

Ousama Rawi, BSC, CSC details his award-winning work on *The Tudors*, a lush period piece he captured digitally, first with the Sony F900, and finally with the Panavision Genesis.

By Michael Goldman



Crowning Achievements

Upon launching his four-year adventure shooting Showtime's *The Tudors*, cinematographer Ousama Rawi, BSC, CSC rapidly found his thoughts turning to the subject of light. After all, when one endeavors to bring 16th-century England to life onscreen in a realistic fashion, one has to face the fact that the only period-correct artificial light sources will be candles, torches, fireplaces and the like. Rawi notes that when he signed onto *The Tudors*, in 2006, Sony's HDW-F900 was the acquisition tool, and the camera "is ultra-sensitive to anything bright. And yet I needed brightness for my frames because I intended to use candles as primary sources as much as possible to enhance realism."

The Tudors recently ended its 38-episode run, and after color timing the last episode at Technicolor Toronto (with colorist Ross Cole), Rawi finally had time to reflect on what he and his colleagues had achieved on the series. For the Iraq-born cinematographer, these achievements included an Emmy Award (for episode 3.03) and an ASC Award nomination (for episode 2.01).

Rawi recalls that capturing *The Tudors* digitally impacted even the smallest decisions early on, including what kind of candles to use. "We carried out tests with various candlemakers, trying all sorts of formulas that might work with the cameras," he says. "Eventually, we found one that the

cameras could handle and which gave me good exposure, and we stayed with that formula for all four years."

The candles burned rapidly, however, sometimes with unintended consequences. "They could melt from full height to 2 inches in less than 30 minutes!" he recalls. "Candle-height continuity was a big issue; we were constantly changing them. For some evening scenes in the Great Hall set, those candles were not only visual decoration, but also fill light, sometimes even key light! We'd light them on large chandeliers above the action, and they would drip down on whomever was below — actors, extras or crew. The fast-burning wax did not discriminate. It would pour down on their heads and quickly harden. It became quite an ordeal to remove."

Waxy hair was a small price to pay for what the production achieved over four seasons. *The Tudors* is the lushest, most detailed and most complicated period drama to air as a regular series on American television in quite some time, possibly ever. Shot on three stages (on about 80 unique sets) at Ardmore Studios in Dublin, Ireland, and in the surrounding countryside, the show endeavored to bring the 38-year reign of King Henry VIII (Jonathan Rhys Meyers) to life with precision and visual excitement — and some creative license.

The period nature of the evolving story, along with the fact that the characters and locations had to age decades

during the show's run, put lots of creative pressure on Rawi and his colleagues. For one thing, they often found themselves shooting thematically similar story developments, such as beheadings and violent jousting tournaments, at different times for different episodes over the years. Series creator Michael Hirst and Rawi also wanted a feature-film style aesthetic, complete with a mobile camera. The cinematographer offers, "I wanted to shoot it as if it were a feature film, which meant using depth, keeping doors open, and not having people close to walls where you'd just see the character and two walls — as they often do on TV so they can take less time lighting and dressing sets. These sets were so elaborate, large and interconnected that I felt it would be an injustice not to use them, so I'd pan the camera all over the place, up and down, tracking from room to room. That required more lighting and setting up, and the art department had to dress more sets.

"I always found reasons to keep the camera moving," he continues. "We could see more of the set and keep energy up that way. We went handheld a lot, and that wasn't always easy, especially when we were using the F900 [during the first two seasons]. Also, if we were shooting another execution or another jousting scene, we'd try to differentiate it from previous such scenes as much as we could, usually by using different angles. We tried not to repeat ourselves."

Because the show had a team of directors, Rawi was part of a triumvirate charged with keeping the look consistent, along with production designer Tom Conroy and costume designer Joan Bergin. "The three of us had a symbiotic collaboration," says Conroy. "I would travel to castles and estates in the United Kingdom, where a lot of the architecture from the 16th century survives, to gather ideas, and then I'd show Ossi what I was thinking, and he'd bring something more to it. Early on, I suggested that we put most windows up high, which meant the characters would



Opposite: The crown weighs heavily on King Henry VIII (Jonathan Rhys Meyers) in *The Tudors*, which recently completed its four-season run. This page, top: Princess Mary (Sarah Bolger), basks in the glow of candlelight. Middle: Anne Boleyn (Natalie Dormer, left), Henry's second wife, appears in a dream sequence alongside Princess Elizabeth (Laioise Murray), her daughter with the king. Bottom: Cinematographer Ousama Rawi, BSC, CSC checks his lighting on stand-in Irina Kuksova inside the chambers of Queen Catherine.

● Crowning Achievements



be lit from a high angle and the immediate background would be quite dark. Ossi brought his level of drama to that; he lit most of the time from those true windows or from doorways or other openings. We talked constantly about lining up doorways and always having one plane in front of another to help create depth.”

Similarly, Bergin was constantly bringing fabrics and designs to Rawi to discuss how to best incorporate them into the show’s aesthetic. “One time, I decided to attire the English court in black and silver for the arrival of an Italian ambassador, and, as always, I let Ossi know about it,” she recalls. “He did tests with candlelight to figure out how to bring out the silver, and he set about designing ways to make one shot of silver [in the fabric] the focus. Everything looks black at first, and then two or three people turn their backs, and there is a wonderful silver sheen. Ossi is into that kind of subtlety, and I really appreciate that.” Rawi elaborates, “I felt Joan’s costumes were characters in their own right, and I therefore enjoyed finding ways to emphasize them. Her black-and-silver costumes were done with great detail, and much of it could have been lost on camera given the low-key lighting. To draw attention to the costumes, I positioned banks of candles at two specific heights, adjusted for the actors’ heights, so that when the actors turned, the silver in their costumes caught and reflected the candlelight. Shooting the scene wide open helped create a bright and very subtle highlight around the shiny silver that made it glow.”

Top: Henry mourns the death of his third wife, Jane Seymour (Annabelle Wallis), who bore his only son, Edward.
Middle: A fireplace helps illuminate Henry’s relationship with his fifth wife, Katherine Howard (Tamzin Merchant).
Bottom: Katherine and Henry share a familial moment with Prince Edward (Eoin Murtagh).



Rawi says the primary references for the show’s visuals were “the old masters.” He explains, “I prepared a folder of different historical lighting references, and it wasn’t all from that period — I had Goya, Velasquez, Vermeer, Rembrandt, Caravaggio, and so on. In those paintings, they’d have dramatic daylight pouring into a room and the rest of the room in deep shadow. Caravaggio’s lighting sources were flames or natural daylight coming from



Top: A frame grab from a Panavision Genesis showing the night-interior LUT applied to a scene in the Great Hall. Bottom left: Catherine Parr (Joely Richardson), Henry's sixth and final wife, joins the dance in the Great Hall. Bottom right: Henry and Jane walk Mary through the Hall.



high or eye-level windows, and I figured that is how he saw life in his day, so that influenced my lighting approach.”

Rawi was particularly careful with his lighting when working with the F900 because the camera is limited to 4:2:2 color space. He stayed with a .45 Gamma setting and restricted camera presets to four, only for Knee adjustments: 0 Point, 0 Slope; 30 Point, -65 Slope; 30 Point, 0 Slope; and 40 Point, 15 Slope. (The camera's standard Knee setting is 4 Point, 0 Slope.) “I engaged those settings whenever I encountered exposure-latitude problems. For instance, when a window really blasted light and resulted in clip-

ping, or if I was shooting an exterior scene with a blue sky and a white cloud suddenly came into the shot, those sudden changes in light levels played havoc with the F900, so I'd try out the four Knee settings until clipping was a bit more controllable.

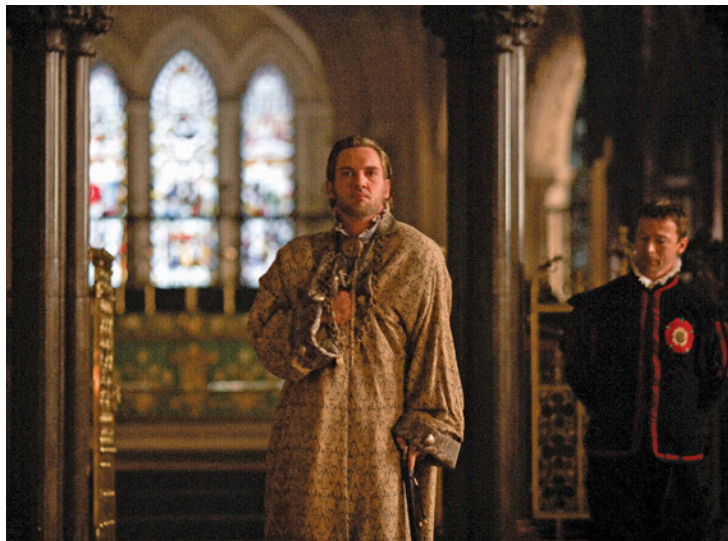
“I also had to take into account the compression that takes place when the image is recorded to the F900's built-in recording deck — the 1920x1080 image is compressed to something like 1440x800,” he continues. “This compression makes it a faux 1080p camera. I had to bear that in mind while lighting scenes in order to conceal any image degradation.”

Indeed, Rawi became well versed in “learning about and working around the F900's idiosyncrasies to get the look I wanted.” Showtime had mandated digital acquisition from the outset, and at the time, Rawi had committed to a four-camera package. “My first choice was the [Panavision] Genesis, but we couldn't get four of them on our budget,” he says. “We'd decided that we'd run two cameras all the time for the main unit, and we needed one camera for second unit and a backup camera, since we were shooting far from our rental house. The F900 enabled me to use the Panavision [Digital Primo] lenses I wanted, so that's what we chose.

● Crowning Achievements



The Tudors' four seasons spanned 38 years, requiring costume and hair-and-makeup tricks to age Henry and the members of his court. Rawi further sold the aging effects with lighting: "I tried to bring out features in Jonathan's face that would make him look different. With the help of makeup, I could make him look off-color, paler, and with lighting we could create hollows around his eyes."



I didn't use prime lenses with the F900 unless we were in Steadicam or hand-held mode; we relied primarily on short and long zooms on the A and B cameras."

When the production began planning its third season, Rawi and Panavision made the numbers work for a switch to the Genesis. That changeover, says Rawi, improved virtually everything. "Finally, I had large-chip full-frame 35mm framing, which meant the entire collection of [Panavision] Primo film lenses was available to me, so I could incorporate a lot of primes. Another bonus was that we no longer had to deal with the F900's back-focus problem — it drifted due to temperature changes. And the compression problem became a thing of the past."

With the transition to the Genesis, Rawi had to take time to design a series of look-up tables — day interior, day exterior, night interior and night exterior — that could be applied on set so the filmmakers could see how the final images would look. The LUTs were embedded in the Genesis Display Processor and called up as necessary with the push of a button. The filmmakers also gained access to the full color spectrum, which was a big step forward. "With the F900, I used deep, dark shadows and bright highlights to create contrast and approximate the look of 4:4:4 color space," he explains. "I had to do a lot less of that on seasons three and four because we were actually working with 4:4:4 color space. I didn't need to fool the viewer's eye."

"[With the F900], I also had to deal with overexposure — if it went 2 to 3 stops over for a view out a window, for example, it would go off the scale and we'd start clipping, and I'd have to start balancing again," he continues. "Irish weather changes every 15 minutes, so shooting on location was always a challenge because the F900 couldn't always cope with the changing skies. Panavision claims the Genesis has 11 stops of latitude, but I found it was more like 11½. That made it easier to cope on

● Crowning Achievements

Top and middle: Rawi (middle photo, center) and company prepare to shoot the executions of Katherine Howard and Lady Rochford on a set constructed at Powerscourt Estate in Enniskerry, County Wicklow. Bottom: A location in Humewood was used to represent West Yorkshire's Pontefract Castle.



location.”

The Genesis was set to its Panalog setting, and Gain was set to 0dB. “Gain was increased very rarely, and only if I was getting no reading on the waveform monitor,” notes Rawi. The shutter angle was set to 172.8 degrees “to cope with HMI lights in the 50Hz realm of the Irish electrical system.”

Because the F900 has a smaller chip, Rawi originally had to take extra steps to achieve the shallow depth-of-field he wanted in particular scenes. He shot wide open, “and that helped give me a little selective focus, depending, of course, on the focal lengths I was employing.”

Shooting digitally posed ongoing focus challenges for A-camera 1st AC Alan Butler and B-camera 1st AC Shane Deasy, notes Rawi. “Film’s three color layers make focus more forgiving, but the digital camera has only one layer: the front surface,” he explains. “Therefore, the image landing on that sensor has to be in sharp focus, with no room for error. This issue actually became more critical when we switched to the Genesis because of the superior optics. The difference between pin-sharp focus and slightly off-focus was



Left: The cinematographer (foreground left) plans his next setup with (from left) B-camera 1st AC Shane Deasy, B-camera 2nd AC Conor Crawley, B-camera operator Iain Baird and director Ciarán Donnelly. Right: To keep the camera moving over the hilly terrain, key grip Philip Murphy and his crew mounted a crane to a specialized Land Rover 130.

more pronounced. It was challenging for Alan and Shane to keep it sharp, especially when we were shooting wide-open apertures, but they excelled at it.”

Rawi tried hard to avoid using diffusion on the lens. In fact, he restricted himself to carrying a single piece of glass diffusion, a 1/2 Schneider Classic Soft. “I only used that to hide the occasional skin blemish,” he says.

Throughout the show’s run, footage was recorded to HDCam (with the F900) and HDCam-SR (with the Genesis) tape using the cameras’ onboard decks. Rawi did incorporate the Genesis’ onboard Solid State recording option for Steadicam work, but otherwise, the show was always recorded to tape. Rawi typically took time at the end of each shooting day to time select frames from each setup using the Gamma & Density 3cP System. Those frames and the corresponding metadata were then burned to a CD and sent with the tapes to Technicolor Toronto, which sent digital Betacam synced dailies across the globe using the Internet-based Sample Digital dax/D3 distribution system.

Bergin and Conroy, Rawi’s fellow “keepers of the look,” also noticed immediate benefits once the production switched to the Genesis. “It only improved things,” says Conroy. “The film lenses gave us much better focal depth and control, so I could really see

exactly how my sets were behaving, how my textures were doing. It was the best of both worlds because we could also get that dynamic range. If we had a courtyard that was brightly lit, my materials could straddle that distance better.”

Throughout the series, Rawi endeavored to shoot virtually everything in low-key light. Because the team wanted to be as faithful as possible to the era’s architecture, a single, giant bay window was built into the Great Hall set, but almost all other windows on the various sets were strategically designed to be small, in keeping with the period. “Many of the windows were high, so to look authentic, the light for day interiors would come from [a point] that was usually higher than where the actors were standing or seated,” says the cinematographer. “During night scenes, light sources were candles no more than waist high and fireplaces low on the ground. When chandeliers appeared in frame, I’d have those candles lit, but I wouldn’t add any artificial light to augment them. The light from the chandeliers was usually enough to gently fill the scene without spoiling the look we achieved with lower-level lighting.”

Rawi organized two lighting packages, one for the studio and one for location work. The studio package was spread around the three stages at Ardmore. On the largest stage, D-stage, permanent or semi-permanent sets were

built, including the composite set of the Great Hall, Henry’s throne room, his bedchamber and outer chamber, the queen’s chambers, and a couple of other sets. Sets that changed for each episode were built on the other two stages.

A permanent row of space lights ran the length of the Great Hall set, close to the wall where the large bay window was located. Those were the instruments Rawi used to introduce ambient light. “I’d vary the intensity by selecting the number of heads that would be illuminated and the number of bulbs in each head,” he says. “For night scenes, we could use the dimmers to control the color temperature of those bulbs and keep them burning at a very low voltage to match the warmth of the candle flames. I used these sparingly and infrequently, but they were ready to be used at a moment’s notice.” A similar arrangement was rigged for a London exterior street set, also on D-stage; the crew rigged 18 space lights overhead to create soft toplight.

The crew utilized hundreds of Fresnel heads of all intensities and stands of all sizes as part of the stage package, along with an array of Kino Flos, Cyc floods, Skypans, Silver Bullets and space lights. For locations such as Dublin’s Christchurch Cathedral (which frequently doubled for London’s Great Chapel), the production generally rolled out a truck carrying at least two

► Crowning Achievements

The crew captures a crane shot in a church in Bray, which stood in for St. Mary's Abbey in York, England. In the scene, Henry and his royal entourage await the arrival of the King of Scotland.



18K HMIs, a couple of 6K HMI Pars, a few 4K HMIs, two 1.2K HMIs and a range of tungsten lamps.

Each two-episode production cycle included about three weeks of work onstage and one week on location. Some of the location work was complicated by Ireland's hilly terrain. In fact, to negotiate the hills and achieve certain shots, Rawi asked key grip Philip Murphy to mount a camera crane to a specialized vehicle. "Ossi wanted to get a master shot at the top of the trenches [on a battlefield location simulating Boulogne, France] and have a Giraffe Crane ready at the other end of a field for the next setup," recalls Murphy. "So our grips built a specialized Land Rover 130 to allow for speed and versatility. It could go over any mountain and level up even on the side of a hill. On location shoots like that, we used Hustler and PeeWee dollies and carried about 300 feet of track that could be laid on any terrain, so we could always keep the camera moving either on cranes or dollies."

Rawi has high praise for Murphy and others on "my marvelous crew," including 2nd-unit director/visual-effects supervisor Bob Munroe; camera operators Des Whelan and Iain Baird; 2nd ACs Jessica Drum, Conor Crowley and Amy Breen; gaffer Terry Mulligan; and rigging gaffer Kevin Scott.

Of all the challenges posed by *The Tudors*, perhaps the greatest was figuring out how to age lead actor Meyers believably. Because the show spanned 38 years, the filmmakers had to make the king look older, heavier and more haggard as it came to an end. Rawi says this was a vexing creative challenge because Meyers is a young, fit actor whose fans enjoy seeing him that way. Some license was therefore taken, and the production settled for making the older Henry relatively bigger, slower and wearier as his reign wore on. Much of this was accomplished with costume padding and hair-and-makeup tricks, but Rawi used some of his own sorcery as well. "I did a lot of it with lighting," he says. "I tried to bring out features in

Jonathan's face that would make him look different. With the help of makeup, I could make him look off-color, paler, and with lighting we could create hollows around his eyes. Those things, in concert with hair, makeup and costuming, got the idea across." ●

◀ TECHNICAL SPECS ▶

16:9

Digital Capture

Panavision Genesis
(Seasons 3-4);
Sony HDW-F900 (Seasons 1-2)

Panavision Primo (Seasons 3-4)
and Digital Primo (Seasons 1-2)
lenses