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WHY WAIT FOR THE FUTURE?

BY

JOHN F. ALLEN

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FIRST IN DIGITAL STEREO

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WHY WAIT FOR THE FUTURE?

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One of the more intriguing conversations one gets into when traveling around this industry concerns the theatre of the future. What will the presentation technology be? How about the sound systems?

A few years ago, a considerable amount of talk began about satellite transmission of films directly to theatres for video viewing. If not satellites, many felt that sprocketed film was surely on its way out, giving way to a superior video system.

In 1966, I founded the J. F. ALLEN COMPANY, specializing in large antenna and television distribution systems. We eventually built Boston's first CATV system. We are currently building a 30-plus channel, supertrunk, two-way cable TV system for the world headquarters of the Christian Science Church and their new Broadcasting Center.

With this television background in mind, I am always surprised to hear such aforementioned video based predictions for theatres. When compared to the potential of a film presentation, video just isn't good enough, at least not yet. Sure, video can give us good color and steady pictures, but can it match film for definition and contrast range? Let's look at some of the factors.

Most everyone is familiar with the 525 line, 30 field per second American television picture standard. There is a common misconception that when viewing these pictures, we are seeing 525 lines of resolution. Unfortunately, this is not true. The "525 line system" refers to the number of horizontal scanning lines which are traced, left to right, by the moving electron beam inside the picture tube. Starting from the upper left of the screen, the beam is moved across the screen, shut off, returned to the left side, turned on, swept across again, drawing another line a little farther down and so on. Each video field is then made up of 525 interlaced scanning lines.

Interlacing refers to the way our broadcast television pictures are scanned. An interlaced picture is scanned in two parts. The first scans every other line. The second goes back and fills in the rest. Alternatively, a field made up one adjacent line at a time is called a progressively scanned picture.

Resolution is something else. In its simplest terms, it refers to the number of discreet lines which you can discern in the picture. This is limited by several factors from camera optics to the frequency range (bandwidth) of the system employed. If, with your eyes, you could resolve a picture containing a 300 vertical line black and white test pattern, you would have a resolution of 300 lines. In resolution terms, 300 lines isn't very good except for small screens, let's be generous and say up to 20 inches wide. Most consumer television receivers don't really have much resolution above 300 lines. Black and white receivers can be this good. Color receivers do not, in general, perform this well as they must either roll off or notch out their high frequency response to reduce the interference between the added high frequency color signal and the video. This reduces resolution to somewhere around 280 lines.

Many home Video Cassette Recorders (VCR's) have little or no resolution above about 200 to 250 lines. The recent introduction of the 1/2 inch Super VHS (S-VHS) video tape system is said to rival the quality of the one inch studio machines with a resolution of over 400 lines. It should be noted, however, that in order to achieve this quality, the receiver / monitor must be equipped to accept the special feeds directly from the S-VHS player, totally bypassing the resolution limiting tuning circuits. Also, the video must be recorded directly to the S-VHS cassette. Off the air recording will be limited to the lower resolution capabilities of our current broadcast system.

To get more resolution, the high frequency response of the entire system must be extended. This is common in straight video systems where there is no fixed-bandwidth broadcast stage. Enter High Definition Television. HDTV uses a picture made up of 1125 horizontal scanning lines, a resolution of 850 or more and runs at the familiar 30 fields per second. The HDTV picture also has a much wider aspect ratio, 1.77 to 1, as compared to the 1.33 to 1 we are accustomed to today. These are significant differences. But how large a picture can it make and still be considered satisfactory? How does HDTV compare with film? The two are not measured the same way. HDTV is said to deliver about the equivalent resolution of today's 35 MM 1.85 to 1 release prints. 70 MM prints made from 65 MM negatives can, of course, deliver far greater resolution than this. So, at least when compared to current 1.85 to 1 theatrical presentation practices, it would appear that HDTV has something to offer. Unfortunately, for a variety of reasons, video does not yet match the contrast range offered by film.

At the moment, the introduction of HDTV has been slowed by the strong desire among broadcasters and producers to agree on a single worldwide HDTV standard. This would eliminate the current standards conversion headaches encountered when, for instance, a European video program has to be reprocessed to work with the American system. It now

seems unlikely that such an agreement will be possible; politics you know. A single production standard is still hoped for even if the dream of a single broadcast or delivery standard appears dead.

It is conceivable that HDTV could become a major production and postproduction tool. It certainly offers easier editing. HDTV could possibly become the system of choice for small video theatres. Indeed, it seems to this writer that HDTV or another advanced television system will be necessary if such small video theatres are to be successful. Another requirement is a vastly improved large scale video projection system, and this is something we do not yet have.

To put HDTV in perspective: HDTV will provide about the same image quality we now have on our standard broadcast quality 20 inch wide picture tubes, but on a screen twice as large or four times the area. The best of the current HDTV video projectors can deliver a 12 foot wide picture of about the same light level we now have in theatres and costs \$100,000.00. Systems like these are too expensive and too maintenance heavy to be practical for the theatre industry.

When it comes to filling a large screen with a sharp, bright image and a wide contrast range, motion picture projection is the best and least expensive thing we've got. As used in exhibition, it's hard to imagine sprocketed film dying out very soon. So why not simply maximize its potential?

A POSSIBLE FUTURE FOR PICTURES

What could the future be? What innovations are required? If it were up to me, which it isn't, the future would be here now. We already have all the knowledge and tools that we need to make a giant leap to a new generation of proven theatrical motion picture presentation technology and entertainment.

The first thing needed is a faster frame rate. We need simply look to the 1950's to see that the 30 frame per second presentations of *AROUND THE WORLD IN 80 DAYS* and *OKLAHOMA* were flicker free. Since we don't see flicker at this rate (recalling that 30 frames per second with a double blade shutter is 60 flicks on the screen), the light level can also be significantly increased. 70 MM releases should be more widely used but photographed with 65 MM negatives. With today's new 65 MM cameras, film stocks and lenses, picture quality could be substantially superior to anything we are seeing today. As with so many things, the keys to our future can be found in our past. The theatre of the future shouldn't have to settle for 70 MM prints blown up from 35 MM negatives.

Shows can, for example, provide all these advantages today with the additional plus of a 60 frame per second rate. This is said to lower viewer fatigue as well as significantly reducing the strobing effects of rapid motion. I have personally never experienced a more impressive imaging system.

The adoption of a 30 frame per second standard has run into a logjam of disinterest on the part of the distribution companies. They feel that we are doing well enough without increasing the cost of a print by 25 per cent. The production use of the latest in 65 MM cameras is experiencing the same frustration. I ask you: Is this any way to grow?

If you are looking for a brighter and sharper future on theatre screens, the technology is here now, simply waiting for us to stop resting on our laurels, to wake up and use it before someone else does.

THE FUTURE IN SOUND

It's interesting to recall the early days of television. Viewer surveys found that as long as people had good sound, they would tolerate the virtually unwatchable pictures found in deep fringe and high interference areas. As long as good sound reception was available in these areas, people would accept the terrible pictures, buy the receiver and erect the necessary antennas. When the sound was bad, watchable pictures were not satisfactory enough and people tended to watch less.

The future in theatre sound would appear to be a digital one. Once the best sound we could buy, the venerable long playing records compare so poorly to Compact Digital Discs that the more costly CD's are rapidly winning the public over, due to their superior sound, durability, and convenience. As we have previously noted, digital sound on release prints is getting closer to becoming a reality. Digital recording and editing techniques are being increasingly used in production.

Can analog film sound with the all too common impotent and unnatural sounding theatre playback systems survive amidst such powerful home entertainment systems? Well, probably they can to some extent. People do love to go to the movies. But MORE people will go to digital movies. The first pioneering Digital Stereo presentations of FANTASIA, which we did in 1985, drew two to five times the business as compared with the analog presentations running at the same time. TWO TO FIVE TIMES the business! When the public votes with their dollars in such overwhelming numbers it is clear that they want, and are willing to pay for, a superior theatrical experience.

This industry has often been criticized for underestimating the public's taste for great

sound. But our recent SMPTE / BOXOFFICE digital sound survey revealed a strong desire, among those responding, for digital stereo film presentations. The results also indicated a firm belief that such presentations would increase boxoffice grosses. Most encouraging was the expressed willingness on the part of theatre owners to make the necessary investment for digital sound systems.

Adopting available presentation technologies such as those outlined here, will not only be fairly easy, but their combined effect would be to virtually reinvent motion pictures. If it can be further shown, as I believe it already has been, that the market will support the (rather modest) investment required, then, presumably, we can all profit while enjoying the theatre going experience more than ever before. One wonders what this industry is waiting for. The longer we forestall the future, the longer we shall do without its benefits.

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