

## *Breaking the Sound Barrier*

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The television business is honeycombed with small clans of specialists who neither understand, nor particularly care about, what's going on in the neighboring clan's patch. Even though in recent years the lighting clan has become part of the tribe of vision controllers in many stations, it's usually quite easy to tell who are the lighting folk that do some vision control and who are the true bearers of the vision control flame.

Perhaps the strangest tribe is our brothers in the audio clan. While we work side by side, facing the common foes of megalomaniac producers and directors, bewildered talent, and "Mad Max"-inspired dolly, crane, pedestal and steadicam drivers, we nevertheless seem doomed to remain implacable enemies.

Perhaps this is because so many lighting people come from either technical or visual arts backgrounds, while the majority of audio people have their roots in music. In one station where I worked, the only member of the 16-person audio department who didn't play guitar was a former lighting technician who played drums.

### **DIMMING LIGHTING NOISE**

I have no problem admitting that lighting is a major source of noise: acoustic, electrical and electromagnetic. Electronic dimmers have always been noisy, which is why we lock them away in dimmer rooms or bury them under the stage, behind a wall of road cases. However, as these same problems—and their solutions—have been with us since the middle of last century, there should be no need to keep arguing about them.

The new decade has seen robotic luminaries, with their discharge light sources and associated ballasts and cooling fans, become the background murmur for virtually every production other than—and sometimes even including—news. It's certainly up there with studio HVAC, traffic rumble and passing aircraft as a constant irritation to audio departments and those of us who listen to program sound with reasonable quality sound gear. Thankfully the recent generations of moving lights from most manufacturers have included stealthier versions that feature better sound insulation and less enthusiastic cooling fans.

Most of the noise from robotic fixtures is produced when they begin to dance to the music. Although this may be the exact moment when every microphone is wide open to collect the wanted sounds from the performers, it is also the moment when the performers are making the most noise, and usually quite close to the microphone, thus rendering into insignificance the racket from lighting gear. If the performers happen to be miming, then the mics are likely to be closed and all other noise will be safely drowned out by thunderous levels of foldback. If the performers are playing quiet, acoustic music, where any extraneous sound is likely to be a significant distraction, there is little chance that even the most uncouth of LDs will be waving legions of robotic fixtures around with joyous abandon.

### **ELECTROMAGNETIC INTERFERENCE**

Where noisy fixtures must be near open microphones, the process of rational planning can produce useful solutions through the application of baffles, acoustic insulation, the judicious timing of critical fixture moves, the careful selection of microphone sensitivity, pattern and placement, and a dash of audio signal processing. While this may not be as much fun as a round or two of verbal fisticuffs with our favorite "enemies" in the cafeteria or a bar after the show, it is more likely to let us all go home at the end of the day without needing extra blood pressure medication.

Unfortunately for any electronic equipment in the vicinity, vast amounts of electromagnetic interference are radiated by unshielded mains cables feeding thyristor-dimmed power to lighting equipment. This problem was identified well over five decades ago, the first time anybody ran a cable anywhere near a thyristor—or perhaps even a Thyatron valve—dimmed lighting feed, and has long since been solved.

Balanced line systems employing twisted signal pairs significantly reduce what becomes common mode noise, and a grounded shield around the cable effectively eliminates the problem. In really high-noise environments or on very long cable runs, the use of cable configurations such as the dual twisted opposed pairs in Star Quad microphone cable is a no-brainer. I acknowledge that it's a burden to have to maintain audio cables in order to be able to use them, but this is the same problem faced by everyone in every field of technology. Why then should the standard response from the audio department to dimmer buzz from an audio cable with a nonfunctioning shield be to demand that all dimmers be set to full or off to stop the noise, rather than replacing or repairing the faulty cable? I have worked in situations where the only place you could be sure to find a properly maintained microphone cable was in the lighting department's talkback equipment case.

### **ENDING THE FEUD**

Looking in another direction, the laws of optics have been known to mankind for much longer than sound recording and broadcasting have been around, yet somehow they haven't been revealed to the practitioners of the audio arts.

I have never been fortunate enough to work on a "money is no object" production or even one that had a budget sufficient to remove stunt safety wires—or audio gear—frame by frame during post production. I've always had to live with boom arms, fish poles, microphones and zeppelins made from opaque materials which either cast shadows when they block the light or are readily visible when they encroach on the frame.

If I discover that I'm working with an optically naïve boom operator, I make it my business to show them the safe places to work from in every setup and that there is a monitor available for them to see the framing of the pictures. It is astounding how many boom operators refuse to accept that light travels in straight lines and that it is therefore possible to predict where the shadow from any given source will fall. Instead, what appears to happen is that they go for optimum sound pickup, getting closer to the talent at every take, hoping that nobody will call "cut" or that the performances are so good that the director will use the take anyway, and make the lighting look bad.

Although there is an ancient tradition of (mostly) friendly rivalry between the lighting and audio departments, I look forward to our current age of cross-skilling and multiskilling finally bringing about an end to the cultural barrier between our clans.