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## Macintosh: 16-bit to 8-bit Audio Conversion

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TOPIC -----

I'm recording some voice audio files to be played back into MacroMind Director. I record them in 16-bit audio with digidesign's AudioMedia card. I convert the files to 8-bit audio with MacroMedia's SoundEdit Pro. The converted sound is very low quality.

I realize that 8-bit has a smaller dynamic range than 16-bit, but the noise added isn't just a steady noise. The noise is a hissing sound that seems to rise and fall with the speakers voice.

Is this sound degradation expected? Are other programs or sound formats better at converting 16-bit to 8-bit audio? Are there any steps I can take to reduce this noise?

DISCUSSION -----

Downsampling (moving from 16-bit to 8-bit and moving from 44.1 KHz to 22 KHz) is strictly a software operation. Therefore, it's the method of changing from one bit-per-sample/sample rate format to another that is introducing the noise.

Downsampling only the bits (16-bit to 8-bit) is generally not the part of the sequence that introduces the most noise. Although, any method of changing the bit-per-sample count will cause a change of character in the sound. The conversion from 44.1 KHz sampling rate to a 22 KHz rate creates the most opportunity for major introduction of noise. The downsampling of sample rates is more an art than a pure science; thus, different programs could easily produce quite different results.

We discussed the issue of using SoundEdit Pro for this procedure with the MacroMedia Tech Support group. They suggested that the downsampling take place within the software package where the sampling originated. For example, if the original digital recording is in AudioMedia's Sound Designer, downsample in Sound Designer. Then use the resulting sound file in SoundEdit Pro and MacroMind Director.

Degradation should be expected during the downsampling. The exact form it takes will be based on which hardware/software elements are used to perform the task. Many sound engineers who must work with 8-bit sound record the

original digital recording in 8-bit. This provides far less room for error than recording in 16-bit sound and then converting to 8-bit.

The introduction of noise isn't related to the file format, unless compression (that is, MACE) is used when the file is saved. Compression can easily add noise, and should be expected when compressing.

To locate a vendor's address and phone numbers, use the vendor name as a search string.

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