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CAPTAIN

AMERICA:

**B R A V E**  
**N E W W O R L D**

ALSO FEATURING

ONE OF THEM UNSTOPPABLE DAYS



KRAMER MORGENTHAU, ASC, KEEPS THE REBOOTED *CAPTAIN AMERICA* ON COURSE FOR MARVEL'S NEW WORLD ORDER.

BY KEVIN H. MARTIN

PHOTOS BY ELI JOSHUA ADÉ, SMPSP / MARVEL STUDIOS

# TRANSFORMERS







Stepping into the shoes of a generations-spanning legend like Steve Rogers is akin to landing a prized workplace promotion. However, in Marvel's new *Captain America: Brave New World*, when ex-Avengers team member Sam Wilson (Anthony Mackie), formerly known as the Falcon, raises Rogers' iconic shield, he immediately finds himself walking a political tightrope, not to mention having to silence the doubters who don't think he's worthy of Rogers' legacy. Wilson's first challenge is reconciling with President Ross (Harrison Ford, replacing the late William Hurt), who, despite their past differences, as seen in *Captain America: Civil War*, wants him to reform the Avengers anew. Conflicted over his new role and the state of the world, Wilson tackles his new assignment alongside friend and sidekick Joaquín (Danny Ramirez), who takes flight alongside Wilson as the new Falcon.







**“We had the mandate to shoot twenty to thirty minutes of the movie in IMAX using the 1.90 aspect ratio, so we carried Ultra Panatar 2 lenses. With the 1.33× squeeze, that got us to the proper format without having to crop and still utilize a lot of the sensor.”**

DIRECTOR OF PHOTOGRAPHY KRAMER MORGENTHAU, ASC

**Marvel recruited Nigerian-American** director Julius Onah, whose indie feature, *Luce*, drew considerable acclaim at Sundance (2019). Onah was surprised and delighted by the chance to join the MCU, co-scripting the film (originally subtitled *New World Order*.) “I never thought I’d get an opportunity to make a film like this,” he shares. “But when the chance arose, I was committed to keeping a focus on character. What I gravitated to was Sam Wilson’s journey and his relationships with Thaddeus Ross and Joaquín Torres. He only becomes Captain America in the last episode of the series and hasn’t had time to grow into the role. So, he’s confronting the ramifications of that decision. What does it mean not just to embrace this new role but to also define it on your terms? How do you navigate the relationships you already have and deal with how the world perceives you? The perception of Captain America as old-fashioned, perhaps even jingoistic, has to evolve as Sam makes him more relatable to the present day.”

In addition to the Russo brothers’ beloved *Captain America: The Winter Soldier*, Onah was inspired by past thrillers. “I was drawn to the genre element,” he continues. “We lean into the language of paranoid political thrillers. The first movie Marvel mentioned was *The Day of the Jackal*. I said I’d take that and raise you *Le Samourai*, along with John Boorman’s *Point Blank* – movies of the 1960s with a controlled aesthetic for how language, color and sound are used.”

Onah selected Kramer Morgenthau, ASC, as his director of photography. “I was

looking for a middle ground,” the director relates. “Somebody who understands what Marvel movies are and how to deliver spectacle, while also having passion for the genre and what the great cinematographers had done. Kramer had done a *Thor* and a *Terminator* movie, yet he’d also done smaller films, including *Fahrenheit 451* for HBO. Kramer brought a sensitivity to light, color, and texture for the action aesthetic, while also knowing what needed to be done to manage that end of this very large production, including extensive interfacing with visual effects.”

Morgenthau, whose other credits include *Creed II*, *Creed III*, *Chef*, and *The Many Saints of Newark* as well as such high-end HBO series as *Game of Thrones* and *Boardwalk Empire*, says “the Marvel universe has grown since I did *Thor: The Dark World*. The epic scale is a real challenge for the director of photography,” he observes. “So, I liked that this incarnation of Captain America was a guy who does not have superpowers, and the story is more grounded on earth. Julius had a detailed lookbook filled with images from the films we sourced. Owen Roizman’s work on *Three Days of the Condor* was also featured, along with the more recent film *The Killing of a Sacred Deer*, another picture where [Onah] loved the compositions, including some abstract framing.”

Assembling a style with nods to such iconic films was Onah’s key to putting his various department heads on the right path. “The looks seen in those films informed all of our crafts heads,” Onah states. “Each design decision had to feel emotionally right

and come across in a tactile way. Production designer Ramsey Avery really embraced this and ran with it.”

Avery, who designed additional photography on previous Marvel titles *Spider-Man: Homecoming* and *Guardians of the Galaxy Vol. 2*, as well as designing *The Lord of the Rings: The Rings of Power* TV series, says one of the main conceptual frameworks of *Cap 4* was to ground it in reality. “We wanted to move it away from some of the more sci-fi and VFX versions of recent Marvel movies,” he reports. “It always feels to me that putting the camera somewhere that it can’t be in the real world takes you out of the movie, so I prefer not to rely on ‘wild’ walls unless it is for crew access or to get a particularly necessary shot that simply can’t be achieved otherwise. It also takes time away from your shooting day to have to wild walls in and out. Kramer and Julius shared this approach. These days cameras can be so small that it is much less of an issue than it used to be to get into tight corners. Plus we can always design doorways, windows, and vents to give natural ports into a set.”

Ramsey says the shoot was “mainly location-based, so that meant no wild walls,” he continues. “But even when we were on stage and could create a wild wall, we didn’t. For example, we built a deliberately small interview room into a larger space within an existing prison location to emphasize the paranoid feeling that compressed space created. Then we shot it exactly as we would have had to with real cinder-block walls. The goal, in Julius’ words, was to use ‘meticulous design’ to frame and support











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DIRECTOR JULIUS ONAH

Sam’s journey as he learned how he wanted to take on the mantle of Captain America. Part of that was the color choices we made that were then worked through the story in the color script.”

Avery worked closely with Morgenthau to create minimally built sets. “It can be hard to get Atlanta to look like anything other than the American South across a whole movie,” he describes. “We looked at design and location options together, discussing color and lighting, and working through possible camera angles. In all cases, Kramer was able to sculpt, through lighting, camera work and color timing, some remarkable imagery that helped meet that high bar of ‘meticulous design’ while maintaining the shared goals of keeping the film grounded.”

**For lensing, Morgenthau primarily used** the Panavision C-series anamorphics, which he’s used many times before, and which Onah liked, “because they were made in the 1960s and 70s, and that ties in with the paranoia thriller vibe,” Morgenthau shares. “We also carried Panavision VA’s, because sometimes spherical lenses are the only way to get a particular shot – especially on wider focal lengths and in extreme low-light situations – and for some VFX elements. We had the mandate to shoot twenty to thirty minutes of the movie in IMAX using the 1.90 aspect ratio, so we carried Ultra Panatar 2 lenses. With the 1.33× squeeze, that got us to the proper format without having to crop and still utilize a lot of the sensor.”

A-Camera 1st AC Craig Pressgrove says Morgenthau gave [Panavision’s] Dan Sasaki notes, “which Dan used to create a customized set. We tested in LA but did the bulk of prep in Atlanta,” Pressgrove explains. “Our A-Camera 2nd AC, John Hoffer [on his third movie with Morgenthau], came up with the naming convention for our primary and secondary lens sets, which he called [respectively] the ‘Shield’ and the ‘Serpent.’” A-Camera/Steadicam Operator Mike Heathcote, SOC, AOC, adds that “this is my sixth film with Kramer, and that strong working relationship allowed us to concentrate on bringing [Onah’s] vision to life. Julius’ clear direction regarding camera movement and composition, which included visual references, made our process more efficient and streamlined,” Heathcote describes. “Julius communicated his preference to avoid any handheld camera, which we embraced as an exciting challenge for an action film.”

Morgenthau concurs, adding that “[Onah] felt very strongly that the camera movement should be more controlled, designed, and intentional. We had lots of scenes that were just straight dialogue, and we often just moved the camera when it was called for. Other times it is choreographed movement in time with the action, so there was not much gratuitous camera movement.”

B-Camera Operator Brigman Foster-Owens says, “Kramer and Mike Heathcote invited me to attend pre-productions meetings, as well as meetings when we wrapped, and I believe it helped a lot during

principal photography. It was also helpful to know why we were using a certain lens and what Kramer’s ‘secret sauce’ was for the look of each lens, which I often discovered during morning dailies and on set. We got to hear from VFX as well as the stunt team and to look at models like the aircraft carrier. Julius was specific about his objectives; it’s nice to have a director who thinks outside the box inventively and then manages to stick with his plan. Every shot had a purpose; it wasn’t just coverage.”

Onah laughs, describing himself as “a preparation junkie. Even on my smallest-scale projects, I’ve developed storyboards for certain sequences. Thinking things through in advance gives me a firm foundation, so then if an opportunity arises on set I can be more nimble in making creative discoveries. I embraced the entire prep toolset: previs, storyboards, and stunt vis.”

While Company 3 Senior Supervising Finishing Artist Stephan Nakamura would ultimately handle the DI, a final colorist had not been selected during prep. And Morgenthau says Onah felt strongly about shooting on film. “But, of course, that isn’t how Marvel works,” he laughs. “Even so, Julius wanted the look on digital to be as close to film as possible. So, I reached out to my friend, Steve Yedlin, ASC, who is a color science guru, for advice. Steve’s done a lot of outstanding film emulation work, and he was very generous in sharing his LUT, modifying it to work for this movie. Colorist Peter Doyle was involved in testing during prep, experimenting with color science and with adding gate weave, film grain and



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A-CAMERA/STEADICAM OPERATOR  
MIKE HEATHCOTE, SOC, AOC

halation, along with other artifacts that got us that filmic vibe. I used the same lighting ratios that I used to use with film, so there is a stronger modeling to the lighting, less ambient than some digital, which on its own is quite beautiful, just not what Julius was looking for.”

**One of the key locales was a prison** holding Samuel Sterns (Tim Blake Nelson), a once benevolent scientist who has mutated into a deformed menace known as The Leader. “The basic idea sprung from Marvel lore of it being a secret prison,” Avery recalls, “so we started with designs in the style of previous superhero prisons – a large space, with a Brutalist overlay and a panopticon design. But that felt too much like the big swings in earlier films, so we scaled back, and concentrated on creating a tight, dank space, like a hole in the ground. The vibe was to establish how an earlier version of S.H.I.E.L.D., the SSR, set up a facility in less enlightened times to make it particularly horrible for the prisoners. It even had some echoes of the HYDRA lab where Bucky was turned into the Winter Soldier. One of the key themes in the movie’s overall design was the character’s self-reflection, so we also looked at how to get materials into this more creepy design in ways we could use to distort reflections.

“We came up with a back story as to how SSR/S.H.I.E.L.D. used lighting to control the prisoners,” Avery continues, “and then sorted out how our mad scientist, with his training and intellect, could subvert that to

gain control of the facility. This all played emotionally into Isaiah’s [Carl Lumbly’s] back story, as well as the story we wanted to tell moving forward. It was a fun challenge and turned out appropriately dank and scary. That set, more than many others, was all about the lighting and the mood we wanted at this point in the story.”

Avery notes that “while there is a look in the MCU for tech, especially in the way blue light is used, we tried to move that ‘Tech Blue’ light into a more green tone. There isn’t a design bible – as each movie is allowed to sort out how to tell its story, while generally aligning with the overall MCU. So we worked closely with Kramer and his team to set that all up along with the idea of controlling actions through light patterns.”

Chief Lighting Technician Josh Davis says “interactive lighting” is a major component in most Marvel projects, and this was no exception. “While Captain America’s talents are based in the real world of strength and speed,” Davis explains, “there were tons of cues that revolved around explosions, warning systems and mood. For the lab, we used ETC SolaHyBeams with custom Gobos to create a series of large rotating fan FX as well as Fiilex Q10’s to give us sharp Fresnel shadows that were color adjustable. All practical fixtures – fluorescent, jelly jar and warehouse lights – were built using Cine 5 LED ribbon and pixelated LED ribbon. With these color and intensity controls – working in strong collaboration with the art department and VFX – we were able to

reveal important character plot points and help take a suspenseful investigation into a high-energy fight scene that complemented some thrilling stunt work.”

One scene with lots of practical lighting occurs in extremely tight quarters. As Heathcote describes: “The battleship set was very confining. So, Julius and Kramer encouraged lots of camera movement to heighten the energy and tension – including 360-degree rotations and whip-pans timed to follow the dialog. I’m grateful for their trust as it allowed me to flow with the actors.” Heathcote had a Steadicam Post custom-cut, allowing him to keep the rig extra compact. “I often had to move over objects or bodies,” he adds. “Plus it let me get very low in regular mode, but then easily get the camera back up to eye level.”

The added freedom was helpful during the action sequences. “A Steadicam shot I especially enjoyed filming was a hallway fight,” Heathcote continues. “It gives the illusion of being one continuous shot, but there are a few stitches. Joaquin and Sam are at one end of the hallway, while Ruth is at the other, separated by guards. Using a specialized wire rig and flooring with the Steadicam, I could move freely within the hall while following her every move. I precede Ruth [Israeli actress Shira Haas playing Ruth Bat-Seraph, aka “Sabra”] through the corridor as she runs along the walls and slides across the floor. As the shot progresses, Sam throws his shield toward the camera, motivating a 180-degree whip pan that reveals Ruth defeating the remaining guards. The entire sequence,













**OPPOSITE/ABOVE:** VFX IN *BRAVE NEW WORLD* WERE CHARACTER-DRIVEN, WITH ANIMATION USED TO MATCH THE FLYING STYLES OF WIRE-RIGGED PERFORMERS AND TO CREATE ROSS' TRANSFORMATION INTO RED HULK. "IT WAS EXCITING TO SEE HARRISON FORD IN MOCAP," ONAH OBSERVES, "WHICH WAS ESSENTIAL TO CAPTURE HIS PERSONALITY WHEN CREATING THE NEW CHARACTER."

choreographed by Julius and the stunt team, was so much fun to film."

Pressgrove shares that "Kramer usually shot around 2.8 and a half. That can be a good place to be for older anamorphics, with the lens resolving well but not giving a hyper-deep depth of field. There's a little focus banding on the top and bottom of the frame, but if you're aware of that going in, you can accept it or reframe slightly to avoid it. It looked both beautiful and unique, and I think Kramer and Mike [Heathcote] worked hard to get the most value out of these lenses."

**With two cameras used throughout,** Morgenthau says "that was driven by schedule – seventy three days, not counting additional photography. When directors and producers ask to do cross-shooting, I figure out ways to get it done without compromising the lighting too much. It didn't happen too much of the time here. We'd also occasionally add a third camera if there was a major action or pyrotechnic event."

Foster-Owens explains that "we would almost always be on the same side of the line, but I'd be a little off-angle, getting

a tighter view. Kramer and I would often find a B-Camera angle together with the viewfinder, if there wasn't an angle for the B-Camera already planned. Physically, I was very close to A-Camera during rehearsals and blocking, so Mike might also see a possible shot for me. Sometimes A- and B-would be side-by-side – Mike and I would both be in the air on two Technocranes, or together side by side down on the wheels. There were a lot of key story points being told, so B-Camera was essential to the overall plan."

With much of the film occurring in and around the White House and action sequences focused on the East Room, the original plan was to build that set to allow for stunts. Avery had worked on *White House Down*, and had access to very detailed drawings, "back from when you were allowed to tour the White House and take pictures," he relates. "So, we drew up our set based on that."

But Production had other ideas, so Avery found a local answer in Atlanta.

"Tyler Perry has built a reduced-scale reproduction of the White House at his studio," the designer continues. "There is no West or East Wing, but some rooms,

like the Oval Office, have been built into various floors of the location, albeit not accurate to the real thing, as the overall interior layout is specific to [Perry's] needs. So, there's an East Room, but it's on the west side of the building, and smaller than the real one, with lower ceilings. That meant adding in some small green screens, working closely with Kramer and Julius to get the blocking, and adjusting camera angles so they could more easily transition from room to room and make it appear to match the real-world layout."

The White House's iconic Rose Garden was created on a backlot.

"That was a pretty extensive build," Avery shares, "and to keep most of it in camera, we needed to build an 'L' connecting the main building to the West Wing, including the whole colonnade, at 1:1 scale. Working with Kramer and VFX, we sorted out where to end the greens on the other two sides to create clean-cut lines for any needed extensions, but we built enough set that by carefully planning our shots, a lot of it could remain safely in camera." Two large blue screen exterior sets were built on the backlot of Trilith Studios. As Davis notes: "filming large exteriors in Georgia can be









challenging, as the weather is inconsistent. To control the sun we employed four 60-by-60-foot Charcoal Light Grid overhead frames. We then kept the quality and color of the sun with an impressive rig consisting of 24 18K ARRIMAXes on scissor lifts. LED lighting has come a long way, but sometimes you just need a bunch of large HMI's to get the sun right.”

For a shot involving Harrison Ford giving an election speech in the film’s opening, Heathcote explains that “Julius envisioned starting backstage, with a bird’s-eye view tracking [Ford] as he crossed to the podium. We would then smoothly transition to a close-up behind his head, looking out at the crowd as he spoke. But stage rigging prevented mounting a crane on a platform. So, Key Grip Joey Dianda devised an innovative solution, suspending a 45-foot Scorpio crane from the ceiling in front of the stage. The platform’s height was crucial in capturing the ideal opening frame while remaining out of sight. This setup allowed for full extension and retraction as [Ford] walked out, while also providing clearance to boom down behind him. This one was especially satisfying because it was the first previs shot shared with me while prepping the film.”

Visual effects in *Brave New World* were character-driven, with animation used to match the flying styles of wire-rigged performers and to create Ross’ transformation into Red Hulk, which was driven by motion capture of Harrison Ford. “Ross is a character trying to redefine himself as a statesman, so there’s an

emotional aspect to his transformation,” Onah describes. “It was exciting to see Harrison Ford in mocap, which was essential to capture his personality when creating the new character. As for Sam, we have a sense of him from when he flew as the Falcon, but now he’s using Wakanda-built wings – a new technology that lets him move in an even more sure and powerful way. There’s also a contrast between him and Joaquin, who is still using the older technology and is not as experienced as Sam with the flying. When CG took over, there was a definite carry-through from what the actors were delivering; that pays off spectacularly at the end of Act Two with a major action sequence that is the first of its kind for the MCU.”

Davis worked out a lighting scheme for the flying scenes derived from VFX previs. “We reverse-engineered the lighting for scenes of Captain America doing high-velocity acrobatics that were shot against blue screen,” he says. “We used the Fiilex Q10 again, this time mounted to a 50-foot Technocrane and remote head, as a rich early morning sun source. In a choreographed dance with the camera, we were able to create the sense of dynamic speed and movement.”

With *Captain America: Brave New World* poised as a bridge to the latter part of the MCU’s Phase 5, including 2025’s *Thunderbolts*, Onah welcomed the chance to further hone the project during reshoots. “I give a lot of credit to the producers and creatives at Marvel because they truly supported us in making this a singular experience,” the filmmaker concludes. 🌈





MORGENTHAU SAYS ONAH WANTED THE LOOK ON DIGITAL. "TO BE AS CLOSE TO FILM AS POSSIBLE. SO, I REACHED OUT TO MY FRIEND, STEVE YEDLIN, ASC, WHO IS A COLOR SCIENCE GURU, FOR ADVICE. STEVE'S DONE A LOT OF OUTSTANDING FILM EMULATION WORK, AND HE WAS VERY GENEROUS IN SHARING HIS LUT, MODIFYING IT TO WORK FOR THIS MOVIE."



## LOCAL 600 CREW

### **Director of Photography**

Kramer Morgenthau, ASC

### **A-Camera Operator/Steadicam**

Mike Heathcote, SOC

#### **A-Camera 1st AC**

Craig Pressgrove

#### **A-Camera 2nd AC**

John Hoffler

#### **B-Camera Operator**

Brigman Foster-Owens

#### **B-Camera 1st AC**

Dwight Campbell

#### **B-Camera 2nd AC**

Alex Waters

#### **C-Camera Operator**

Jeff Crumbley, SOC

#### **C-Camera 1st AC**

Stephen Early

#### **C-Camera 2nd AC**

Lauren Gentry

#### **Loader**

Cory Blake

#### **DIT**

Robert Howie

#### **Utilities**

Bre Jones  
Alex Nguyen

#### **Still Photographer**

Eli Adé, SMPSP

#### **Unit Publicist**

Carol McConnaughey

### **2ND UNIT**

### **Director of Photography**

Bruce McCleery, ASC

### **A-Camera Operator/Steadicam**

Matthew Petrosky, SOC

#### **A-Camera 1st AC**

Pat Sokley

#### **A-Camera 2nd AC**

Katrienne Soulagnet

#### **B-Camera Operator**

Bill Saxelby

#### **B-Camera 1st AC**

Andy Hamilton

#### **DIT**

Kyle Spicer

#### **Loader**

Laura Spoutz

### **ADDITIONAL PHOTOGRAPHY**

### **Director of Photography**

Kramer Morgenthau, ASC

### **A-Camera Operator**

Brigman Foster-Owens

#### **A-Camera 1st AC**

Stephen Early

#### **A-Camera 2nd AC**

Lauren Gentry

### **B-Camera Operator/Steadicam**

Colin MacDonnell

#### **B-Camera 1st AC**

Taylor Fenno

#### **B-Camera 2nd AC**

Alex Waters

### **C-Camera Operator/Ronin**

Rebecca Ulmo

#### **C-Camera 1st AC**

Freddy Thomas

#### **C-Camera 2nd AC**

Kevin Wilson

#### **DIT**

Robert Howie

#### **Loader**

Lexi Guenard

#### **Utilities**

Amanda Ashley  
Rory McCleery

### **2ND UNIT**

### **Director of Photography**

Fernando Reyes-Allendes

### **A-Camera Operator**

Josiah Morgan

#### **A-Camera 1st AC**

Trevor Rios

#### **A-Camera 2nd AC**

Geoff Waters

#### **DIT**

Ben McLeod

#### **Loader**

Laura Spoutz

#### **Utility**

John Wachtel