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The SCORE

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WHAT HAPPENED TO MY BEAUTIFUL SCORE?

What Every Film/TV Composer Should Know About Final Audio

By Miriam Cutler

Last year, I completed the score for a wonderful film that I was proud to be part of. The filmmakers and I collaborated for months while I wrote, then painstakingly recorded and mixed over 80 minutes of music with a slew of live musicians. We then spent an intense week at the sound stage, mixing effects, music, dialogue and finishing just in time for our first screening. We provided a BluRay DVD with a 5.1 surround mix that had been quality-checked at the sound facility, and it sounded great.

This screening was for funders, cast and crew in a private but professional screening room with built-in playback. But the moment the movie started, it was obvious that something was terribly wrong with the sound. The music was mostly inaudible, the stereo speakers didn't even seem to be on, and the sound design was drowned out by dialogue in the center speaker. What's more, the surround speakers were not on. All that we had invested in the best sound package was wasted, at least for this screening. How had this happened? If there had been a technical check in the theater earlier, could this disaster have been avoided?

As a composer, this was really disappointing, but when I traveled to film festivals as a producer of *One Lucky Elephant*, I realized just how common this problem is. And even though our sound mixer had provided a list of specs for optimal performance of our DVD and/or HD formats, I discovered there wasn't much I could do to improve the sound in many venues once on site. I decided to look into ways to bring about better sound quality control. I hope to provide some suggestions to prepare composers and filmmakers for what they may encounter in the wild west of film festivals, screenings and art house runs.

I solicited the expertise of three highly respected film sound professionals: score mixer, Les Brockmann; sound editor and film mixer, Joe Milner, from Puget Sound; and Chapin Cutler (no relation), president and principal of Boston Light & Sound, technical director for the Sundance, Telluride, TCM Film Festivals, and more.

I started with Les Brockmann to get a technical framework from the music side.

Les Brockmann

***Score*: We all work so hard to make our music sound fantastic. But once the score leaves our studios, there are so many factors beyond our control. From the music side, what can we do to protect our work?**

Les Brockmann: Sound projection issues are well worth calling to the attention of our filmmakers. Particularly in independent film, producers need to be aware that excellent sound for the audience matters as much as an excellent picture; the film market is too competitive to let any aspect slide.

To bring music folks up to speed on some technical concepts in this article, here's a brief review of sound for cinema:

How is theatrical audio different from TV, CDs, etc.?

Phantom imaging: When we listen at home on a 2-speaker stereo system, ideally we sit facing the speakers and exactly between them, like a triangle. (At least, we engineers do!) Using panning in a mix, any instrument or voice that is supposed to be exactly in the

Continued on Page 6

The bottom line is we all share the goal of wanting movies that we work on to sound great as well as look great, not only for film producers we work directly for, but every audience member.

CONTENTS

What Every Film/TV Composer Should Know About Final Audio

Continued from Page 1

center comes out of each speaker at an equal level, and so forth, a concept we're all familiar with. Of course, if you leave that chair right in the middle, you don't hear that nice stereo image anymore.

A theater auditorium, however, only has a few seats right in the middle "sweet spot," and the entire room is intended to be filled with audience members who will hopefully get some sense of sound location regardless of where they sit. In order to do that, theater sound systems have "hard" center speakers, so dialogue and other center sounds will sound anchored there from any seat. A film audio mix doesn't rely much on phantom imaging.

A big part of today's theater experience is surround sound, as well, which is the familiar 5.1 channel system, the ".1" being a low-frequency discrete subwoofer channel. With constant innovation on the part of film and theater companies, many films are presented with seven audio channels, or sometimes many more than that. (In a recent SCL screening of *Life of Pi*, those of us in attendance were treated to the new Dolby Atmos system, which offers as many as 62 audio channels!)

A finished film in a format that's delivered to a theater doesn't have that many discrete digital channels for audio, so there are a variety of analog and digital encoding schemes, which typically store multiple channels on two physical channels of the disc, tape, or film. These can range from the old standard (but still commonly used) analog Dolby Pro Logic to newer digital formats such as Dolby E and others.

In fact, the wide variety of delivery formats, tracks and encoding schemes, accounts for a good deal of confusion. Projectionists and theater operators, particularly in less-than-ideal screening rooms often used for art and festival films, have plenty of chances to get it wrong; in some cases the blame can go to filmmakers who haven't prepared things correctly technically.

How can film music people ensure the best possible music sound under these varying circumstances?

In mixing for surround audio tracks, we use multiple discrete digital tracks. We don't deal directly with format encoding, but it's important to at least be aware of how it might end up affecting the sound.

A good example is potential problems that come from our old-fashioned two-channel stereo techniques. A nice stereo image on an acoustic instrument, recorded with two microphones, gets its imaging from the phase interaction between the two channels. But theatrical encoding, particularly good old Dolby Pro Logic, can do some weird things to that kind of sound source, especially if it's solo or strongly featured, perhaps making it sound mono or alternately throwing it into the side surround speakers.

Also our computers are full of two-channel stereo electronic sound sources such as chorusing, reverb devices, and various synthesizers and samplers. We mix engineers can sometimes compensate through various techniques, one of the simplest being to simply mono the source and, if it needs a little spread, add a delay. Of course many synth/sample players can be instantiated as surround devices; in acoustic recording careful attention to microphone placement and phase relationships are essential. And the ProTools plug-in Dolby Surround Tools can be used to check mix compatibility (hopefully this older TDM plug-in will be updated in a version for current ProTools systems); we're not going to be delivering a mix encoded in some way, but that will encode and then decode the signal, to reveal what the theater processing might do to the sound.

The bottom line is we all share the goal of wanting movies that we work on to sound great as well as look great, not only for film producers we work directly for, but every audience member. Especially on lower-budget projects, awareness and control of presentation issues may be incomplete, but it helps to spread the word. Knowledge of these technical issues, and sharing this information with our filmmakers, can help us all to do work we can truly be proud of.

In order to help our filmmakers understand what they can do to be proactive, I went to Chapin Cutler and Joe Milner.

Score: **What do filmmakers need to do prior to screening their work?**

Chapin Cutler: Way before the event, filmmakers should ask the venue representatives the following questions:

Chapin Cutler

- What formats for digital or video playback does the screening venue accept?
- What audio playback formats do they accept that are accompanying the video playback?
- What is the cinema processor, and what is the input signal?
- What is the channel configuration in the theater?
- If the sound playback is 5.1, has the system been tuned recently by a qualified service technician to cinema industry specifications?

But here is the problem: Many filmmakers don't know what their video or sound formats are. If they don't know this, do they really know what they should be hearing?

Joe Milner: There are basically three formats for how a sound mix for festivals might be prepared:

- Lo/Ro Stereo [Left only/Right only]—This is what I call "plain-vanilla" stereo, like you might find on a CD, and probably how you're listening to your film in the cutting room. You get two channels of audio, and it plays back out of the left and right speakers. Very flexible, but you get no surrounds and your dialog "floats" in the phantom center of the stereo field, as opposed to having a dedicated center channel. This is much more noticeable in a theater than on TV, obviously.
- Lt/Rt Stereo (pronounced L-T-R-T) [Left total/Right

Joe Milner

Continued on Next Page

What Every Film/TV Composer Should Know About Final Audio

Continued from Page 6

total]—Also known as Dolby Surround, this is four channels of audio (left, center, right and mono surround) encoded onto two channels using the Dolby Matrix, either with Dolby Hardware or one of the Dolby Encoding plug-ins that are available. This format, which is two channels of analog audio, will play back in Mono, Lo/Ro Stereo, or, if the proper decoding equipment is present, it will be decoded back into four channels. This is also known in the home/broadcast world as ProLogic; the newer flavor, ProLogic 2, gets you stereo surrounds, but still no discrete subwoofer.

- 5.1.—This is what you're listening to when you're watching a film in either Dolby Digital or DTS. You get left, center, right, stereo surrounds and a dedicated subwoofer (or LFE, Low Frequency Effects) channel to handle the deep lows. On a 35mm print it's very easy. On video it's a little trickier. You can lay back the discrete six channels of the 5.1 mix to HDCam SR or D-5, but very few venues are able to play back a discrete mix. The solution for this is Dolby E, which is a method of digitally encoding the six channels onto two channels of a video tape. With the Dolby E decoder, it's then decoded back out to 5.1. This is a digital signal, though, so it can only be listened to in a decoded format as opposed to the Lt/Rt, which is analog. To avoid damaging your ears or your speakers, on an HDCam or D-Beta tape you always put the Lt/Rt on channels one and two and the Dolby E on channels three and four. On a DVD, the 5.1 mix is encoded using ac3 for Dolby Digital; for BluRay, the 5.1 mix is encoded for Dolby True-HD or for DTS Master Audio.

Score: **What sound formats offer the best results with digital projection?**

C.C.: Mono, Lo/Ro certainly. Then there is Lt/Rt, which may or may not be properly decoded to Dolby Pro Logic. Beware of festivals that offer more than one or two playback options. The more formats they offer, the more likely yours will not go well, since these festivals do not have an integrated system, but a "patch and play" operation. Patch and play is common in smaller and regional festivals where tech budgets are really small.

I would not include 5.1. Although it is not uncommon to find 5.1 Dolby Digital, it is unusual to find this track configuration from DVD or BluRay in many places. It is further unlikely that 5.1 is played back from Beta SP, Digital Beta Cam or HDCam, as it requires significantly more expensive decks, insertion of Dolby E tracks and the like. Dolby E is usually only found in the larger, more industry-oriented festivals, not the smaller, more underfunded locations. Even with HD playback, L/R and Lt/Rt are the most common.

Score: **What are some common problems you've dealt with in relation to sound at screenings, and how they were solved?**

C.C.: The most common problems in playback might be:

- Switched left/right channels.
- Inappropriately balanced audio channels.
- Bad acoustics.
- Hum from a system that are improperly grounded or that did not have proper isolation between components.
- Technical staff that are unfamiliar with cinema systems but know a lot about home video. It is very easy to make a living room sound good. It is very different to make a barn, function room, gymnasium or high school auditorium sound like a home theater. And it should not ever sound like that!
- Projectionists that have the wrong format punched up.
- Home video/audio components or consumer-grade electronics. Patching components together that were never designed into a real system leads to imbalances. Generally, the major components have balanced line ins and outs. If not, they must have balancing transformers. Often, you can tell the "Pro" gear from the so-called "prosumer" devices by whether they have balanced or unbalanced audio connectors.

Continued on Page 9

SESAC Hosts Brunch At SXSW

SESAC hosted their annual Brunch during the SXSW festivities at Austin's elegant Driskill Hotel. The event drew a gathering of SESAC-affiliated artists, songwriters, composers and publishers along with a plethora of journalists and music supervisors for a casual, festive gathering during a very hectic week.

L-R: SESAC's Erin Collins, composer Chris Tyng & Kristen Tyng

What Every Film/TV Composer Should Know About Final Audio

Continued from Page 7

- The center speaker and podium mic. Almost any time that a microphone is "hot" through the same speaker that is playing back recorded content it can cause this problem in playback. It can make the center too hot, and send audio from a speaker closer to the mic through the center channel as well. If the mic is left on the stage with the mic potted up, this can happen. The most common set-up would be a stage channel from the content source routed through a mixer that is ahead of a stage speaker for the purpose of inserting a microphone.

I know I've run into what appear to be patching/routing problems where they had the right decoder, but didn't know how to patch it in. We do not do any hot patching or wire-switching or plug-swapping once our festival set-up is in place. In most cases all source-audio switching is done from the front panel of a Dolby CP 650. All non-sync sources and analog video sync sources are run through a system we refer to as our "video support kit." This allows us to set the right balance between components so none are either louder or softer than any other. We solve any channel imbalances at that point well before the festival. We have extra channels so if we do need to do a swap or add-on, we do not have to unpatch or re-balance anything else, just the new component.

***Score:* How would you advise filmmakers to prep their film for festival screenings, and solve any on-site problems?**

C.C.: 1) Know what your track really is. Know and understand the terminology.

2) Check and listen to your track in a facility that replicates as closely as possible the one where your content is going to play; don't expect it to sound like it did in your basement or post-house.

3) Find out what the requirements for soundtrack configuration might be and confirm what the available playback options are. Be sure your content matches what they provide.

4) For the festivals we work with, we aim for industry standards in all venues. If the content is not produced to those standards, it may not sound good. That is not the fault of the presentation. Ask in advance what the system is capable of and how your track should be configured to lead to the best results.

***Score:* Is screening on any type of video format inherently trickier because of all the variables?**

C.C.: The problem is not the fact that they are HDCam or DVD/BluRay; the problem is that these playback devices are improperly hooked up to either a professional cinema processor or are put together in some hodge-podge mixture of inappropriate home stereo gear.

***Score:* Is 35mm a more reliable format?**

J.M.: If your film is a 35mm film print, virtually every theater you might encounter will have at least the basic equipment to play the sound, either in Dolby Digital 5.1 or Dolby SR Lt/Rt.

C.C.: This is true. However, just because there are 35mm projectors on hand does not mean they are set up properly for either digital or analog stereo. Many of the new wave of digital cinema technicians don't know how to properly tune, balance or service 35mm playback systems. The cruder the projection/sound system, the greater this is true.

J.M.: When you screen on anything video-based, it's the wild wild west. Some theaters can play DVD, but not BluRay; some can play DigiBeta, but not HDCam. And, even though they can play 5.1 from a 35mm print, they may not have the proper equipment to play that mix back from a "non-sync" source.

C.C.: This is also correct. Out of the box, the playback from Digital BetaCam and HDCam is Lo/Ro or Lt/Rt. No 5.1.

J.M.: Or, you might have an Lt/Rt mix on a tape, but they are unable to run it through the Dolby Decoder, so it plays in stereo only.

CC: This is also true. Unfortunately, many festivals are not properly set up to do this in an appropriate manner, whether in a theater or a hotel ballroom. Ask before you get on site what the playback system is.

J.M.: Or, you might have a stereo mix but it's actually being run through the Dolby Decoder, so some strange audio problems can arise—like dialog being "tugged" into the surrounds.

C.C.: Yes, but if a Lo/Ro mix is done correctly with no funky phasing, this should not be a problem. We run into problems with mixes done by a "Pro Tools" expert in their basement who has never listened to the track properly and is shocked when the content does not play back properly. In this case, the problem is not necessarily the playback system, but the mix. Our standard processor setting at Sundance is Dolby Pro Logic and is changed only if we have a problem tape.

With that said, we play back all our non-digital soundtrack from video as Dolby Pro Logic. If the track is mono, it will play back as mono. If it is Lo/Ro, it plays back that way, or if it is Lt/Rt, it will playback as 4.0 analog stereo. The reason we do that is we do not always know the intention of the content provider. Unfortunately, many of them do not know the difference between the above formats and mark their content inappropriately.

At Sundance, we advise our content providers as to how their content is going to be played back in all our venues—they are set up virtually identically in all cases—and expect that they will provide a properly composed and laid-down track to accommodate that. If we find that we get a non-conforming track, we advise the content provider of the problem and solicit a properly set-up tape. Or, if that is not possible, we make our best guess as to the intent/technical expectation based on the tape and endeavor to adjust accordingly.

All our theaters have the same equipment complement, are tuned by Dolby engineers and are never changed. If a content provider's track is low, we adjust accordingly. But beyond that, we do not change EQ, or try to fix phasing problems or anything like that.

Continued on Page 17

What Every Film/TV Composer Should Know About Final Audio

Continued from Page 9

If a track does not play properly, we hit "Mono" and that is it. If we have time, we will do a post-mortem on the content and request a replacement. If the problem is on our end, we will fix it pronto. We want our content providers to feel as they are part of what is going on. And, we want to know what their expectations are.

J.M.: If possible, try to get a 15-minute tech check, so you can ensure that your mix is playing in its proper format, and you can set the master volume level on the Dolby Cinema Processor. Theaters are supposed to be calibrated so that a setting of "7" on the Cinema Processor will play back at a level of 85dB, matching that of your mixing stage. But with all the different playback devices that are patched into the sound system, you never know if setting it to "7" will be accurate for your mix.

C.C.: At most of our festivals, Sundance included, the projectionist will run a few minutes of content before the house is opened to set levels and masking. If you are there, we solicit your comments, but other than level or making a format change, as needed, we do not make systems adjustments. At every show start, we have a staff member in each theater monitoring the house and the playback; they notify the projectionist of any issues.

At Sundance, every piece of non-film content we get will be HD Cam. At Sundance and other festivals that may have other formats, we have a pre-processor system installed where we pre-balance all the playback sound output such that no matter what the source, if the track is properly configured in the content, "7" is the magic number. We do the same thing in all our permanent installs as well. Usually, we will find tapes that have a hot or low-level track, we catch it at our pre-festival review, mark it on a report, so the projectionist will check it in the house.

J.M.: Make sure your tape is clearly labeled with the format of your mix, the channel layout, and the channels to play. This is especially important with Dolby E, as there are 2-channel configurations available: you need to make sure the decoding configuration matches the one on your tape.

C.C.: Very important. At Sundance, we solicit that info way in advance and send out tech sheets for all content we will play. You must be sure that your track is in alignment with our systems. We always provide a proper track configuration guide for how we need to have Dolby E encoded and which tracks to use. We also insist on a Pro Logic track that is exactly the same as all the other Pro Logic tracks in the rest of the festival for all Dolby E tapes. If we have any trouble with Dolby E on any playback, we immediately switch to Pro Logic. However, again, we pre-screen everything and solicit a replacement tape if the Dolby E track is defective.

J.M.: Projectionists at festivals are often not in their familiar environment, sometimes just volunteering for that particular screening and are presented with films in every format imaginable.

C.C.: Again often true, but most of the festivals we deal with do not have this problem. We standardize everything so that a projectionist can move between theaters and know what they are being faced with. We do not use untrained or volunteer projection staff . We give our projection staff two days before festival start to run content, practice show starts, do scratch tests on prints, clean house. That is why we standardize all analog tracks as Pro Logic, and at Sundance all non-film content is HDCam.

J.M.: Knowing exactly what you're handing the projectionist goes a long way, and having your sound supervisor or mixer available either in person or via cellphone when you're at your tech check can also help. Mix your film on a properly-calibrated, professional re-recording stage. *Continued on Page 20*

SCL Golf Event

April 1st found SCL golfers and their guests out on the links for the SCL Golf Outing at Rustic Canyon Golf Course in Moorpark, CA. Prizes were awarded for best team score, closest-to-the-pin and longest drive.

Standing (L-R): Stephen Erdody, Bruce Dukov, Raph Grierson, Ian Freebairn-Smith, Dominic Messinger, Jack Wall, Shawn LeMone, Matthew Doughty, Gerard Marino, Mark Doughty, Wayne Hankin, Mike Rubino, Charlyn Bernal, Angel Velez, Noah Smith, Jeffrey Michael, Dom Aiken, John Houston, Jeff Goodlund

Kneeling (L-R): Alan Williams, Billy Martin, Dan Foliart, Dave Merenda

What Every Film/TV Composer Should Know About Final Audio

Continued from Page 17

C.C.: That can be helpful, but should be unnecessary. If the track is recorded on the tape properly to industry standards by a professional post house, if you have read the festival's instructions for properly setting up your tracks, if you have asked the questions that need to be asked and we have done our job checking your tape, the best you can do to have a great Sundance experience is to introduce yourself to our projectionist, thank him for being there and for looking after your show, ask if he has looked at any of your content and did it sound good, and wish him a good show. Then, find the house staff that will be in communication with the projectionist. Then, stand with them at show start and offer suggestions about sound level and the like. Remember, in most cases, you will not be in an area of the house where the sound is the loudest or most distinct or have perfect coverage from all speakers. You will probably be too close to the surrounds. So, your perception of what it sounds like will not be the same as someone actually in the audience.

With all that said, most of it comes from the Sundance perspective. There are a lot of festivals that do not put as high a priority on the quality of presentation. Many festivals use an existing multiplex and are satisfied with what is there. Or, they add components with insufficient knowledge of what they are doing both technically and operationally. Festival attendance should be all about what happens when the lights go down and magic happens.

***Score:* Do you foresee any <u>one</u> standardized format in the near future?**

J.M.: I'm really excited about DCP (Digital Cinema Package). Last year, two films mixed at Puget that premiered at Sundance went the DCP route which is *much* cheaper than a 35 mm print, and looks and sounds fantastic.

C.C.: Not to dodge the ball, but it depends upon what you refer to as standardized format. The playback of digital content that has a 5.1 channel configuration, whether digital film or DCP, the auditorium standards are identical. The same is true for 7.1. Auditorium speaker layout and sound levels are the same. There IS one standard for each. The playback results are totally compatible. If you play a 7.1 mix through a 5.1 system, it will reproduce properly as 5.1. If you play back a 5.1 track through a 7.1 system, it will playback as 5.1. Now, as with all things, nothing remains constant, and the marketplace will determine where this will go. There will be new sound playback technologies that will emerge, and will find some proponents, as well they should. But in the long run, it is butts-in-seats that will drive this bus. As of now, any new technology that is adopted for cinema sound playback *must* have a path of reversion back to 5.1 channels. THAT is the standard as of right now.

So, as you can see, there have been standards for film and video playback for years. The same is true with DCPs. The standards for sound track manufacture and playback of Digital Cinema Packages is well established by the DCI specifications. Once mixed and manufactured into the playback configuration, playback from a properly set up and calibrated system should always lead to the *same* results. Problem is that some folks try and get away with doing it cheaper and less appropriately. There seems to be an increase in non-conforming playback systems for DCPs that will make your track sound really bad. Just remember, no matter how well the system is set up and installed, a poorly mastered and manufactured track will sound bad no matter what technicians do with it in the field. The standards are there; understanding them is a different problem. ■

Composer Miriam Cutler recently completed the score for Oscar nominated Kings Point, *(HBO),* Vito *(HBO) and* Ethel *(HBO), Rory Kennedy's documentary about her parents, Bobby and Ethel Kennedy. Other highlights include Oscar nominated* Poster Girl *(HBO);* One Lucky Elephant *(OWN), which she co-produced and scored, Emmy winner* Ghosts of Abu Ghraib *(HBO), Emmy-nominated* Thin *(HBO) and many more. <u>www.miriamcutler.com</u>.*

Bource Receives BMI Film Music Award

BMI's Vice President, Film/TV Relations, Doreen Ringer Ross, presented composer Ludovic Bource with a BMI Film Music Award recognizing his Oscar win for Best Original Score for the film *The Artist*. Bource won several awards for this score, including the Golden Globe for Best Original Score and the BAFTA for Best Film Music.

L-R: BMI's Doreen Ringer Ross and Ludovic Bource

Film Composer: Artist, Artisan Or Machine Operator?

Continued from Page 5

and interpersonal skills of a true media composer are what is rare and of greatest value.

What we, as composers, need to focus on are the skills and talents which cannot be purchased online or in a music equipment store. As "machine operators" we are worth slightly more than minimum wage, but as professionals we are worth what I consider to be far more appropriate: compensation and respect. ■