



HPS-4000®

HIGH PERFORMANCE STEREO

Sound IS the Experience !™

THE DIGITAL PROMISE

BY

JOHN F. ALLEN

HIGH PERFORMANCE STEREO™



HPS-4000®

HIGH PERFORMANCE STEREO

FIRST IN DIGITAL STEREO

This article was written by John F. Allen and originally published in BOXOFFICE MAGAZINE. Unauthorized duplication or publication without the written consent of both John F. Allen and BOXOFFICE MAGAZINE is prohibited.

HIGH PERFORMANCE STEREO™

NEWTON, MA 02459 USA • TEL: 1-617-244-1757

HPS® and HPS-4000® are registered trademarks of John F. Allen

THE DIGITAL PROMISE

by
JOHN F. ALLEN

In a 1980 BOXOFFICE article, I stuck my neck out and predicted that digitally recorded film soundtracks would be here within 5 years. It appears that I wasn't too far off. For the motion picture industry, 1984 will go down as the dawn of the digital age. This year, not one but two films were produced with digital soundtracks.

Glen Glenn Sound of Hollywood was the first with a pioneering effort entitled DIGITAL DREAM. The sound for this 30 minute experimental film was recorded using Sony's PCM 3324 digital recorder. Each of the sound elements was digitally mastered. None were taken from existing analog libraries. In August, Fritz Lang's 1926 silent film METROPOLIS was screened at the Motion Picture Academy complete with Giorgio Moroder's digitally recorded soundtrack.

Digital recordings differ substantially from the conventional analog recordings which we are so accustomed to. The familiar optical soundtrack used today is nothing more than an analog representation of sound waves. If one were to divide just one seconds worth of those wiggles into 40,000 plus samples, the result would be tiny slivers of the film's soundtrack each with its own piece of sound, its own part of the wiggles. This is essentially the way a digital recording system works. The sound is sampled over 44,000 times per second. Each sample is quantified and represented by a binary number made up of ones and zeros. It is these numbers that are recorded. This process is called analog-to-digital, or A/D, conversion.

During playback a digital-to-analog converter reverses the process and gives us an audio signal.

The benefits of all of this are not always apparent. If all we want to do is make a single recording of a single event, there are high quality analog techniques which will do an admirable job. The drawback to analog has always been noise and distortion. Noise reduction circuits such as DBX and Dolby are used throughout the recording industry to reduce the ever annoying background hiss and other noise.

Movie soundtracks, as we all know, are divided into three elements; music, effects and dialog. These elements are further made up of a large number of individual recordings, sub-mixes and rerecordings. While an original analog master recording can be virtually hiss free, each subsequent duplication leading up to the final mix adds some degradation in the form of distortion and noise. Digital systems have the potential of all but eliminating these problems.

Imagine, lifelike true fidelity recordings with the wallop of a thunderstorm, playing in movie theatres. This is the promise of digital sound.

However, upgrading the world's theatres for this technology also promises to be both frustrating and expensive. Frustrating because we have already seen how poorly much of the industry has responded to stereo. I say poorly because so many stereo equipped theatres sound so awful. Inferior processors are often used with inadequate amplifiers and inappropriate speaker systems. Dolby Laboratories has stated that even nine out of ten theatres using their processors are suffering from "atrocious" playback facilities. The situation is gradually improving in some quarters. Good sound is neither inexpensive or simple. Yet the truth is that we can hardly regard American movie theatres as state of the art when it comes to sound. After all, there are car stereos which outperform most of the sound systems in theatres today.

This is one of the reasons digital installations will be so expensive. The additional dynamic range digital offers will be way too much for the majority of today's theatre speakers and amplifiers, let alone adjacent theatre sound isolation problems. Obviously good planning now can avoid having to totally replace your sound systems and rebuild your walls when digital arrives. Good room acoustics, effective room isolation, powerful amplifiers and high output / low distortion speaker systems are all that's needed to be ready. It's that basic. These items can of course do wonders for today's Dolby Stereo so no one need wait to realize the benefits of first rate sound equipment.

Another promise of digital sound relates to production. We have all experienced current stereo recordings which are simply too loud. I don't wish to point any fingers but some producers and directors feel that compressing the dynamic range of their soundtracks to make everything loud all the time is desirable and no recording engineer can convince them otherwise. Theatre operators face the choice of driving their customers out the door or turning down the sound level. This results in a presentation which while still loud enough to be understood, is fatiguing to listen to, lacks bass, has no dynamic range and is devoid of any dramatic impact or punch. Digital offers a very wide dynamic range allowing the sound to be very quiet or very loud. We can only hope that producers will

chose to use it to add impact instead of loudness, otherwise digital sound will be a waste of time and capital.

I don't mean to paint a bleak picture. Rather I am attempting to be honest about the subject of theatre sound. The promise of digital is real: No noise or distortion, wide dynamic range, even multiple surround channels. In short digital opens up a whole new world both in production and exhibition.

Unfortunately, digital recordings on release prints are still a ways off. Storage problems on the print persist. In the meantime, super analog technologies are likely to become available. These tools are not new, they are just currently being ignored by the movie industry. Attempts at super analog have already been made using the existing optical soundtrack area. Sennsurround, Nuoptix and Vistasonics come to mind.

Film problems aside for the moment, digital technology will continue to grow in the industry if for no other reason than the digital editing systems that are now coming into use. We will continue to see computerized production systems become available which will speed up the post production process.

There can be little doubt that there is a substantial market for better sound. People love to listen. They love to feel. In motion pictures, sound is half the show. Market surveys have shown that sound quality is second only to the actual movie when the public selects a theatre to attend. Digital and super analog sound systems have the potential to keep them coming. The question is whether the theatre industry can mature fast enough to employ and market these technologies effectively.

© Copyright 1984, John F. Allen. All Rights Reserved.

John F. Allen is the founder and president of High Performance Stereo in Newton, Mass. He is also the inventor of the HPS-4000® cinema sound system and in 1984 was the first to bring digital sound to the cinema. John Allen can be reached by E-mail at JohnFallen@aol.com.