The Art of Multi-Camera Production

Patti Lee, ASC (right) and 1st AC Missy Toy on the set of the multi-camera comedy pilot *Pandas in New York*.

Cinematography for multi-camera television is a complex realm filled with production challenges that the single-camera director of photography doesn't normally encounter. It's akin to a theater performance, as most multi-camera shows shoot in front of live audiences.

"In a live show, no one wants you to come in with a ladder and start making tweaks between setups," says Patti Lee, ASC, a two-time Emmy nominee whose credits include *The Bernie Mac Show*, *Mad About You* (2019) and *Bob Hearts Abishola*. "We have to get everything set up so that there's very little need to make changes during shooting."

Adds Gary Baum, ASC, a two-time Emmy winner and 11-time nominee, whose work includes *Will & Grace*, *Mike & Molly* and *B Positive*, "You also don't have the luxury of changing your setup within the scene or when you switch to shooting close-ups or masters. Even during Covid times, without a live audience, the nature of the system is a proscenium-style structure, like a Broadway show being photographed with four cameras. You have to build all of your lighting and any transitions ahead of time, for four cameras."

To that end, multi-camera cinematographers must be ready for anything in terms of their lighting setups. Retakes and slight changes between takes can happen, but they're frowned upon. The show mostly unfolds as a live production, so each scene and the movements of the actors must be planned and programmed into a dimmer board. If an actor misses a mark, the cinematographer must anticipate it with lighting that is flexible enough to cover the moment.

What used to be called "three camera" is now predominantly a four-camera (or more) production. The sets are designed and built to open the "fourth wall" to the audience and, of course, the camera.

"Most lighting has to be done overhead," Lee says. "Sometimes you can plant units in a hidden spot — for instance, if someone's working on a computer, you can put a pad light in there to accentuate the screen. But hiding lights behind furniture is difficult, because actors are walking through the entire set. Sometimes we can have an electrician with a light on the floor, and they can sneak in a little special light as the cameras are moving, but

we have to do that sparingly so it doesn't become distracting."

Mapping the Stage

To clarify a few terms: When an actor is standing onstage facing an audience, the area behind them (farther from the audience) is known as *upstage*, while the area in front of them (closer to the audience) is referred to as *downstage*. The area just offstage, unseen by the audience, is called *the wings*. Stage directions are noted from the actor's position, so when performers are facing the audience, the area to the actor's right is *stage right* and to their left is *stage left*. These are the opposite of camera left and camera right.

Lighting Plans

The basic principle of lighting for multi-cam is to utilize cross-back keys. This means you're normally using an off-camera key, lighting from an upstage position. "For back-crosses, I lean toward harder sources like 2K tungsten Fresnels or sometimes a 5K," says Baum. "Then we'll augment the other areas with softer units."

Lee also uses 2K Fresnels, but she incorporates smaller tungsten fixtures, such as Babies and Tweenies, as well. "We use [smaller lights] to hit more areas where actors walk. I'll also put up grids on the 2Ks and 1Ks to help control that light. Some cinematographers use Lekos to really shape the light. We all have our own style."

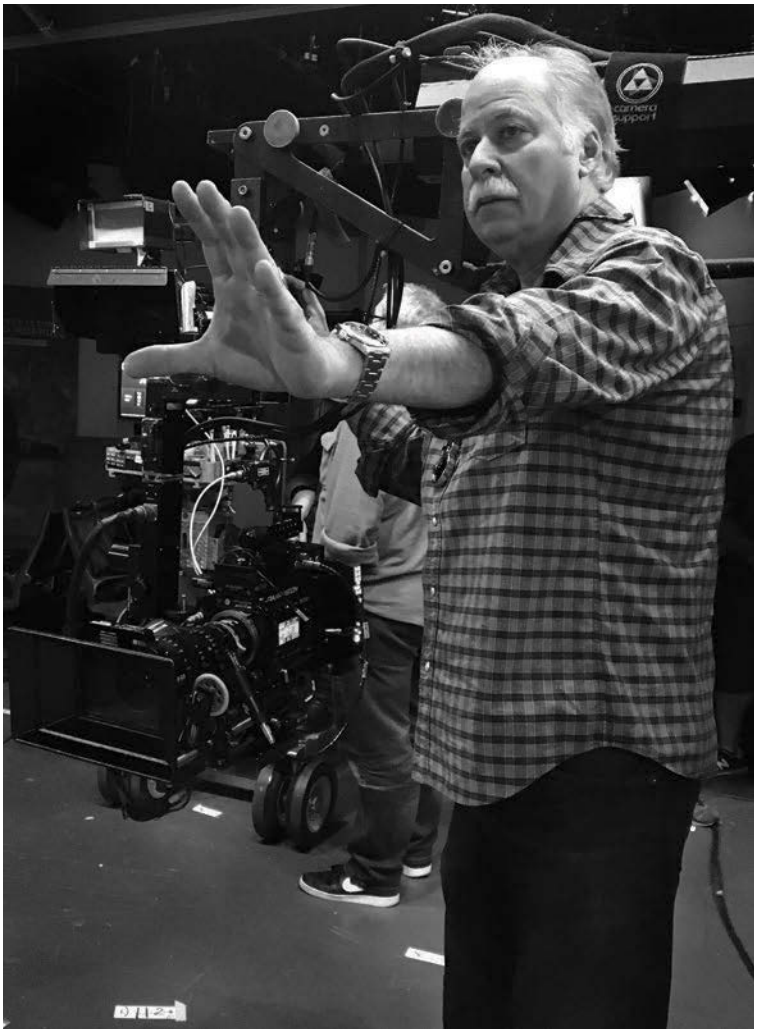
The back-cross keys cover the primary areas the performers use during a given episode. Fixtures rigged on stage right will provide cross-keys for performers on stage left and vice versa. There are often redundant fixtures rigged in each area to cover actors' blocking, or shifts in the mood or time of day. "Redundant fixtures happen quite a bit," Baum says. "If it's a standing set, we'll build in certain areas of lights that we can shut off and turn on at points. Everything is connected to a dimmer board, of course, and board technology has improved a lot over the last few years; we can make changes on the fly in seconds, or program them as cues based on the blocking. If we have an actress coming downstage and there normally isn't much light there, I'll make sure we add a nice soft light for her close-up, and we can activate it just before she gets [to her mark].

"The next challenge is that scripts change *all the time*," Baum continues. "Sometimes you're getting new pages by the hour, so you really have to be on your toes. And, of course, we try to make it look cinematic," he says, noting that the look of sitcoms has evolved in recent decades.

Refining the Look

In addition to the back-cross keys, cinematographers working in multi-camera often have a front soft fill "run" or "trough." This is often a line of 4'x8' bounce material running all the way downstage to provide a soft front fill, to taste. "Everyone has a slightly different technique for front soft fill," Lee says. "I often use beadboard or fabric bounce that runs along the front of the camera aisle. Each set has a separate front fill that sits right under our greenbeds. One challenge is that as multi-cam shows have evolved, many sets aren't specific about where the proscenium is. We end up trying to figure it out from the designs so we can find places to work in the front fill."

Gary Baum, ASC at work on the revival of the NBC comedy *Will & Grace*.



"It's like a Broadway show being photographed with four cameras."

PANDAS IN NEW YORK PHOTO BY CLIFF LIPSON. *CALL ME KAT* PHOTO BY VITO GIAMBALVO. *WILL & GRACE* PHOTO BY JASON HERRING. *I LOVE LUCY* PHOTO FROM THE ASC ARCHIVES.

Lee oversees the camera crew of Fox's *Call Me Kat*.

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In addition, many multi-cam cinematographers reach for "projected fill." These are the same types of soft boxes that are found on every set, such as "Croney Cones" or Chimera-like soft boxes placed in front of Fresnel fixtures. "I use a lot of DVS Cones, which were designed by gaffer Felix Williams, who worked with the great Don A. Morgan [ASC] for many years," says Lee. "They're like a Chimera in that they have inner diffusion positions and a front honeycomb to help shape and cut the light, but still let it be soft. I usually use them on our 2Ks; we put the projected fills in the wings to give us the extra light we need to push into people's eyes, especially when they're farther upstage, away from the front fill run."

Baum doesn't often use much frontal bounce. "My contrast ratio from front soft to back key is typically about 2.5:1," he says. "I like to keep the bounce fill low and have more modeling on the face, and then use the projected fills where needed."

Adds Lee, "The lighting can be very theatrical, but we're often working to make it look more natural — we bring light in through windows, or if we're outside, we're using more soft top ambient bounce. We can work in some hard sun streaks, but it can be tough to work out the right position for that to accommodate four cameras."

Given the great need for flexibility on multi-camera shows, one might assume that productions have completely converted to RGB LED fixtures, but they actually haven't, primarily for financial reasons. Multi-cam cinematographers and their crews often rig multiple sets for an entire season of shooting, and with the requirement for redundant fixtures, the numbers grow quickly. "I use about half tungsten sources and half LED, but our budgets are typically a lot tighter than [those of] single-camera shows," says Lee. "Tungsten sources are significantly less expensive and much more readily available."

Sound Strategies

Though all cinematographers strive to incorporate sound needs into their lighting and composition strategies, sound is often the *first* consideration for the multi-cam cinematographer. "You've got to get the booms in," says Lee. "One of the first things we need to know is how sound will boom the show. Are they coming from the floor [mounted to a] perambulator, like Fisher booms, or are they booming from the greenbeds? Either way, the booms have to swing across the stage, and we have to either create alleyways for them to move through from above, or simply clear lighting paths on the ground so they won't create shadows all over the place as they move. When we put toppers downstage, they have to be soft so the booms can move through them."

Maintaining the Schedule

The production schedule for a typical multi-camera series is quite different from that of a single-camera show. Many shows operate on a five-day week. The first day comprises a production meeting, a table read and sometimes a first rehearsal. The next two days are reserved for blocking and run-throughs, and the fourth day involves a pre-shoot for anything that needs to be played back for the audience. The fifth day encompasses final rehearsal and shooting in front of the audience.

Lighting and grip crews work a single show for five days a week, but the DIT, camera operators and video controller (a role unique to multi-cam production) can effectively work only two days on each show; they can work on multiple series simultaneously as long as the schedules are staggered for shooting days.

"During pilot season, especially, we're all working on multiple shows at a time," Lee says. "Each show will have a different crew — a lot of us will have multiple crews, gaffers and key grips — and we bounce

ASC member Karl Freund was an early multi-camera innovator on the classic sitcom *I Love Lucy*.

between productions with the camera team. That way we keep working five days a week as well."

Says Baum, "For each episode, on Monday they usually have any new sets built, and the actors haven't even seen them yet. We have a general idea of where the actors will be moving and sitting, but otherwise we have to pre-rig and sort of guess where everyone will be as we 'rough in' the lighting."

Lee adds, "You end up trying to figure out where everyone will be and then build in multiple options — while trying to keep actors away from the walls." With a laugh, she adds, "We even conspire with the production designer to put furniture against the walls! Then we basically build in pathways where the actors can move and walk."

Specs and Insights

Many of today's multi-cam shows are shooting with the Sony PMW-F55. In terms of lenses, Baum favors using the Panavision 11:1 24-275mm T2.8 Primo zooms on all his cameras. Lee uses the 11:1 on her wing cameras, but prefers the Fujifilm Premier ZK Cabrio 19-90mm T2.9 on her two center cameras.

"Unless we're shooting for Netflix or Sony, which both want 4K, most shows are still shooting 1080p and in Rec 709," notes Lee. "We want to make sure the live audience watching the monitors isn't looking at a log picture. Some shows do shoot in log and put a show LUT on the audience monitors.

"Multi-camera cinematography is an underappreciated art form," she says. "Getting four camera angles to look good simultaneously takes a tremendous amount of effort, and you're worrying about making it artful and a pleasurable experience for the audience. It's a challenge to take care of so many things and yet try to make it an interesting picture that serves the story."

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Assessing the continued evolution of his world, Baum notes wryly, "Multi-camera shows want to look more like single-camera shows, and single-camera shows want to incorporate more cameras to save time. A number of single-camera cinematographers have come to my sets to learn how to handle three and four cameras on their productions. We're also working with more single-camera directors who come to multi-camera projects with their own aesthetic. It's an ever-changing world of challenges, and I'm very interested to see how it evolves!"