go in this direction."

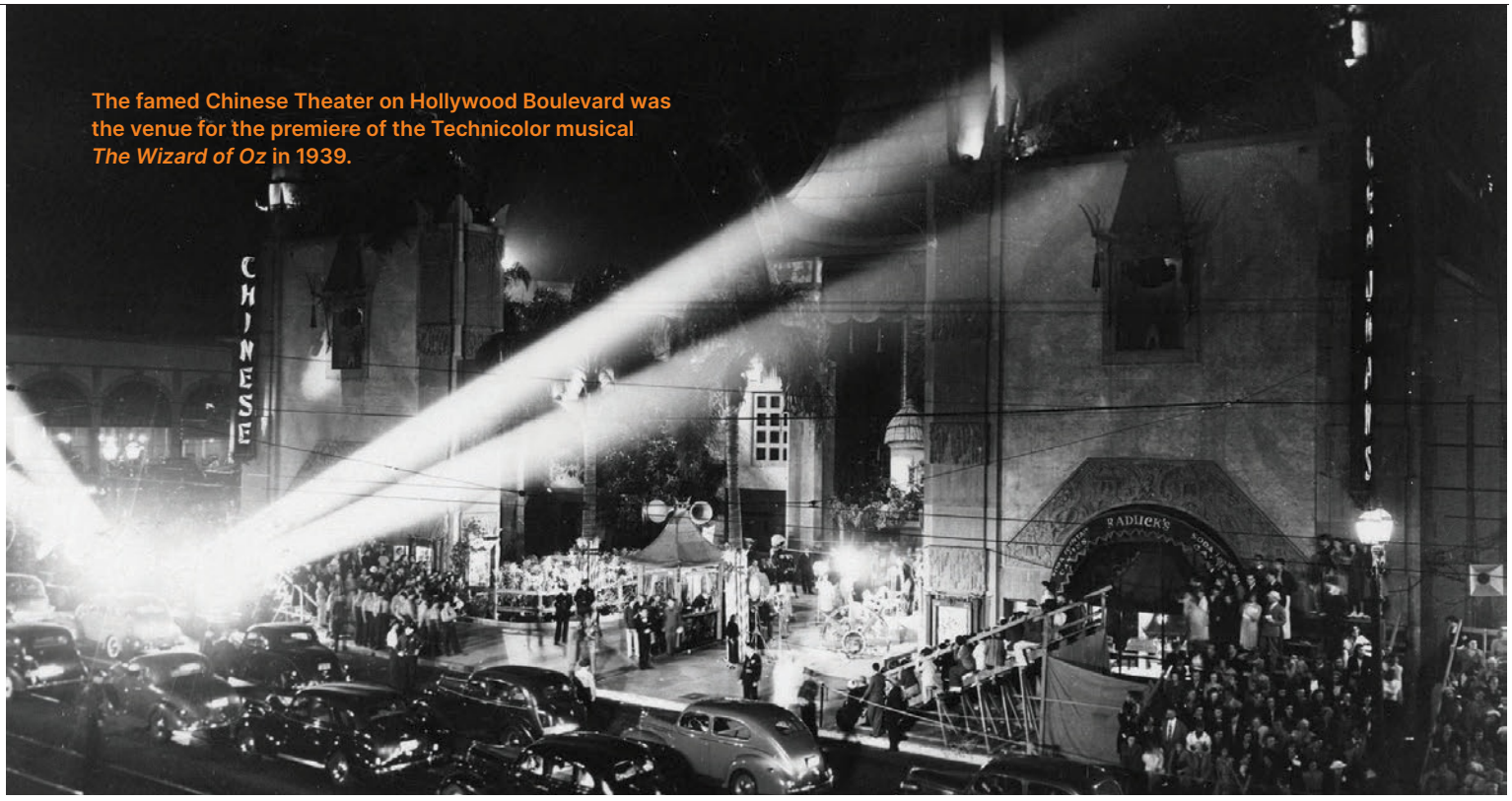
Mundorff believes theatrical windows are more important for specialty films that are more reliant on festival exposure, reviews and word-of-mouth. "The specialized films that a Landmark would play need at least existing windows — 90-days — in order to survive. They need *Moonlight* to go 13, 14, 15 weeks. In the commercial world, not too many films play more than four to six weeks. The bulk of the money is made in week one, and then it's 60 percent less in week two and another 60 percent less in week three."

Rajski points out that the pandemic has created the time and willingness for consumers to get out of their comfort zone, which could eventually translate into more adventurous moviegoing down the road. "I think Covid might have expanded people's appetites for a wider range of fare," she says. "I know, just from talking to people who are not in the film business, that the consumption of documentaries seems to have expanded. People [are] poking around a little bit more. We may even get people to watch subtitled films again, which is what I hope for."

Futurecasting

So how will the exhibition landscape play out five or 10 years from now? Everyone interviewed for this article expressed a belief that the theater-going experience will come back once Covid-19 is in our rearview mirror. The floodgates analogy comes to mind — people have been cooped up for so long that they're itching to get out of the house, whether it's for the movies, live music or sporting events.

Of course, many believe that movies must be seen on the big screen for optimal effect, and an audience gives a movie energy. As one veteran publicist put it, you "single-task" — you are resolutely focused, you turn off your phone, you don't take kitchen breaks.



The famed Chinese Theater on Hollywood Boulevard was the venue for the premiere of the Technicolor musical *The Wizard of Oz* in 1939.

Or as Christopher Nolan told *DGA Quarterly* in 2018, "Cinema is a medium. You shift away from that and it becomes something else." Nolan describes moviegoing as "a visceral, subjective experience" where "shared empathy" is "maximized with the largest possible screens. In the theater — and nowhere else — you have people look at the image and sound from the same point of view together. This is unique to the movies, and it can't be overstated enough."

At the same time, Rajski thinks we'll get "bigger and bigger TV sets in our home, which will cause us to try to emulate the big-screen experience" in our living rooms and dens. The fact that sales of smart TVs 65" and larger were up 53% in the first half of the year, according to research firm the NPD Group, bear that out and the demand is driving prices down, making such home screens generally more affordable.

Fithian believes some of the safety precautions instigated by Covid will continue for the long term, noting, "Some of those policies make a lot of sense. Better ventilation systems, better cleaning procedures, regular health checks on your employees — there's a lot of good learning in here that should be maintained permanently."

He also feels the trend in such amenities as luxury recliners will continue, and he is heartened by the resurgence of drive-in theaters. "We've learned that we are competing with lots of different ways for people to spend their leisure time, and the modern world is very busy, and there's a ton of content in the home, so we've had to up our game."

But Bock feels exhibitors haven't gone far enough. "Strong businesses evolve with the times," he says. "I don't think they've evolved enough. Even Walmart was setting up drive-ins in their parking lots this summer, and they sold out nationwide. You couldn't even get a ticket for a Walmart drive-in movie. Sony Pictures did it on their lot. AMC did not.

"AMC and these big chains were hoping for a reboot. I think it's more of a rebuild. And that's the way they're going to have to think if they're rebuilding new theaters."

Bock prescribes to the time-honored philosophy that "the customer is always right," and that consumers will define how businesses are shaped in the future. "What phones have done and what streaming has done is to make people the masters of their own entertainment world," he says. "They get to decide when and where they want to watch something, and that has become ingrained in the way we digest entertainment. We want it when we want it, not when someone else dictates it. If filmed entertainment wants to live on in theatrical format, it's going to have to cater to what consumers want, not the other way around."

Like Coppola, Bock sees companies like Disney continuing to buy or build their own theaters, controlling the pipeline throughout the distribution process and "eliminating the middle man," as he puts it. "In 10 years we won't be talking about windows, because they won't be around in the same way. And theaters, at least the major chains, will not be owned by the same companies we're talking about now, because they don't have any of the content. And we all know that content wears the crown."

Coppola, whose pioneering strides in what he once called "electronic cinema" laid the foundation for the digital age, is characteristically fanciful. He talks about "live cinema," which he explains as "not a live play, but a movie that's being made while you're watching it." He's been experimenting with the form since 1980, and wrote about it in his book *Live Cinema and Its Techniques*, published in 2017.

The filmmaker behind *The Godfather* trilogy and *Apocalypse Now* also sees the filmgoing experience as more than just a night out. "There will be a different kind of huge-event exhibition in which people go to a resort in a beautiful place. Instead of being a weekend devoted to a movie, [it would be] an entire week. And people would eat well, and receive information about a great new Martin Scorsese film that they're going to see. And then the ultimate experience would be going to this unbelievable theater in the mountains to see it. It's a nutty idea, but [one] I actually had before the pandemic. The payoff would be seeing the premiere of a major film — a *Lawrence of Arabia* experience." ◊

Cinema Paradiso and the Seventh Art

When audiences return to the cinema, we will be there for and with them.

By John Bailey, ASC

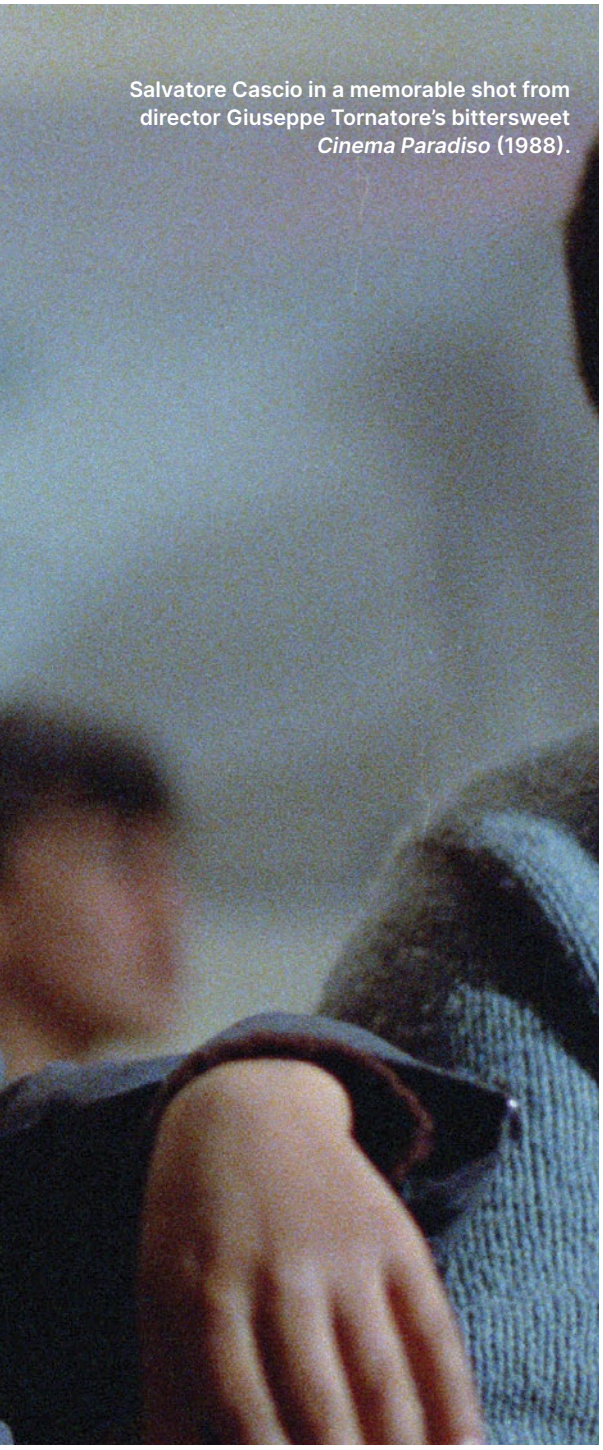
There is no movie that more deeply speaks to that almost spiritual journey any aspiring filmmaker makes from intern to master than Giuseppe Tornatore's 1988 Academy Award-winning love song to the movies, *Cinema Paradiso*.

The movie, shot by Blasco Giurato, begins with acclaimed filmmaker Salvatore Di Vita learning of the death of the man who had first inspired him to follow his dream: Alfredo, the movie projectionist in the Sicilian village where Salvatore — nicknamed "Totò" in his youth — first succumbed to the magical thrall of the movies. *Cinema Paradiso*, embracing the time-honored trope of the flashback, takes us back to the late 1940s, a time before television, when the village church and movie house were both, in their own ways, places of community-wide worship.

An early scene opens with a wan shaft of sunlight falling through a window of the village's small Catholic church. It pools around 8-year-old Totò, who has fallen asleep while performing his duties as an altar boy. Father Adelfio has just elevated the sacred host at the most dramatic moment of the Mass, and the venerable priest is not happy with his distracted charge's late ringing of the Sanctus bell.

Later that day, the priest sits alone in the darkened local cinema, holding aloft the same Sanctus bell; he is staring ahead as the projector casts a different beam of light on the tattered screen. (We can almost smell incense here, too.) Inside the cramped projection

CINEMA PARADISO PHOTO COURTESY OF ALAMY.



Salvatore Cascio in a memorable shot from director Giuseppe Tornatore's bittersweet *Cinema Paradiso* (1988).

"We are not the film audience, watching a movie for a few hours and then moving on with our real lives. We live *reel* lives, a species of happy, lost souls cached inside our own realities. 'The movies' are and always will be our lives."

booth, the aging 35mm projector is manned by the grizzled Alfredo. The images pouring out of the projection port, a plaster leonine cast, are from Jean Renoir's 1936 classic *The Lower Depths*. At every kiss or intimate sexual moment between actors Jean Gabin and Junie Astor, Father Adelfio rings the Sanctus bell, signaling Alfredo to insert a piece of paper into the spooling film reel — to excise frames depicting physical intimacy — before showing the movie to the local townspeople. It is a "final cut" beyond any director's ken.

Behind a curtain in the theater entryway, Totò also stares at the screen. Slightly buck-toothed and open-mouthed, he is transfixed by the flickering images, a celluloid prelude to the adventures of adulthood soon to unspool in his own life. It is the future filmmaker's transcendent look that speaks to all of us who have followed the same path as this modest boy into our own magical world of cinema.

Whether you are 8-year-old Totò from a backwater Sicilian village, or from an elite Upper East Side cineaste family that refers to the movies as critic Ricciotto Canudo's "Seventh Art," or a veiled Iranian woman embracing film not only as art but also as an agent of social change, or a recently rediscovered woman pioneer of silent cinema, you are, like the rest of us, mesmerized by this art form in constant technical and aesthetic flux. The full breadth of human emotions that the movies document continues to surprise and engage audiences — as well as us filmmakers. We, the cinema's sleight-of-hand artists, savvy to the tricks, are every bit in thrall to its magic.

Every generation of filmmakers since the Lumière brothers, who mounted cinema's first public exhibition in Paris in December 1895, has confronted change and challenges. Some of these have broadened the creative spectrum of how we make movies; others have been technical; and still more have been changes beyond filmmakers' control, whether it be the commercial ups and downs of an art form deeply dependent on box-office returns, or transformative changes such as television in the 1950s, home video in the 1970s, digital production in the 2000s, or — something no one could have predicted — a deadly virus.

As I write this, many months after movie theaters across the United States shut down, filmmakers and studios are struggling to make movies within the safety guidelines dictated by Covid-19, and the future remains uncertain. Several times a week, I drive past the Vista Theatre on Sunset Boulevard in Los Feliz. It opened on Oct. 9, 1923, with a feature titled *Tips*, starring Baby Peggy. Its marquee now features not a current-release title, but the words "To be continued..." In a kind of irony, the marquee stands about a football field's distance from the site where D.W. Griffith built the Babylon set for his epic 1916 film *Intolerance*.

Each major change during cinema's evolution seems to augur a generational change in the men and women who make movies, and Covid-19 is no exception. This time, it is those most vulnerable to the virus — those more advanced in years — who may stand aside, becoming filmgoers once again, rather than makers. This opens portals for new and younger filmmakers.

The waters they must navigate as emerging artists are uncertain. The gnawing question of "What is a film?" — which preoccupied the Academy of Motion Picture Arts and Sciences during the two years I was its president — is still on the table, as theatrical exhibition struggles to contend with ever-expanding streaming platforms and 4K home screens. Will audiences' desire to laugh or cry together in the dark with hundreds of fellow viewers return, or will the 100" monitor in the living room become the new normal? How we will make our future movies is in the balance.

Writing several months ago about this crossroads, I had a somewhat dystopian view of cinema's future, but during a recent virtual meeting of the National Film Preservation Board, where I joined several dozen film scholars, historians and archivists (and a few other actual filmmakers), my belief in the timeless magic of cinema was reaffirmed. As a student, I watched key movies of the cinema canon in mostly degraded, duped and pirated prints featuring insistent scratches, missing frames and near-incoherent sound. Using today's cutting-edge remastering technology, many films, even those from the early silent era, have been restored to the luminosity of their original release. Decades of cinematic time have collapsed; we now can see glorious restorations of movies by the Lumières. The words "film history" have

John Bailey, ASC (far left) and crew set up a shot for the feature *A Walk in the Woods* (2015). He subsequently served two terms as president of the Academy of Motion Picture Arts and Sciences (2017-'19) before returning to cinematography.

A WALK IN THE WOODS PHOTO BY FRANK MASI, COURTESY OF BROADGREEN PICTURES.

become irrelevant as we almost seamlessly move from today's VFX-laden action film to a dark masterpiece of the Expressionist era like Paul Wegener's 1920 film *The Golem*. We were all gobsmacked by director Peter Jackson's 2018 documentary *They Shall Not Grow Old*, which brought World War I newsreel footage back to life with state-of-the-art technology; its images can stand side by side with Roger Deakins, ASC, BSC's brilliant work in *1917*. Today, past and present cinema intersect, overlapping in wondrous ways.

Near the end of *Cinema Paradiso*, which was made a decade before the emergence of digital cinema, the graying Salvatore returns to his childhood village after a 30-year absence to attend Alfredo's funeral. We learn that 10-year-old Totò had replaced Alfredo as the village's film projectionist after the older man was blinded by a nitrate-print fire in the projection booth. Becoming custodian of the village's cinema fantasies was Totò's first step into the intoxicating world of cinema creation. Especially in the analog film era, the role of the projectionist, that solitary worker in an often hot and oily-smelling booth, was the final link in the making of a movie.

These scenes resonate deeply for me. As a graduate student at USC School of Cinema, I received a teaching-assistant grant to work as a projectionist. My job was to present "cuts" of student works-in-progress; 16mm prints on loan from MoMA, New Yorker Films, Raymond Rohauer and Janus Films; and pristine, 35mm release prints for industry guests prior to general release. Spooling up and threading the 2,000' steel reels and nursing the ancient, dual 35mm Simplex projectors was my entry into filmmaking. Memories of those mesmerizing hours spent gawking at movies through the booth's glass portal remain strong — a formative experience that can't be duplicated by the automated digital-projection systems in today's multiplexes.

As Salvatore walks the streets of Giancaldo in Alfredo's funeral cortège, he passes the shuttered, derelict theater in the village square. It is scheduled for demolition to make way for a parking lot. The theater's aging owner leans in to Salvatore and says grimly, "The cinema has become a memory." Later, the townspeople gather to watch the Cinema Paradiso flattened by an implosion.

Earlier in the movie, sitting on a low wall overlooking the Mediterranean, Alfredo had offered advice to young Totò: "Life is not what you see in films; life is much harder." Maybe so! But to those of us who have made lives of making films, and to those who are just beginning such lives, this caveat *must* fall on deaf ears. We are not the film audience, watching a movie for a few hours and then moving on with our real lives. We live *reel* lives, a species of happy, lost souls cached inside our own realities. "The movies" are and always will be our lives.

So, a pox on the dystopian vision of cinema's future. Recent statements — even commitments — by many movie-studio executives have reaffirmed their dedication to broad-based theatrical exhibition as an essential element of movie releases. Audiences have flocked to cinema screens for 125 years, a habit the studios and exhibitors believe will again flourish as the doors open and the smell of hot popcorn welcomes us. Our mission is to be there for and with them, even as several studios equivocate on just how they will balance theatrical release with their burgeoning streaming platforms.

Several delightful scenes in *Cinema Paradiso* show the audience sharing vibrant emotions during a movie and eagerly waiting for lights to dim before the next show. This ritual of entering a communal space and surrendering to this shared experience in a darkened room, immersed in the flow of images and the sounds of other lives being lived, with no pause button to reach for, is, as Hamlet invokes in a darker context, "a consummation devoutly to be wished."

It is no accident that we first see Totò as an acolyte in the rite of the celebration of the Mass. In its rich past, in its ever-vibrant present, and in its often wobbly future, cinema is a celebration, a secular exaltation of the aspirations of our most passionate, even spiritual, humanity.

A Forward Focus: In the following pages, more ASC members offer their views on the future.

"There's a plethora of tools at our disposal, and new equipment is always being developed. Cinematographers have always embraced and influenced new technologies."

Step-By-Step Change

By Tara Jenkins

When it comes to the future of filmmaking, Nancy Schreiber, ASC sees hopeful signs despite the upheaval caused by Covid-19. It's a period of transition not only in terms of logistics, but also creative approaches. "During the pandemic, I've found myself using longer lenses," she says, "And now remote heads are part of the package, not just for day playing."

Schreiber adds that many "new" approaches are simply time-tested ideas that are coming back around. "Every technique that we used before will probably be used again, as history has demonstrated, and eventually the pandemic will be over. Remember when 3D returned, then disappeared, then returned again? I wonder if that trend has finally run its course. Shooting anamorphic has exploded again, and is stronger than ever. I think it will only keep growing as lens manufacturers are rising to meet increased demand. Film is back, but it never really left. We used to use film stocks to create different styles or emotions, whereas we now use lenses, choosing vintage or modern glass, which give us unique characteristics for particular ways of storytelling. It's just fantastic how lucky we are at this point to have so many incredible choices."

Known for her work on the documentaries *Visions of Light, Linda Ronstadt: The Sound of My Voice* and *The Celluloid Closet*; the narrative features *The Nines*, *Your Friends and Neighbors* and *Mapplethorpe*; and the series *The Comeback*, *Better Things* and *P-Valley* — and as the recipient of the ASC Presidents Award in 2017 — Schreiber has noticed progress in both documentary filmmaking and narrative television, and she is enjoying the greater flexibility that has arisen in both fields. She looks forward to this continuing trend wherein movie theaters

Author Dolly Freed steps in front of the camera for director-cinematographer Schreiber during the production of the documentary short *Possum Living* (1980). The project helped Schreiber establish a career in nonfiction shooting.

PHOTO COURTESY OF NANCY SCHREIBER, ASC.

and streaming continue to work in tandem to create audiences for new productions. "There is nothing like being in a dark theater, watching a film on a 50-foot screen with an audience laughing together, or gasping out loud when scared," she says. "We are always going to cherish this communal experience, but no doubt streaming is here to stay. And I'm encouraged about an ever-growing audience for independent narrative and documentary filmmaking, thanks to streaming services. Our tastes are more sophisticated, so we now demand better picture and sound."

Schreiber appreciates documentary filmmaking's move toward a more cinematic look and higher-resolution cameras, not only because of the aesthetics, but also for ease of shooting. "It was a blessing when the trend toward full-frame cameras became desirable for documentaries — as it did for narrative films — because I got a crewmember back: the camera assistant. For a while, we were using ⅔-inch chips and the cameras were equipped with one or two zoom lenses. Cameras could be picked up at rental houses without the need for long checkouts. With full-frame sensors, we are often using primes or a variety of zooms that require a variety of accessories, so there has to be a prep day for the camera assistant, unless there is an owner-operator of the gear. It was like the old days on film, when we had a three- or four-person tech crew, and that person could prep the camera gear at a checkout prior to the shoot, and even help with lighting on shoot days. This is how many assistants learn lighting, and become more experienced when moving on to be cinematographers. While documentary is known for a small crew and light footprint, having a few extra hands on set can be exponentially helpful in quickly and effectively creating a cinematic look and making setup faster.

"Everyone is demanding that visuals look really polished now, which surprisingly wasn't always the case in television," she continues. "Cinematographers have always been lauded for our abilities in crafting style — with lighting, composition and movement. It is only in the last couple of decades, influenced by certain cable networks' sky-high budgets, that television visuals, even on commercial networks, are so desired and embraced. It is truly amazing what DPs have been able to create despite the short schedules.

"There's a plethora of tools at our disposal, and new equipment is always being developed," Schreiber adds. "I regret only getting to use celluloid occasionally, but cinematographers have always embraced and influenced new technologies. That's what we do."

Schreiber says the diversity of her camera crew "has always been important for me. I've always made it my business to hire a diverse crew, and I've used camera assistants who are diverse, going back decades." On her recent show *P-Valley*, "the camera crew was more than 60 percent women, and we focused on hiring people of color.

"When I came onto commercial sets back in the day, I know a lot of eyebrows were raised, especially when I arrived with assistants or electrics who were women. I knew there were great obstacles, but if I did not hire, who would? It was less common for women outside of documentaries to shoot other genres, unless it was a tiny independent film. One time, I was hired on a movie, and while my agent was making the deal, the financiers called to say they were going to renege because they'd already hired a woman production designer, and they were afraid to have too many women. That was a while ago, but nonetheless it was shocking.

"Of course, now that has changed. It's very common for directors to have women cinematographers, but there was a time when they really had to fight for us. I've been fortunate to be on projects where all key positions have been female or people of color."

Yet women cinematographers are still more often hired on smaller independent projects, Schreiber says. "If a woman can shoot a movie in 20 days with a $5 million budget, what couldn't she do with a huge crew and much more time? It doesn't make sense, but when the financial stakes are high, women still have a much harder time getting hired. Fortunately, the success of studio films whose cinematographers were women — like Rachel Morrison, ASC; Maryse Alberti; Tami Reiker, ASC; and Mandy Walker, ASC, ACS — helps greatly!"

Schreiber feels that many more opportunities in television, both above and below the line, have opened up for women. "On *P-Valley*, we had a woman of color as showrunner, and all the directors were women. It was very inclusive, and that went down the line. When I was on ABC/Shondaland's *Station 19* last year, diversity in gender and race was evident in the makeup of our producers, directors and crew. There is much more consciousness now."

The #MeToo and 50/50 by 2020 movements have brought attention to the disparity, the cinematographer adds.

Schreiber cites one particular organization,

Women in Media — for which she serves on the advisory board — and its #HireTheseWomen initiative for helping to "move the needle forward for diversity below and above the line. The union and the ASC have also been active with their diversity committees, and the situation is changing step by step.

"While there is more work to be done to promote the efforts of women, women-identifying, and people of color," Schreiber says, "I believe that the opportunities for inclusive filmmaking in the future look bright."

On a Changing Industry

By Tommy Maddox-Upshaw, ASC

I feel we all have to evolve with these changes. I heard one cinematographer say that the biggest thing we're missing by not going into the theater is being there with the audience. It's like sports. For me, it's been hard to watch sports because I love going to a ballgame. Part of going is being there with everybody, experiencing the game together in an emotional context, and seeing how everybody reacts to the game, and how the players react to the fans either booing or cheering. It's the same thing with the movies. When you have an emotional response and you hear things in the theater, those are the things that I think people are really going to miss when you aren't sitting in front of that huge screen.

At the same time, a good movie is always going to have a certain level of emotional response. When you're watching a movie on a small-sized screen, depending on how close you sit to it, there's going to be a level of visual magnification that is just lost — you can't get the full scope. But if it's a great movie, you're still going to have the emotional context by sitting there and getting involved with it. And watching a movie on a 35' or 50' screen isn't going to make it better if the story sucks. I understand we cinematographers have egos, and we want to shoot for the big screen, but we should just shoot the best story out there, and it will resonate with people.

I think streaming and paying to watch movies at home is here to stay. Maybe the filmmaker could put something at the head of the movie before it screens, like: "Please enjoy in your home theater on the biggest screen possible." Because streaming isn't going to leave, and depending on the health risks over the next year or so, we can't expect everybody to want to go to the movie theater.

Even in movie theaters, there are things that can be off on the projection. Something screening in Bulgaria versus at the ArcLight — there's just no way that it's going to look the same. I've been in a movie theater in another country where the lights didn't go down all the way, and that was their standard — it was just super bright. Not everyone is going to have the standards of viewing that many of us filmmakers do.

But, I would say — don't stop watching. We all need a bit of escaping during this tough time. Entertainment has been around since we were painting on cave walls and writing stories in the dirt, from the beginning of human existence. Visual entertainment, and escapism, and stories by the firelight all over the world — this is what we do. Hopefully we don't lose touch with it, because it's something that we've been enjoying as human beings for a very long time.

Tommy Maddox-Upshaw, ASC has served as director of photography on Empire, Snowfall *and* On My Block.

MADDOX-UPSHAW PHOTO BY PRASHANT GUPTA, COURTESY OF FX.
CHRISTENSEN PHOTO BY JONNY COURNOYER, COURTESY OF PARAMOUNT PICTURES.

Cinema as Culture

By Charlotte Bruus Christensen, ASC

Going to the cinema is like going to an art gallery, or the theater to watch a play — it's making a choice that you need to get out of the house and do something cultural. I really believe that cinema will survive, and that people will want it enough to make sure that it does.

I think it's clear to all of us that the viewers' experience is going to come increasingly into their homes, because a lot of big companies like Disney are putting their focus into that. But I also think, like everything in life, sometimes it's one wave that goes in, but it draws back. I hear a lot of people saying cinema is going to die, but I don't think so. I think we will always want to go to the theater — for cinema or stage — because it's culture. I absolutely think with

PHOTO COURTESY OF CRAIG KIEF, ASC.

Narrowing the Gap

By Terry McCarthy

Craig Kief, ASC sees a bright future for filmmaking, courtesy of new technology and new distribution channels. Movie theaters? Not as much. "Sadly, I think the cinema experience will forever be changed by the pandemic. We're now seeing big movies premiering on streaming platforms. People like watching things in the comfort of their own homes, and the longer the pandemic goes on, the more people will get used to that."

Kief — known for his work on such series as *The Unicorn*, *The Muppets* and *The Kids Are Alright* — is quick to note that he doesn't see this change as detrimental to the audience's experience, as it's occurring at a time of advancement in both capture and viewing technology. "It's not just the quality of the images that is getting better — the quality of the viewing systems is also getting better," he says. "With bigger and better TVs and superior sound systems, the gap between movie theaters and home viewing has been on a long-trend line of narrowing. The expansion of HDR into home viewing is a dramatic leap forward."

The cinematographer says now that TV manufacturers are enabling 'filmmaker mode' on new televisions, which turns off extraneous processing and, most importantly, motion smoothing — something he calls "the most egregious sin that manufacturers do to our work" — the experience at home will further improve. "We are narrowing the gap between what the artists created on the set and what people see in their home. That is exciting. Accessibility to great TV and films in a high-quality viewing environment is always a good thing."

For example, Kief pointed out that this year's Camerimage festival, which was all online, "showed incredible films with great cinematography. Before, you would not have been exposed to most of these films unless you went to the festival in Poland — now, it is great that these international films are reaching more people online."

In terms of the craft as a whole, he points to the democratization of filmmaking technology — an ongoing trend over the past several years — as a sign of good things to come. "It's not only the continued innovation and access with camera and lighting products that's been improving the quality of film and TV," says Kief, who serves as a co-chair of the ASC Future Practices Committee. "Improvements in accessibility and the lowering of cost on all fronts, including post-production software, distribution platforms and education, will continue to put very powerful tools into the hands of filmmakers at all levels that were previously available to only the largest productions. This elevates everyone's ability to create compelling images and tell their stories in all genres."

"I think for all of us — whether it's the sound designer, director, actor or DP — this idea of being switched-off, switched-on or paused is a shame, because you're putting so much effort into every moment, and again we're completely out of control."

some projects, stories and genres, it makes a difference sitting amongst 50 or 100 other people to share a laugh or a scare. With genres like comedy, it's just a different experience when you have an audience laughing with you than seeing it at home.

We all put a lot of precision into our work, such as filters, color grading and a DI, and with home cinemas you have no idea what kind of screen people are watching on, or what their individual settings are — and they're watching on computers, iPads or phones. It's scary how little control we have. I've just done my first TV show, *Black Narcissus*, and I learned that there are times where one has to 'keep it safe' — when grading for dark scenes, for instance — to compensate for badly calibrated TVs. Whereas for a film, we can be more precise and braver with scenes playing in low light levels.

I prefer the bigger screen because people are in a dark room and watching a color-corrected monitor. It just feels like your work is being screened in the way it was meant to be. I think for all of us — whether it's the sound designer, director, actor or DP — this idea of being switched-off, switched-on or paused is a shame, because you're putting so much effort into every moment, and again we're completely out of control. But when you sit in a cinema, you've taken that time to watch a movie. I think there's some sort of relaxation in that, because you're not stressed by something else. You're going to the movies — that's what you're doing.

Charlotte Bruus Christensen, ASC has served as director of photography on such productions as A Quiet Place, Fences, Molly's Game *and* The Girl on the Train.

Continuing to Captivate

By Terry McCarthy

"Cinema is an art form that fully engages the viewer, and that won't change," says Armando Salas, ASC. "If a film or television series manages the alchemy of combining disparate crafts in just the right way, the viewer, regardless of background, can be transported and transformed."

Salas, who was nominated for a 2020 Emmy Award for his camerawork on the Netflix series *Ozark*, says that the moving image has an exceptional ability as an art form to command protracted attention: "Successful cinema wholly captivates its audience and supersedes the passage of time."

Salas adds that technology will continue to have an impact on the evolution of cinematography, as it has throughout the history of the medium. "Technology expands our toolsets for capturing images and curating how they appear through the lens." One of the effects of new technology, he notes, has been to lift the production quality of episodic series so that they are now beginning to rival the look of bigger feature films. "Although episodic productions may move at three or four times the pace of features, the image quality is becoming comparable. Look at the cinematography of *The Queen's Gambit* or *Mindhunter* — or *The Marvelous Mrs. Maisel*, which M. David Mullen, ASC won an Emmy for."

"New technologies allow for more options. On *Ozark*, for example, by using LED walls we photographed many pages of driving scenes in a day without the distraction of camera cars and police lockups. This allowed for a higher level of sophistication: I could focus on fine-tuning the lensing and lighting on a sound stage, while the actors could get in the zone. The goal is to limit how practical considerations can hinder the essence of the art form. And, of course, if we do our jobs well, the audience has no clue how it happens" — which is the point, he says.

"The question is simply: 'Did the audience connect with this scene?'" That, he says, will continue to be the goal of filmmakers in the future.

"If a film or television series manages the alchemy of combining disparate crafts in just the right way, the viewer, regardless of background, can be transported and transformed."

"I use a variety of cameras to shoot stills, but my carry-around camera is a Leica M."

— Dan Laustsen, ASC, DFF

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User Friendly

With virtual production on the rise, cinematographers take real-time control in VFX environments. By Noah Kadner

Shortly before the Covid-19 pandemic took hold in the United States, *AC* explored revolutionary new techniques for virtual production and in-camera visual effects that were pioneered on such projects as *The Mandalorian* (*AC* Feb.'20). Since then, this approach — which combines 3D scenery rendered on large, LED-screen volumes synchronized with tracked cameras — has started to mesh with remote-collaboration techniques that have become increasingly prevalent due to the safety guidelines and travel restrictions imposed by the pandemic. Even independent productions and modest start-up facilities are now looking to virtual production and in-camera visual effects to create content safely, and this, in turn, has led to a major increase in the number of LED "smart stages" in operation throughout the world.

While virtual production relies on new technology, it also leverages longstanding approaches first developed for rear-projection — and, like rear-projection, it offers a first-hand look at a nearly complete image. The result is a controlled environment rich with visual possibilities that places image control in the hands of the cinematographer.

"It's the cinematographer's eye that matches the color, contrast, perspective and everything else about a composite shot," says David Stump, ASC. "That used to be delegated to someone else, who could spend hours and hours doing that in post. Now, it has to be an instinctual decision made quickly onstage."

A seasoned visual-effects veteran who pioneered live-compositing techniques on 2006's *Red Riding Hood* (*AC* April '06), Stump is the visual-effects supervisor and co-cinematographer on *Gods of Mars*, an indie sci-fi feature that combines in-camera visual effects with traditional miniatures scanned into the digital realm via Lidar. The project, shot with Blackmagic Design's Ursa Mini Pro 12K, is currently on hiatus, due to Covid-19. Work thus far was performed during the pandemic with a team dispersed throughout the U.S. — with the director, editor, composer, sound designer, animators and VFX artists collaborating online from Hollywood, Portland, West Palm Beach, Detroit, Dallas and Austin. The movie takes place during a civil war on Mars in 2099, and follows

David Stump, ASC (left) takes aim on *Gods of Mars*.

PHOTO COURTESY OF PETER HYOGUCHI.


TITLE
IMAX
CAMERA CREW

This page, top: Shooting against the LED wall. Bottom: Matte-painting supervisor Caroleen "Jett" Green. Opposite page: Production designer Fon Davis and crew work with miniatures that are scanned into the digital realm.

a disgraced fighter pilot who leads a group of mercenaries on a mission to take out a charismatic cult leader who's spearheading a mining-colony rebellion.

"There are a couple dozen people in Hollywood who can say they've done many virtual productions," Stump says. "I did environments and previs with [Unity Technologies'] Unity three or four years ago, but the notion of using a game engine like [Epic Games'] Unreal for final pixel production in-camera is new for everybody."

Real-time game engines are the lynchpin for the virtual process. The final effect is highly convincing to the camera, incorporating realistic, interactive lighting and matching camera parallax.

Stump's co-cinematographer Michael Franks immediately recognized the advantages of capturing complex visual-effects shots in camera versus creating them with greenscreen composites. With the latter technique, "the difficulty is always matching the light in the plate to the light in the image," notes Franks. "You want it to be seamless to create the illusion that the subject is in a snowstorm or in the rain. With the LED volume, you're already starting with what looks like a real place.

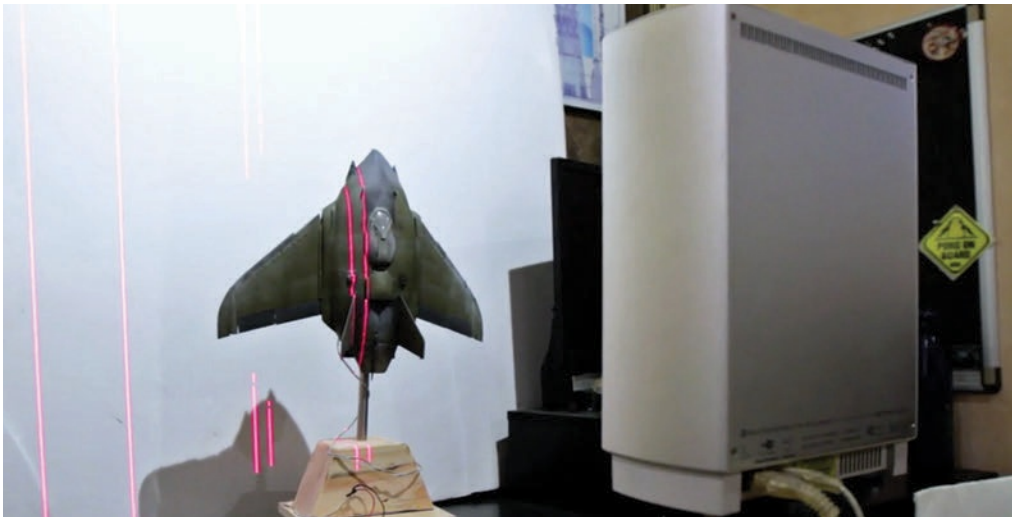
"The pandemic has also created a lot of restrictions on traveling to a location and dealing with larger crews," he adds, "and this technique enables us to do certain things that would otherwise be very difficult to accomplish under the restrictions — and we can do them in a controlled environment."

Gods of Mars director Peter Hyoguchi, who has a background in visual-effects supervision, sees a best-of-both-worlds solution in building practical miniatures and converting them into digital models that can be photographed in real time. "We're using photogrammetry and laser scanning to capture the miniatures and light them," Hyoguchi says. "The beautiful photographic flaws of nature are what make reality look real and CGI look artificial. The next level is using these digital models to capture complete shots in real time.

"I find the traditional CG pipeline tremendously time-consuming and expensive," the director adds. "Doing everything in camera cuts our costs by 30 to 50 percent, and it's much more efficient. I'm moving faster with a dozen visual-effects artists now than I was when I had 250 visual-effects artists on earlier projects. Working in this new medium is wildly different, but it's been a great learning process."

Hyoguchi does not believe the need for fewer crewmembers will lead to less work for industry personnel — in fact, he foresees the opposite. "It's going to increase the number of productions that are made globally, by a substantial amount. Because you'll be able to make a complex-looking visual-effects movie for a lot less money, a lot more of them will be made, and then the risk carried by any one film failing at the box office will instead be spread across many films, which means a more stable ecosystem and increased opportunities for work."

"Even though large-scale shows like *Westworld* are using this technology already, I still feel like it's in its infancy in terms of what's possible," Franks says. "I wonder what doors



"We're using photogrammetry and laser scanning to capture the miniatures and light them. The beautiful photographic flaws of nature are what make reality look real and CGI look artificial."

will be opened up later, like the ability to shoot multiple angles simultaneously. Also, as LED-module quality increases, we can worry less about getting too close to the screens and revealing any imperfections."

Stump notes that the exponential growth in virtual-production techniques has created a parallel need to continually educate its practitioners. "It's tough to spend enough time to learn all these new techniques," he says. "Virtual production is just another tool in the box, but the toolbox is getting so big the need for education is greater than ever. That's why the VES [Visual Effects Society] handbook is now so densely packed — there's so much to know."

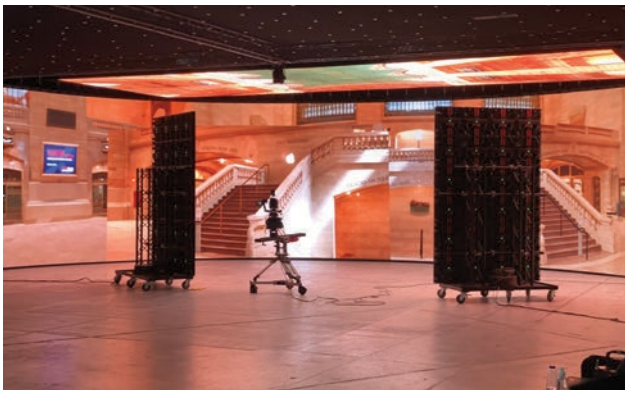
"I feel like I've been to the frontier, and it's great," says Hyoguchi. "People just need to learn the new techniques. You can make a very low-budget movie look like *Lawrence of Arabia*. If it wins at the box office, great. And if it fails at the box office, the studio is not going to go under. It's like the stock market: Do you want to put all your money into Nike, or would you rather have a diverse portfolio?"

Gods of Mars benefited from support from Epic Games, which assists emerging virtual-production filmmakers via technical outreach and Epic MegaGrants. "The MegaGrant program was created to help people who want to do something with Unreal but don't have enough funds," says David Morin, head of Epic's Los Angeles Lab. "Or there might be reluctance on some part of the team to use new technologies versus proven methods. The grants are there to help 'de-risk' a project." The *Gods of Mars* filmmakers tell *AC* that an Epic MegaGrant is covering half the cost of the production's experimental research and development.

Regarding the significant uptick in virtual production's popularity since the advent of the pandemic, Morin notes, "It's in times of disruption that innovation can leap forward. A typical filmmaker may feel stalled right now, and that is an ideal time to look at new technologies and retrain. In-camera visual effects have gone from a high-end technology used for major

Epic has enhanced features in Unreal Engine that are of particular use to cinematographers, says David Morin, head of Epic's Los Angeles Lab. "For one, the Rest API allows you to extract some part of the Unreal Engine user interface and put it on a simpler interface where you can just move sliders. For example, a cinematographer can move the sky and alter the density of clouds or trees using an iPad — they don't need to sit down in front of the full Unreal interface." And with the planned 2021 release of Unreal 5, the system's image quality will rise significantly.

Another critical cinematography tool that has been emphasized in Unreal is the virtual camera. "It's a way to see your finished visual effects through the viewfinder or monitor as you're shooting, by overlaying visual-effects imagery onto the live camera view," Morin notes. "Unreal can now make a photoreal, real-time rendering of the visual effects in the digital world. That makes it possible to exercise your craft as a filmmaker and as a cinematographer on the digital scene without having to wait to see everything come together in post."



Clockwise from top left: A virtual stage at Orca Studios in Spain; the *Gods of Mars* virtual stage at Creative Technology Group in Panorama City, Calif.; a virtual stage at LAVAlabs in Germany.

projects to something within reach of anyone."

As more filmmakers express interest in virtual-production tools and techniques, smart stages are sprouting up to meet the demand. These stages often combine existing soundstage infrastructure with bespoke LED volumes ranging from smaller insert stages to stages capable of supporting elaborate feature work. For example, Mels Studios in Montreal recently unveiled its first virtual-production stage in collaboration with Arri and Epic Games. The stage uses 2.9mm Absen LED modules combined with a host of Arri equipment, including remote heads, Alexa cameras, wireless communications tools and Signature Prime lenses. The stage's various services departments are linked together with the stage infrastructure via high-speed fiber-optic networks to support a decentralized, distanced production approach.

Epic Games also recently renovated its London Innovation Lab with a new, curved LED volume with partners Brompton Technology, Arri and production company 80six. The solution includes 144 ROE Black Pearl 2.8mm LED panels, 38 CB3 Carbon 3 3.75mm full-size panels and eight half-size panels. The displays are fed by Brompton Tessera 8 video processors calibrated via its Hydra measurement system for HDR-display capabilities. The volume combines LED screens for directly displaying content with a host of Arri lighting controlled by DMX to augment the light generated by the screens.

At press time, *AC* learned that Arri is currently at work on at least two LED virtual stages. One will be in Burbank for Arri, and the other will be for Arri Rental in the United Kingdom. The Burbank stage is scheduled for completion in January.

Dozens of other smart stages are in operation elsewhere in the world. These include Diamond View in the United States, Full/Frame/Figure in Italy, Mado XR in France, Orca Studios in Spain, Lavalabs in Germany, Ogel Sepol Productions in Brazil and Anvil Frame Studio in Russia. Each stage offers specific capabilities and different combinations of equipment and workflows, but they all take the same basic approach to delivering virtual imagery in camera that is nearly indistinguishable from live, on-location cinematography.

What's becoming increasingly apparent is that there is a crucial role for the traditional cinematographer in this new paradigm. They provide the eye for realism in a virtual world, and virtual-production tools are continually being updated to address their needs and workflows. Buoyed by constant advances in CPU/GPU power and LED panel quality — as well as increased cost efficiency — virtual production seems likely to grow as it presents significant opportunities for new adopters ready to step into the virtual waters.

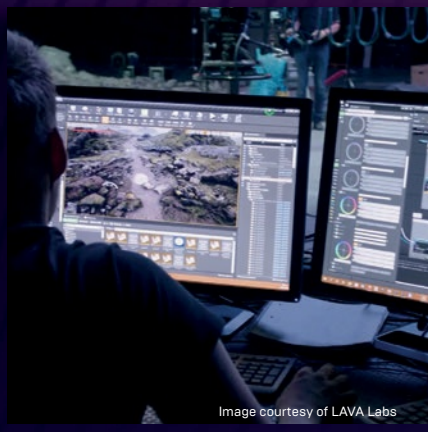
Noah Kadner is the author of Epic Games' Virtual Production Field Guide.

TOP-LEFT PHOTO COURTESY OF ORCA STUDIOS. TOP RIGHT PHOTO COURTESY OF PETER HYOGUCHI. BOTTOM PHOTO COURTESY OF LAVALABS.

UNREAL ENGINE


Image courtesy of MARS Studios and Bild Studios


Image courtesy of Orca Studios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Tipping Point

For *One Night in Miami,* Tami Reiker, ASC and director Regina King capture cultural icons on the brink of transformation.

By Patricia Thomson

It's a little-known fact that after Cassius Clay wrenched the World Heavyweight Champion title from Sonny Liston in a stunning upset, he spent a quiet evening in his Miami hotel room with his friends Malcolm X, singer Sam Cooke and NFL champ Jim Brown. When playwright Kemp Powers learned of this from a book about the intersection of sports and the civil rights movement, he was inspired to write a stage play, and then a screenplay, that imagined what the men discussed over the course of that evening.

The year was 1964, and each of the four men was on the verge of a major transition. Clay was about to become a Muslim and take the name Muhammad Ali; Malcolm X was preparing to break from the Nation of Islam and start his own organization; Cooke was pivoting toward socially relevant songs such as "A Change Is Gonna Come," and Brown was

BEHIND-THE-SCENES PHOTOS BY PATTI PERRET. ALL PHOTOS COURTESY OF AMAZON STUDIOS.

about to retire from football and pursue an acting career.

The feature *One Night in Miami* gives equal weight to all four, but it's Clay who first draws the viewer in. The movie kicks off with an earlier fight in London, one of the few times Clay was knocked down. "We enter the film feeling like it's Cassius' story — that's what grabs you," says director Regina King.

King had clear ideas about the production's look: Keep the camera moving, create an immersive experience, use vibrant colors, and respect history. "It was important for Regina to keep the historical references to actual events and locations," says cinematographer Tami Reiker, ASC, who was working with the director and Oscar-winning actor for the first time. (Reiker calls King "a powerhouse and an incredible collaborator.") Historical accuracy was paramount not only in the fights, but also in various scenes based on iconic photographs. These include Clay posing underwater in a perfect boxer's stance; the tuxedoed boxer holding court in a diner after the Liston fight; overhead shots of spectators rushing into a ring, post-knockout; Brown announcing his NFL retirement on the set of *The Dirty Dozen*; and Cooke debuting "A Change Is Gonna Come" on *The Tonight Show*.

Another priority was bold color. "I told Tami that Black people are so vibrant," King says. "We're like the most resilient beings because we've been through so much, but we still manage to dance, to smile, to sing, to have an energy that comes off of us that's so colorful. I wanted to capture that without it feeling like a musical." Her touchstone was Jacob Lawrence, known for his colorful mid-century paintings of African-American life.

Prior to her interview with King, Reiker sent the director a lookbook packed with color. Street photographers Saul Leiter and Garry Winogrand were in the mix, as were stills from Wong Kar-wai's *In the Mood for Love* (*AC* Feb. '01). "What I presented was a very rich and saturated look," Reiker recalls. "I wanted to show the vibrancy of Miami at night. We chose a vibrant blue to contrast with the warm tungsten interiors of the hotel room."

Another guiding principle: "We wanted to make it a very immersive experience," Reiker says. That affected everything from choice of format, to shooting long takes, to letting shots run in the edit.

Reiker pushed for an Arri Alexa 65 and a 2.39:1 aspect ratio after her positive experience with it on *The Old Guard*. "It's just so beautiful, the falloff you get, and it [creates] an immersive experience for the audience. You feel like you're right in there."

The production didn't have the budget for large format, but Reiker pleaded her case with Arri Rental in Burbank anyway. "I did my whole song and dance about how amazing it would be," she recalls. "Arri was fantastic. They said, 'We'll make this happen. We want filmmakers to know the 65 isn't just for big action movies or superhero movies; it's also for small, intimate movies.'"

The production obtained two Alexa 65 cameras and an Alexa Mini LF, as well as Arri Prime DNA lenses, which Reiker chose for their speed, softness and falloff. She used a Tiffen Bronze Glimmerglass 1 filter on the lens throughout the shoot. "It added a warmth to the overall feel and also a warmth to the skin tones," she says.

Though *One Night in Miami* was King's feature-directing debut, it was not her first go-round in the director's chair. She had helmed numerous television projects — a mix of movies, pilots and episodes — but this time, she says, "my choice was not to lean on extreme close-ups to make a point for a piece of dialogue or an intention in a scene, because I didn't feel it complemented the large format. So, how do we come up with frames that are going to put an 'exclamation mark' on a moment? That takes time to find." With a 30-day

Above: Four icons gather at a turbulent time. Right: Tami Reiker, ASC with director Regina King and crew. Opposite page: King and A-camera operator Chad Chamberlain (bottom) prep to shoot a hotel interior.

schedule, however, time was not on their side.

Their solution tied into another of the director's priorities — a constantly moving frame — and Reiker's way of achieving that. "Because the majority of the film takes place in the hotel room, I felt it was visually important to not feel static," King says. "I wanted to keep the energy going because these men have so much life. I wanted to always feel like there was movement, but I didn't want the camera to be a distraction."

Reiker adds, "We had these 10- and 12-page scenes, many of them just wall-to-wall dialogue. That was very daunting."

Two such scenes were set inside the Hampton House Motel, and one unfolds on the roof. For the interior Hampton House sets — constructed in a rec-center-turned-stage in LaPlace, La., outside New Orleans — Reiker notes, "We wanted to keep the camera floating and drifting so we'd be constantly shifting perspectives. I presented this idea of keeping the camera on a jib arm but manually operated, not on a hothead. We had each 65 on a [J.L.] Fisher 10 dolly with a 12-foot jib arm and an underslung Cartoni Lambda head. [A-camera operator] Chad Chamberlain and [B-camera operator] Austin Alward could swing and drift and get to every corner of that hotel room. We could go from 2 feet to 10 feet in one move, and it was the operators making that decision, so it could be very organic."

Every painting and mirror in these interiors had what Reiker calls a "hidey hole" behind it so a jib arm could poke through. "Everything except the back of the hotel could pop in and out," she notes. "So if A camera was in the room, B camera could still be getting the full movement of the jib arm through the holes that were cut out without having to pull the wall" — a big timesaver.

On these long, dialogue-heavy scenes, the strategy was to shoot takes of 10 to 15 minutes. The actors loved it because

it allowed them time to fully ramp up. It also helped with the edit. "We didn't want to have the film all cut up," says Reiker. And although it was challenging for her crew, "the material was intense, so shooting it this way was as immersive an experience for us as we wanted it to be for the audience!"

By its very nature, the camera strategy made lighting tricky, especially because the hotel room had a low ceiling. "We had to use very low-profile lights, mainly on the ceiling," Reiker says. "We used Astera Titan and Helios [LED] tubes with Honeycrates and fabric grids. They were rigged in all four corners of the room, and after we watched rehearsal, we'd decide which ones we'd use. For fill, we used a baby scoop light made by [gaffer] Allen Parks; it was a 10-inch metal disc with LiteGear bi-color LED cards and Magic Cloth diffusion over the top, and we added snoots and honeycomb grids. That allowed us to have a tight fill light on our actors without overpowering the set walls." She gelled the Astera tubes with ¼ CTO and dimmed the practicals, lamped with 40-watt tungsten bulbs, "to a nice warm hue."

Reiker adds appreciatively, "The latitude with a 6K

camera is really incredible. You can underexpose in the shadows [while] bringing out people's faces. In the hotel room, that was invaluable."

For exteriors, Reiker created what she calls "Miami blue" by dialing in something close to Rosco Cyan 60 on the Arri SkyPanels that lit the hotel exterior and pool, as well as a liquor store in Los Angeles.

In contrast to the camerawork in the hotel interiors, King wanted a different energy for the 12-page scene on the hotel roof. At that point in the story, Reiker explains, "they've been in that hotel room, and Malcolm is getting paranoid that he's being watched and bugged. They just needed to bust out and get a breath of fresh air. As they did that, we went handheld, and we stayed handheld for the entire scene so we could move with them and feel the energy."

That energy, however, turns from relief to tension. Says King, "Just as we're thinking it's like summer camp, with the boys on the roof watching the fireworks, it starts to get a little crazy when that conflict between Sam and Malcolm starts to go." Thus begins one of the movie's many arguments about whether Black artists and athletes should be "weapons" in the cultural fight, as Malcolm X insists, or whether economic power is key. Cooke, who owned his own record label, says at one point, "I don't want a piece of the pie — I want the recipe."

The filmmakers wanted to shoot the roof scene outside but keep blue- or greenscreen to a minimum. They had trouble finding the right roof; most of the buildings nearby had low parapets that would require safety harnesses on the actors. So instead, the crew built a roof atop shipping containers in a parking lot next to the stage. Being 10' up, they needed a guardrail, but that could be a thin, black bar that was easy to disguise in the dark.

The production split the rooftop shoot over two nights. When the actors faced the Miami skyline and the fireworks display, they had a bluescreen. Then that came down, and they shot in the opposite direction the next night. To suggest the surrounding environment, Reiker says, "I put small, battery-operated lights and neon a quarter- or half-mile in the background to create the feeling of light back there."

"Shooting these long takes was as immersive an experience for us as we wanted it to be for the audience."

Ready to Rumble

The two boxing matches in the story don't occupy much screen time, but the filmmakers knew it was important to get those sequences right — after all, anybody can watch the actual fight footage on YouTube. The production thus faithfully replicated the fight choreography, costumes, height of the ring, lighting grids, and myriad other details.

The first fight opens with a crane shot telescoping in over the crowd at Wembley Stadium. Londoners were rooting for Henry "The Hammer" Cooper, who was heavily favored to win. At that point, Clay was mostly known as a big talker, but he quickly proved the superior boxer, pummeling his opponent and ultimately — though it's not shown in the movie — winning the fight. However, Cooper managed to land a hammer-fisted blow that knocked down the overly confident American.

Odds were against Clay in Miami, too. There he was pitted against Liston, a seemingly invincible boxer with ties to organized crime. Clay was still considered a braggart and a showboat, but he gave more than he got. After the sixth round, a bloodied Liston pointed to his injured shoulder and threw in the towel. That moment marked Clay's transformation into "The Greatest."

Reiker used both Alexa 65s and the Mini LF (the latter modified to LPL mount to use the Prime DNAs) on both fights. Two cameras were outside the ring on longer lenses, capturing "dirty frames" over the crowd and through the ropes. Chamberlain was inside the ring, holding the A camera at waist height. "That gave you more of a feeling of being in the ring," Reiker says. The low angle also meant that overhead lights were sometimes visible, and Reiker's crew meticulously reproduced the respective lighting grids for each fight. "Allen Parks was able to source the 18-inch Altman 1K scoops that were actually used for [the Miami]

Tech Specs:	2.39:1 Camera: Arri Alexa 65, Mini LF Lenses: Arri Prime DNA

Hero Fight

When it came to the Wembley and Miami fights, King wryly sums up the filmmakers' challenge: "How do we make the two fights feel different with the limitations we were under, these being money and money? And how do we make Miami feel like the hero fight?" The fact that both fights were shot in the same place, Second Line Stages in New Orleans, made it tougher still.

One key reference was the book *Greatest of All Time: A Tribute to Muhammad Ali*. "That really became our bible for the Miami fight," Reiker says. Among its photos was an overhead series looking down on the ring after a knockout. Though the image was from a different fight, King knew she'd struck gold. "I thought [that would] make this feel like a heroic moment without having to lean on extras," she recalls. "This image makes it feel like God's watching over. It's the biggest moment in his career."

The same Technocrane 45 that telescoped over the Wembley crowd was used to get this climactic overhead in Miami. The production could only afford limited hours with the crane, however. King notes, "This is not a film where you have a bunch of cinematic-type shots, so when we were creating those moments and [with] such a time constraint, it did create a lot of anxiety. At least, it did for me."

— Patricia Thomson

fight," she says. "He found them collecting dust in a corner at MBS Equipment in Burbank."

Parks obtained 30 of them and replicated a seemingly random grid in the Miami fight. "There were a lot of lights up that were never actually turned on," says Reiker. "So we re-created that whole grid and raised it up above the fight. The bounce off the white mat [in the ring] lit the entire set, plus the first three or four rows of the audience."

Reiker used the same Altman scoop lights for Wembley, just on a lesser scale. That arena "was much tighter, much smaller, and the fight took place right at sunset, so it went from dusk into night." She also distinguished the fights by smoking up the first one but not the second. In addition, many of the 200 extras in the Miami scene were popping off flashbulbs. "We had hundreds of those flash cubes," says Reiker, noting that visual effects extended the effect deeper into the crowd.

Final Rounds

The bulk of *One Night in Miami* was shot in January and February 2020. (The two remaining scenes were shot in L.A. in June as soon as production was permitted to re-start following the lockdown.) By the time the final grade rolled around, Amazon had bought the feature, "so that extra money bought us a little extra time," Reiker says. She, King and the producers spent three weeks at Light Iron in Los Angeles working with colorist Ian Vertovec, who used a FilmLight Baselight system. The filmmakers sat in one theater and Vertovec in another, and they viewed the same screen. "We talked to Ian using Google Meet on an iPad and laser pointers," Reiker recalls. "Other than that, it was the regular color-correction experience. We could include VFX from all over the world on the Google Meet, so we were all watching the same image, which proved incredibly helpful."

Although the movie takes place in 1964, its nuanced and passionate debates about race, responsibility and power continue today. "Fifty years later, those complications still resonate, now more than ever," Reiker says. "It was such an experience to be in that hotel room and listen to this dialogue. Chills down your back!"

With a laugh, she adds, "There was one point when Malcolm was speaking to Sam Cooke in one of his lectures, and the dolly grip was so into the moment, he yelled, 'That's right!' Then he looked horrified! But that's how everyone felt. We were all watching incredible performances and just hanging on their every word." ◊

CLASSIC STYLE FROM THE ASC

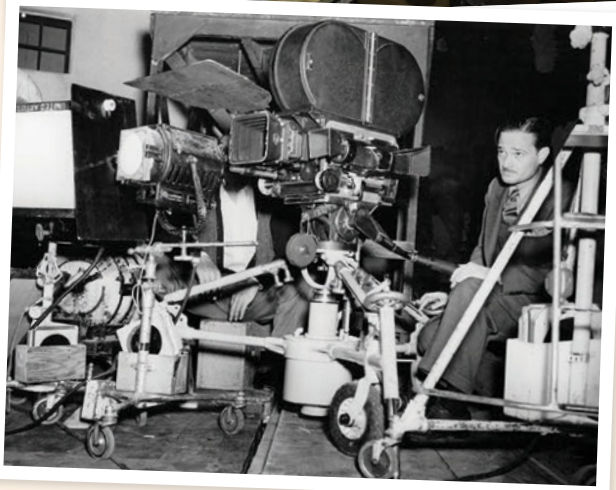
This black tee sports famed ASC member Gregg Toland's Mitchell BNC silk-screened in white on the front, with the camera's serial-number badge on the back.

This same camera was used by Toland to photograph the classic *Citizen Kane*, as well as many other exceptional pictures, including *Wuthering Heights, The Grapes of Wrath, The Long Voyage Home, Intermezzo, The Little Foxes* and *The Best Years of Our Lives*.

Restored to original condition, this piece of film history is now part of the ASC Museum collection.

Our commemorative shirt is made of fine jersey fabric, 100% combed ring-spun cotton.

Camera photo by Richard Crudo, ASC



Gregg Toland, ASC behind his trusty Mitchell BNC while shooting *Citizen Kane*.

In Memoriam
Michael Chapman, ASC (1935-2020)

Above: Chapman shooting *Six Days, Seven Nights*. Opposite, clockwise from left: Chapman working on *Invasion of the Body Snatchers* (1978) and *Raging Bull*, and serving as camera operator on *Jaws* for Bill Butler, ASC.

"I'm glad I got into the business when I did, because I think the job I did is disappearing somewhat."

Michael Chapman, ASC, whose honors included Academy Award nominations for *Raging Bull* and *The Fugitive*, died Sept. 20 at the age of 84.

An influential figure in the New Hollywood that emerged in the 1970s, Chapman shot more than 40 features over the course of his career, among them *The Last Detail*, *Taxi Driver*, *Invasion of the Body Snatchers*, *The Last Waltz* and *Dead Men Don't Wear Plaid*.

He also tried his hand at directing with the features *The Clan of the Cave Bear, All the Right Moves* and *The Viking Sagas* (which he also wrote).

Born in New York, N.Y., on Nov. 21, 1935, Chapman was raised in Wellesley, Mass. As a youth, he was keenly interested in sports. "I was certainly as passionate about movies as any other kid in Wellesley, but it never occurred to me that I could go get a job in that business," he told *AC* in 2003, when he was honored with the ASC Lifetime Achievement Award. "It was a whole other world to me."

After graduating from Columbia University with a degree in liberal arts, Chapman went to work as a freight brakeman on the Erie Lackawanna Railroad. "It was a very chic thing to do in the late '50s — echoes of Kerouac and Ginsberg," he noted dryly. The U.S. Army soon put an end to his railroad career. "Fortunately, it was after Korea and before Vietnam, so I managed to get out of the Army without having to shoot at anybody."

Following an honorable discharge, Chapman married a Columbia classmate whose father, Joseph C. Brun, ASC, happened to be an Oscar-nominated cinematographer. "He was a wonderful guy," Chapman recalled, "but he was scandalized that his daughter should be married to a freight brakeman, so he got me into the [camera] guild. I started out loading magazines on commercials. There were very few features being shot in New York at that time."

Working his way up the ranks to assistant, Chapman landed at commercial house MPO Videotronics, where he connected with cinematographer and future ASC member Gordon Willis. "Gordy was offered a feature, and [his regular operator] foolishly turned the job down, so Gordy asked me, and I changed my card from assistant in a second. Then Gordy took me along for an amazing ride."

Chapman subsequently operated for Willis on Hal Ashby's *The Landlord*, Alan Arkin's *Little Murders*, Alan Pakula's *Klute,* and Francis Ford Coppola's *The Godfather* and *The Godfather Part II*. "I'd always been a good athlete, and there's a lot of athleticism in operating a camera," Chapman said. "That's what makes operating so wonderful and seductive and exhilarating to do. It's wonderful fun, it's sexy and it's gratifying."

When Chapman decided he was ready to move up to cinematographer, "I didn't really lobby to shoot anything," he recalled. "I just hoped an opportunity would come along the way the chance to operate had." That's just what happened: Ashby began to prep *The Last Detail*, and he asked Chapman to shoot it. "Hal was really good, and he made some wonderful films," noted Chapman. "He's one of the '70s directors that people don't talk about enough."

With the feature *The White*

CHAPMAN PORTRAIT BY OWEN ROIZMAN, ASC. ALL OTHER PHOTOS COURTESY OF THE ASC ARCHIVES.

Dawn, Chapman began a fruitful collaboration with director Philip Kaufman, for whom he went on to shoot *Invasion of the Body Snatchers, The Wanderers and Rising Sun*.

Chapman's feature-cinematography credits in the 1970s included Martin Ritt's *The Front* and James Toback's *Fingers*, and whenever East Coast cinematography jobs slowed to a trickle, he returned to operating. One of his best-known credits in that arena was *Jaws*, shot by Bill Butler, ASC.

"Bill and I figured out early on that I could handhold the camera on those small boats and roll with the waves as I climbed all over the place," Chapman told *AC*. "I think it was very effective in terms of creating suspense, but there was really no other way to do it."

Shortly after completing *Jaws*, Chapman met with up-and-coming director Martin Scorsese to discuss shooting *Taxi Driver*. "Paul Schrader's script was as good a script as I have ever read, and it was … laden with visual information and suggestions," Chapman said. "[Marty and I] felt it would be correct to do odd things with the camerawork and lighting. We went for it."

Scorsese and Chapman went on to collaborate on the concert film *The Last Waltz* and the black-and-white drama *Raging Bull*. Of the latter film, Chapman noted, "Boxing was black-and-white to us, whether it was the Friday night fights on TV or the graphics in *Life* magazine." Chapman had never shot black-and-white before. "I found that it was actually liberating … because it's inherently more abstract than color; it's one step removed from the reality of the red tie and the blue shirt," he said. "You start one step from reality, and from there you can do pretty much whatever you want."

In 1999, *Raging Bull* was selected by *AC* readers as one of the best-shot feature films of all time, and in 2019, the picture was recognized by ASC members as one of the most influential films of the 20th century.

After shooting the film-noir send-up *Dead Men Don't Wear Plaid* for director Carl Reiner, Chapman went on to photograph several other comedies, among them Reiner's *The Man With Two Brains*, Richard Donner's *Scrooged*, Ivan Reitman's *Ghostbusters II* and *Kindergarten Cop*, and Joe Pytka's *Space Jam*.

His credits also included Joel Schumacher's *The Lost Boys*, Gregory Hoblit's *Primal Fear*, Scorsese's *Michael Jackson: Bad*, Andrew Davis' *The Fugitive* and Gábor Csupó's *Bridge to Terabithia*.

In his 2003 interview with *AC*, Chapman noted, "I'm glad I got into the business when I did, because … I think the job I did and still do is disappearing somewhat. Fifty years from now, it will be a very different world."

Chapman also dismissed the notion that he had helped shape the American New Wave. "I was involved in a ridiculous number of those movies, and I must say that it was much more about accidents or happening to be at the right place at the right time than any overarching genius on my part. Had I known at the time that it was going to be thought of as a great renaissance, I would have taken a lot more notes and paid more attention. We thought we were just making movies."

In 2016, Chapman was honored with the Lifetime Achievement Award at the Camerimage International Film Festival of the Art of Cinematography.

He is survived by his wife of 40 years, screenwriter Amy Holden Jones; four children; and four grandchildren.

Donations may be made in Chapman's memory to the Sheriff's Meadow Foundation, which is dedicated to conserving the natural landscape and character of Martha's Vineyard, Mass. ◻

New Products and Services

For more of our latest tech reports, visit ascmag.com/articles/new-products.

Atomos Unveils Neon Monitors, ProRes Raw Solutions

Atomos has released Neon HDR monitor/recorders, available in 17" and 24" models.

The Neon 17" model is suitable for focus pullers and gaffers and as a production monitor for mobile editing systems, whereas the 24" is suitable for the cinematographer, DIT and video village. Neons offer consistent SDR/HDR monitoring and provide recording functionality for shot review or render-free output delivery to Apple ProRes or Avid DNx at up to 4K DCI 60p.

Cameras or any video sources can be connected via SDI, supporting up to 4K DCI 60p via 12G or Dual 6G or lower resolutions and frame rates via 1.5/3G SDI with up to 12 channels of embedded audio.

Atomos also announced it is providing ProRes Raw recording support for Sony's new FX6 camera, which natively outputs raw over SDI, via the Atomos Shogun 7, which records ProRes Raw images at up to DCI 4K60p. In addition, the company's Ninja V HDR monitor-recorder enables the new Nikon Z 6II camera to output and record files of up to 4Kp30 ProRes Raw.

For more information, visit atomos.com.

Blackmagic Releases Resolve 17, Speed Editor

Blackmagic Design has released DaVinci Resolve 17, which offers more than 100 new features and 200 improvements, and the DaVinci Resolve Speed Editor, a new keyboard for Resolve's cut page that offers a faster editing solution.

DaVinci Resolve 17's color page includes new HDR grading tools, redesigned primary controls and AI-based magic mask, among other features; Fairlight updates mouse and keyboard edit selection tools so users can work faster; and FlexBus is a next-generation audio engine and busing architecture with support for 2,000 tracks. Editors get a metadata slate view with bin dividers, zoomed waveforms for audio trimming, smart reframing, a unified inspector and dozens of other tools.

Magic mask uses the DaVinci Neural Engine to automatically create masks for an entire person or specific features such as face or arms. Power Window drawing has been improved, and DaVinci Resolve color management adds features to simplify workflow and improve image quality. Metadata slate view with bin dividers makes it easy to sort and find clips based on scene, shot and camera. In addition, users can create independent proxy media; these can be as small as 1/16th resolution and saved as H.264, H.265, ProRes or DNxHR — they can also be generated internally or externally by third-party tools. New Resolve FX 3D, HSL and luma keyer plug-ins let customers pull keys directly in the timeline on both the edit and cut pages.

The new DaVinci Resolve Speed Editor features a source-tape function that enables faster clip searching, large trim in and out buttons, new keyboard modes for intelligent editing, buttons that allow the search dial to live trim, buttons to change the transition type, an integrated search dial control and a keypad for direct timecode entry.

For more information, visit blackmagicdesign.com.

Rotolight Illuminates Titan X1

Rotolight announces the Titan X1 1×1 LED fixture, which features SmartSoft electronic-diffusion technology and a full-color touchscreen display. Building on the success of the Titan X2, the Titan X1 also offers a High-Speed Sync RGB flash, built-in wireless connectivity and energy efficiency. With SmartSoft, users can electronically adjust Titan X1's diffusion, focus and spread without the need for gels. Like a 216 on an adjustable dial, SmartSoft provides the flexibility of a soft output and a harder light source all in one.

The touchscreen display features a user-friendly interface, quick-start icons and 50 customizable pre-sets. The High-Speed Sync RGB flash (up to 1/8000) delivers a powerful output and zero recycle time. Users can shoot at any color temperature across the CCT spectrum (3,000K-10,000K) for a significant performance boost over continuous light output. Alternatively, users can flash in any one of Titan's 16.7 million RGB colors or 1,400 industry-standard filters for creative/fill/hair lighting effects and enhanced battery performance.

For more information, visit rotolight.com.

Anton/Bauer Expands Battery Line

Anton/Bauer has introduced the Titon SL, Titon Micro, Titon Base and Go 90 compact batteries.

The Titon SL is available in 95Wh and 143Wh, and in V-Mount or Gold-Mount options. With a slim profile and light weight, the 14.4-volt SL can power monitors and more.

The Titon Micro is available in 47Wh, 94Wh and 140Wh, and in V-Mount or Gold-Mount options. Offering extended power, the 14.4-volt Micro delivers a reliable continuous current, 8A 47Wh and 10A 94Wh and 140Wh.

The 68Wh Titon Base is slimmer and lighter, designed for compact cine cameras in a travel-friendly form. With a quick-release plate and integrated ¼"-20 mounts, it can be easily mounted to a tripod or camera support with a simple click.

The 98Wh Go 90 is a lightweight V-Mount or Gold-Mount 14.4-volt, 8A battery that can power cameras, on-camera lights or monitors without adding excess weight to equipment.

For more information, visit antonbauer.com.

Filmotechnic Launches Flight Head 6s

Filmotechnic has announced Flight Head 6s, the latest iteration of its Academy Award-winning, three-axis, gyrostabilized flight head. Flight Head 6s offers a 360-degree continuous roll slip ring. The open platform design enables users to mount a wide array of film and digital camera packages, including 3D rigs, Imax cameras and multi-camera arrays. Payload capacity is 102 pounds. Joysticks and hand wheels offer responsive, smooth, precise control. The head is fitted with the latest GPS Gyro Vertical Horizon control to facilitate high-speed tracking.

For more information, visit filmotechnicusa.com.

Classifieds

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Clubhouse News
Welcome to Inwood, McCleery

Society Welcomes Inwood, McCleery

After graduating from New York University's Tisch School of the Arts, new member **John G. Inwood, ASC** served as a lighting electrician and gaffer for several years before shooting full-time in the 1990s. During this time, his projects included two seasons of the celebrated Nickelodeon comedy series *The Adventures of Pete & Pete*, as well as the features *The Daytrippers*, *Six Ways to Sunday*, *Going Nomad* and *Face*.

His extensive work in television includes 150 episodes over eight seasons of the popular NBC/ABC comedy *Scrubs*, for which he received an Emmy nomination in 2008. He also photographed the NBC comedies *Parks and Recreation* and *The Michael J. Fox Show*, Paramount's *American Woman*, NBC's *Murphy Brown* reboot, NBC's supernatural drama *Manifest*, and the critically acclaimed Netflix comedy *Unbreakable Kimmy Schmidt*. He also photographed the comedy feature *The Best and the Brightest*, the NBC pilot *Great News*; the television movie special *Unbreakable Kimmy Schmidt: Kimmy vs. the Reverend*, and the special episode *30 Rock: A One-Time Special*.

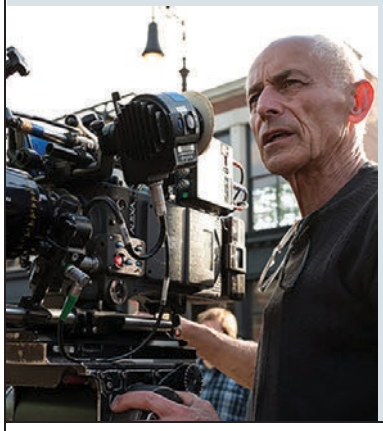
Inwood's upcoming credits include the Peacock comedy series *Girls5Eva*.

New member **Bruce McCleery, ASC** attended UCLA's School of Theater, Film and Television, after which he embarked on a successful career as a lighting technician and gaffer on such pictures as *Independence Day* (photographed by Karl-Walter Lindenlaub, ASC, BVK), *Pleasantville* (John Lindley, ASC) and *Friday Night Lights* (Tobias Schliessler, ASC).

As a cinematographer, his impressive list of 2nd-unit and additional photography feature credits includes *Terminator: Dark Fate* (Ken Seng), *Black Panther* (Rachel Morrison, ASC), *Star Wars: Episode VII — The Force Awakens* (Dan Mindel, ASC, BSC, SASC), *Tomorrowland* (Claudio Miranda, ASC), *Star Trek* (Mindel), *Star Trek Into Darkness* (Mindel), *Star Trek Beyond* (Stephen F. Windon, ASC, ACS), *Super 8* (Larry Fong, ASC), *Mission: Impossible III* (Mindel), and *Mission: Impossible — Ghost Protocol* (Robert Elswit, ASC), among many others.

He has also served as director of photography on the features *Shoot First and Pray You Live (Because Luck Has Nothing to Do With It)*, *Reservations*, *Don't Fade Away* and *Sabotage*.

His upcoming credits include 2nd-unit work on the features *Chaos Walking*, *Wrath of Man*, *Snake Eyes: G.I. Joe Origins* and *Samaritan*.



Rousselot Honored at Camerimage

Esteemed French cinematographer **Philippe Rousselot, ASC, AFC** was honored for his body of work with the Lifetime Achievement Award during the 2020 EnergaCamerimage International Film Festival. The largely virtual event took place Nov. 14-21. Rousselot, whose credits include *A River Runs Through It*, *Hope and Glory* and *Henry & June*, was honored with the ASC International Award in 2017.

CineGear Hosts *AC* Panel

American Cinematographer celebrated its 100th anniversary throughout 2020 — the year following the centennial of its parent organization, the American Society of Cinematographers. To honor this milestone, CineGear presented an hour-long online panel featuring ASC President **Stephen Lighthill, ASC** and cinematographer **Lawrence Sher, ASC**, with key members of the magazine's team: *AC* editor-in-chief Stephen Pizzello, web director and associate publisher David E. Williams, and senior editor Andrew Fish. The group discussed the publication's storied history and offered a sneak preview of their future plans for *AC*.

For further coverage and additional news, visit theasc.com/asc/news.

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Wrap Shot
Lawrence Sher, ASC

PHOTO BY LAWRENCE SHER, ASC.

When I was making the 2011 bird-watching comedy *The Big Year*, we thought of tons of ways to shoot the section of the movie that took place in Attu, a small island off the coast of Alaska. We ran options of how to replicate the island, including shooting it near Vancouver either basically all against green-screen or adding snow and mountains effectively as full set extensions. But that just seemed so limiting and fake — there would be little sense of discovery or adventure. So we pushed to at least have a scout to the Yukon, which is very similar in terrain to Attu. This was no easy feat.

This photo was taken in April during the scout — with my Canon EOS 5D at dusk, if I recall — right after we landed in a full blizzard. We literally couldn't see a thing through all the snow. This didn't bode well for selling production on a location we couldn't even see. Thankfully, we persisted and found ourselves taking a smaller crew to an area off the Dempster Highway, an hour outside of Dawson City.

When we shot in June, it was 24 hours of daylight. It was like summer camp for the whole crew and cast. We played poker in the old gambling hall in town, where the locals couldn't figure out how they ended up at a 1/2 limit Texas Hold 'em table with Steve Martin, Jack Black and Owen Wilson. My father, an avid birdwatcher, came for the trip and stayed up all night with me, taking pictures and being an extra. We played golf at 3 a.m. at the Top of the World Golf Course. The shoot there is as fond a memory as I've ever had making a movie — and it nearly didn't happen.

— *Lawrence Sher, ASC*

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