



View from the basement: by Jim Weyand

Part 4 : Finding a happy medium

8/98 The bad thing about tape is it never gives back a hundred percent, and with each duplication the overall quality degrades exponentially. So every copy of your master is a third generation recording. I could almost live with this, but the insult to injury here is that so many consumer cassette decks have their own little quirks. There's always subtle variations in head alignment and motor speed that make you wonder what it's gonna sound like out in the field. The only thing I did to improve my mixdown deck (besides adding front panel in's & out's) was add a front panel switch that bypasses the hi-speed dubbing switch allowing me to record and play at 3 ¾ IPS (approximately) instead of 1 7/8. If nothing else, this lets those annoying little dropouts and wrinkles pass over the head more quickly. I think the signal is stronger and cleaner also because the tape doesn't get saturated so fast. It sounds good but any copy I make from there suffers. The only other options for a mixdown deck are DAT machines, the MD recorder, open reel, hard disk, or to use a hi-fi stereo VCR. VHS is a good medium for mastering because of the enormous tape width, high speed and low cost. All this is fine and dandy, but when you copy again onto standard cassette it *still* doesn't sound as good as it should.

There is another option. The CD burner. It seems preposterous to copy cassette onto compact disc. But consider the new generation of consumer burners that are on the horizon. Phillips was the first to come out with a domestic CD recorder, and for \$429 (CDR870) seems too good to be true (see diagram #4a). In one important regard it is too good to be true. The Phillips unit is designed to record on CONSUMER (audio) CD-R's, which are about 5 times more expensive than regular CD's, or it will record on re-writable CD's, but they won't play on most consumer CD players. A neat little hack that allows the unit to record on the cheaper generic discs is to have one consumer CD on hand that you can put in the tray before recording. The machine reads some kind of information off the disc (presumably copy-guard & set-up data). Then without hitting the door open button (which re-sets the unit again), pull the tray out *by hand*, remove the consumer CD, put the generic CD in the tray, push it back in *by hand*, and you're ready to roll. The blank discs cost around \$1.49 (I've seen them for 99 cents or less in bulk) and will play on any consumer CD player. The only catch is once you start recording you can't take it out and continue later. Once removed from the tray the disc is done, and of course as with any write-once disc if you screw up it stays screwed up or you pitch it and get another disc (this manufacturing "flaw" will probably be addressed in units of this type to follow making the units hack-proof). Nonetheless I think this is what everyone without PC burn capabilities has been waiting for. It's rumored DVD will obsolete everything before long as a universal medium but I don't see the generic compact disc dying out for at least 10 more years, especially if artists can buck the all-powerful music industry by distributing their music via the internet.

7/99 : Since I wrote this article last year little has changed. Phillips has come out with it's latest & greatest version of the above (in which I assume they have upgraded their design to prevent the "swap trick" described earlier), and released a dual version, and also Pioneer and Kenwood have CD burners out now. All of these still require those "special" discs that are still quite expensive and not readily available at your local appliance store (I found some at Circuit City for \$4.99 but they didn't have the re-writables in stock). On the

"pro" side, Marantz and HHB have new multi-media units out now for \$1000. These are definitely the ones to get, but the price is still out of reach for your average 4-track hobbyist or audiophile. PC burners are practical only if your studio and computer are in the same room, and even then to use it for mixing down tracks would be less than user-friendly. For \$250 you could buy an MD recorder (or for \$800 + a DAT machine) to use for mixdown and use your PC burner for the CD copies, but it still ends up costing as much as the Marantz. So we've not quite yet replaced the faithful analog cassette recorder for anything under a grand that uses an economical yet universal medium (gotta be the computer CD-R). If anyone out there has an opinion on this I would love to hear it because I'm stumped, and it looks like I'll be copying onto good old cheap muddy hissy cassettes for at least a little while longer.



at \$599 the Tascam RW700 is my pick of the litter right now

1/00 : Well, the "pro" units are still the best thing going, and the "consumer" CD burners are surviving at best given their limitations. However, for Xmas my wife bought me & my son a CD burner for the PC which has actually yielded some very impressive audio recordings. Granted they are impractical for mastering, but if you already have a master (cassette, MD, DAT or whatever) the deck can be plugged directly into the sound card input of your PC and recorded as WAV files that in turn are transferred directly to the CD as CDA files that are playable on any CD player. I tried converting MP3 files to audio CD format but the results were noticeably mushier sounding. The only thing about WAVS is that for an hour's worth of music you'll need about 500 MB free space on your hard drive. Good thing is you can delete these files once you have a master CD and make copies by downloading the master CD to an empty folder, copy to a blank disc and then delete the folder's contents. One thing I've noticed though, is when you copy CDA files there is a slight de-generation similar to cassettes in the form of skips and jitters on the 2nd generation disc. One way around this would be to record the disc as a *data* disc instead of an *audio* disc, retaining the original WAV or MP3 format. The only downside is your master will not be playable on a standard CD player, and unless you have an extra CD player on your PC these files will have to be loaded to a TEMP folder each time you make a copy then deleted once again.

Here are a few tips for those of you who are new to this as I am :

Record at the highest possible frequency. MS Sound Recorder peaks out at 44,100 hz stereo as does MusicMatch which will also record MP3s up to 160 kbps.

Even at highest sampling it may be necessary to EQ the source signal to exaggerate the high end enough to offset the high end loss typical in WAV files. This seems most noticeable when converting tape to MP3.

Beware of distortion. The finished file will exaggerate any distortion inherent in the original signal, usually because it's simply too loud.

Keep in mind that an audio CD is not playable until "finalized", but once finalized no further data can be added to the disc.

CD-RWs are not playable on domestic CD players, save for a few and newer models coming out now.

Note that this whole process is *very* time consuming. To avoid any glitches or freeze-ups turn off any screen savers, wallpaper changers, etc. and close any applications that may be running in the foreground/background.

Adding to an already tedious process, I've found that (at least with MusicMatch) when I hit RECORD I get an annoying "pop" sometimes that I have to take out of the recording later by using the *delete before current position* feature in MS Sound Recorder and then re-save the file. This is a very slow process but necessary

to achieve a seamless end product. Personally, I use the Nero Burning ROM software which not only has a wave editor far superior to MS Sound Recorder, but automatically converts mp3s to wavs on-the-fly while burning. I've tried several burn softwares and in my opinion Nero is the most user-friendly.

Choose the "write-at-once" option if you don't want a 2 second countdown space between every track. This writes the table of contents first and then burns the disc non-stop instead of turning the laser on & off between tracks.

Try not to pay more than a dollar a piece for blanks, because you *will* ruin several before you get it down.

Be patient. No matter how grueling this seems remember that once you get that "perfect master" you're home free and from there copies are a dime a dozen

8/02 : So ... from these entries it's apparent that the transition from cassette to CD was not as painful as previously thought. Granted, I would still like to have a pro burner in my rack, but I am quite satisfied with the results achieved by my PC burner. And since I first started this website the price of blank discs has actually dropped below the cost of a blank tape. Also, with the advent of the car MP3 player these blank discs take on a whole new utilization as storage devices capable of recording 50 to 100 times more music than the cassette. So we bid a tearful farewell to the good old cassette tape. However, for those of us who still use 4-trackers, cassettes still play an important role in our creative endeavors. And for those of us who grew up with them, we will regard them as the medium that replaced the 8-track and 4-track cartridge, and allowed us to record vinyl LPs and songs off the radio and take them with us wherever we went. A big hats off to Phillips-Norelco for a marvelous invention that helped define a whole generation of music lovers.

8/05 : One more thing to share regarding mixdown. In the past I have shyed away from trying to mix down directly to my computer, because my downstairs computer was a piece of crap and also because the MusicMatch software I used would automatically save to file when you hit "stop", requiring you to delete the bad file and rename a new file. Not a big deal except it usually takes me 4 or 5 times to get a seamless and glitch-less mix. Now I am using a wonderfully simple program called ADVANCE MP3 RECORDER that allows instant overwriting of a bad file by simply hitting the "record" button again. It also supports WAV, MP3 and WMA formats in all sampling rates. In WAV format these files can be tweaked and re-saved over and over without any noticeable degradation. This expands the 4-track limits as they can be inserted into a multi-track program where additional tracks can be added on then saved again to stereo. I use COOL-EDIT PRO which has unlimited multi-track capabilities (note: Adobe has bought out Syntrillium who made Cool-Edit. I use an old version so I don't know if the Adobe version is any good or not). Obviously you don't want to get too crazy adding tracks because the final product will sound cluttered and artificial, but it's great for adding a vocal harmony or enhancing a weak track from the initial mix. The only requirements for this other than the recording software is a dual RCA to stereo miniature phone plug shielded cable to go from your 4-tracker's stereo-out to your PC's soundcard line-in, at least 256MB of RAM, and lots of hard drive space. An hour's worth of WAVs equals about 1 gig worth of hard drive (give or take. never really did the math). When I reach the final mix I polish it off with Nero Wave Editor. Cool-Edit Pro has the same features and then some, but Nero is much easier to use. Before the final "save" I trim/fade the beginning and ending, cut out any pops, clicks or any other unwanted sound, EQ some or all of the song if necessary (and if it is necessary it means I did something wrong earlier in the process), add any necessary effects, and it's ready to burn. Selection of a soundcard is something I know little about. I use some off-the-shelf Yamaha card that as far as I can tell gives 100% of what's fed into it provided I don't distort the input. There's lots of software and hardware out there now to allow integration of analog recording equipment to PC. FireWire is perhaps the most versatile. It allows for 8 individual channels to be fed into a recording program simultaneously. In the case of a 4-track recording ready to be mixed down, a Y-cord can be used so each track has 2 FireWire outputs each for a total of 8. Even though the tracks are identical, when recorded as stereo pairs each L/R pair can be imaged separate from the other 3 pairs using the many effects processing features included with programs like CuBase or Cool-Edit. For example, the bass track can be imaged to a tight, almost mono sound, whereas the drum track can be imaged to a wide reverb. If you're a perfectionist, editing these tracks individually for a "jigsaw puzzle" final mix is a way to remove every last imperfection, musically as well as sonically. As

mentioned, I like a live mix to digital stereo, and then maybe add a few things before the final render. It just seems like a live mixdown better captures a particular mood at the time of the mix. Could be all in my head. With digital mixing, processing, and editing you're only limited by your knowledge of what all the software can do, how much time you have to spend with it, and your imagination. Finding products that you like, learning how to use them, and connecting the hardware is a lot easier and cheaper than most beginners might think, and the results are far greater than anything achievable using a cassette mixdown deck and more practical than a stand-alone CD burner. So I guess what I'm saying is disregard everything I wrote at the beginning of this page. Hey, I'm still learning too.

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