



## Audio Engineering Society – New York Section

### NEWSLETTER – MEETING NOTICE

**2009-2010  
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The New York Section of the Audio Engineering Society invites all folks who are actively involved in professional audio to join us for a most informative evening. Students are especially welcome.

**Tuesday, June 15th, 2010**

Note the change of venue:

**Dolby Screening Room**

1350 Avenue of the Americas

(Entrance on 55th Street, in the lobby)

Meet and Greet 6:30 P.M.

Presentation 7:00 P.M.

### **“The Dawn of Commercial Digital Recording”**

**Host: Robert Auld - AuldWorks**

**Presenter: Tom Fine**

Digital recording for commercial music releases date from the early 1970's in Japan, but the technology did not gain worldwide traction until the late 1970's elsewhere.

This presentation will focus on the digital "firsts," starting with Denon's pioneering work with Japan's NHK broadcasting company and then looking at early efforts in the U.S. and Europe. Digital recording's pioneering efforts were mostly in the classical field, but we'll look at some non-classical landmark recordings too. We'll also listen to samples of all the recordings discussed, using the excellent facilities of the Dolby Screening Room. This presentation is based on Tom Fine's article on the topic published in the Spring 2008 ARSC Journal. The article is hosted online by the AES Historical Committee at [http://www.aes.org/aeshc/pdf/fine\\_dawn-of-digital.pdf](http://www.aes.org/aeshc/pdf/fine_dawn-of-digital.pdf)

#### **About the presenter**

Tom Fine owns an audio transfer and production studio in Brewster, NY. There he mostly does analog-to-digital transfer work for institutional clients and collectors. He is also Managing Editor at Beverage Digest, the leading industry publication for the non-alcoholic beverage business. He is an Associate Member of the AES.

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Tuesday, June 15<sup>th</sup>, 2010

## The Dawn of Commercial Digital Recording

Host: **Robert Auld** Presenter: **Tom Fine**



In 1970, Denon recorded and released the first commercial digital recording. 2010 is the 40th anniversary of that recording and the AES New York Section observed the event with a special presentation from Mr. Tom Fine.

Digital Pulse Code Modulation (PCM) for sound recording and transmission was originally developed and patented by Bell Labs prior to World War II and was used by the United States military for secure voice communications during the war. In the early 1970s, it was successfully used for audio transmission by the BBC in Great Britain and by PBS in the United States. But it was Denon in Japan who married PCM technology to video tape decks for storage to produce a digital audio recorder for music recording. The first recorders were 2 track machines using 1/2" video tape recorder transports, operating at 13 or 14 bit resolution and a sampling rate of 47.25 kHz. Denon recorded and released classical music performances using this system. They then expanded the recorder to 8 tracks (with a 2" video transport) to address the production styles used in jazz and popular music.

Dr. Thomas Stockham at the University of Utah developed his digital audio recording system around a computer and data drive. This introduced the ability to edit electronically and also to apply dsp processing to the audio files, both cornerstones of contemporary computer-based recording. By the mid-1970's he founded Soundstream as a digital recording company with a recorder capable of 16 bit resolution and a 37.5kHz. sampling rate. Soundstream caught the attention of Mr. Jack Renner and Mr. Robert Woods of Telarc Records during a demonstration at the 1977 AES Convention. They requested improvements from Dr. Stockham who responded with a higher sampling rate (50kHz) and expansion to 4 channel recording. This recorder was successfully used by Telarc for a recording of Holst's "Suites for Military Band" which attracted critical and popular acclaim. Later, RCA and Delos, among other record labels, adopted the Soundstream recorder.

3M licensed some of the BBC's PCM technology as the basis for their digital recorder, intending to produce a true multi-track recorder with punch-in/punch-out capability and a full auto-locator. The machine used 1" tape running at 45ips to record 16 bit audio with 50kHz sampling, recording 32 audio channels. Preliminary tests with 2 channels were performed at Sound80 Studios in Minneapolis, MN. The St. Paul Chamber Orchestra recorded Aaron Copland's "Appalachian Spring" and Ives's "Three Places in New England" at those sessions. When the recording won the Grammy in 1978, it was considered a breakthrough for digital audio. Warner Brother's recording engineer Lee Hershberg was an early advocate and his 3M system recording of Ry Cooder, "Bop Till You Drop", is considered the first digital Rock recording.

Mr. Fine concluded the presentation with selections recorded on the three pioneering machines and it was great to hear the sonic improvements in the recorders and to re-visit the production styles of the mid-1970s. This was followed by a lively question and answer period. Mr. Fine's full discussion is available on-line through the AES Historical Committee at [http://www.aes.org/aeshc/pdf/fine\\_dawn-of-digital.pdf](http://www.aes.org/aeshc/pdf/fine_dawn-of-digital.pdf)

The AES New York Section is grateful to Dolby for the use of their lovely facility and their help in the technical presentation.

Report by David Prentice