



Windows to the Soul

I Origins, shot by Markus Förderer, takes viewers on an epic quest to India, where an eye researcher's rational logic meets evidence of reincarnation.

By Jay Holben

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As the dramatic feature *I Origins* begins, atheistic Ph.D. student Ian Gray (Michael Pitt) hopes that his ongoing research into the human eye will help him disprove the notion of intelligent design. However, he begins to question his own beliefs after meeting the mysterious, masked Sofi (Astrid Bergès-Frisbey) at a Halloween party. Struck by her captivating eyes, Gray grows desperate to see her again, but knows neither her name nor how to find her. He finally gets his chance at 11:11 a.m. on the 11th of November, when, after buying a lottery ticket at a 7-11, he sees dancing 11s on the side of a building caused by the light reflecting off of a passing train. Following the 11s, he is led to a billboard that features Sofi's unique eyes in mesmerizing close-up.



Opposite: Ocular research sends molecular biologist Ian Gray (Michael Pitt) toward a crossroads of science and faith in the feature *I Origins*. This page, top: After a chance meeting, Ian tracks down Sofi (Astrid Bergès-Frisbey) and an intense romance ensues. Bottom (left to right): Writer/director Mike Cahill, cinematographer Markus Förderer, 1st AC Rylan Morris Scherer and key grip Thomas Moll-Roczek study a frame.

Ian tracks down Sofi through the advertisement, and once they reconnect, the two are inseparable until Sofi dies in a tragic accident, causing a distraught Ian to fall into the arms of his lab assistant, Karen (Brit Marling). Years later, Ian and Karen are happily married with a newborn baby, but when the child's eyes are recorded for an international iris database, they're found to match the eyes of a deceased man. What appears at first to be a fluke in the system leads to a series of incredible connections that suggest evidence of past lives and reincarnation. As he traces these connections, Ian sets off for India on a journey that leads him toward a seemingly inexplicable crossroads linking science, faith and Sofi.

Helping writer/director Mike Cahill to envision this metaphysical mystery was German-born cinematographer Markus Förderer, whose work on Tim Fehlbaum's *Hell* earned him considerable kudos, including a nomination for Best Cinematography Debut at the 2011 Camerimage Film Festival in Poland. A graduate of the University of Television and Film Munich, where he studied cinematography, Förderer met Cahill when they were both on the



festival circuit; the cinematographer was helping to promote *Hell* and the director was screening his sci-fi drama *Another Earth*. They began talking about collaborating on a project and were soon at work on *I Origins*, Cahill's second narrative feature and Förderer's fourth.

"Mike sent me the script, and we met up in New York to talk about ideas while I was on vacation," recalls Förderer. "I brought a lot of pictures with me — every time I watch a movie

at home, I capture some screenshots, and I've saved thousands over the years. Mike and I sat and talked for a long time, and he really challenged and tested me: 'How would you do this?' 'How would you do that?'

"I really admired *Another Earth*," the cinematographer continues. "That film had almost no lighting, yet it was beautiful and honest and still cinematic. He wanted to do *I Origins* in a similar way, with a very small crew and very natural, limited lighting to give the

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Top: Ian shares a song with Sofi.
Middle: Cahill gets a shot of Ian on the train.
Bottom: Once they've reconnected, Ian and Sofi become inseparable.



actors a lot of freedom. We kept it small — no big lights, no marks on the floor. I'd light the space once in the morning and we'd shoot all day long with two cameras, 360 degrees, keeping [our approach] very organic for the actors.

"We had very little equipment," he adds. "We lit mostly with Litepanels [1x1s] and 4-by-2 and 4-by-4 Kino Flos. We also had one M18 HMI, which was our biggest light. I mostly lit with available light and just augmented with the Litepanels and Kino Flos; I used the Kinos over the windows a lot to help carry daylight into rooms, or I would bounce them into ceilings. I also used a lot of DoP Choice Snapgrids, which can attach to Kinos or larger frames to provide a fast, sturdy egg crate that keeps the light from spilling everywhere."

The reduced scale of the production also extended to Förderer's crew, which was limited to 1st AC Rylan Morris Scherer, 2nd AC Andrea Boglioli, data wrangler Liang Cai, gaffers Aaron Smith (in New York) and Siby Veliath (for the Delhi-based portion of the shoot), two electricians and two grips. Förderer operated the A camera, a Red Epic MX, and Cahill operated the second, a Red Scarlet, which was chosen over a second Epic for budgetary reasons. Visual-effects shots were captured at 5K, but otherwise the cameras recorded 4K at 7:1 compression to 128GB RedMag SSDs. Both cameras were almost always hand-

held. “Mike pulled his own focus,” recalls Förderer. “He doesn’t come from a typical film-school background, and he comes up with images that are really fresh and interesting. It’s not always about having nice backlight or great framing. He breaks all the rules and gets really nice results.”

The filmmakers tested a number of digital cameras during preproduction. Although Förderer says he “felt the [Arri] Alexa looked the most film-like and held details in highlights nicely,” they opted for the Epic as the primary camera “because it’s much smaller,” the cinematographer explains. “We wanted to shoot fast, and having a small, light-weight package — while still getting an image that would give us flexibility and quality in post — was a key factor.

“Digital gives me more flexibility in lighting,” Förderer continues. “I don’t have to fill the blacks as much. But digital images tend to not have the kind of ‘life’ to them that film does. Texture is really important with digital cameras, and [to create texture] I like to shoot at a higher ASA and underexpose a little bit. Some cameras are better for that than others — their noise looks more like film grain. Most of the time I was rating the cameras at 1,250 or 1,600 ASA to create some noise and get a little texture and life in the image. I also ended up applying some film grain in the DI process, which I think helps the image a lot.” The filmmakers monitored in RedGamma3 and RedColor 3 on set, and did no color grading until the DI, which was conducted at Harbor Picture Company in New York City with colorist Joe Gawler, who graded the 4K raw files using Blackmagic Design’s DaVinci Resolve for a final 2K output.

Ian’s study of iris patterns called for a number of extreme close-ups of eyes. “That was actually one of the things that caught Mike’s attention about my work,” offers Förderer. “*Hell* starts with an extreme macro of an eye, and he really loved the way it looked. For *I Origins*, we did some early tests in Mike’s New York apartment, shooting our own eyes to determine how we



Top and middle: The couple explores the city together. Bottom: Ian and Sofi’s wedding day darkens following a call from Ian’s lab.

wanted to light the macro shots — since the eye is like a mirror, you see all the reflections of the light sources and the camera itself. We took a black trash bin, mounted LED lights and cut a small hole in it; then we put the bin over our

heads and shot through the hole. It worked great to eliminate the reflections, so we created a larger version [for production]: a 20-foot-by-20-foot black box with one strong M18 HMI very far away so that the reflection could be

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Top and middle: Ian and his lab assistant, Karen (Brit Marling), conduct research they hope will disprove arguments for intelligent design. Bottom: Cahill directs Marling.

controlled. We switched to a Canon mount on the Epic and used a Canon EF 100mm [f2.8L Macro IS USM] lens.”

Wider shots also called for a careful consideration of the shape and placement of highlights in the actors’ eyes. Förderer attests, “I became obsessed with eye lights on this film. It’s amazing how different an eye can look depending on the shape of the eye light. If you have a really big reflection in the eye, you can’t really [discern] the texture and pattern in the iris, and if you have no reflection, the eye looks dead. I found that the best solution was to have an amorphous shape that was a little more rounded, with soft edges, but not symmetrical. If we reshaped a bounce board into a rounder shape by taping the edges with black tape, then you saw the life in the eye but your brain would kind of erase the highlight.”

Förderer also strove to find the best angle at which to place the eye light, ultimately deciding to set it as far off-axis as possible without losing the highlight. “You want the light far enough away so it doesn’t fill in the actor’s face, but still close enough to the lens axis that you get the reflection,” he explains. “I felt it always looked better off to the side — not centered — and slightly above the eye line.”

In some instances, Förderer notes, it was also important *not* to use an eye light. “When we wanted someone’s eyes to look special, we added the eye light with the off-axis, organic-shaped source. Otherwise, I was careful not to include eye lights.” As an example, the cinematographer points to the scene when Ian first reconnects with Sofi. They meet in a diner, where Förderer used “a single source for her, an M18 outside the window through a diffusion frame that we rounded — but not into a perfect circle — by taping off the corners. It was both her key light and her eye light, and it created a beautiful highlight. That same light was also a great backlight for Michael, and I made sure he didn’t have any eye light at all, which made her look much more special

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Top: Years after Sofi's death, Ian and Karen have married and had a son.
Middle and bottom: The couple partners with friend and fellow scientist Kenny (Steven Yeun) when they discover matching iris patterns from different people in disparate parts of the world.

and 'alive' than him. When we moved into Sofi's close-ups, I created her eye light using a small silver reflector with the same kind of organic shape taped out on it.

"Just as I became obsessed with eye lights on this film, I had become a bit obsessed with lenses and flares on *Hell*," the cinematographer confesses. "Flares are such a strong storytelling tool, and shooting against a window can really set the atmosphere. For this project, I tried to shoot without a matte box as often as possible to get softer blacks and more veiling flare.

"It's important to pick the right lenses for a project, especially with digital cameras," Förderer continues. For *I Origins*, the main lens package consisted of Red Pro 17-50mm T2.9 and 50-150mm T3 zooms, and Zeiss Super Speed primes. "I like simple lenses with simple coatings," the cinematographer attests. "The Red lenses are inexpensive, they're light and they have a good flare property to create a nice image." Additionally, the Canon 100mm macro was used for long-lens handheld work because of its built-in stabilizer.

Much of the film's first act takes place in Ian's lab, where large windows look out over New York City. "We scouted a lot of locations, and when we came across this one everyone knew it was right," Förderer recalls. "It was fantastic and cinematic, but I also knew

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Top: Ian travels to India and meets with Priya Varma (Archie Panjabi) to inquire about a young girl with Sofi's iris pattern. Middle: Ian searches the streets of Delhi. Bottom: After locating the young girl, Salomina (Kashish), Ian puts his reincarnation theory to the test.

we'd be shooting big scenes in there [over] long days, with no way to control the light outside those big windows. I ended up lining the upper shelves in the lab with Kinostubs fitted with 5,600K tubes. Some of them had additional full CTB on them, and we bounced them into the ceiling. I'd set the white balance on the camera to 8,000K or 9,000K and then [light with] either 5,600K or 5,600K with full CTB to get cool fill inside and make the outside go warmer. I really liked what the cool fill did with Brit Marling's blonde hair and fair skin — it worked beautifully. For the night scenes, we just used the practicals in the lab."

Förderer pursued a similar strategy in the apartment locations for Sofi and Ian and then Ian and Karen: minimal lighting, mostly natural and practical with some soft, cool bounce into the ceiling provided by Kino Flos. "The approach was to avoid stands on the set," he explains. "We wanted to make sure that the actors had total freedom and that we could shoot in any direction. In Sofi and Ian's place, we put ND on the windows so we could see outside; we also used some negative fill with floppies close to the camera, but that was pretty rare."

The filmmakers also employed a Vision Research Phantom Miro for several slow-motion sequences — which they shot at 300–600 fps in 1920x1080 resolution — including Ian's

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The production employed an Egriment Xtreme telescopic crane for the shot of Ian finding Salomina.

emotional breakdown after Sofi's death. In other instances, Förderer achieved a subtler slow-motion effect with the Epic. "For some specific moments," he explains, "we shot at 30 fps to create a

very subtle slow motion that you feel more than [consciously] notice. It's a technique used frequently in sound design, where the audio will be slightly slowed down for a dramatic effect. This

was a big concept for Mike: the idea of subtly slowing things down to heighten the drama of key moments and make the audience pay a little more attention to what's happening."

The technique was specifically utilized for instances of déjà vu that Förderer describes as "brother-sister shots. These were key moments that we repeated visually to connect two story points, and they were certainly our most complicated shots in the movie." For example, the first time Ian enters Sofi's apartment, the camera move matches Ian's entrance into a hotel room in India where he meets with a little girl. "We scouted a ton of hotels in India to find one with a similar layout to Sofi's apartment so we could repeat the same camera move in both places. We did the shots on a slider, matching the move at each location. The hope is that you get a feeling that something is familiar about this little girl in India. We also worked with the color palette of the hotel room



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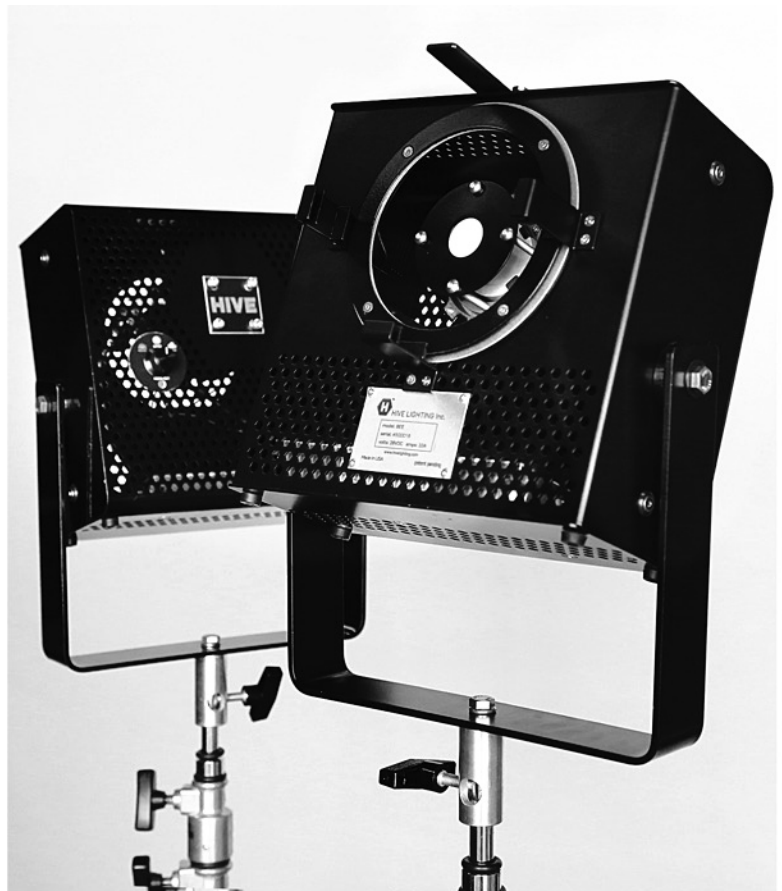
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to make it like Sofi's apartment, and we [designed] the girl's wardrobe to emulate Sofi's clothing choices.

"We also used a motion-control rig for the first time Ian sees the billboard with Sofi's eyes [in New York]," Förderer continues. "Here, we did a slight *Vertigo* shot [combining a dolly move with a zoom] that starts when Ian exits the bus and discovers the billboard; we dollyed in with a Technodolly and zoomed out as the camera rotated 180 degrees to get over his shoulder, [and then we] filled the screen with the billboard. It was a very complex shot, especially for the size of this show. Unfortunately, when we got to India for the shot of Ian finding the girl, we couldn't get a motion-control rig or a Technodolly. We tried to make it match as closely as possible with an Egriment Xtreme telescopic crane, starting at 30mm on an Angenieux Optimo 24-290mm [T2.8] zoom, circling around Michael and ending up at 290mm on a

close-up of the little girl's eyes."

For the six-day shoot in Delhi, Förderer reveals, "it was very difficult to get equipment. Mumbai is really the big movie city [in India]. To get equipment in Delhi, everything had to come by plane. It was very challenging to get a big crane!"

Looking back on his collaboration with Cahill, Förderer can't resist a pun. "Working with Mike was eye-opening for me," he says. "He challenged me to find images that were unique and interesting but still felt honest. I learned that it was possible to keep the production very small, to light very simply and still create nice images that fit the story and character. It was liberating to be less distracted by equipment and technicality and to just focus on the story; you're not thinking of the next setup, or what equipment you need to bring in or strike. You light the scene in the morning and you shoot all day with only very minor adjustments. It

makes for an atmosphere where everyone feels safe to create. The actors feel like they're in a real place, not a movie set, and it allows them to go deeper into their characters and their environment. It was an extraordinary experience and I'm very proud of the end result!" ●

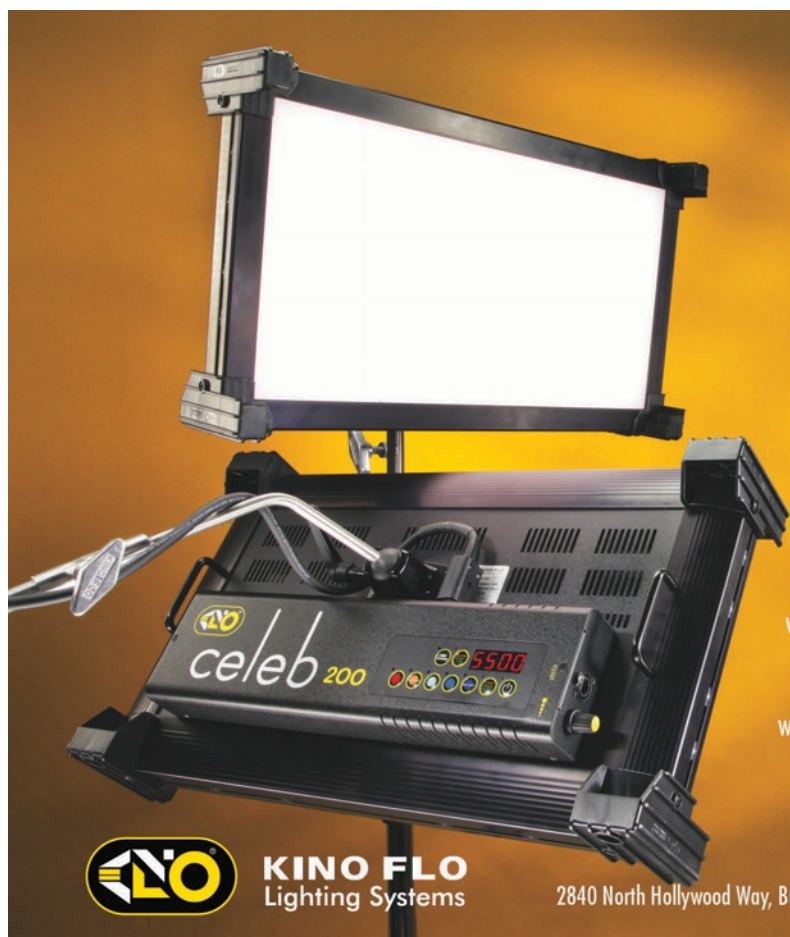
◀ TECHNICAL SPECS ▶

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Digital Capture

**Red Epic MX, Scarlet;
Vision Research Phantom Miro**

**Red Pro, Zeiss Super Speed,
Canon, Angenieux Optimo**



The image shows a Kino Flo Celeb 200 DMX LED light fixture. It consists of a black metal frame holding a large, rectangular, white LED panel. Below the panel is a black control unit with the 'celeb 200' logo and a digital display showing '5500'. The unit has several buttons and a dial. The background is a solid orange color.

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