Subject: Re: Analog or digital audio?
Posted by Wayne Parham on Wed, 13 Apr 2016 21:44:59 GMT
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Both technologies have advantages and disadvantages, and the best systems exploit the strengths of their core mechanism and limit their weaknesses.

The strength of an analog recording is it has the potential of being a perfect copy, but its weakness is its vulnerability to inconsistencies. Examples of analog problems are tape hiss and vinyl record pops and skips. These are generally media problems and are over and above the things that cause harmonic and intermodulation distortion, such as clipping, zero crossing, asymmetry, etc. So analog systems tend to have some amount of noise and distortion that is predictable, but added to that, they have some that are unpredictable, usually related to media quality.

The strength of a digital recording is its consistency. It cannot be a perfect copy, but its imperfection is known and precise. You can know exactly how flawed the recording is by the size and speed of the samples that make it up. So while a digital copy can never be perfect, it can be made with parameters high enough that any imperfections are well below the level of audibility.

Of course, there is still an analog system in front and behind a digital recording. Ultimately, both source material and playback output are analog, so there is a conversion process and amplification and transmission systems that are prone to all the analog distortion and noise sources. But if we're just comparing the storage/transmission mechanism - analog versus digital - then we must consider the rest of the system to be comparable, and therefore assume them to be equal.

So the bottom line to me is both have different strengths and weaknesses. Digital is more consistent, and can be made consistently quite good. But as you get closer and closer to perfection, there comes a vanishing point where only pure analog can go. After all, everything starts and ends analog.