THORBURN ASSOCIATES
ACOUSTIC AND AUDIOVISUAL CONSULTANTS

Summer 2000

Welcome to our Summer 2000 Newsletter! During the past 8 years, we have covered a variety of technical topics, from the acoustical benefits of green insulation to the pros and cons of front and rear projection. All of our newsletters, as well as detailed information on Thorburn Associates, is available at our website, www.TA-Inc.com. And, as always, if you have questions, don't hesitate to contact us.

HIGH DEFINITION TELEVISION IS HERE! (SORT OF...)

High Definition Television (HDTV) promises bigger and better images and great audio. But what exactly is HDTV and how will it affect our television viewing? Consumers are experiencing a confusing mess of conflicting standards, limited programming, few available channels and outrageously expensive equipment. However, with the ratification of the advanced Television Systems Committee (ATSC) Digital Television Standard, the long promised delivery of HDTV can finally begin.

What does *all this mean*?

The main selling point for HDTV is the high resolution image. An HDTV can more than double the lines of information transmitted to your screen. In terms of visual impact, this is a change similar to the one from VGA monitors (640 x 480) to XGA graphics monitors (1280 x 1024).

The picture will also be wider. The width-to-height ratio for HDTV is 1.78:1 (commonly referred to as 16:9, see box below), compared to today's TV broadcasts at 1.33:1 (or 4:3). For an image 27" high, your screen needs to be 48 inches wide (versus 36" with a standard TV), so factor width into your design! This change in aspect ratio more closely matches motion pictures, commonly shot in a 1.85:1 format.

HDTV will also carry great audio. The Dolby Digital sound program information that is now available on some broadcasts will always be provided. HDTV broadcasts can be encoded with six separate audio tracks. So each track can be sent to a different loudspeaker. This allows detailed and realistic surround sound.

The ATSC standard also provides for a data channel that will allow the receiver to display related information such as scrolling text or computer software downloads.

What are we seeing now?

The current television standard in North America, Japan and various nations around the world is 525 horizontal lines of information refreshed almost 60 times per second. This television system is called the NTSC (National Television Systems Committee). In Europe, most of Asia, Africa, and South America, a system known as PAL (Phase Alternating Line) is used. PAL is 625 lines of information updated 50 times per second.

By mandate of the Federal Communications Commission (FCC), each receiver sold to the American public today must be able to receive the NTSC television signal, must include a UHF tuner and have closed captioning. The FCC has made the addition of MTS (multi-television sound) stereo audio voluntary, but has provided rules and regulations so that both signal providers and set makers know exactly what to build.

Why change television at all?

Basically, we're dealing with limited real estate. Digital broadcasts take up a fraction of the airwave space that analog broadcasts take up. The system that we are currently using was developed in the mid-1930s and has proved to be a durable means of transmitting information to the home for over 70 years. Since then, there have been significant advances (such as color, cable, satellites, etc.), but they have all been developed out of the original technology. At some point, we have to shift paradigms. Unfortunately, updating a broadcast facility to change formats is not as easy as changing operating systems on a computer or getting cable TV brought into your home.

When do I have to buy a new TV?

Nearly all of the Top 30 markets (see sidebar) have at least one station broadcasting in digital and many of the other metropolitan markets are well ahead of schedule with one or more networks broadcasting in digital. Broadcasters outside of the top 30 markets are not mandated to begin any digital TV broadcasting until 2002 - and no one has said how much digital broadcasting they will have to do at that point. On May 17, 2000 the National Association of Broadcasters (NAB) announced that the number of television stations broadcasting in digital jumped to 134, capable of reaching 63% of all U.S. television households. Conventional televisions and analog broadcasting

Top 30 Markets Currently Offering Digital Broadcast (in order of market share)

- New York
- Los Angeles
- Chicago
- Philadelphia
- San Francisco
- Boston
- Dallas
- Washington
- Detroit
- Atlanta
- Houston
- Seattle
- Cleveland
- Tampa
- Minneapolis/St. Paul
- Miami
- Phoenix
- Denver
- Pittsburgh
- Sacramento
- St. Louis
- Orlando/Daytona
- Portland
- Baltimore
- Indianapolis
- San Diego
- Hartford/New Haven
- Charlotte
- Raleigh
- Milwaukee

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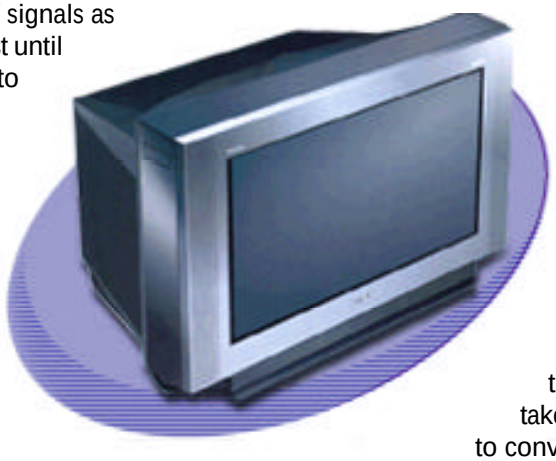
are scheduled to be fully phased out by 2006, although we'll believe it when we see it.

I need a new television now. Should I go for an HDTV?

Good question! We believe the set you buy today will serve you well for many years and that the HDTV experience will take a long time to develop in terms of affordability and programming choices. The TV signals as we know them will be around at least until 2006 to ensure a smooth transition to HDTV. This means that the set you buy today will have signals to show for at least 6 years! Some manufacturers have announced plans to introduce add-on boxes that will allow conventional TV sets to receive and show digital broadcasts. Of course, with add-on boxes you won't see broadcasts in a wide screen format and you may not see all of the resolution being broadcast, but you will be able to watch your set beyond 2006 and you can add the converter box at any time.



Even if you live in one of the top markets where digital broadcasts are currently, or will soon be, available, the first HDTV sets on market are priced from $3,000 to $14,000, depending on size and quality!

And even if you buy an HDTV set, you still need programs to watch on it. Much like the early owners of color TV, early adopters of HDTV will have very limited high definition programming to watch, although they will still be able to view regular programming. It will take a couple of years for the studios and broadcasters to convert their programming to an entirely HD lineup.

What about Cable and Satellite Broadcasts?

Approximately 65% of the country receives their TV signal via cable or satellite. Presently, no HDTV sets are guaranteed to be cable compatible when the cable systems eventually offer HD programs. The present FCC HDTV regulations only govern over-the-air transmission of TV signals. Rules for cable stations have not been developed in regard to HDTV. Major cable companies have said they will oppose any FCC effort to force them to carry HDTV signals in full definition. Cable and satellite providers may choose to convert to digital signals and formats at different rates and resolution, if at all. Ultimately, this may end up being a court case with the FCC on one side and cable service providers on the other.

The bottom line is that it may be a few years before HDTV technology will be affordable to the majority of the country. It will take time and lots of money for stations to convert to HDTV, much as it took time for stations to transition from black and white to color. Personal HDTV sets will be expensive for some years to come. Even after HDTV is well established, a TV set that you buy today won't become entirely obsolete since converter boxes which will allow display of HDTV signals on an existing TV (but without the wide screen and some of the detail) will be available. So keep in mind that it may be seven to ten years before HDTV sets and programming become affordable and widely available. By that time, you'll probably have gotten your money's worth from the set you buy this year!

TA is currently offering **two courses:** *Essentials of Acoustics* and *Presentation Facility Design*. Earn up to **12 AIA Learning Units**! View descriptions, schedules and registration information on our "AIA/CES Courses" page at **www.TA-Inc.com**.