Lesson 19
Surround Mixing
Q & A

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The Future of Our Business - Product Manufacture - Output Media

1. A 5.1 surround system incorporates __5__ speakers. (Do a search.)

2. To check the final master before ordering copies to be printed, you may want

   to order __art proofs & test pressings__. (page 577)

3. List and explain in detail to your mentor what 5.1 surround sound is.

   __5 speakers fixed in a circular are being equally distanced from the__ ↑

   __listener at the center (with a speaker also right in front of them) so__

   _____

   _____

4. The number of pits contained in an 74 minute CD is __3 million 37 micrometers__. (page 577)
   120 mm discs   pit of a CD = ½ a micrometer wide
   up to 74-80 min;
   Sampling rate of 44.1 kHz

5. The CD sampling frequency rate is __44.1__ kHz. (page 577)

6. Multiple CD's are produced in two ways; __Replication Outsourcing__ and __Duplication In house__. (Do a search.)

7. Mixes can be mastered to __24 bit DAT__, __16 bit DAT__, __CD-R__, or __¼ inch reel to reel__

   (Do a search).

8. How much data can a Blu-Ray disk, single layer, store? __25 Gbytes__. (page 590).

9. To route multiple tracks of vocals to a single reverb unit we could use an __bus__.

   (page 435, 437)

Before you learn more about recording surround sound in the studio, you might need a better understanding of what surround sound means for your speakers. For that, go over Chapter 17 in your **Modern Recording Techniques** book (pages 545 – 561) in greater detail.

For each of the following subjects in this chapter, write close to 100 words:

> Introduction.
>
> Past to the Present
>
> Monitoring in 5.1
>
> Active / Passive Monitors in Surround
>
> Sound Interfacing

Surround Final Mastering and Delivery Formats (50 Words Each)

> Dolby Digital
> DTS
> Dolby Pro Logic
> SRS
> WMA9
> MP4

Mixing in Surround

Reissuing Back Catalog Material

~~█████████████████~~

Dolby Pro Logic – A common delivery format for getting surround sound to the masses it through the u of Dolby Pro Logic. In its simplest form, Pro Logic is able to derive a ~~sound~~ surround soundscape from a standard pair of stereo channels. When Pro Logic is switched in it's possible to listen to a stereo program (of any type) in surround.

SRS – The Circle Surround format form SRS technologies also makes use of matrix signal processing and phase steering technology to encode and decode surround sound. When listening to Circle Surr encoded material, a number of "spatial" enhancements can be taken advantage of from a stereo or surround setup (The SRS TruSurround XT and SRS Circle Surround II).

WMA 9 – Through the use of plug-in encoders from various DAW manufacturers, it's possible to encode 2 channel, as well as discrete 5.1 and 7.1 surround sound audio into a bitstream that can be played back using Microsoft Windows Media player (as well as others). The WMA (Windows Media Audio) codec which was designed for digital download and multimedia formats, have been optimized for streaming or download-and-play delivery.

MP4 – MPEG4 (commonly known as MP4) is essentially based on Apple's Quicktime MOV format, and is capable of containing audio, video and subtitle data streams in various bitstream formats including surround sound. This popular format allows for the distribution of audio and video content over download, and other data transmission media in a way that can be protected using an optional digital rights management scheme.

NOTES:

Introduction

Surround Sound is sure to play an ever-growing role in the media technologies of tomorrow. The ability to augment music and visual media by placing sounds w/in a 360° circle has literally opened up new dimensions in mixing and effects-placement technology. For enhanced job opportunities surround sound can increase your clientele and perceived prestige in the fields of mixing music, soundtracks for movies & gaming, by investing in a surround monitoring system and learning the basic tools & techniques of mixing and mastering media for sound.

Past to Present

In the late 1920s, all of the soundtracks were played back by the delivery format of the time mono. On November 13, 1940 Disney's Fantasia opened up the soundfield to stereo. Fantasia was the 1st to introduce multi-channel sound to the public. The final mix of Fantasia was printed onto 4 master optical tracks for playback -using a special RCA system called "FantaSound." In the early 1950s, the 1st commercially successful multichannel sound formats came onto the scene with the development of Cinema Scope (4-track 35mm) and Todd-AO (6-track 70mm).

Monitoring in 5.1

Before choosing a 5.1 speaker system setup it would be wise to consider the following: What are the commercial advantages of producing audio in surround? What is the budget for such a system? Can your existing speakers be integrated into the surround system? Can your console produce audio in surround sound? In what type of surround mastering tools should I invest? Installing a 5.1 surround system can be a daunting task, requiring technical expertise and acoustical knowledge, or it can be straight forward undertaking that requires only basic placement and system setup.

Active/Passive Monitors in Surround Sound

Active monitors include a powered amplifier(s) within their design whereas passive monitors require that an external power amplifier be used to power their drivers. 1 of the results in the rise in popularity of powered speakers is the ability to upgrade a stereo system to a surround environment by simply adding 3 monitors to a suitably equipped production system. Its a fortunate fact that many of the newer high-end audio interfaces now include a master volume that can be programmed to control all of the channels in a surround sound system

Sound Interfacing

Because surround requires that you have at least 6 output channels, it logically follows that your audio interface should be either: A dedicated audio interface with at least 2 inputs and 6 outputs, A multichannel audio interface (for example having 8 × ins and 8 × outs). A number of USB/FireWire interfaces might include a driver that has extensive monitor controls for varying setup levels, switching between modes (mono, stereo, surround), inserting Sound Surround processing and generating setup tones - often well worth the investment.

Dolby Digital - A technical spec that's also known as AC3 is a popular codec that's used to encode digital audio into a multichannel (mono through 5.1) bitstream through the use of perceptual coding techniques. Dolby Digital is used in the encoding of surround audio on the ever present DVD and has also been adopted for use in high-def Blu-ray disc discs, HDTV television production, digital cable and satellite transmissions.

DTS (Digital Theater System) - is an audio encoding scheme that supports up to 6.1 channels of discrete audio from a single datastream for use in cinema sound, DVD/home theater and multimedia. The DTS codec exists in several format flavors (depending on its intended application) and they include: DTS Digital Surround, DTS-ES, DTS-Neo6, DTS 96/24, DTS Interactive, and DTS Virtual.