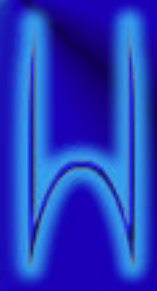

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HIGH PERFORMANCE STEREO

Sound IS the Experience !™

DIGITAL THEATRE SYSTEM'S DTS

BY

JOHN F. ALLEN

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The comparison of the Digital Compact Disc to the venerable vinyl LP has often been used to describe the benefits of digital motion picture sound versus the analog optical soundtracks. This is a valid comparison in so far as digital recordings, with their reduced noise and distortion, are now widely accepted as superior. However, motion picture prints are subjected to far greater use throughout their lifetime than even our favorite LP's. In addition to wear, analog motion picture soundtracks also suffer from a very restricted dynamic range and frequency range.

In 1972, Digital Theatre Systems founder and president Terry Beard, conducted a motion picture digital sound feasibility study for Fred Hynes of Todd-AO. That study considered the feasibility of various methods of providing digital audio for motion pictures including dual systems (sound and film separate) and single systems (sound on film). The study concluded the while the sound on film single systems were feasible, they presented some very difficult practical problems and were thus probably not the best long term choice as a general release method. A dual system was also possible, but was generally dismissed out of hand by industry experts as unacceptable. In 1981, the Motion Picture Association of America conducted its own study of methods for recording and reproducing optical soundtracks. A part of that study addressed the feasibility of digital recording on film and again concluded that it was possible but recognized that certain problems would have to be solved to make it practical.

Not withstanding the almost universal sentiments by industry experts that a dual system was intrinsically unacceptable, Terry Beard was convinced that such feelings were falsely grounded in the assumed framework of old technology. He realized that the critics were failing to consider the fundamental changes in technology that not only made a dual system possible in theatres, but highly practical with many advantages over digital sound on film systems.

In 1985, Terry Beard discussed his DTS concept in detail with his colleague Jim Ketcham. They decided to develop the DTS system as the required elements became available. By 1990, a finished working system was demonstrated at Columbia Studios for members of the SMPTE and patents were filed.

Initially, the DTS system was, as expected, met with great skepticism by the industry because it was a "Dual System", using a CD-ROM to store the digital information. However, some were willing to examine the system more seriously and by late 1992, Steven Spielberg became convinced enough in DTS that he asked that the system be used for his film JURASSIC PARK. Within a few short months, over 550 DTS Systems were installed for the opening of the film.

The very first public digital motion picture presentation was Walt Disney's FANTASIA at The Los Angeles Plitt Century Plaza Theatre, in February, 1985. This momentous presentation was accomplished by John F. Allen of High Performance Stereo in conjunction with Plitt Theatres as well as the Disney studios and utilized a double system. The response to the unprecedented sound quality of these performances was so strong that several manufacturers were inspired to develop a digital movie soundtrack.

Optical Radiation Corporation and Eastman Kodak were the first to market a sound on film digital soundtrack. Their Cinema Digital Sound (CDS system completely replaced the conventional analog soundtrack, thus requiring dual inventories and distribution of digital and analog prints. Following Dolby Laboratories' announcement of a scheme for a single inventory digital-analog print, the CDS system faded and was ultimately withdrawn. More recently, Sony has introduced their digital format that. like Dolby's, places the digital data on the film along with the analog tracks.

While sound on film has been the accepted standard for years, it has also presented substantial limitations to the sound quality heard by audiences and to the durability of the soundtracks themselves. As long as film is run through projectors, these limitations will continue to exist.

Using modern computer technology, the DTS system has now been proven so reliable that the early questions about synchronization problems which were voiced by so many, have been finally set aside.

Audio quality is, of course, the ultimate objective. The DTS system uses the least digital compression in order to maintain the highest sound quality possible. Unlike every other proposed digital film sound format, The DTS system employs no complex and controversial sound masking techniques in the digital compression stages. Such masking techniques actually throw away sound information during the recording process thus can and do degrade sound quality. Recently these techniques have come under growing criticism in the audio press and the audio community in general.

By entirely avoiding the use of such diminishing processes, DTS assures the cleanest and purest sound quality possible in modern motion pictures. And, of course, the clever selection of a CD-ROM based digital storage system, automatically means that DTS provides exhibitors with the most durable soundtrack since sound came to motion pictures.

Since its introduction, DTS has lead the industry. With over 2500 installations worldwide, more people have heard DTS digital presentations than all other digital film systems combined.

To date, over 60 pictures using the DTS system have been released or scheduled from nine production companies, with exclusive agreements with three major distributors.

The future of digital film sound can only be a bright one. When combined with the superior theatre speakers and amplifiers now available, Digital Theatre Systems' DTS provides exhibitors and moviegoers alike with an extraordinary CINEMA sound experience far surpassing anything obtainable in the home.

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.