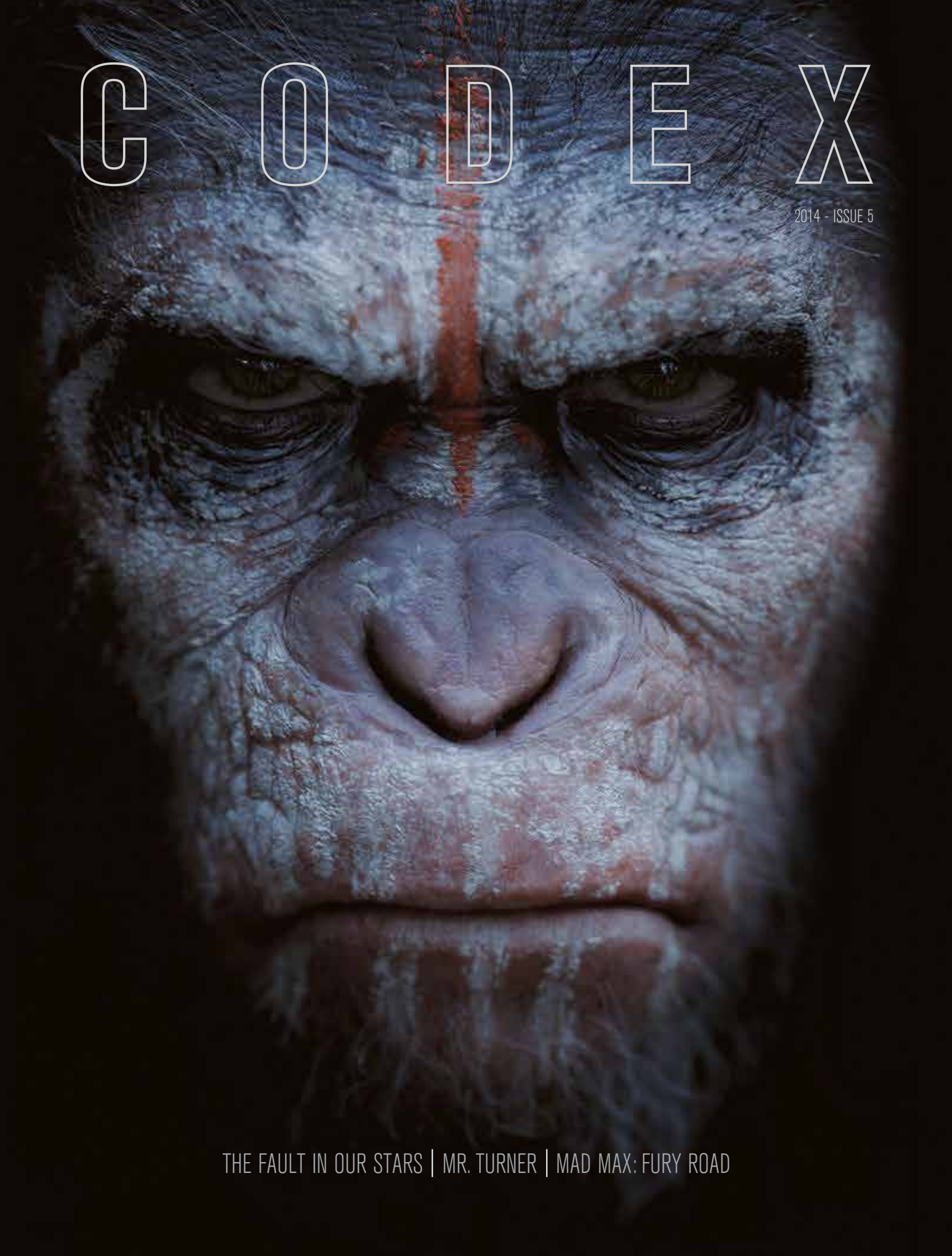

C O D E X
2014 - ISSUE 5
THE FAULT IN OUR STARS | MR. TURNER | MAD MAX: FURY ROAD









CAPTURED ON
CODEX

# LINE UP ISSUE 5



## WHO TO BLAME


Editorial Team and Contributors: Marc Dando, Sarah Priestnall, David Heuring, Matt Walters, Linda Rosner, Keith Gayhart, Debra Kaufman, Nick Dager

Design and Production: Craig Hildrew, Gareth Ewers

A big thank you goes out to everyone who contributed to this edition of Codex.

# U P F R O N T

CODEX STARTED OUT AS A COMPANY ON A MISSION: TO MAKE **FAST, FLEXIBLE** DIGITAL MEDIA RECORDERS THAT WOULD HELP FILMMAKERS DEAL EFFECTIVELY WITH THE FLOW OF DATA POURING FROM THE EMERGING DIGITAL CINEMATOGRAPHY CAMERAS.

**FAST FORWARD** TO TODAY. THE CAMERAS HAVE MULTIPLIED. THE FLOWS ARE NOW TORRENTS. CODEX HAS GROWN TO BECOME THE TRUSTED BRAND IN RECORDING AND WORKFLOW TECHNOLOGY FOR THE MEDIA AND ENTERTAINMENT INDUSTRY – WITH OFFICES IN LONDON, LOS ANGELES, BEIJING, AND WELLINGTON, AND AN EVER-EXPANDING LIST OF CREDITS.

IF THERE'S A **SECRET RECIPE** BEHIND OUR SUCCESS, IT BOILS DOWN TO AN UNSHAKABLE DEDICATION AND DETERMINATION TO GIVE PROFESSIONAL CONTENT PRODUCERS THE TOOLS THAT MEET THEIR DAILY NEEDS AND CRITICAL PRIORITIES. TO GET ON WITH THEIR SHOWS.

CODEX PRODUCT DEVELOPMENT STARTS BY **LISTENING** TO WHAT USERS SAY THEY WANT. WE THEN COMBINE LEADING-EDGE INDUSTRIAL DESIGN WITH THE MOST MODERN ELECTRONICS TO CREATE RELIABLE, ROBUST TECHNOLOGIES THAT ARE EASY AND ENJOYABLE TO USE.

AT THE SAME TIME, WE COLLABORATE WITH LEADING MANUFACTURERS OF THE WORLD'S MOST POPULAR DIGITAL CINEMATOGRAPHY CAMERAS, TO ENSURE CODEX RECORDING AND WORKFLOW **SYSTEMS STREAMLINE** THE TRANSFER OF MATERIAL FROM THE SET INTO POST PRODUCTION AS EFFICIENTLY AND AS FAST AS POSSIBLE.

WHETHER YOU ARE SHOOTING A SMALL, **INDEPENDENT** FEATURE, THE NEXT HOLLYWOOD **BLOCKBUSTER,** A COMMERCIAL OR EPISODIC TV SERIES, CODEX HAS THE WORKFLOW FOR YOU.

WE HOPE YOU ENJOY THIS LATEST ISSUE, AND THE LIGHT IT SHEDS ON THE SCOPE, SCALE AND VISION OF CODEX – TODAY AND TOMORROW.

# SHOOTING NATIVE 3D FOR X-MEN: DAYS OF FUTURE PAST

In the early 2000's, Newton Thomas Sigel ASC and Bryan Singer made *X-Men* and *X-Men 2* on 35mm film. Now the duo has reunited with Wolverine and the X-Men roster of superheroes for *X-Men: Days of Future Past,* which was shot native 3D on a variety of ARRI ALEXA cameras with Codex recorders.

SUCCESS STORY: X-MEN: DAYS OF FUTURE PAST
CINEMATOGRAPHER: NEWTON THOMAS SIGEL ASC
RELEASE: MAY 2014

Boasting a stellar cast that includes Jennifer Lawrence, Michael Fassbender, Evan Peters, Hugh Jackman, Ellen Page, Anna Paquin, Ian McKellen, Patrick Stewart, and Halle Berry, the latest chapter in the Marvel saga has the X-Men characters joining forces with their younger selves to change the past in order to save the future.

Sigel, whose credits with Singer also include *Superman Returns and Jack the Giant Slayer,* is known for pioneering work with digital cameras. His other credits include *The Usual Suspects, Three Kings, Confessions of a Dangerous Mind, The Brothers Grimm,* and *Into the West.* Sigel says the first important decision on *X-Men: Days of Future Past* was to go native 3D.

"Bryan made the decision based on an awareness of how attracted and interested people are in 3D in other parts of the world, particularly Asia," says Sigel. "He wanted a movie that has that feeling of an event. Having done a 3D movie with him before, I knew we'd be on prime lenses, and that we would stage things a little less cutty, with the 3D experience in mind."

The production was based in Montreal, mostly on stages but with some locations. Visually, the movie falls neatly into two different segments - a dystopian, post-apocalyptic future, and the past, circa 1973. Each would have its own visual grammar, in part to help audiences stay oriented. The future was cast in colder, clinical, more cyan tones, and the past is more selectively desaturated with strong contrast, a look reminiscent of a skip-bleach process.

"We did a bunch of tests, and we worked with the production designer John Myhre to facilitate those distinctions," says Sigel. "Particularly for 1973, I was able to get wardrobe to give me a lot of saturated colours on background extras in oranges and yellows and reds, very intense colours that were easier to isolate, grab onto and actually desaturate later."

On previous native 3D shoots, Sigel and Singer had used different cameras, but this time Sigel went with the ARRI ALEXA, which he had used on *Drive* as well as on the recently completed *Seventh Son.*

"I like the look of ALEXA very much," Sigel says. "It's a kind of softer look, with more half-tones, more variations of colour, and it's a better look for this project. By the time we started *Days of Future Past,* ARRI had come out with the ALEXA M, so I was able to use them with the TS5 3D rigs from 3ality, and the Codex Onboard S Recorders to record our images. "The 3D rigs are pretty solid, but what's evolving are the cameras and lenses that are available for them," he says.

"The options are expanding, and the ALEXA M was certainly a step in that direction. We also had some 2D stuff, and for that we were able to use the ALEXA XT and record the ARRIRAW right onto the internal Codex drives, and that was very liberating."

3D Systems Supervisor Ben Gervais agrees. "The ALEXA XT with the built-in recorder is a game-changer for us," he says. "It's a great leap forward, and it enables 120 frames per second in ARRIRAW. It reduces the footprint and increases reliability."

The second unit, under cinematographer Larry Blanford, shot at more remote locations, using ALEXA XTs and a Codex Vault system to view images during the shoot and to back up the files during transport.

The lenses were almost all Leicas. Some Fujinon Premier zooms were used for 2D shots. "The Leicas are really beautiful, sharp lenses that aren't harsh," Sigel says. "I thought they would give us that slightly clinical look that we were going for with the future. But also, they're all exactly the same size. They're all very uniform, which is a big deal in the 3D world. It saved a lot of time."

The cameras output a Log C image, which were given an initial grade by DIT Julie Garceau. The grades would then be passed with the footage to Company 3, which maintained a truck near the set. Company 3 would ingest the footage to a SAN, and process it. The truck included a projector for screening. Dailies colourist Adrian DeLude would begin with any on-set colour and further finesse the footage in 3D with Sigel and stereographer John Harper, sometimes at lunch or at the end of the day. Singer did not look at 3D on the set, preferring to focus on performance. Sigel usually watched a 3D image during playback. Gervais says that the goal was to make shooting native 3D as easy as possible.

"That meant being mobile, with a small footprint and the ability to go anywhere Tom and Bryan wanted," he says. "As an engineer, I approach this in terms of equipment capability, performance, size, reliability, and flexibility. We selected fibre-optic systems that allowed us to have essentially an unlimited cable run between the 3D rigs and our workstations. For each ALEXA M, we used a single Codex Onboard S recorder, allowing us to record up to 60 frames per second in ARRIRAW for each 3D 'eye.'"

"RECORDING ARRIRAW INTERNALLY ON THE ALEXA WAS VERY LIBERATING."

Newton Thomas Sigel ASC

Regarding the capture format, Gervais says, "In terms of creative latitude, the choice is simple. ARRIRAW is uncompressed. Not 'visually lossless,' but actually lossless. That means that every subtle detail is preserved. It lets the DP and director make the choice about what details are important to the image in DI, rather than letting an algorithm decide for them. It's particularly important for scenes where you have extremes of contrast – day exteriors with harsh sunlight."

The digital intermediate was done at Company 3 with colourist Stephen Nakamura. "Doing some colour correction day-to-day saves a lot of time in the DI, and it also gives you an idea of what the film is going to look like as you go along," says Sigel.

Asked why the CODEX/ARRIRAW workflow was important to his approach, Sigel says, "First of all, it helps in terms of colour correction and image quality, because you're getting the highest resolution possible. And when you're colour

correcting, you don't have to fight through somebody else's colour correction. Even a LUT is in essence a colour correction. Starting from scratch gives you the greatest range, and the maximum ability to manipulate and do subtle things later. It also gives greater freedom for editorial to blow up, to move the image around."

Gervais says that while 3D conversion techniques have improved, native 3D capture is a moving target. "Codex, because the company is always pushing the barriers of size and performance, means that native captured 3D is not standing still either," he says. "As time goes on, partners like Codex allow us to be more flexible, faster, and deliver a higher-quality image while shooting however the DP and director choose – native 3D, 2D, or a hybrid of the two."

"PARTNERS LIKE CODEX ALLOW US TO BE MORE FLEXIBLE, FASTER, AND DELIVER A HIGHER-QUALITY IMAGE"

Ben Gervais - 3D Systems Supervisor




# RECORDING WITH CODEX

Because of its reliability and ruggedness, backed up with excellent support, Codex is the gold standard for ARRIRAW recording, having been used on hundreds of feature films worldwide.

From budget conscious independent films all over the world to award winners *Life of Pi* and *Gravity*, the world's leading cinematographers have entrusted Codex with capturing their digital negative – Robert Richardson ASC, Roger Deakins CBE ASC BSC, Seamus McGarvey ASC BSC, Claudio Miranda ASC, Emmanuel Lubezki ASC AMC... the list goes on.

Building on the close relationship established during the rollout of the ALEXA camera, ARRI and Codex collaborated next on the ground-breaking ALEXA XT camera, the latest member of the ALEXA family. The XR module integrates Codex recording technology directly into the camera body – an enhancement that has proven to be incredibly popular all over the world.

During the first few months of availability, movies like *X-Men: Days of Future Past*, *Guardians of the Galaxy*, *Hunger Games: Mockingjay* and *The Fault In Our Stars* all relied on the ALEXA XT and the associated, battle-tested Codex workflow.

The development of in-camera recording provides a more compact package that simplifies RAW recording and enables higher speed ARRIRAW – up to 120 FPS for 16:9 or 90 FPS for 4:3. For shooting ProRes, the XR module allows for longer recording times using the same reliable Codex Capture Drives. With ARRI's SUP 10.0, Codex now supports Apple's ProRes 4444 XQ, the highest quality version of ProRes, with a target data rate of 500 Mb/s. And you can still shoot to SxS cards using an adaptor. Same proven workflow – more flexibility.

And the ALEXA XT can also record to the same Codex Capture Drives used with the Codex Onboard S recorder (at up to 60 FPS 16:9), providing flexibility, prolonging the life of your equipment and offering unified workflows for the ALEXA XT or the ALEXA plus a Codex Onboard S Recorder.

*"When it became clear that the XT was available, and we could use Codex to shoot ARRIRAW, it was absolutely my first choice."*

*Ben Richardson, Cinematographer, The Fault In Our Stars*


ARRI ALEXA XT with in-camera ARRIRAW Recording



SUCCESS STORY: THE FAULT IN OUR STARS
CINEMATOGRAPHER: BEN RICHARDSON
RELEASE: MARCH 2014

# SHOOTINGSTARS

Ben Richardson burst onto the cinematography scene in 2012 with *Beasts of the Southern Wild,* a film in which framing and camera movement communicated the innocent, exploratory worldview of a child. *Beasts* earned Richardson cinematography awards at Sundance and at the Independent Spirit Awards, as well as a nomination for the Golden Frog at the Camerimage Festival in Poland.

Richardson followed that success with the features *Drinking Buddies, Happy Christmas,* and now *The Fault in Our Stars,* the tale of two love-struck teens who meet and bond in part due to their cancer diagnoses.

CAPTURED ON
CODEX

Richardson found the source book incredibly moving. He campaigned to get the job as soon as director Josh Boone was attached. In their initial meetings, it became clear that they shared a common vision for the film.

"One of the first things that Josh said to me was that the film couldn't be about death - it had to be about life," says Richardson. "That really struck me and stuck with me for the duration of the shoot. It's a love story in the tradition of Romeo and Juliet. The interactions, feelings and experiences of these characters are seen through fresh eyes, and I thought it was really important that we maintain that sensibility."

Boone's first feature, *Stuck in Love,* had been shot on the ARRI ALEXA. Richardson had not previously worked with the camera, but the new XT model with built-in Codex recording module intrigued him. "That made a huge difference to me," he says. "I'm very intimate with my cameras. I want them to be as small as possible. I still operate the camera. I do a lot of handheld, and I've never liked the idea of a tethered solution. When it became clear that the XT was available, and we could use Codex to shoot ARRIRAW, it was absolutely my first choice."

The composition and framing were built around the faces of the two leads, Shailene Woodley and Ansel Elgort. Richardson chose a 1.85:1 aspect ratio, because he felt he could frame the actors "closer and quieter" in that frame. "Ansel and Shailene have beautiful faces, and they're wonderful performers," says Richardson. "You can get lost in their eyes and in their expressions. I tried to find very simple, elegant ways to compose, and to frame them with soft colour washes and soft tones, and slightly more classical compositions than perhaps I'd done in previous projects. What really mattered here were the performances, and my goal was to capture those with nuance."

The lenses were Master Primes. "I found that they didn't get in the way," he says. "This film didn't want to feel vintage. It wanted to feel fresh and immediate. The Master Primes allowed what we were putting in front of the lens to come through unadulterated, and that allowed me to focus on lighting."

In defining a look for the project, the filmmakers referred to the work of the photographers Ryan McGinley and Wolfgang Tillmans. They were also influenced by the tremendous outpouring of imagery the book generated on Tumblr and other online venues, much of it from teens who could relate to the story and characters.

Colour was very important to Richardson's approach. He says that his lighting included very few primary colours, with more emphasis on tertiary and a few bright secondaries. Earth tones were prominent, with blues tending towards turquoise, for example. "A big part of the job for me was maintaining that palette in all the different environments," he says. "Pittsburgh is very much the four-seasons-in-one-day kind of a scenario, so we had a lot of silks and large frames, and a lot of balance and bounce and colouring, along with intelligent compositions to frame out anything that played against our palette. For daylight interiors and night exteriors, I had a bigger lighting package than I've used before, which was quite fun."

Regarding the workflow from camera to post, Richardson wanted the control he was used to with film. DIT Curtis Abbott helped build a LUT that worked on the set, and together they would make a few fine adjustments that went with the footage

to the dailies house via CDLs. Abbott set up shop in the camera truck with a miniature colour suite. He used a Codex Dual Dock to download the cards into a RAID and then to shuttle drives. From the RAID, he would bring the images into ASSIMILATE SCRATCH and apply the show LUT. Then he would make tweaks to match shot to shot and scene to scene, incorporating any specific instructions from Richardson. He used a Sony BVM OLED monitor that Emery Anderson calibrated to match the monitors at Sixteen19, who created dailies for the production.



"When I first sat down with Ben to discuss the workflow, he mentioned that he only wanted to make printer light adjustments," says Abbott. "I found that to be a unique and interesting challenge. I worked directly with ASSIMILATE to make sure we could do this and allow those adjustments to end up in a CDL file that Sixteen19 could read. That meant that full control of the images could remain with the camera department. We could only affect colour on the overall image, and not contrast. While there are tools available these days to do just about anything, we put limits on ourselves and produced some pretty spectacular images. I've worked with other systems to record ARRIRAW in the past and nothing comes close to the internal Codex recorder in the XT."

Richardson says that his main concerns are process control and repeatability. "One thing that I do love about film is that the negative is an absolute record of a certain set of colour qualities and light intensities, and once you understand the way that behaves, then you're going to get certain results," he says. "To me, the ALEXA is the digital version of that, finally. Once you understand the workflow and you get it set up correctly, with the right DIT and the right on-set LUTs, you can treat the camera very much as you would a film camera."

"I can do all my work in front of the lens," he continues. "I can think entirely in terms of light metering and contrast ratios and so on, with the knowledge that it's going to carry through. There aren't going to be any peculiar colour shifts or other strange things happening. I think everyone was very happy with the way it looked."

Two key shots of Woodley bookend the film. Richardson lit with a large overhead softbox with some subtle blue and a bit of green added. He brought some slight neutral bounce in from the side for fill to set it off. "She's looking at the stars in these opening and closing shots, and I thought it would be wonderful to get stars reflecting in her eyes," he says. "We built a 4ft x 4ft frame and wrapped a whole set of little Christmas lights onto it. We managed to get her angled in the frame so that she had this beautiful catch-light of stars across the top of her eyes. There's just something really wonderful and silvery about the quality of that moonlight colour we settled on. Even with such a large source, at that distance it feels directional, and it picks up beautiful speculars all over Shailene's cheeks, eyes, and lips. It was everything that I pictured that shot as being."

"One of the lovely things about film is the beautiful range of subtle hues it reveals, in the shadows, in the speculars, picking up a little extra kiss of blue skylight from the side, those sorts of things," Richardson adds. "Up until this point, I hadn't really seen that with digital. But the ALEXA definitely picked all that up. I think shooting in ARRIRAW allows you to just preserve that through as far as possible. After this shoot, it's clear to me that the ALEXA is at the very forefront of imaging."



"WHEN IT BECAME CLEAR THAT THE XT WAS AVAILABLE, AND WE COULD USE THE CODEX TO SHOOT ARRIRAW, IT WAS ABSOLUTELY MY FIRST CHOICE."

Ben Richardson

# HANDHELD IN HAMBURG

Benoît Delhomme AFC burst onto the international cinematography scene in 1993 with *The Scent of Green Papaya,* a visual poem in which images and sounds took precedence over dialogue. That film was well-received at the Camerimage Festival of the Art of Cinematography in Poland, and in subsequent years Delhomme has worked with directors Mike Figgis, Anthony Minghella, Michael Radford, Mikael Håfström, Hideo Nakata, and Lone Scherfig, among others. His collaborations with John Hillcoat, *The Proposition* and *Lawless,* have been widely acclaimed.

Delhomme's latest assignment was *A Most Wanted Man,* the spy thriller based on the John Le Carré novel that was one of Philip Seymour Hoffman's last films. In designing a visual strategy, Delhomme worked closely with Anton Corbijn, the visionary Dutch photographer-turned-director best known for *Control* and *The American,* and for his striking music video work.

"I was very happy for the opportunity to work with Anton on a spy film," says Delhomme. "I knew that working with Anton and Philip would be very demanding, and I was excited by the challenge. Anton told me he chose me because he thought I could make the film look both modern and poetic. I saw the story as a spy tale that was based on human characters rather than in technology. It's a rather poignant love story between very lonely people."

*A Most Wanted Man* was filmed mostly on location in Hamburg, and the city looms large in the film's iconography. Delhomme took his first inspiration from *The American Friend,* the 1977 Wim Wenders film photographed in Hamburg by Robby Müller.

"Colour plays an important role in that film, and I wanted to pay a secret homage to Robby's work, playing with colour temperatures mixed together to infiltrate more emotions in the scenes, while always staying realistic within the setting," says Delhomme. "With Anton, we scouted and chose locations with great care. We were both excited to frame the variety of architectures Hamburg has to offer, which are often hypergraphic."

Practically 100% of the film was done with a handheld camera, often wide open, and usually with little or no rehearsal. "Even in static shots, we wanted the image to breathe, to give the audience the sense of a person spying or watching," Delhomme says.

First AC Birgit Dierken says, "For me, the handheld work was the main challenge on this project. Marc Dando of Codex has always been very helpful. He introduced us to a harness for ALEXA cameras on *World War Z.* On *A Most Wanted Man,* we could use it like a rucksack when necessary, and for other situations, we came up with a cart version. That helped." The preponderance of handheld shooting was one factor that led to the decision to go with lightweight ARRI ALEXA M cameras. In combination with Codex Onboard Recorders, the ALEXA was also key to success in the many night exterior situations.

"That gave us the ability to shoot nights with the actual light that existed in the streets and other city environments," says Delhomme. "Quite often, we would ask shopkeepers to leave on or turn off the lights in their shops after closing time."

Delhomme says that it has been difficult to find a gaffer who could understand his approach. "Many gaffers who do international films in Germany seem to think that you want to light nights like big American DPs, with a lot of HMI lights and 'cherry pickers' everywhere," he says. "Shooting with existing city lights was so important to this project. Our characters were either spies or trying to escape the spies, so they favoured dark places! I really wanted to give the film an authentic urban flavour. The camera's ability to see far in the cityscape enhanced our night scenes with additional depth and texture." The lenses were the older high speed Zeiss series, with the 35 mm focal length used extensively. In dialogue scenes, the camera was often close to the actors with the lens wide open, throwing backgrounds nicely out of focus. The idea was to concentrate the audience's attention on the internal lives and souls of the characters.

All monitors were timed for consistency, including set monitors, onboard monitors, eyepieces, and those used in editorial and for screening dailies. On-set timing was minimal. During the day, the cameras were ND'd extensively. Delhomme says that Corbijn was surprised by the cinematic quality of the resulting footage. "The CODEX/ARRIRAW workflow gave us the latitude to create filmic images," Delhomme says. "We used a single LUT developed with ARRI, and there were no surprises in post. That's important." Dierken had worked with Codex and ARRIRAW on several previous projects. "Codex is a very reliable recorder," she says.

The final shot of the film was a good example of the filmmakers' spontaneous approach. As is typical for Le Carré, the ending is loaded with ambiguity. After a breathtaking climax, Hoffman's character is driving through the city. He parks, gets out of the car, and walks away. The shot was totally improvised at the last minute, filmed with Hoffman driving the car himself, with Delhomme and his 1st AC in the back seat and Corbijn in the passenger seat whispering suggestions to Hoffman.

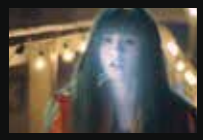
"We jumped into the car and just drove around the city, doing take after take in a quite contrasty and sunny afternoon light," Delhomme recalls. "The ALEXA M with the Codex allowed me to go back to my old way of shooting. I knew instinctively I would get all the latitude of exposure to hold exteriors and Philip's face inside, as if I had shot it on my favourite Kodak stock. It was a great way to make a film."

SUCCESS STORY: A MOST WANTED MAN
CINEMATOGRAPHER: BENOÎT DELHOMME AFC
RELEASE: JULY 2015

"PRACTICALLY 100% OF THE FILM WAS WITH A HANDHELD CAMERA

Benoît Delhomme AFC



Canon

# RECORDING WITH CODEX

From the beginning, the compact size of the Canon EOS C500 camera has led people to push it to the extreme. Given its reliability and rugged design, Codex has been the obvious choice to accompany these adventures. Base jumping off a mountain in the Swiss Alps for the movie *After Earth,* attached to cars driving and crashing at high speeds in *Need for Speed* with Shane Hurlbut ASC and shooting motorbike races in the Mojave desert for the documentary *Why We Ride* – the C500/Codex combo has produced stunning imagery in the most demanding situations.

The Codex Onboard S is the only recorder that can record 4K Canon Cinema RAW from the C500 at up to 120 FPS. With one recorder and one Capture Drive. And it's the only recorder that can record the 12-bit 2K signal from the C500 – used to beautiful effect by cinematographer Rodrigo Prieto ASC AMC, in the short film *The Human Voice,* starring Sophia Loren and directed by her son, Edoardo Ponti.

Codex is not just a recorder. It's a robust, proven workflow, allowing you to capture at the highest resolution – 4K Canon Cinema RAW, make a safe copy of your original footage on - or near-set, transcode to all the formats you need for editorial and post production, and make a long-term archive of your digital camera original in an industry-standard format onto LTO tape.

*"To me, Codex is the most reliable and robust recorder I've used. It's also the most versatile. In the heat of battle, there was never a problem."*

*Andre Lascaris, Cinematographer*


Canon EOS C500 with Codex Onboard S Recorder mounted on Vocas handheld shoulder rig

# THE RETURN OF THE MUSIC VIDEO

SUCCESS STORY: CLAUDIA LEWIS - M83
CINEMATOGRAPHER: ANDRE LASCARIS
RELEASE: AUGUST 2013

**MTV's Supervideo has been called the network's attempt to bring back the ambitious music video. Supervideos are essentially short films set to music, often directed by hot, young up-and-coming filmmakers. Usually the song has already generated some buzz with a previous clip. MTV bankrolls the Supervideo as a way to promote the song further, and to drive viewers to their various media properties.**

One recent example of a Supervideo is a short film directed by Bryce Dallas Howard set to the song *Claudia Lewis* by the band M83. Howard, the daughter of filmmaker Ron Howard, worked with cinematographer Andre Lascaris, a frequent collaborator.

Through imagery, the new clip tells the story of a young girl who is sent from another world to observe the behaviour of teenagers on earth. She and a cute boy catch each other's eye, but she worries about her secret alien identity. When they are about to have a touching, revealing moment at a beach party, pranksters squirt them with water, not knowing that water will give her skin an unearthly glow. She flees, but just before she returns to her world through a column of intense light, she shares a kiss with the boy.

"Visually, we set out to create a gentle, 1980s aesthetic, an allusion to *Sixteen Candles* and that type of film," says Lascaris. "Bryce was really keen on getting a lot of young teenagers into the movie, and going with a look that was a bit softer and more pastel, while still feeling modern and relatable for today's youngsters. We wanted to be intimate with our lead actress, Lily Collins, and to be close to her as often as possible, since the film is about experiencing this world from her point of view."

The clip was filmed at a high school near downtown Los Angeles and at Dockweiler Beach at the western edge of that city. The filmmakers chose Canon C500 cameras and Codex Onboard Recorders capturing 12-bit 2K files. They planned to shoot the entire clip at 36 frames per second, allowing them to ramp to any frame rate in post.

Lascaris had two days to shoot the entire short. The first day at the school location, he brought existing fluorescent light fixtures to 5600°K for daylight balance, and boosted the ambience with two ARRI M18s at either end of the hallway. The beach party scene takes place at magic hour and after, and is lit for the most part with light from the bonfire. There was a small Bebee Mini Truck and some Christmas lights for accent, and a 5K Molebeam (augmented by visual effects) for the column of light that transports the girl.

"Most of the lighting was simple, as natural as we could get it to be," says Lascaris. "Dockweiler Beach also has a parking lot with available light, which I thought would add a certain urban texture, making it feel closer to the school. It also allowed me to create nice frames with a lot of depth, without having to work for hours lighting it."

The beach scenes were done almost entirely on Steadicam. The C500 was used with the lightweight Canon short zoom, a 15.5 - 47 mm T2.8 lens. At times the ASA was pushed to 1200. The fire played at about a 4 stop. The fire in the clip has rich, varied colour.

"I was very pleased with how the fire read," Lascaris says. "Whenever you have fire on a set, it's always about finding the correct balance that will make it feel good, where the fire has enough colour and texture and it's not blowing out. So sometimes you have to over-light fire scenes. For me, this is where the Codex shined. That's where you're really seeing the advantage of 12-bit 2K.

"It's really one of the nicest ways to shoot," he says of the extra bit depth. "I'd rather have the gradation in colour and a bigger dynamic range than 4K of resolution, especially when I'm doing something for television or the internet. The additional resolution of 4K is great when there's a specific need, like visual effects. But I'll always go for better colour depth over resolution."

Lascaris says that the additional latitude translated into a more efficient shoot – an important factor given the two-day schedule.

"The ability to shoot at different frame rates was the main reason we decided to go with Codex, but I also knew that the 12-bit option was really going to help me with the fire scene," he says. "I've done two or three fire scenes prior to this shoot with the C300 and the C500, and I've had fantastic results. It delivers all the texture and quality you want from a fire without it looking unreal. And what's also nice is the latitude - I'm able to keep a lot of the available lights twinkling and alive in the background without having to affect the fire. "To me, Codex is the most reliable and robust recorder I've used," says Lascaris. "It's also the most versatile. In the heat of battle, there was never a problem."

See the finished Supervideo here:
http://www.mtv.com/videos/m83/942449/claudia-lewis-directed-by-bryce-dallas-howard.jhtml

CAPTURED ON CODEX

SUCCESS STORY: AMITYVILLE
CINEMATOGRAPHER: STEVEN POSTER ASC
RELEASE: JANUARY 2015

# GAME CHANGER

Steven Poster ASC is known as an early adopter. In the late 1980s, he was already shooting tests for NHK with high definition cameras. Years later, he's still pushing the limits of filmmaking technology.

For his most recent feature project, Poster and his team shot all of the interiors and exterior nights while rating the cameras – Canon C500s – at 3200 EI.

"That's a game-changer," he says. "I'm finding out that the way Canon has developed their chip technology means that very high EI ratings work very well, with very little noise," he says. "The fact that I could shoot for the big screen at 3200 EI meant that I could use very little light, and shape it in ways that gave me an advantage, especially on a low budget project. It's a very effective and efficient way to work. A table lamp becomes a light source, as opposed to a mere decoration."

The project was *Amityville,* the twelfth feature film in the series of haunted house paranormal thrillers that originally sprang from the 1977 book, "The Amityville Horror: A True Story." The film was shot over 26 days, mostly at practical locations and on sets built at RED Studios in Los Angeles. The exterior of the famous house was built and filmed at a park near Long Beach, California.

After testing, Poster chose to shoot in the 2K 12-bit format rather than using ProRes or the 4K 10-bit option. For recording he chose Codex Onboard S Recorders. "That seemed to give me a level of colour depth that I found more interesting, especially at higher EIs," he says. "The Canon chip has a very photographic quality that I like very much."

Poster is quick to add that working in a high exposure index and low light levels does not mean that lighting is unnecessary. "Of course, you still need to be able to see the light and shape it the way you want it to tell the story," he says. "Sometimes it's even more difficult to see the subtle effects of going from one foot-candle to one-half of a foot-candle, but there really is a difference, as compared to going from 100 foot candles to 50 foot candles."

Poster describes his approach as a classic horror film sensibility. He and director Franck Khalfoun referred to *Dead & Buried,* a film Poster photographed much earlier in his career. "The concept is that the audience has to almost strain to see into the image," he says. "You lean in to see, and then when something scary happens, it throws you back in your seat. Franck and I were completely in sync – I was thrilled to work with a director who knew exactly where he wanted to go with the story."

The interiors were lit almost entirely with very small fixtures, often battery-powered, including the KinoFlo Celeb, Lowel Primes, LitePanels, and larger 2x2 Fill-Lites. LED Fresnel lights were also used, as well as the ARRI L7 and the AAdynTec Punch Plus.

"I was particularly delighted that gaffer Russell Ayer introduced me to LiteGear LiteRibbon LEDs," says Poster. "I was trying to use as much new lighting technology as possible, in order to see we could get away with in terms of minimising the power requirements."

He notes that there were still situations that required more powerful units – HMIs for daylight, and a BeBee Night Light for large night exteriors, and several four-foot hybrid tungsten and HMI SkyBall balloons on Matthews High Roller stands.

The film was shot with two cameras most of the time, but three bodies were usually on hand in various configurations, making the switch to Steadicam quick and easy. Daylight scenes were generally rated at EI 1250. The lenses were all Canon – two compact zooms, two full zooms, and five primes.

"The lenses felt real nice," says operator Gunnar Mortensen. "The focus and the witness marks were well-placed and the barrel roll felt very natural. They didn't flare very easily, which was good."

Poster used new Tiffen Pearlescent filters throughout. "These new filters enhance the digital image with a unique quality that helps to transport the audience to that desired state of suspension of disbelief," he says.

"The combination of the Canon C500 camera and Codex recorders was a natural," says Poster. "Once it was set up, the whole process of recording was as it should be – completely transparent to me. It worked beautifully."

DIT Rohan Chitrakar, who owns his own Codex gear, including an Onboard Recorder and Vault, agreed that the 12-bit 2K workflow was right for the project. "There were many benefits to using 12-bit," he says. "We were filming a lot of really dark scenes, and what the 12-bit afforded us was the ability to look into that darkness and pull out detail without bringing out the noise that you normally get in shadows. Early on, we did some tests, and looked at footage on the big screen at Technicolor. We were very impressed by how much you can push the signal. At that level, it looked so beautiful that there was no reason for us to even consider 4K."

Poster says that Canon's design delivers more voltage to each pixel as the EI is increased, thus making it a more sensitive chip, as opposed to "slipping" the curve later in the chain. "It's almost like using a different emulsion," he says. "You really get the full dynamic range."

On the set, according to Chitrakar, "While we were capturing all of the highlight and shadow detail in Canon Log at 3200 ASA, we used Livegrade to create grades and view in real time the graded footage and demonstrate what we were capable of doing in the final colour. The Codex Onboard S Recorder is one of the few recorders that can capture every format the Canon C500 outputs. Other recorders have limitations with the higher data rates that C500 is capable of. The Codex Onboard S Recorder captures Canon 4K RAW in 10-bit or 2K RGB in 12-bit. And it's extremely reliable."

Visual effects supervisor Jamison Scott Goei sometimes used the 4K 10-bit capability to capture green screen elements, giving him extra information and the option to reframe later.

No pre-made LUTs were used. CDLs generated for every setup flowed through to the Technicolor DI suite, where colourist Mike Sowa used them as a starting point, saving time and money in the grade.

Codex Vault also played a key role on the set, says Chitrakar. "This project was a perfect application for Vault," he says. "I've been using it on a lot of documentaries and some commercials, but the amount of data that we gathered, the amount of footage that we captured on this film, was just extraordinary. The workflow Vault offered allowed us to keep up.

"We were shooting an average of about 200 minutes a day," he says. "We generated a little under 50 TB of footage in this film, and I was backing that up in three different places – two LTO tapes and one set of hard drives. That's about 150 TB of data. I can't imagine doing that with any other system that is so compact and robust. Not only was

I doing the live colour in Livegrade, I was managing the media workflow with Vault. Multi-tasking was an essential part of the new 2K RGB 12-bit workflow. The reliability and support of Codex allowed me to focus on all of my DIT and workflow tasks with confidence. Vault was the right tool for such an intensive job.

"The production saved money, because outsourcing even one small part of the workflow, such as creating LTOs, would have been too expensive," says Chitrakar. "If we had not used Vault on set, we would not have been able to keep up with the data generated, and we would have had to use a more compressed format. Vault enabled us to shoot at the highest quality format of the C500 for significantly less cost."

Poster relished the ability to grade on the set. "That was a complete joy to me, to be able to create the colour and density of every image the way I wanted to see it, on the set as we were working," he says. "Everybody got to see what Franck and I intended the images to look like. That brings back the magic and the quality dialogue about the photography that we used to have when film dailies existed. If you give people something that approximates the finished image, they look at it in a different way. Nobody questions the intent of the image. They're saying, 'Oh, I see what you're doing,' as opposed to, 'Don't you think it should be darker?'

"It was a wonderful experience compared to not seeing what the image is really supposed to look like until the first screening, after you've graded it," says Poster. "Even the editor, Patrick McMahon, whom I first worked with on *Strange Brew,* told me that the ability to see the intent of the image was helping him tell the story in the edit. Live grading gave me a sense of control. I could push the images farther in the direction I wanted to go. The whole concept of the intent of the cinematographer following the image all the way through post is a reality now. It's pretty exciting – and I can't imagine a cinematographer not wanting to do this."

"THE COMBINATION OF THE CANON C500 CAMERA AND CODEX RECORDERS WAS A NATURAL"

Steven Poster ASC

CAPTURED ON CODEX

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# DEPICTING A CULTURAL HERO

Movie fans outside of Latin America know Mario Moreno best as Passepartout, the patiently suffering valet to David Niven's Phileas Fogg in *Around the World in 80 Days.* That 1956 film took home five Oscars, including best picture and best cinematography for Lionel Lindon ASC, who shot in the large-format Todd-AO process.

But Passepartout was only one role in the long and distinguished career of Moreno, a.k.a. Cantinflas. Beloved in his native Mexico, the actor, producer and filmmaker was deemed "the greatest comedian in the world" by none other than Charlie Chaplin. His character had a distinctive way of using a flood of words that add up to little or no meaning, and he often used the technique to flummox the powerful. This way of speaking has entered the lexicon of Mexican Spanish – an indication of his cultural importance.


The story of Moreno and his character has now been brought to the screen by director Sebastian del Amo, actor Óscar Jaenada and cinematographer Carlos Hidalgo AMC. The filmmakers worked very closely with the actor's family to create an honourable and authentic tribute. The film is not a comedy, but rather the dramatic story of the man's life. A number of times and places are depicted, including the humble theatres of the 1930s where Cantinflas got his start, and the Technicolor world of Hollywood in the 1950s.

"Sebastian is really a historian," says Hidalgo. "On our last movie, we recreated periods decade by decade, some in black and white. For *Cantinflas,* we created a 1930s look that was not quite monochromatic, but with less colour and less contrast. And for the 1950s, we designed a brighter look with more pastel colours."

The schedule was limited to seven weeks, and the budget was relatively modest – $4 million. What made everything possible, according to Hidalgo, was a luxurious ten-week prep period, and the fact that del Amo had meticulously storyboarded the entire film.

"We collaborated very closely with Christopher Lagunes, our production designer, and he did an excellent job researching the colour palettes of the two eras," says Hidalgo. "Without a good production designer, a DP has nothing."

Hidalgo took inspiration from Gabriel Figueroa, the most important figure in the history of Mexican cinematography. Often that meant very hard backlight from large sources, and distinctive composition. Early tests showed that in order for Jaenada's skin to read with the proper tone, Hidalgo needed to colour the light with cosmetic peach and chocolate gels.

The choice of lenses was crucial to the look. "We wanted an older-looking texture, and the new lenses are too sharp," he says. "A brutal, crispy look was against this story. So we went with the oldest lenses we could find – a very old set of Ultra Primes."

The cameras were ARRI ALEXAs – usually two – with Codex recorders set up to record in ARRIRAW format. "The ALEXA has been my favourite camera for a long time," says Hidalgo. "The combination of old Ultra Primes, ALEXA, and Codex was perfect for the story."

Hidalgo worked with a very basic LUT on the set, and didn't do much manipulation of the image until post. He says that the CODEX/ARRIRAW workflow delivered plenty of information to work with after the shoot had finished.

"With the Codex, you take everything that the ALEXA can give," he says. "That gives me a lot of freedom in post, and that's the most important reason to go with Codex."

DIT duties were handled by Marco Rodriguez, who also oversaw the post workflow. "Creatively, the CODEX/ARRIRAW workflow is fabulous," says Rodriguez. "We get extended dynamic range, which helps maximise creativity not only for colour correction, but for visual effects, where it's amazing. We have plenty of detail for everyone, and the results are visible in the final product." Rodriquez is managing director of Oxido, a major provider of post services in Latin America.

"The main challenge on *Cantinflas* was to capture in high quality ARRIRAW and preserve the image in every aspect," says Rodriguez. "Codex is the best choice with the ARRI ALEXA – a safe, efficient, reliable and robust system."

Rodriguez devised a workflow that would incorporate Hidalgo's LUTs and provide quality dailies as well as a nightly LTO backup. More than 30 terabytes of information went through the system without a hitch. Colour correction for the visual effects shots went through a parallel process in which Hidalgo could ensure consistency with the rest of the imagery.

"Oxido has now used Codex on five feature films and countless commercials, and the outcome is always wonderful," Rodriguez says. "Even under very difficult conditions, including extreme heat and cold, we've never lost any information. The system makes it very easy to detect any anomaly. If the images come to the datapack, I'm 100% certain that we have them accurately recorded.

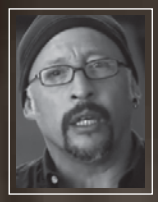
"We're very proud to have participated in the production of *Cantinflas,*" says Rodriguez. "It's an important film in our culture, and it proves that we can make films of the highest quality. It was a pleasure working with such passionate filmmakers as Sebastian and Carlos."

Hidalgo also places a high value on passion. "The question I always ask is, 'How is your Romeo & Juliet going to be different from the 3,000 Romeo & Juliets that have already been shot?'" he says. "It's the way you see and feel the story, and the way you put passion into it. *Cantinflas* is a movie that I feel down into my boots. The director was already in love with the story, and he made the magic. He made everybody feel the same about that story. That's why I think *Cantinflas* is really different – because it was made with passion."

Hidalgo is currently planning his next shoot, a period film about Cañonero II, an unlikely thoroughbred who won the 1971 Preakness and Kentucky Derby. He plans to shoot the racing scenes at very high frame rates and the main story using ARRI ALEXA cameras and Codex recorders.


## "CREATIVELY, THE CODEX/ARRIRAW WORKFLOW IS FABULOUS"

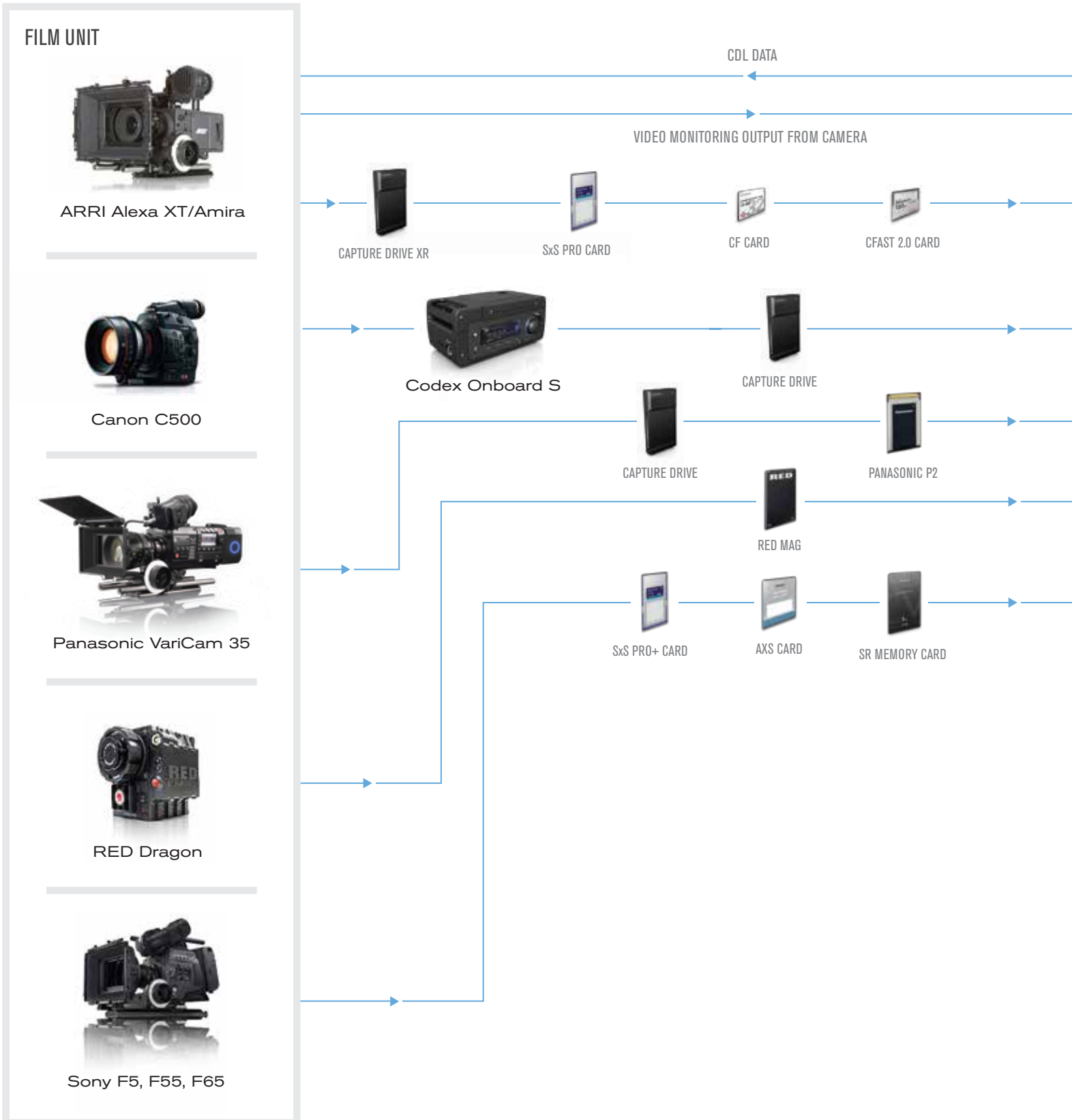
Carlos Hidalgo AMC



SUCCESS STORY: CANTINFLAS
CINEMATOGRAPHER: CARLOS HIDALGO AMC
RELEASE: AUGUST 2014

# CODEX VAULT WORKFLOWS

No matter what camera you shoot with or what media you record onto, simplify and safeguard your workflow with the compact, production-proven Codex Vault. From production to post with no fuss.



## ONSET

Codex Onset Cart

LTO
WORKING COPY

LTO
DEEP STORAGE

## POST PRODUCTION LAB

REMOVABLE STORAGE

Codex Vault

MASTER WORKING COPY

AVID DNXHD MXF/
QT PRORES

EDL

## EDITORIAL

Avid/FCP

Master Sound
DVD/CF/HDD

QC/Lab
Report

EDL

## FINISHING

Final Grade

# CODEX VAULT PLATFORM


The frenetic pace of a TV production, the quick turnaround of a commercial, the longer production cycle of a feature film – no matter what type of project you're making, Codex Vault can streamline your production and simplify your workflow. Vault brings your digital negative into one standard, secure workflow, saving you time and money and protecting your valuable asset. And it's production-proven – used around the world by all kinds of productions, on-set, near-set or in facilities, and backed up by our world-class 24 hour support team.

The increasing amount of choice in cameras has led to a proliferation in the number of different workflows for feature film, commercials and television production – but there is a better way. Codex Vault is a powerful end-to-end dailies and archiving solution that simplifies your workflow without taking away the flexibility that you need.

Fast transfers, automated production management, full reporting, rugged design and a compact size make Vault the hub of any on-set or near-set file-based workflow and the bridge between production and post production. Vault supports industry-leading cameras made by ARRI, Sony, Canon, RED, Panasonic and others.

Control your workflow - Vault has a simple task-driven user interface that anyone on the camera crew can use. The workflow can be designed and locked down at the beginning of production.

Powerful, multi-output GPU-based processing (with Codex Review) supports the generation of dailies in all the formats required for review, post production, archiving and VFX. With and without LUTs and burn-ins as required, and with all the associated sidecar formats and metadata.

Recognising how critical metadata is to streamline your workflow and save you money in post production, Vault allows you to protect, manage and export your metadata so that the right information gets to everyone who needs it as soon as they need it. Make sure all the information is correct and add any information you need before you make any deliverables.

And there's no Internet access so your valuable assets won't appear on-line.

**And now Codex's Vault Platform is available in various configurations and on various hardware devices.**

# CODEX VAULT S

Battle-tested all over the world; a modular, rugged device with super-fast processing and transfer times. Customise to your particular workflow on a specific project. Ready to go wherever you need it to accelerate your production pipeline and secure your data.

## Because it's modular, Vault can be configured to suit any project.

The Transfer Module is the core, with docks for various types of media - Codex Capture Drives, Sony SxS cards, CFast 2.0, Sony AXSM cards, RED MAGs etc. Quickly back up your original camera negative with full checksum verification.

Add the Storage Module for 8 terabytes of removable RAID-protected storage via Codex's 8 TB Transfer Drives – a sensible capacity for backing up and transporting your data wherever it's needed.

For archiving to dual LTO tapes using the industry-standard LTFS format, add the Archive Module. Save time by archiving to tape during the day so that the day's archive is complete a couple of hours after wrap.

Add the Review Module for playback, colour-grading and QC as well as super-fast GPU processing for transcoding and dailies generation.


1. TRANSFER 2. REVIEW 3. REMOVABLE STORAGE 4. ARCHIVE 5. BASE

## VAULT PLATFORM ON APPLE MAC PRO AND MACBOOK PRO

The functionality of Codex Vault Platform is now available to integrate with your existing Apple hardware.

Customise your on-set solution to meet your production's needs whilst maintaining the peace of mind you get from a production-proven platform with world-class support.

# CODEX VAULT XL



Codex Vault XL
in rolling rack

The production-proven Codex Vault, now available as a rack-mounted network attached device to integrate into your production or post production infrastructure, whether it's near-set or in a post facility.

Vault XL harnesses the benefits of network storage – faster access to files, simple configuration and easy administration – and bolts on the power of the Codex Virtual File System so that whatever files you need are available on demand whenever you need them.

Vault XL is a multi-GPU parallel processing appliance, combining high quality processing and world-class image science with automated efficiency.

"CODEX IS A WELL DESIGNED TOOL. YOU DON'T NEED TO WORRY ABOUT IT. IT'S PEACE OF MIND. TECHNOLOGY SHOULD NOT CLOG YOUR MIND WITH TECHNICAL INFORMATION. I WOULD RECOMMEND IT TO ANYONE."

Anna Foerster ASC

# CODEX REVIEW

Codex Review and Codex Vault combine into a complete end-to-end playback, dailies and archiving system, delivering your dailies quickly, efficiently and securely, no matter where you are in the world.

Codex integrates dailies tools – audio sync, image QC, look generation, colour grading and metadata management – with world-class image science, and harnesses the power of GPU processing to deliver dailies faster than real-time in all the common file formats.

Codex Review consists of four integrated modules – Play, Process, QC and Colour – adding new tools and processing power to the proven technology of Codex Vault and raising the bar for on-set and near-set mobile production.

Review UI - Clip Palette

Review UI - QC

Review UI - Colour

**PLAY** – view your camera original material as you intend it to be seen on a calibrated display - at the highest resolution, with the correct look and at the right frame rate. Review your footage with and without CDL values and LUTs applied. Scale and crop images using viewfinder metadata from the camera so that you know you're seeing the right framing. Two playheads allow for side-by-side comparisons of different looks and allow you to instantly compare different takes or shots.

**PROCESS** – a high-performance processing engine that adds the power of accelerated multi-output GPU processing to Codex Vault. Transcode to all the formats you need to deliver, faster than real-time - transcoding to DNxHD 115, for example, at more than 60 FPS. And that's with an input LUT, CDL, and a 3D LUT. So you can meet the toughest deadline with time to spare.

**QC** - an intuitive user interface for playback and QC of your camera original negative, featuring a sophisticated timeline, allowing you to mix and match different camera formats within the same resolution-independent timeline. Use a 3D mouse for controlling playback, including zooming and panning for a thorough visual QC. Generate a detailed QC report, with or without thumbnails so that everyone gets the information they need to move to the next stage of production.

**COLOUR** - Codex Review contains a full colour pipeline, including support for ACES. Dailies can be viewed as the cinematographer intended them to be seen. Collaborate and communicate using real-time, non-destructive, primary grading tools to generate CDL data that is tied to each shot and is carried forward to the next stage of your workflow. Or use LUTs that you've already created and add CDL data from the set.

Codex Review Module with Vault S on a Codex On-Set Cart

# A NEW DAWN RISES

The 2011 *Rise of the Planet of the Apes* unleashed a cross-species thriller and, on July 11, the sequel, *Dawn of the Planet of the Apes,* directed by Matt Reeves and shot by cinematographer Michael Seresin BSC, debuted in U.S. theatres. Unlike most 3D movies, which are shot in 2D are converted to 3D in post production, this movie was shot in native 3D. Seresin, who also shot a portion of *Gravity,* faced his first experience shooting in 3D. Although he doesn't consider himself a "technical cinematographer," Seresin felt confident. "Lighting, composition, and camera moves are what I like," he says.

Early on, Reeves sent Seresin 100 to 150 images of photos, paintings and films, to describe the moody, underlit look he was after. "So the discussion started at an advanced level," says Seresin, who also shot a series of 3D tests. "He wanted to sustain a 2D aesthetic and use 3D for its full dramatic use. We keep it subtle, low-key and then, bang, use it like a character in the drama."

Based on advice from ARRI Media's then head of digital and 3D, Bill Lovell, Seresin contacted Zoe Borys, client relationship manager at the Chicago-headquartered camera rental/sales house Fletcher, now Cineverse. "Michael and I started an email correspondence," says Borys. "He told me he didn't want to get bogged down by the technology. I said, whatever is the right way to tell your story, I can facilitate it."

Seresin already knew he wanted to shoot with the ARRI ALEXA M. "I went to Camerimage and shot tests on the ALEXA M and ARRI brought the M for us to look at on *Gravity*." As a smaller version of the flagship ALEXA the ALEXA M was ideal for the production's 3D rigs. With up to 4 rigs in use in the production, Cineverse provided 8 cameras.

Choosing a 3D rig was also crucial and, after looking at what was available, Seresin chose 3ality Technica's TS-35 rigs with the company's Stereo Imagery Processor. He also picked Leica lenses. "The Leicas have a cinematic look and they're incredibly constant," he says. "The 2 lenses on each rig have to match, not just in terms of colour resolution but in millimetres. My 1st AC Alan Disler said he'd done a 3D movie where they went through 50 lenses to find one set. I had up to 8 Leicas and only went through 12 sets, which was pretty amazing."

For recording, he picked Codex, which he was already comfortable with after his experience on *Gravity*. "The production ended up with between 30 and 35 Codex Capture Drives," says Borys, who added that the production worked closely with Fotokem to make sure the footage was a "go" before the drives were wiped clean and sent back into the field.

Codex is ideal for capturing native 3D because any relevant camera and lens metadata is captured and passed through to post production. Metadata can be added to or modified if necessary. In the case of *Dawn of the Planet of the Apes*, a Codex recorder was used for each camera, because production wanted to have the maximum shooting time available before reloading. In different circumstances, one recorder can be used to record the signal from both cameras.

Seresin says, "The ARRI M and 3ality rig worked well together. The Leica lenses were brilliant, and I like the Codex system. Codex works closely with ARRI so it's all well integrated." Cineverse also sent director of engineering Mike Sippel to make sure the workflow went smoothly. "He was absolutely brilliant," says Seresin. "It was a more personal service, working with people I trusted rather than a corporation."

The movie shot on location in Vancouver and New Orleans, where the weather conditions proved to be a challenge; Vancouver, where they shot in a forest preserve, was rainy and muddy and New Orleans, at an abandoned Six Flags Park, was hot and humid. "In Vancouver, the fibre tethering the cameras to the processors got full of mud," says Borys. "It wasn't an ideal set-up for native 3D shooting."

Seresin says "the sheer bulk of the cameras and rigs" was also daunting: "It was like a Sputnik with 50 cables. One great thing about shooting on location is that it makes you more imaginative. We also did a bit on Steadicam – it weighed 80 pounds – but shooting in native 3D didn't prevent us from doing anything we wanted."

Making the light consistent in the two very different locations was also a challenge. "New Orleans has tropical light, and Vancouver is more like San Francisco," says Seresin. "We sustained the aesthetic set up in Vancouver throughout the movie."

"Visualising the dramatic CG images that would be part of

what we filmed was also a challenge. In one sequence in the Human Colony, the production designer, James Chinlund, designed a city block with roads in New Orleans that was meant to be a ruin in San Francisco," says Seresin. "The buildings were three stories and we had to keep reminding ourselves that there would be 70 to 80 stories above it."

In the end, the production went more smoothly than anyone could have predicted. "We finished the film on time and on budget," says Seresin. "It was a tough but enjoyable job. We were lucky whilst shooting in horrendous circumstances. Most of it comes down to relationships with people – and everyone was brilliant, from ARRI and 3ality to Cineverse, Leica and Codex."

"With the complexity of digital 3D, capturing the image is a more appropriate way to describe what we did than photographing," he adds. "It's not a bad thing but it is a reality. If it's 2D, 3D or 48D, we're still telling a story with lights and composition and camera moves as seen through a lens."

Article written by Debra Kaufman
First published by Nick Dager in Digital Cinema Report

CAPTURED ON CODEX

# "CODEX - THE BEST... PEOPLE, SERVICE AND EQUIPMENT" Michael Seresin ONZM BSC

SUCCESS STORY: DAWN OF THE PLANET OF THE APES
CINEMATOGRAPHER: MICHAEL SERESIN ONZM BSC
RELEASE: JULY 2014

# POINTSHOOTPOST...

Introducing the Codex Action Cam - the exceptional small camera, with a workflow that works. Whether you're making commercials, TV, or movies, sometimes your camera package is just too big for the situation or location you're trying to shoot in.

A complete shooting, capture, transcoding and data management solution for situations that require a compact form factor and low weight, without compromising on image quality.

Codex Action Cam itself is a tiny remote head camera for shooting at up to 60fps. It comes packaged with the Codex Camera Control Recorder that delivers full remote control of the camera, plus the proven workflow of the industry-standard Codex recorder.

## ACTION CAMERA
## WITNESS CAMERA
## POV CAMERA

...the creative possibilities are endless.


**Compact package** – the Action Cam camera head measures just 45 x 42 x 53mm. The Codex Camera Control Recorder is only 83 x 139 x 188mm.

**Lightweight & Flexible** – A single co-ax cable connects the base unit and camera head, carrying video, control signals and power. With industrial grade cables, the base unit and camera head can be up to 180m apart. A camera set, consisting of the recorder and two camera heads, weighs just 1.5kg.

**Extended Dynamic Range** – packing 14-bit image-processing, a 12-bit RAW output and Codex's industry-leading debayering, Action Cam performs exceptionally well in normal and extreme lighting conditions.

**CCD Sensor Technology** – Action Cam uses a Kodak 2/3" CCD sensor, which provides great light sensitivity, signal-to-noise and temperature stability, along with no visible fixed-pattern-noise. A global shutter means there is no distortion of fast-moving objects.

**Native S3D** – with Action Cam, 3D shooting is easy. Connect two camera heads to the Codex Camera Control Recorder, and the signals undergo exactly the same image-processing.

Without any fuss, you get completely synchronous 3D output and identical image properties, such as white balance and contrast. This makes shooting S3D simple and straightforward, saving time and money in post production.

**Upgraded C-Mount** – Action Cam makes back focus adjustment quick, easy and precise, thanks to a special mechanism consisting of a sturdy locking lever, firmly securing the adjustment, and an accurate back focus wheel that rotates independently of the lens mount.

This makes it possible to use C-Mount lenses for professional production, giving you everything you expect from larger lenses in a small form factor.

## KEY FEATURES

- > LIGHTWEIGHT AND COMPACT
- > 2/3" SINGLE CHIP SENSOR WITH GLOBAL SHUTTER
- > SYNCHRONISES WITH ARRI ALEXA, SONY F65, F55, AND F5
- > EXCELLENT HIGH-DEFINITION IMAGE QUALITY AT UP TO 60FPS
- > WIDE DYNAMIC RANGE
- > C-MOUNT WITH EF, PL AND B4-MOUNT OPTIONS
- > RELIABLE AND ROBUST CODEX RECORDING AND WORKFLOW

"Codex represents a simple, elegant, all-in-one solution for the digital camera workflow. I consider it to be a rock-solid platform."

Bruce Markoe, Senior VP, Post Production,
Marvel Studios

CAPTURED ON
CODEX

# HEATONMAX

**Extreme temperatures endured in capturing *Mad Max: Fury Road*. Cinematographer John Seale ASC ACS takes Codex into the Namibian Desert**

*Mad Max: Fury Road* is the fourth movie in writer/director George Miller's post-apocalyptic action franchise and a prequel to the first three. It is also the first digital film for cinematographer John Seale ASC ACS, whose storied career spans more than 30 years and such iconic titles as *The Mosquito Coast, Witness, Dead Poets Society* and *Rain Man*. Facing inhospitable conditions, intense action scenes and the need to accommodate a massive number of visual effects, Seale and his crew chose to shoot principal photography with ARRI ALEXA cameras and capture ARRIRAW on Codex Onboard Recorders, a workflow that has become standard among filmmakers for its ruggedness, reliability and easy integration with post production.

Originally, *Fury Road* was intended to be shot near Broken Hill in New South Wales, Australia. However, several years of unusually heavy rainfall caused the desert in the area to bloom with wildflowers making it unsuitable for the film's wasteland setting, and production was moved to Namibia. The coastal deserts of that African country are among the most formidable in the world, featuring sand dunes measuring 1000 feet high and 20 miles long. Frequent sandstorms and intense heat required special precautions by the camera crew.

"I'd shot plenty of film-negative films in deserts and jungles under severe conditions, but never digital," notes Seale. "So I was a bit worried, but I had a fantastic crew of people who had done that... had worked with digital cameras in jungles, deserts, dry, heat, wet, moist, whatever. They were ready and put together full precaution kits of rain covers, dust covers and even heat covers to take the heat off the cameras in the middle of the day."

"We were using a lot of new gear," Seale adds. "Everything that our crew did in pre-production in Sydney and took to Namibia worked very, very well for the entire time. Our time loss through equipment was minimal."

Seale's crew was outfitted with six ARRI ALEXAs and a number of Canon 5Ds, with the latter used in part as crash cams in action sequences. The ALEXAs were supported by eleven Codex Onboard Recorders. The relatively large number of cameras and recorders helped the camera crew to remain nimble. While one scene was being shot, the next was being prepped. "We kept two kick cameras built the whole time, and two ultra-high vehicles rigged the whole time," recalls camera coordinator Michelle Pizanis. "When we when drove up (to a location) we could start shooting, rather than break down the camera at one site and rebuild it at the next."

The original *Mad Max* is remembered for its gritty look. *Fury Road* took a different route due to the film's heavy use of visual effects. "The DI and the post work is so explicit; almost every shot is going to be manipulated in some way," Seale explains. "Our edict was 'just shoot it.' Continuity of light wasn't really a question. We knew that the film would be cut very quickly, so there wouldn't be time to analyse every shot. Intercutting between overcast and full sun wasn't going to be a problem. On this film, the end result controlled the execution."

In order to provide maximum image quality and flexibility for post production manipulation, Seale and his crew chose to record ARRIRAW with the ARRI ALEXA cameras. That, the cinematographer noted, made Codex an obvious choice as only Codex recorders were capable of reliably capturing ARRIRAW.

"The choice to go with Codex was definitely for the quality of the recording and post production considerations," Seale said. "Everyone said Codex was the recording device that we had to have. Once again, we were a little worried about desert heat and desert cold. It changes so much from night to day. And during the day, we had dust storms, dust flying everywhere. We sometimes had moisture in the air. But the Codex systems didn't fail us. They came straight through with flying colours and, in post, they are very happy with the results."

Shooting digitally with Codex offered an advantage over shooting on film as it avoided the need to reload cameras with film negative in the blowing winds of the desert. "There is a certain amount of paraphernalia needed to shoot digitally," Seale said, "but our crew was used to that. They built special boxes to put everything in. They had little fans. They had inlet and outlet areas to keep air circulation going. Those boxes were complete. Cables came out and went to the camera. If we were on the move, the boxes were bolted down so that they were out of the way and didn't fall off. Sometimes we sat on them to get our shot."

RF interfaces were used with the ALEXA cameras to transmit images to a command vehicle for monitoring by director George Miller. Miller was not only able to review shots, he could edit material to determine what further coverage was needed. "For George, it was a godsend," said Seale. "That refined the film shooting and made it a lot quicker than the normal procedures."

It was that sort of flexibility that made shooting with ALEXA and Codex so appealing, added Seale. "I was a great advocate of digital ten or fifteen years ago when it started to come in," he says. "Film negative is a beautiful image recording process, but it's 120 years old and you get scratches and dead flies caught in the reels. It's pretty archaic.

"I think the way digital has caught on is extraordinary. Its R&D is vertical, where film development has stopped. The ability of digital to record images, coupled with the DI, where you can change it, manipulate it, allows you do anything you like. I know with *Mad Max*, it won't look anything like a 'good film image' and it won't look anything like a 'good digital image'. . .it will look like its own image. I think that's the wonder of it."

Director George Miller recently appeared at Comic-Con and seems to agree with Seale, "It was very familiar," he said about returning to the Mad Max world, "A lot of time has passed. Technology has changed. It was an interesting thing to do. Crazy, but interesting."

SUCCESS STORY: MAD MAX: FURY ROAD
CINEMATOGRAPHER: JOHN SEALE ASC ACS
RELEASE: MAY 2015

## "THE CHOICE TO GO WITH CODEX WAS DEFINITELY FOR THE QUALITY OF THE RECORDING AND POST PRODUCTION CONSIDERATIONS"

John Seale ASC ACS

# PAINTING WITH LIGHT

For his 10th film with British filmmaker Mike Leigh, cinematographer Dick Pope BSC, was given a subject that many could only dream about: a biopic about Joseph Mallord Turner, known as “the painter of light”

CAPTURED ON
CODEX

SUCCESS STORY: MR. TURNER
CINEMATOGRAPHER: DICK POPE BSC
RELEASE: OCTOBER 2014

Celebrated by critics at the 67th Cannes Film Festival, a film with visual influences rooted in the romantic paintings of the 19th century, but that is still a character study as well as a simple pictorial tribute, *Mr. Turner* won the Best Male Actor Award (Timothy Spall) and the CST/Vulcain technical artist prize for best cinematography for Dick Pope.

"Mike Leigh is a filmmaker unto himself", explains Dick Pope. "He has a way of working that is unique, which consists in rehearsing for months and months in advance with his actors, in places more or less similar to those in the film. Then he dives into the shooting, without sharing the script with the crew. He thus gradually uncovers the plot like a puzzle, and the construction of the image is done as and when the action unfolds in the location we previously scouted together".

Despite being shot in 2.35:1 aspect ratio, *Mr. Turner* is not a film of landscapes. Three quarters of the film takes place indoors. "Mike had particularly liked the 2.35:1 format on his previous film *Another Year*, and although at first I wasn't sure of the merits of this choice for *Mr. Turner*, he quickly convinced me otherwise." Pope explains, "Particularly the use of the wide format to construct the narrative in the interiors." The result is a smaller number of shots, and the use of the frame width to develop the characters entering and exiting the shot. Another way that framing was used was to show things through the perspective of the painter, staying mostly in interior shot and reverse-angle shot.

As is usual for Mike Leigh, the film was shot entirely on location. The crew alternated between some authentic historic sites (Petworth House, home of Lord Egremont, main patron of Turner) and reconstructions (the National Gallery of 1840, recreated in Wentworth Wood House). Even Mrs Booth's tiny home in Margate was shot on location, with an actual view of the harbour in a house whose ceiling height was just over 7 feet. "One of our main influences in this area was clearly the strategy developed by Stanley Kubrick and John Alcott on *Barry Lyndon,* explains Dick Pope, "shooting in natural locations, and using almost only very mild external light sources, with little lighting in the scene itself".

After 24 years of regular collaboration, this is the first time that Dick Pope and Mike Leigh chose to work digitally. But why go digital to make a period film about one of the pillars of romantic painting? "To tell the truth", says Pope, "I think philosophically this question does not arise because Turner was a visionary, constantly searching for new techniques. He had a passion for astronomy, physics, science, as we can see in some scenes from the film with his discovery of the prism or the camera obscura. So shooting in digital seemed natural to me".

To do so, the filmmakers chose a combination of ARRI ALEXA cameras and Codex recorders. "Personally, I had just finished shooting *Angelica* in New York, another project set in the Victorian era, with this configuration," explains Pope, "I didn't even shoot any tests to make my decision for *Mr Turner*. For me, RAW was an obvious choice. For example, the first shot of the film, set in a little hazy Dutch landscape, with the sun just above the horizon, would probably have been impossible without the latitude that RAW can provide in the highlights. We never had any concerns about skies or burned exposures, and this allowed me to go farther and farther as the shooting progressed".

**Working with DIT Peter Marsden (*Argo, Into the Woods*) on the set, Dick Pope also used Codex Vault to secure the rushes. "It's a wonderful tool, with which everything is now done on site. We literally have the lab with us, and the entire film production is controlled live", Pope notes. "We were also able to organise screenings of synced digital rushes every night, old school, with the technical crew. Mike greatly values this ritual, which allows him to listen to feedback from his collaborators. There is a sense of theatre troupe in this ceremony, a sense of shared creation that is very close to what we had when we used to shoot on film. The actors are not invited, however, leaving them completely free from any influence in their acting for the scenes to come."**

**Peter Marsden kept the workflow simple, "Working with Mike Leigh, we tried to minimise anything 'technical', to allow for his style of working with the actors, and that included minimising monitoring onset" he explains, "we had a 17" OLED monitor, but it was kept at a distance from the actual set. So anything fussy like having specific LUTs on a scene, or adjusting CDL wouldn't work."**

**He used two Codex Vaults – one for an initial check and backup on the camera truck, and one for generating dailies and archiving to LTO. "I created two ARRI Look files which were applied to the viewfinder & monitor output from the ALEXA," he adds "it warmed up the highlights, and cooled the shadows. Dick Pope & Gordon Segrove, our focus puller, and I had studied Turner's works and noticed that idea in many of them. We applied these simple looks to dailies in a semi-automated method, by using the 'Look' metadata field on Vault."**

In terms of light, the film is bathed in a gentle atmosphere, reminiscent of Turner's paintings. "I used almost no direct light", explains the cinematographer. "Everything was done in reflection or through many layers of diffusion." The only scene that is a slight exception to the rule is the photo shop, in which the painter sitting in front of the camera is literally blinded by the sunlight from a mirror. "It seemed pretty funny to me to see this character whose paintings are bathed in a perpetual gentleness, finding himself tricked by the harsh light of this new way of capturing images."

For the colour palette, Dick Pope and his assistants tapped into the exact chromatic scale of the paintings of the master on display at Tate Britain. "The colours used for the workshop or the scenes at Mrs. Booth's are exactly the same as the pigments chosen by the father of the painter at the chemist at the beginning of the film", he says. "The calibration later allowed us to refine things, adding a bit of yellow green in the highlights without touching the faces, and green blue "teal" in the shadows... a characteristic combination of Turner's paintings."

For the lens selection, Dick Pope remembers testing almost every lens available at Movietech in London. "Leica Summilux, ARRI Master primes, Cookes S5... everything was tested. But I needed something a little older, optically speaking, for this film, especially with digital... Finally, I heard of an old Cooke Speed Panchro series dating from the '50s, used during the first ascent of Everest! These are lenses that have since been re-mounted and are now in great demand in advertising. A very retro lens construction, with tiny rear lenses... They have a very gentle, very romantic character, and are truly lovely at 75mm or 100mm on faces. They were a fundamental tool for this movie along with ALEXA and Codex".

"This film was a joy to shoot", admits Pope. "We had resplendent weather for the duration. Perhaps Turner's blessing from heaven? I don't think the project could have been done with grey or cloudy weather because, as the painter admits at the end of the film: 'Sun is god'".

b/w images courtesy of Peter Marsden

SUCCESS STORY: IF I STAY
CINEMATOGRAPHER: JOHN DE BORMAN BSC
RELEASE: AUGUST 2014

CAPTURED ON CODEX

**John de Borman crafts a range of looks for**

# IF I STAY

Since shooting his first feature 23 years ago, John de Borman BSC has developed a reputation as a simpatico cinematographer who understands the nuances of character and performance, and a dependable ally to first-time directors.

His body of work has grown to include 39 films, including *An Education, The Full Monty, Hideous Kinky, Serendipity, Hamlet, Shall We Dance, Made in Dagenham,* and the HBO miniseries *Tsunami: The Aftermath.* Last year, his contribution to British cinema was recognised by the Royal Society of Photography's Lumiere Award.

De Borman's most recent assignment was a collaboration with R.J. Cutler, an American director known for documentaries who was making his first foray into dramatic filmmaking. Based on a best-selling YA novel, *If I Stay* concerns the victim of a car accident. During a coma-induced out-of-body experience, she must choose whether to wake up and live a life radically altered by the accident.

De Borman's propensity for naturalism seemed appropriate for most of the film. In developing their approach to the out-of-body scenes, the filmmakers viewed *The Diving Bell & The Butterfly*, shot by Janusz Kaminski, and *Three Colours: Blue*, shot by Slawomir Idziak. Both films present the point of view of an accident victim, and both are considered cinematographic landmarks.

"Although *If I Stay* is an American film, the approach we took was that of a European film," says de Borman. "Hopefully it's gentle, yet photographic."

*If I Stay* was shot over the course of seven weeks in Vancouver, which was doubling for Portland, Oregon. It was de Borman's first feature film using a digital format. The script offered opportunities for a variety of looks.

"Most of the film is reflective," says de Borman. "It's all about what she remembers. There are moments when she's remembering times with her boyfriend, or her family. We had a different style for the actual hospital, which has a quite cool look. Scenes in her memory are more colourful, and more like Super 8 – handheld, fleeting moments. She is a classical musician, and her boyfriend is a rock n' roller, so they have different looks as well. It was a mixture of all these looks and styles."

The variations in tone and colour were accomplished mostly in camera, with some additional fine tuning done in the grading. For the more naturalistic scenes, de Borman used ARRI ALEXA 4:3 Plus cameras and Hawk V-Lite anamorphic lenses with nets to achieve a slightly softened look. "The nets are a very old-fashioned way of doing things," he says. "It gave incredible skin tones for portraiture – a lot of the film was close-ups. The combination of the nets, and the anamorphics with digital, was beautiful. I was very pleased with that."

Some memory scenes were shot at 48 frames per second on a Canon C500 camera with older Cooke S2 spherical lenses or short Angenieux zooms. "Those images were a bit more grungy, I suppose, but also more colourful," says the cinematographer. "The C500 chip is by nature a bit more colourful than the ARRI chip, so we used that as a strength." The ALEXAs – most shots were done with two – were outfitted with XR modules providing internal Codex recording that captured images in ARRIRAW. The aspect ratio was 2.35:1.

"That was a no-brainer," says de Borman. "The quality of the image was fab. With the Codex and ARRIRAW, you've got much more latitude and much better resolution. You can play around a lot more. We did some digital enhancement for certain things, so the more information we could give to the CGI people, the better.

"This was my first digital movie, so I was slightly apprehensive," de Borman explains. "I wanted a sort of poetic look to the film because it's about an emotional state of mind. And so I wanted a softness to it. But I think we managed to crack it. And it just goes to show that you can do it digitally, and it doesn't have to look harsh and contrasty. You can play with the image, and that's what I'm going to do every time I use digital – test it to get the look that I want. You have to look at it on the big screen to see the differences – and that's what I used to do with film," he says. "I just carried that through and duplicated what I would do on film to get the look that I wanted."

De Borman was keen on doing as much grading on the set as possible, to ensure that the editor and director were seeing an approximation of his intentions during the edit. DIT Michael Tannasee helped de Borman accomplish that. Due to budget constraints, Tannasee's responsibilities were myriad. According to Tannasee, "I personally enjoyed the challenge of not having a colourist at the lab. I also didn't have a digital loader or a camera trainee, so it was very important to have a solid system in place. Using Codex ensured that I didn't have any issues with the media, and I could focus on maintaining John's look throughout the film."

Tanassee's DIT station was usually positioned close to the set. He took the monitor out, set to LogC, and applied a Rec.709 viewing LUT that went back to the camera for focus pullers and operators, and to the director's and producers' monitors.

"At my DIT station, I had the signal go through a separate LUT box, and John and I would build a look at my station with Livegrade, grading in the ALEXA Look mode," Tanassee says. "Once a look was established for a scene, John would return to operate the camera, while I would maintain that look for the remainder of the scene."

Tanassee would download the Codex Capture Drive to his local Thunderbolt RAID prior to sending it to the lab. A drive with the LUTs and an explanatory note was sent with the drives twice a day. The lab handled backup to LTO, syncing and sending dailies to Los Angeles – and back to Tanassee for a quick QC. The Codex Capture Drives would return to Tanassee the next day. Tanassee says he created an average of ten LUTs per scene. "For the family scenes, we would adjust the gamma curve to soften and raise the mid-tones, while reducing the highlights, and softening the slope of the blacks so that the drop-off was less severe," he says. "John would have me add warmth to the skin tones, while maintaining balance in the blacks and highlights. He had a grittier look for the club and rock scenes, with starker contrast, rich blacks, and touches of cyan. The hospital scenes were very cool in the mid-tones, and the curve of the mids was dropped significantly to create a soft, pastel look. Since there was no colourist working at the lab, it was important that we take the time to get the look as close as possible on set."

Tanassee says that the Codex system, paired with the ALEXA, is easily the best choice. "I've used other recorders that are not as reliable, that are dependent on merging two separate external SSDs together, which opens itself up to problems. Onboard recorders are bulky, and they leave room for operator error and cable issues. Codex eliminated all of these problems! We never had a single issue with the Codex that caused us to lose any material."

In retrospect, the project was a great experience, says Tanassee from the set of his next project, with DP Tim Maurice-Jones. "It was an absolute pleasure to work for John de Borman on his first digital feature," he says. "It was fascinating watching him work."

*If I Stay* was released on August 22nd 2014.




SONY

# WORKFLOW WITH CODEX

4K is now becoming a viable consumer entertainment platform, whether in the cinema, with more than 13,000 Sony Digital Cinema 4K projectors installed worldwide, or in the home with 4K televisions and content providers like Netflix and Amazon getting ready to distribute 4K content. Sony has been driving this adoption through not only their consumer products but also with the digital cinematography cameras in the CineAlta product family – the F65, F55 and F5. And of course, acquiring in 4K RAW or higher produces stunning images if HD or 2K are your delivery format, plus your content is future-proof.

In 2012 Sony launched the F65 camera, featuring 16-bit RAW capture from a 20 megapixel sensor at up to 120 FPS. The RAW files are recorded onto SR-Memory cards with the dockable SR-R4 recorder. Although RAW, the files are mildly compressed – either 3.6:1 (F65RAW-SQ mode) or 6:1 (F65RAW-Lite). Even with this mild compression, file sizes are still relatively large – 250 MB/s - but not that much bigger than other leading digital cameras.

This was followed in 2013 by the launch of the Sony F5 and F55 – two 4K cameras that look almost identical on the outside and have the same image sensor, but have some important differences. The F55 has the same colour filter array technology as the F65 whereas the F5's colour filter array is similar to the F3. And the F5 does not allow you to record 4K internally to SxS Pro+ cards. Both can record 4K to the external AXS-R5 recorder (with ASXM cards). Codex provides a simplified workflow for all these formats.

The widespread adoption of digital capture seems to have led to an increase in the amount of footage shot every day. The combination of this increase in frames captured plus the size of the digital files themselves means that having an efficient, secure workflow for archiving and creating dailies is more critical than ever. Codex continues to lead the way in managing workflows for all the industry-leading digital cinematography cameras. Codex Vault secures your digital negative and accelerates your workflow so that you can concentrate on making amazing movies.

*"CODEX VAULT IS THE ONLY WORKFLOW SYSTEM CAPABLE OF HANDLING F65 4K FOOTAGE FOR CLONE AND ARCHIVE."*

*Xinming Huang, Producer*

# MEDIA DOCKING

Capture Drive Dual Dock (SAS)

Codex provides flexibility of systems, workflow and connectivity – integrate Codex into your existing dailies workflow or use it standalone to make a full set of dailies deliverables with the powerful Codex Virtual File System (VFS). The choice is yours.

For maximum throughput and flexibility, use a Codex Capture Drive Dock (SAS) to clone two Capture Drives at once and make a full set of dailies (with burn-ins and LUTs as needed) using the Codex VFS Encoder.

For secure and reliable archiving and offloading, use the Codex Disk/Tape Offloader software to make a verified copy of your camera original data to LTO tape or external hard drives. If a smaller footprint is needed, the Codex Capture Drive Dock (USB-3 or Thunderbolt) facilitates the fast transfer of ARRIRAW, Canon Cinema RAW or Apple ProRes to an Apple MacBook Pro or Apple Mac Pro.

And Codex now offers a reliable Codex workflow for CFast 2.0 – the Codex CFast 2.0 Card Reader, available from ARRI.

# CODEX BACKBONE

Productions need to automate and put control of all digital files and metadata into the hands of production where they can be accessed and utilized quickly and efficiently. Codex Backbone is the integration of proven Codex Vault technology, the new Codex Dashboard system, and the new Codex Production Server. With the Backbone, data is omnipresent and available immediately to those who have access.

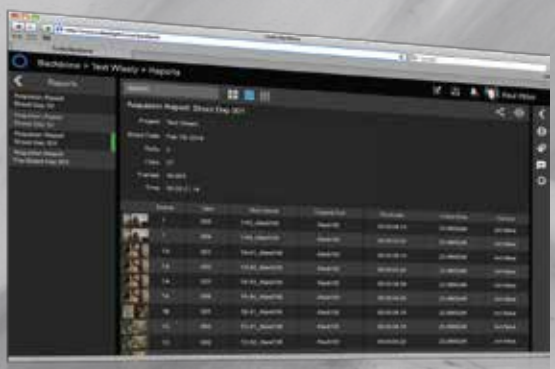
Codex Backbone is being developed to be used for feature film and television productions. It will be an integrated end-to-end pipeline that can deliver the time and money savings that have been expected from digital productions but often not achieved. Codex Backbone and all parts of Backbone are scalable allowing studios to expand when needed and reduce the amount of usage to save money when needed. Studios and individuals alike will be able to track and re-use their information across shows, streamlining the production process.

## CODEX VAULT

Codex Vault has proven itself as a reliable image management and storage system. When a show gets to the shooting stage, Vault will do the heavy lifting in getting the shots cloned, archived, and transcoded as necessary. Codex Vault is scalable to accommodate single camera and multi-camera productions and supports many different camera and media types. Files can be uploaded to the cloud via Codex Dashboard or archived to LTO tape.

"IT MAKES PERFECT SENSE - FROM CAPTURE TO ARCHIVE WITH CODEX SYSTEMS. CONTINUING THE INFORMATION FLOW IN ONE UNIFIED SYSTEM IS THE INNOVATION I HAVE BEEN WAITING FOR."

Ron Ames, Visual Effects Producer



## CODEX DASHBOARD

As bandwidth gets faster and faster and is expanding into ever more remote production locations, tracking your production in the cloud is becoming a reality, wherever you are.

Codex Dashboard allows a production to store project information on the Internet. Using Dashboard, users can access production information using a web browser, tablet or smart phone.

Codex Dashboard can be run on public cloud-based servers such as Amazon Web Services, private cloud services like Sohonet's Media Network, or locally using a Codex Production Server. This flexibility allows Codex Dashboard to fit the varying needs of production.

# CODEX PRODUCTION SERVER

Codex Production Server is the front-end hub for the digital files and metadata generated during principal photography. Files can be uploaded to Codex Cloud or archived to LTO tape. Codex Production Server uses the same expansion modules as Codex Vault. This gives you the most flexibility and scalability for the least amount of cost. Information from multiple Vaults can be easily transferred to Production Server for long term image and data access. 8 terabytes of data can be transferred at a time by simply moving the 8 TB Transfer Drive from Vault and inserting it into Production Server.

**The combination of Vault, Dashboard, and Production Server, allows Codex Backbone to be the central repository for film images and metadata from beginning to end.**

"WE ARE EXCITED TO BE COLLABORATING WITH CODEX, WHO ARE COMPLETELY AWESOME ON SET. BRINGING OUR TECHNOLOGY TOGETHER WILL PROVIDE OUR JOINT CLIENTS WITH MAJOR EFFICIENCY/SPEED BOOSTS THAT ULTIMATELY SAVE TIME AND MONEY."

Don Parker, CEO and Co-founder, Shotgun

Wherever productions go to work, Codex Backbone can travel with them. It works offline or online and in remote locations, sharing files around the world and allowing crews in multiple locations to easily collaborate, saving time and money.

Codex Backbone allows production information and pipeline stages to be securely viewed and edited any place, any time, by approved crew members, using any desktop or mobile device with an Internet connection and is also designed to communicate with other 3rd party systems. Because it's a layered system, productions take advantage of the scalability. Users, Vaults, and Production Servers can be added and removed as necessary.

# CODEX BACKBONE AWARE

Codex has always worked in harmony with other systems and Codex Backbone is no different. Codex Backbone is built on open APIs that can be shared with partners including VFX tools such as Shotgun, PIX for dailies, Signiant file transfers, Sohonet services, or your own internal pipeline systems.




Panasonic

# RECORDING WITH CODEX

Earlier this year, Panasonic unveiled an exciting new 4K camera, the VariCam 35, with a newly developed Super 35 image sensor and an innovative modular design. The VariCam 35 utilises a new Panasonic super 35mm MOS sensor. The sensor size is 4096 x 2160 (17:9) for 4K image capture. This new imager has 14+ stops of latitude, and faithfully captures high-contrast, wide dynamic range imagery without compromise.

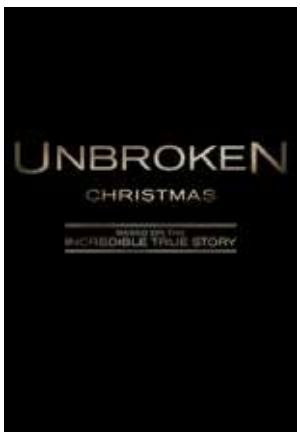
Powerful colour management capabilities provide a much extended colour gamut for great image fidelity, and permit support for an Academy Colour Encoding System (ACES) workflow for full fidelity mastering of original source material. ACES is also fully supported by Codex workflow products. The VariCam 35 also features a newly-developed OLED electronic viewfinder (EVF) with optical zoom functionality and a standard 35mm PL mount.

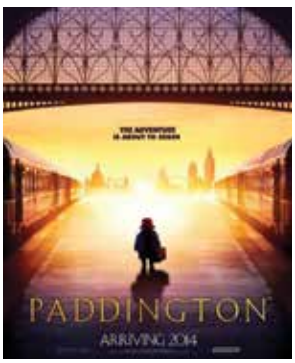
Panasonic previewed the camera at NAB 2014, announcing a strategic alliance with Codex to develop a dedicated recorder to capture uncompressed 4K VariCam RAW (V-RAW) at up to 120 FPS. The VariCam 35 is a modular camera so the Codex V-RAW Recorder directly attaches to the 4K camera module, eliminating any need for cables and simplifying the use of the system. The V-RAW recorder uses production-proven, industry-standard Codex Capture Drives, which are the gateway to an entire Codex workflow with Codex Vault or Codex docks.

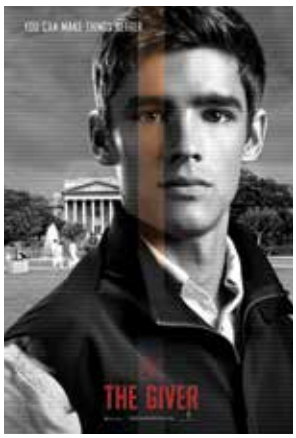
*"CODEX HAS AN IMPRESSIVE TRACK RECORD IN DESIGNING AND MANUFACTURING ROBUST DIGITAL MEDIA RECORDERS WHICH ALSO STREAMLINE THE WORKFLOW ON FEATURE AND BROADCAST PRODUCTIONS."*

*Kunihiko Miyagi, Director of Panasonic's Professional AV Business Unit*

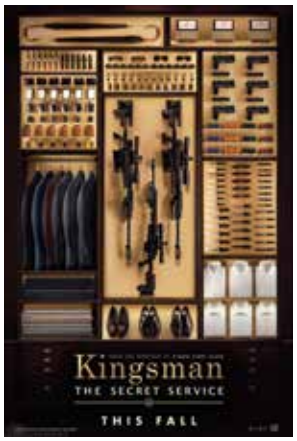
Panasonic VariCam 35 and Codex V-RAW Recorder

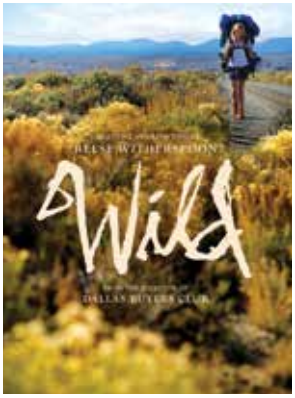









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CODEX


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