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DIGITAL SOUND UPDATE II:

BOXOFFICE READERS MAKE A VALUABLE CONTRIBUTION

BY

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by
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This article marks the beginning of my 10th year writing for BOXOFFICE Magazine. May I say it's been my privilege.

As I have often said, few things offer so much potential for 35 MM films as the introduction of an all digital soundtrack. People love pleasant and even spectacular sound. Almost since they first appeared, the demand for compact digital discs has regularly outstripped the industry's ability to produce them. When we realize that no modern audience will sit through a silent film without background music, we begin to see just how important sound is to any entertainment. Since we are in the business of selling entertainment, we should employ every available means to perfect the sound audiences hear and look forward to technological improvements.

How well has the industry responded to this issue? Not well enough. Once the proud leader in High Fidelity, the motion picture industry of 1989 still uses analog optical soundtracks for 99 percent of all film presentations.

Advances such as Kodak's Stereo Variable Area soundtrack and various noise reduction systems, particularly Dolby SR, have enabled interested exhibitors to at least stay in the running while audience's ears have become tuned to compact digital discs, VHS Hi-Fi and laser video discs. While producers have done a relatively good job, now releasing some 75 percent of the major releases in stereo, some 65 to 70 percent of the theatres in the US are still mono! Optical stereo installations have, in general, failed to deliver all the sound available to the audience. One need only listen to a film on a good home stereo system to realize how much is missing in all too many theatres.

INDUSTRY SURVEY

Against this background, several things are happening. At last count, six companies from around the world have either announced they were working on digital sound for films, or have approached me privately to say so.

In 1986, the Society of Motion Picture and Television Engineers (SMPTE) formed a study

group to look at the subject of digital film sound and make appropriate suggestions. As part of this effort, BOXOFFICE readers participated in a survey which I prepared for the February, 1988 issue. The results of this survey proved so enlightening, they became a major part of the study group's final report presented last October at the SMPTE's national convention in New York City.

More than just enlightened, I felt encouraged as well. Though only 128 responses were received, it was clear they were what pollsters call high quality. Approximately 70 percent came from theatre owners and technical directors. I have assumed that these responses are from people who are in a position to make equipment purchasing decisions. The remaining responses came from theatre managers and others who have more day to day contact with movie go-ers.

Both group's answers to the six survey questions were remarkably similar and therefore we can consider their responses together.

THE RESULTS

Question 1: Do you agree that digital stereo film presentations will increase ticket sales?

An overwhelming 85 percent either slightly or strongly agreed. Only about 4 percent disagreed and the rest were neutral. One interesting exception was a note all but blaming stereo for a 40 year decline in theatre attendance.

Question 2: How much of an increase would you expect?

Again, a strong feeling among those responding: 79 percent felt ticket sales would increase 5 percent or more, with 50 percent answering 5 to 10 percent, 35 percent indicating 10 to 20 percent and 15 percent expecting a 20 percent growth or greater.

Against these expectations we asked question 3: **How much would you realistically be willing to spend to equip a single theatre for digital stereo?**

Sixty three percent answered \$5,000.00 or more. However, 37 percent answered \$3,000.00 to 5,000.00. Such a small amount will very likely not be enough especially if a theatre's speakers and amplifiers are inadequate. This is curious, as some of this 37 percent had to be part of those anticipating an increase in ticket sales of 5 percent or more.

Question 4: If digital movies would require theatres to replace current speakers and amplifiers, how willing would you be to replace them?

Thirty eight percent responded “very willing”. Forty four percent indicated “only in top theatres”. The rest were neutral or unwilling. Again, this would indicate a strong belief in the potential for digital stereo.

TECHNICAL QUESTIONS

We asked two slightly technical questions. Question 5: How many channels, including surrounds, should films have?

Twenty two percent said four channels, 18 percent said five, 33 percent said six and the rest said eight. Since we currently have only four channels of stereo in most theatres, the majority of those responding are clearly saying that this is not enough.

Question 6: How many surround channels should there be?

Only 8 percent said one surround channel, such as we currently have. Forty five percent indicated two and the rest were evenly split between three and four channels.

I must confess this was a bit of a trick question. With only three surrounding walls available (left, rear and right), and with the difficulties encountered mixing multiple surround channels, it’s hard to imagine four surround channels. However, what we did see was a substantial desire for more than a single surround channel. Indeed, one response indicated a total of five channels with four of them being surrounds. This wouldn’t even be stereo, but would certainly be surrounding.

THE REPORT

In the study group’s final report, there was a general consensus on several issues. The group felt that digital movies should only be introduced if they can offer a sound quality superior to what we have now. Digital ought to be used to genuinely improve motion pictures not just to help sell them.

In considering the number of channels employed, we should briefly review current practice. The two largest sound formats currently available are the 70 MM discrete six track, and 70 MM Dolby stereo with split surrounds. Both are rarely used. The original, and now almost forgotten, straight 70 MM six track format uses five full range speakers behind the screen plus one surround channel. Typically today’s 70 MM releases use the so called “baby boom” format with three full range speakers and one bass channel behind the screen plus one surround channel. In the last ten years, only about half a dozen 70 MM releases have used the Dolby split surround format. In this format, the surrounds are

stereo only in the treble frequencies. The bass remains mono.

The committee's recommendation was that digital films should have no less than three full range screen channels, one bass channel and two completely discrete surround channels. This represents a slight improvement over the largest current Dolby 70 MM format. But making such a format available for all 35 MM prints in pure digital form would indeed be a significant improvement.

Of the two major systems developed to store digital sound on film, both Peter Custer's Fluorescent sound system and Kodak's optical digital system are said to handle sufficient data for the format suggested by the study group. In fact, Custer's system has a total of 8 redundant channels. Kodak's system is generally thought to be best configured as a 5.1 channel system, with five full range channels and one bass channel. The amount of digital information needed for a bass only channel is a small fraction of that required for a full range channel; hence the 5.1 designation.

Other committee recommendations called for a digital system with a bandwidth, or frequency range, of 20 to 20,000 Hertz for all but the bass channel and a dynamic range of around 100 dB.

WILL THE AUDIENCE HEAR THE DIFFERENCE?

This often asked question is a good one. The answer is an unqualified maybe. Unless theatre owners plan now for a digital future and install speaker systems and amplifiers powerful enough to deliver the dynamic range, yet articulate enough to reproduce all the nuances, in my opinion digital stereo will be about as appreciated as Dolby SR is today. In other words, the available improvement in sound quality will be significant but, in general, much of this quality will be lost in the theatre. In a recent case, a team from a film company heard one of their Dolby SR releases on a true digital ready sound system and later on another (brand new) system very typical of today's installations. The differences were so great, they complained to the management that the second theatre was not playing the film in SR at all. It turns out that both theatres were equipped with Dolby SR, but the true digital ready sound system really showed it off.

In order to take full advantage of both present and future film sound technologies, the theatre industry must redouble its efforts to understand them better than is now the case. When discrete digital stereo becomes available for every feature; mixers, producers and directors will surely learn to take advantage of these tools to make better movies. Their knowledge will grow. Those charged with presenting these films should do no less.

The SMPTE has asked me to express its sincere thanks to the readers of BOXOFFICE for taking the time to provide such valuable insight. Thanks also go to Messrs. Bob Dietmeier and Harley Lond of BOXOFFICE for their kind cooperation in agreeing to publish the survey and receive the responses.

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