

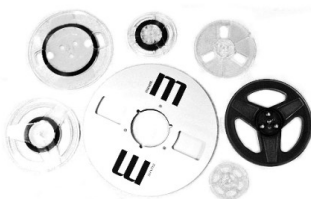


By C.J. Huss

Chapter Twelve

Tape It To The Limit/One More Time Part Two

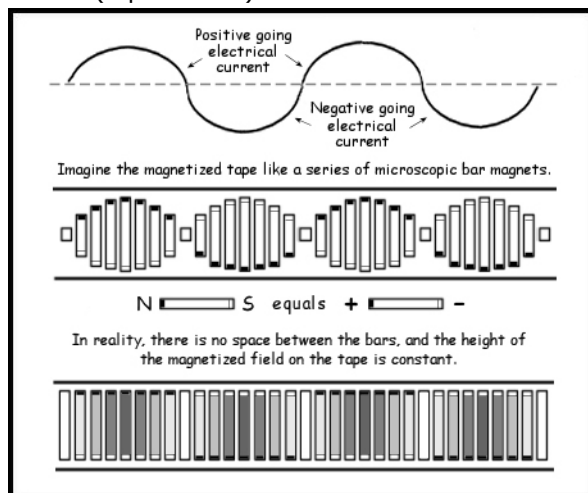
All right, where was I? Oh, yes, that's right, I was about to provide some more info on why your tapes may be slowly losing their once-robust magnetic memories. Now, if you are fortunate, your tape collection may be primarily made up of these beasties:



Consumer grade open reel tapes are most commonly recorded at 3 3/4 or 7 1/2 IPS ('inches per second'), and are 1/4 inch wide, with no more than 4 magnetic tracks on them. Why does this matter? That part is actually pretty easy to explain. All

else being equal, the faster the recording speed, and the wider the width of the magnetic tracks, the better the audio performance. Increasing the speed spreads the audio signal farther apart, and a wider track width means the magnetic signal is stronger.

Here's a drawing to make this easier to explain, using the simplest of audio signals, our good old friend, a sine wave (a pure tone):



For the sake of clarity, the drawing cheats a little. Those little bar magnets in the drawing aren't actually separated from one another like they are here, but are continuous, connected together, since the recording signal is continuous. You will notice, though, that the magnets get smaller as the signal gets smaller, and they reverse in polarity as the signal moves from positive to negative.

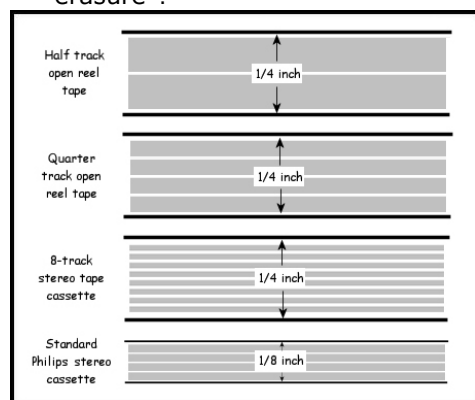
There is also a second little cheat, which is that the magnet sizes don't get smaller end-to end like they're shown here, but stay the same length, because what's called the "gap" in the recording head is a fixed width. What actually happens is that the "bar magnets" get weaker in strength, have less retained magnetism.

The gist of things, though, is that the farther you place those magnetic fields from one another, the higher the sound frequency you can record on them. This is why if you check the performance specs for your tape deck, you will notice that it might say, for example, that the frequency response at 7 1/2 IPS is 25 Hz to 22 KHz but at 3 3/4 IPS it's only 25 Hz to 18 KHz" *

(Interestingly, there is a similar weakness in vinyl records, although it's a mite more obscure because it doesn't always cause a problem. Some hard core vinylphiles know the term "inner groove distortion". This distortion occurs if the last half-inch to inch of grooves on the record are close to the label, a common situation if the side time of the LP is 20 minutes long or longer. Since the record turns at a constant speed, and the diameter of the groove gets smaller and smaller as the record plays, basic math tells us that like with the tape speed above, the audio signal gets squeezed into a smaller space. Inner groove distortion occurs when the audio signal is strong (loud) enough that the cartridge has trouble tracking it accurately, and the sound becomes harsh.)

Anyway, back to tapes. Cassette tapes have the disadvantage that they are recorded at 1 7/8 IPS, or half or a quarter the speed of most open reels. On top of that, the tape is only 1/8 inch wide, but still contains 4 magnetic tracks. Only some fairly advanced technological advancements even make it possible to get decent sound out of a cassette, a medium that was originally invented for recording the spoken human voice, not music.

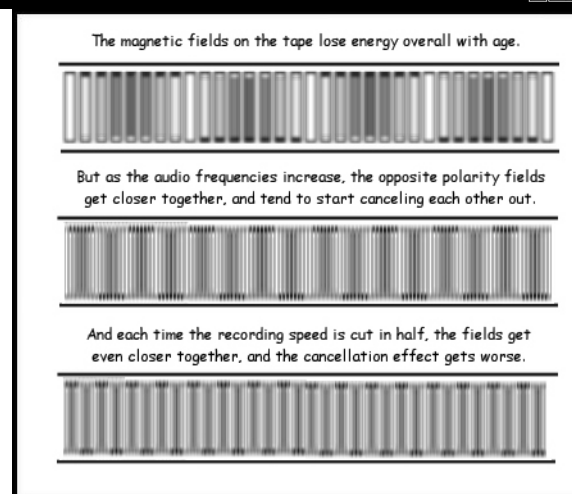
Sound quality aside, though that is clearly the most critical thing during the normal use of the medium, how does this relate to the problem of "self-erasure"?



There is a technical term of primary importance to tape (or other magnetic physical media) engineers, co-er-civity. What this means is the degree that the magnetic material being recorded on will accept and/or retain the mag-

netism. Put another way, how permanent is the magnetism? We tend to assume that, once a magnet, always a magnet. The magnet holding your kids artwork to the front of your refrigerator might be ten, twenty years old, even more, but it still manages to hold the paper on there, right?

But...given long enough, the magnet may lose its strength--its physical bulk is its primary beneficiary there. Now...think of the tape, and that thin, thin coating of iron oxide or equivalent on that plastic ribbon, and...not much bulk there, is there? Nope. Plus, because the audio signal alternates polarity, at higher frequencies, those little bar magnets in the example above may find that a (+ to -) bar is right next to a (- to +) bar. That's right, the two opposing fields want to cancel each other out, which is why the higher frequencies on the recording disappear first.



So, the faster the speed, the larger the recorded area on the tape--the longer it takes the magnetic signal to fade away.

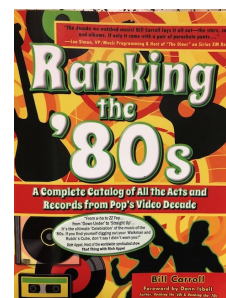
Huh. Bummer. So whadda I do about it?

First off, don't panic. Just like you can't relive your past, no matter how desperately you might wish to, you can't. (Any of you out there who have successfully opened a dimensional portal to an alternate universe where you are still young, and you've bumped off your alternate self and taken his/her place, never mind. Otherwise...)

Your tapes are whatever they are right now, condition-wise, and the first thing to do is try playing a few of them if you haven't for awhile and see how faded they've become. If you're lucky, the loss may be barely noticeable or even not apparent. In my own case, one thing that helped was good ol' Mr. Dolby and his magic (not really, science, sorry) noise reduction system, most commonly used on cassettes, but also for some open reels.

RANKING THE '80's BOOK OVERVIEW

Bill Carroll's latest installment of Billboard chart analysis comes in the form of a 520-page book entitled Ranking The 80s.



This book is organized in the usual format that we have come to respect in his previous publications, utilizing a point system.

The ranking of each entry is based on peak chart position, number of weeks on the charts, weeks in the Top 10, weeks in the Top 40, and total weeks on the charts. The charts were designed by Billboard magazine originally to rank records on sales, airplay, and other criteria.

There are six major sections to the book: Acts with their singles; acts with their albums; then section for acts, singles, albums, and writers/producers. There are also specialized lists providing geographical snapshots for the decade, all delicious to consume for chart hounds, record collectors, and all who want to dive deeper into the music of the decade.

Will this book help the average collector to organize their library? Maybe.

The Dolby system worked by boosting the high frequencies of the audio signal during recording, and then exactly reversing that boost during playback. This action kept the audio sounding normal, but lowered the background "tape hiss" all tapes have to some degree. Neat, huh? Yes, it was, but by pure dumb luck, if you have older tapes that have lost some high frequencies but were originally recorded with that Dolby boost, playing them back without the compensating Dolby cut can offset the age-related loss!

Verily, I kid thee not! I've transferred a number of cassettes in particular that were Dolbyized to CD and simply didn't use the Dolby decoder on them, and they no longer sound dull. Another standard trick is to use an equalizer in the playback path to boost the lost highs, although the tradeoff there is that this will also raise the level of the tape hiss. Nevertheless, if the recorded material is rare or valuable to you, the improved clarity of the boosted highs is likely more important than some modest added background noise.

All right, it's about time to run out of time for this issue, but in the next one, cleverly designated as "Part Three!", I'll talk about the remaining challenge for preserving / playing back your old tape collection, which is--where the heck do I find new tape machines? Or even old ones that still work? And if I find one, how do I get the stuff on the tapes onto a CD or other newer medium?

I'll give you what I've got on those subjects, gentle readers, but in the meantime, if some of the technical stuff in this column is still poking at your brain and being told to go away, no biggie. At the very least, there were no conspiracy theories promulgated, so take whatever you can grok** and be at peace with it. Or use it to baffle your friends and family members at your next get-together, always a hoot!

Take care, breathe the air, always keep a spare,

-- CJ

* Hz = Hertz = cycles per second (frequency) KHz = kilohertz = 1000 Hz

Will this book make the average collector wish they had paid more attention in math and science class?

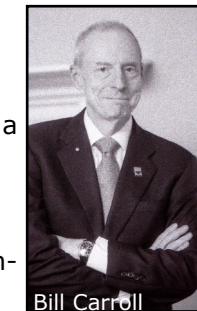
Definitely.

Here is a sample question:

Q: Where did Night Ranger rank as a group?

A: Do you mean singles or albums?

You get the idea, There is a lot of information inside.



The final section of the book entitled Chronologies contains actual graphs focusing on Top 20 singles acts.

In the decade of MTV, parachute pants, and Rubik's cube, this book provides a deeper look into the 80s decade of music than any other publication we have seen. It is available at Amazon and at the website <http://ranking.rock>s

-Phil Schwartz