



DVD Is Audiophile Grade... But Check The Fine Print

By Jesse W. Knight



My knee-jerk reaction to anything video is that the sound must be bad. KILL YOUR TV is one of my favorite bumper stickers.

When a TV in our house died, I replaced it with one that has a built-in DVD player and that all-important headphone jack, knowing that our library system was adding DVDs of plays, movies, concerts, and opera to its collection. With its 22,000 DVDs and counting, I now have a no-cost way to check out DVD quality. Library loans are for one week, which is long enough to decide whether or not to add an item to my collection. Here's what I've found.

In a nutshell, if you can test DVDs and mid- to high-end players before you buy, and are willing to experiment with speakers, fantastic sound can be yours. After obtaining a basic player, explore the possibilities of inter-library loans at your library. DVD rental is the next best option, and you can find specialty DVD rentals online. When all else fails, there are always reviews, although most reviewers are not critical audiophiles.

In my opinion, opera presents a worst-case scenario for audio gear. Other music may not exhibit as much distortion as a consequence. Everything

except the DVD itself is troublesome. You might not agree with my priorities for assigning the degree of trouble each topic involves, but here is my opinion.

1. **Speakers have always been trouble.** With the need to correlate stereo to the screen, they just became more troublesome. Most complaints about DVD sound posted on the web are due to poor speakers. Web postings complaining about excessive dynamics in opera DVD are excellent examples.
2. **Poor DVD player digital decoding.** DVDs have multiple audio playback options; LPCM is 48kHz sampling with 16 linear bits. Then come the perceptually encoded formats—Dolby digital 2.0, Dolby digital 5.1, and DTS 5.1. Finding a player that is clean on all DVDs in all formats may be difficult. I have found plenty of player issues and no clear-cut disc problems. Few listeners have heard these problems, which I find quite audible. This is not something elusive such as jitter or lower bit errors; these are major design flaws at work.

I always have my headphones and a few demanding DVDs with me when I evaluate players in the field. My low-end player “flags” DVDs for further

testing at stores. So far the DVDs receive much better grades than the players do. Finally, perceptual encoding may not be totally imperceptible, even if it cannot be heard.

3. **Microphone placement in complex live performance recordings.** There are unlimited problems when stage directors go off the beaten path. Singers running, crawling, rolling, and popping in and out of trap doors in the stage are hard to track with spot mikes.
4. **Many DVDs made from TV videotapes were dynamically compressed.** Not all that is old is of poor quality; some video productions as early as 1980 took care to preserve most of the dynamic range of the performance and full frequency response. This is a problem that gets very little discussion on the web. Many people notice over-compression of video.
5. **Bad performances.** This is a thorny subjective topic that suggests that your library is your best friend.

ANALOG SOUND ON FILM OR VIDEO

Before DVD, having a picture and audiophile sound at the same time was not practical. I did enough experi-

ments with 16mm projectors in the early 70s to realize that at 24 frames a second neither an optical nor magnetic soundtrack could be very good. I totally redesigned the optical pickup and amplification in a 16mm projector and achieved very disappointing results.

At work I rebuilt several magnetic sound 16mm projectors, finding that there just was not room for a decent sound track. If you got flat response to 7kHz, you were doing well. Wow and flutter were out of control.

Half-helical scan open reel videotape did not improve things much, as the linear tape speed was slow. Sony hi-fi beta had possibilities, but the format did not catch on for home use. The bottom line was that if you wanted sound that was good enough for classical concerts or opera, the picture had to go. Sound on VHS, in my opinion, was marginal only for rock concerts. Well-made rock recordings on vinyl, such as Pink Floyd's *Dark Side of the Moon*, could not be equaled on VHS.

Meanwhile, TV networks worldwide were archiving professional-grade videotape and 35mm films of concerts and opera. Unfortunately, there was little incentive to record sound with a full dynamic range, because TV broadcasting required compressed sound. Likewise, it was probably believed that frequency response beyond what the multicellular horn on the typical theater speaker could reproduce was unnecessary. If a soundtrack sounded good on an Altec A7 "Voice Of The Theater" speaker, it was a "good" soundtrack. This speaker, with its stiff woofer and "squawking" midrange without a tweeter, is not something I would choose to listen to for more than two minutes.

DIGITAL RECORDING

Even the most primitive digital recording unit, the Sony F1, provided a time-stable way to record much better sound with a picture. Some concert videos from the 1980s are very good, when their producers gave some thought to recording for posterity, rather than just what was required for TV. Conductor Herbert Von Karajan set up his own company, Telemondial, with the future in mind. His video of the Brahms German *Requiem* from 1985 has very good

sound that is equal in overall quality to sound-only recordings of the same period of this work.

Although the Brahms *Requiem* is musically very complex and demanding of performers and engineers, the singers stand in one place and always sing facing forward. Opera singers move and sing at the same time, which complicates the microphone and mixing demands. In my sampling of DVDs there is some correlation between poor sound and novel staging.

TWO DVD SAMPLES

"Great Conductors of the Third Reich, Art in the Service of Evil," from the Bel Canto Society (BCS -D0052), clearly states on the front cover that the contents are "A compilation (not a documentary), 1933-1943." The back cover clearly explains that this DVD is taken from Nazi film footage. Packed with this controversial DVD is a statement that perceptually encoded DVD formats are not adequate when restoring historic recordings (**Photo 1**).

Here is a clear statement that even historic material deserves uncompressed LPCM recording mode. It is quite possible in my opinion that perceptual encoding, when used on distorted noisy material, does not perform well. The DVD gets high marks for explaining what it is (on the outside) and why the sound was not perceptually encoded on the inside. This DVD is valuable for any study of musical ethics when combined with other resources.

In LPCM mode Verdi's *Otello* (DGG 073 092-9) is a clean highly dynamic recording with excellent picture. Even better, the performance is superb (**Photo 2**). Some web postings have complained about excessive dynamics, but these are from people who tried to listen to this DVD on built-in TV speakers showing that they have no knowledge of audio.

Two important details are buried in fine print inside the package. First is the actual recording date, stated as production date of Oct. 1995. Second is the fact that the 5.1 sound options were derived from a stereo master by using "Ambient Surround Imaging" developed by Emil Berliner Studios.

I don't find any malice in this; rather

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PHOTO 1: The controversial Third Reich music video.

Stupendous performances staged for Nazi propaganda Includes stunning newsreel footage

THIS VIDEO SHOWS that these conductors turned themselves and their art into Nazi propaganda. The Nazis wanted to be perceived as men of culture, so they crowned many of their victories with concerts, which they sometimes filmed.

"In this compilation a newsreel presents panzers parading down the Champs-Élysées juxtaposed with Karajan conducting the Prussian Staatskapelle in occupied Paris. Other footage includes Furtwängler conducting in celebration of Hitler's birthday and Hitler at Bayreuth. The performances are glorious, spiritual even — the greatest art in the service of the greatest evil." — Stefan Zucker, producer

"THE VIDEO MAKES LURID VIEWING. The young Karajan had a much showier, even militaristic style of conducting than in his later years. In most cases, the intensity of the music-making is remarkable." — David Patrick Stearns, *USA Today*

"THERE IS A VISCERAL IMPACT in actually seeing Karajan lead the [Prussian Staatskapelle] in occupied Paris, and Furtwängler lead [the Berlin Philharmonic] in a concert for wounded soldiers and workers in an AEG factory before a backdrop of swastikas." — James R. Oestreich, *The New York Times*

"HERE IS RAW, visual evidence to bring home the reality of what some musicians did during the war....In the end, this video provides more than a quick look at a difficult past. What we get is a test of our own values." — Tim Smith, *Ft. Lauderdale Sun-Sentinel*

"THE SOUND REPRODUCTION is remarkably clear for the period." — Barbara Zuck, *The Columbus Dispatch*

"THE MUSICAL STANDARDS throughout this video are always excellent, and often outstanding....A must-see for anyone interested in this turbulent period." — David Mellor, Queen's Counsel, *Gramophone*

"AN ELOQUENT, incontrovertible indictment by Frederic Spotts in the booklet is worth almost as much as the video itself. Compulsive watching." — Tully Potter, *Classic Record Collector*

"THE MUSIC-MAKING is uniformly glorious....You must see this video." — Stephanie von Buchau, *The Oakland Tribune*

Picture format: NTSC / B&W / Full screen
Audio format: PCM Mono
Running time: 53m
Region code: 0 (All regions)
DVD format: 5

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PHOTO 2: Verdi's *Otello*.

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Libretto/Livret: Arrigo Boito after/nach/d'après William Shakespeare

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Desdemona: **RENEE FLEMING**
Jago: **JAMES MORRIS**
Emilia: **JANE BUNNELL**
Cassio: **RICHARD CROFT**

Roderigo: **CHARLES ANTHONY**
Lodovico: **ALEXANDER ANISIMOV**
Montano: **THEODORE LAMBRINOS**
Un Araldo: **CHRISTOPHER SCHALDENBRAND**
A herald: Ein Herold • Un héraut

Conductor: **JAMES LEVINE**
Metropolitan Opera Orchestra and Chorus Chorus Master: **RAYMOND HUGHES**

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Costume Design: **PETER J. HALL**
Lighting Design: **DUANE SCHULER**
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it is an unintended statement on the relative unimportance of sound engineering in a video age. I want to know what I am listening to, without digging through the fine print. Could we have a symbol for 5.1 that is derived from stereo? There is plenty of newer stuff that has far less sonic quality, so I would not

pass this over based on age or lack of real 5.1. Highly Recommended.

WIRELESS VS. FAR-FIELD MICROPHONES

Popular music singers use wireless or handheld microphones on stage, and as a result they can move around without

changing the sound mix. In a sense, they are electronic instruments that can be panned to any sonic location. Reverb can be added to give a sense of distance. This is a very different vocal technique from what a classical singer learns. I have failed to find a way to audition a popular singer's voice "unplugged" from the perspective of a wireless or handheld microphone. How can I put both my ears at the same time 1" from a singer's mouth?

Distortion issues with near-field vocal microphones are monumental compared to any DVD audio artifacts from jitter or sampling rates. This is not to say that I think this is bad singing, but it is singing that has no live reference in my opinion. Popular music listeners can still make judgments about DVD players using two identical DVDs and an ABX tester.

Classical voices do not sound good when the microphones are almost in their mouths. Often classical singers are positioned 5-10' from any spot microphones. When these spot microphones are turned up too high, it can rob the orchestra of power by favoring the voice too much.

If the singer is running around, crawling on the floor, turning his/her head, or singing into another singer's body, the sound perspective keeps changing. Even in the 1990s the

sound engineers could not keep up with these antics in productions that had open trap doors in the stage with singers singing

waist deep in the stage. Despite this, an experienced listener can make judgments about DVD sound when singers are in their normal upright positions.

LASERDISC

Laserdisc should have ended the practice of overly compressing the audio at the front end of video productions. Unlike London-Decca, TV production crews still did not see the value in making an uncompressed audio recording for future use. Back in 1955, Decca was making essentially uncompressed stereo opera recordings, which, remastered on CD, are quite good, despite crude stereo imaging and some "shimmer." Put another way, they are quite enjoyable.

A NEW DVD IS NOT ALWAYS NEW

DVD manufacturers have been searching through the archives of TV stations and film studios for old material that can be issued at less cost to them. Some of this material has historic value that is beyond question. Furtwängler conducting Mozart's opera *Don Giovanni* at Salzburg in 1954 is a good example. Restoration improved the sound, but it is still way below what London-Decca was doing at that time.

For instance, you can compare Lisa Della Casa singing on this DVD to a "Decca Legends 1953" CD of Lisa Della Casa singing Strauss songs and opera excerpts. Nobody would prefer the DVD to the CD based on sound alone.

DVDs have several copyright dates that apply to DVD mastering, restoration, translations, subtitles, and staging. Buried in the fine print, you may find a date for the original sound recording, which may be much older than the video, if the production was lip-synced to an existing recording. Unless your eyes are in fantastic shape, take a strong pair of glasses to the store, if you intend to figure out what was done when. A bit of online research often clears up these issues, as DVD customers are often very articulate in customer reviews.

In my opinion, the best tests

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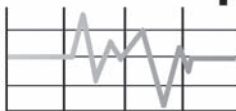
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of DVD sound and players for most listeners are the large-scale oratorios of Bach, Beethoven, Brahms, and Verdi. Mahler's symphony #2 is scored for a huge orchestra, pipe organ, and chorus with two soloists. No music has more dynamic range than Mahler's.

VIDEO ISSUES

There is a trend in theater and opera toward an ugly production style in which black paint and fabric predominates. It is cheap and ugly and certainly provokes divisive opinions from audiences and critics alike. It is often fascinating and not totally worthless by any means. DVD is a relatively inexpensive way to explore this phenomenon, but there is a catch.

Eurotrash often violates every rule of using light, whether you are a painter, film photographer, or digital video maker. There is a limit to how much contrast or dynamic range you can capture. A scene with excessive black areas and blinding highlights defies recording.

DVD cannot record what cameras cannot image. Whatever impression a scene with excess contrast makes in the theater will be lost in the camera. This is not the fault of DVD. It is already evident that Eurotrash opera productions are not popular with American home audiences, judging by customer reviews and sales figures.

Rameau opera was not a big seller until William Christie staged a spectacular production in Paris of *Les Indes Gallantes* (Opus Arte, OA 0923 D). This is a ballet and opera combined, lit and staged in a way that the camera loves. There is constant movement and dance, with eye candy galore. This is state-of-the-art in every way for 2003, including the sound.

CONCLUSION

DVD is far superior than any other format in bringing a wide range of theater into our homes. In every case I believed that the limitations of source material were greater than any DVD limitations.

I am concerned about the widespread use of perceptual encoding. Can we be sure that the missing sound does not register in our brains at any level? Will constant exposure to MP3 and Dolby digital formats over time change the way we perceive sound?

As long as an LPCM option is included in a significant number of DVDs, and CDs are still available, we can continue to have all the masked sounds whether we perceive them or not. What is certain is that we can no longer have simple tests for audio quality, due to format diversity. *ax*

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This project would not have been possible without the vast DVD collection at the Minuteman Library Network. Andrew J Nittoli, at the State University of New York, shared insights on perceptual encoding research he is doing to determine whether this encoding is truly imperceptible to our brains. Radio Shack in Woburn and Tweeter in Burlington provided considerable help in evaluating home theater components from Onkyo, Rotel, and Cinevision. These mid price components provide a substantial improvement over built-in DVD players.

Jesse W. Knight has designed custom analog audio gear for Select Film Library in New York. He built a record cutter of his design and was involved in opera and choral recording work. He experimented with a tape/slide opera recording format, designed and built specialized optical systems for 35mm photography, and built several speaker systems for classical listening. He studied classical singing and has been a bass section leader for amateur choirs. He is currently researching the impact of DVD on opera from every possible perspective, as an audio engineer, photographer, and singer.



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