



## Journal 9

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## Welcome

This issue of the CAS Journal represents the continuation of the CAS publication schedule originally established in the early 80's, experiencing only a brief hiatus of 20 years between Journal 8 and the one you're currently viewing.

I hope to keep this project going, and with the help of the eminently knowledgeable members of the Colorado Audio Society, I believe that it will.

A quick review of the issue's contents will reveal that the size of

our first reestablished offering is modest in size, but hopefully interesting and worthy of the time and efforts spent in its writing.

Many thanks to Brian Bohler, Greg Graff, Corey Patrick and Andy Rogulich for contributing to our first publication in over 20 years.

During the club's early years publishing a yearly Journal with newsletters in between was a significantly greater chore than today. Articles had to be typed on a

typewriter, and after several hours of Xeroxing copies, the final product was collated and stapled by hand. And then mailed. The communication technology we enjoy today makes this almost too easy. Create the product on a PC, convert to a .pdf and email it instantly to our 100+ membership.

But the development of content remains the same — some effort is required. Please consider participating in the journal. Everyone has something to contribute.

## Upcoming Events

Please mark your calendars: our annual meeting will be held on Saturday, Jan 30, 2010 at 6pm. We have booked a conference room at the Tech Center Marriott (the same location as Audio Fest) in order to accommodate a large group. Times and details will follow, but we do plan to have speakers (human kind),

and possibly some door prizes. The annual officer elections will be held on that evening, so you may want to begin considering nominations (nominating yourself is fine) for the following officer positions:

- President
- Vice President

- Treasurer
- Secretary

And I would like to add a new position, Media Manager, to be responsible for our electronic presence (i.e. webmaster).

Please provide nominations any time prior to the meeting.



Harry Pearson speaking at RMAF 2009.



The Kaiser Kawero room.



Reel-to-reel heaven.

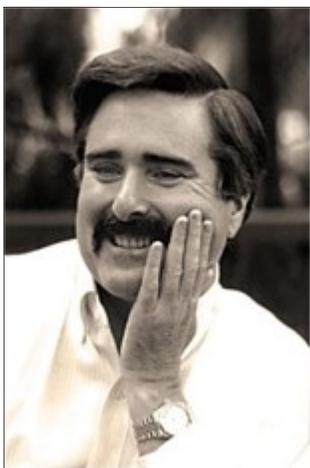


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### MIT Magnum 1.3 Speaker Cable *By Brian Boehler*



*“There have been a flurry of audiophiles on the internet who are very vocal about their views which include discussions that the hype around today’s audiophile cables is all voodoo, snake oil, or simply put, a bunch of BS.”*



Bruce Brisson.

The dreaded cable review! I believe one of the hardest and most challenging audio equipment reviews is for cables/cable sets. Why, you ask? It is no secret that reviewers do not flock in droves for the chance to review cables. Cables represent the interaction of three inter-related electrical parameters that have to be evaluated within the context of a particular system. These electrical parameters include inductance, capacitance, and resistance. These three interact/interplay within a system and are very hard to quantify for the general public. I can tell you what I hear in my system but that may not translate to anything meaningful for your system. Hence the problem of reviewing cables, we each hear differently and have systems and environments that make it hard to compare sound quality.

My impressions are valid within the context of my system which may not be true for yours. The interplay of the above parameters between components in your system will vary. What is not clear is by how much and whether those differences negate my general listing impressions of the sound as it would apply to your system. This is why reviewers generally play it safe with broad sweeping generalizations about the superiority of one brand over another.

There have been a flurry of audiophiles on the internet who are very vocal about their views which include discussions that the hype around today’s audiophile cables is all voodoo, snake oil, or simply put, a bunch of BS. If this view is held due to the marketing literature and hype surrounding “new technologies”, I can understand the general frustration.

While sonic differences can be small, they can also be the different between contrived and real perceived sound in my opinion. Most reviewers want people to respect our perceptions, hearing, and understanding of all things audio. If I declare something as wonderful, revelatory, or hands above the rest, I want others to draw to that conclusion and generally agree with me. Cables can put you in a position where others wonder if you have some wax build up in your ear canal. Go figure!

#### MIT History

Bruce Brisson began designing audio cables in the 1970’s after “hearing” the sonic problems inherent in typical audio cables of the day. In 1981, he licensed the first of many of his designs and patents to Monster Cable. I don’t know about you, but this statement leaves me rather cold and indifferent to his beginnings and early accomplishments. Monster Cable, Noel Lee, and who really cares? In 1984, he founded Music Interface Technologies (MIT) and still heads the company as we know it today. If you have been around audio for long, you will recognize that Bruce has had a strong influence on the industry and has brought forward many concepts and design criteria. In 1989, he created the low-pass filter network concept, designing the patented CVT® and Terminator™ technologies that are contained in the distinctive modules for which all MIT products are known. Many key designers of high end equipment have either

directly recommended MIT products or worked with MIT to design their own product recommendations based on MIT modified products.

#### Electrical Parameters in Cables

In order to understand why cables can sound so different and why everyone has a favorite flavor, you need to have a basic knowledge of what makes up a wire. I’m not talking about the actual wire or weave or dielectric but rather the electrical parameters as a result of the design choices. Here is an extremely simplified description of electrical parameters of cables.

**Inductance:** Inductance in a speaker cable is largely determined by the area between the conductors. Many speaker cables have conductors that run side by side (“twin-lead”). These conductors are separated by a small distance, so have moderate inductance. Some cables use many small wires that are woven together. This reduces inductance greatly, but at the cost of increased capacitance.

**Capacitance:** Capacitance is a function of how close the conductors are to each other. So, to keep the capacitance low, the conductors must be widely separated. Note: this is just the opposite of what we need for low inductance. Woven wires are close together so they have high capacitance.

**Resistance:** Resistance is the tendency for the wire in a cable to oppose the flow of current.



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### MIT Magnum I.3 Speaker Cable ... continued

Most cables are designed to have low resistance so that they don't significantly reduce the damping factor of the amplifier.

The interaction of these three parameters can have a profound influence on what you ultimately hear as music in your room. There is no one right formula for designing these parameters. Depending on your equipment choices such as tubes versus solid state, electrostatic speakers, or passive pre-amps, these all have strong requirements that you should not ignore. Understanding how these electrical parameters all work together within the context of your system can save you a lot of money, wasted time, and general frustration.

#### Magnum I.3 Speaker Cable

The Magnum M1.3 speaker cable has 50 poles or articulation. The cable includes enhancements over its predecessor with an upgrade to MIT's two proprietary 2C3D technologies: Stable Image Technology (SIT) and Jitter Free Analog (JFA). Ok, that sounds like a bunch of marketing gibberish, so what is 2C3D technology? As the name suggests, 2C3D was engineered to create a believable three dimensional soundstage from a two-channel system. The 2C3D technology offers the optimal balance between detail, imaging, and soundstage (the real question is who defined optimal?). 2C3D makes it easy to identify each of the individual instruments/voices within a well defined soundstage, at any volume level or so the story goes.

And by the way, what are 50 poles of articulation? This relates to MIT's Multipole networks. The website states "these networks are wired in parallel, passively correcting the problems that are inherent with ordinary cable designs. All cables have one ideal area where the capacitance, inductance and resistance are balanced for proper articulation. This describes a single-pole of articulation. With Multipole networks, MIT can create additional poles (within the cable) for ideal behavior over a broader range than "just cable." With the advent of new micro-componentry, MIT can now provide improved performance without increasing package size for ease of installation. Think of it as getting the best of multiple cables, "all in one package".

#### The Right Technology Matters?

I hate to burst your bubble, but I really don't care about the fancy marketing of unique technologies (or snake oil) as it relates to cables. I have some pre-conceived ideas about what works but they are not hard and fast rules. I really don't care if a wire has a box/network or not. I don't care about copper versus silver, or gold and palladium versus who knows what. The point is that many of the commercial high-end designs have a basis in science but are predicated on a particular set of criteria and therefore can be substantiated by their science. Bottom line, you still have to listen within the context of your system and find what approach best serves the music in your system.

Let me share a couple of examples that will highlight my ideas around this topic. I believe system synergy

is about matching components to achieve an overall balance of attributes that represent as close of an approximation of live music to your ear as possible. I don't believe any wire set is truly neutral so therefore every piece of wire is in effect a type of tone control. Different wires emphasize different aspects or characteristics that you perceive need improving in your system. These can be fairly subtle but one brand versus another might add a little more overtone and harmonic structure or offer a broader three dimensional soundstage. Hold on, you say, everyone wants that so what are you talking about?

I will make a few overstated generalizations to share my concept. If we take an electrostatic speaker with solid state electronics, we have tremendous speed and articulation but we might also have a lighter harmonic structure. In other words, the sound might be on the border line of becoming thin if we don't choose the right combination of wires. If we decide to go with a brand that emphasizes speed of transmission and leading edge transients, then we take the system further down the road of being viewed as thin and potentially bright. If, on the other hand, we choose a wire that emphasizes harmonic structure and overtone we probably find a better balance with the final sound. It really is all about synergy and finding the right combination of attributes that work for you.

#### Sound Quality

I had a new set of Magnum M1.3

*"I don't believe any wire set is truly neutral so therefore every piece of wire is in effect a type of tone control. Different wires emphasize different aspects or characteristics that you perceive need improving in your system."*





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## MIT Magnum I.3 Speaker Cable ... continued

single wire speaker cables on loan from the manufacturer that I decided to try within the context of my system. The cables retail for \$6,500 for an eight foot pair. These cables are part of the MIT on-line store product offering.

My system consists of solid state amp/preamp, a Mod Wright Sony tube CD player, and floor standing dynamic loudspeakers. The CD player helps with adding some warmth and harmonic structure to the overall sound. My current reference speaker cable is the Acoustic Zen Hologram II which is 6N zero crystal copper (8AWG). While not perfect, it seems to offer a good

balance of attributes for the money invested. Compared to some of the more common product names at this price point, I found the Acoustic Zen to be closer to truth and a balance of key attributes in my system.

Let's now provide some insight into what I heard that was both positive and negative. First, on the positive side, I found the MI.3 to offer a more convincing three dimensional soundstage than almost any other speaker cable I have auditioned. The sense of air, depth, width, and height were bordering on remarkable. I'm not talking about a hyped hi-fi type affect but one that made the music and recording venue seem

more real and substantial than other wires. Instead, I'm talking about a real sense of people and instruments inhabiting space and giving that acoustic space a sense of humanity versus really good hi-fi.

Another area that had a profound impact on what I heard was how the wire handled upper octave energy, detail, and leading edge transients. The wire has a unique way of having the right balance of detail and upper octave energy without being overly analytical or having leading edge transients that were bordering on hi-fi sounding versus real live music. I found more clearly

revealed inner detail such as the turning of a page of sheet music in the third or fourth row of an orchestra. Many wires convey a sound but it doesn't sound like a page of paper being turned but more like an indistinct noise of some sort that our mind has to fill in versus hearing the sound of real movement within a real space. In spite of hearing more detail revealed within the sound space, I didn't hear the overhyped leading edge transient or detail that often reveals itself as hi-fi versus a real sound within a given sound space. I heard more of the right information and less of the false or overhyped leading edge detail. This balance of perceived detail is

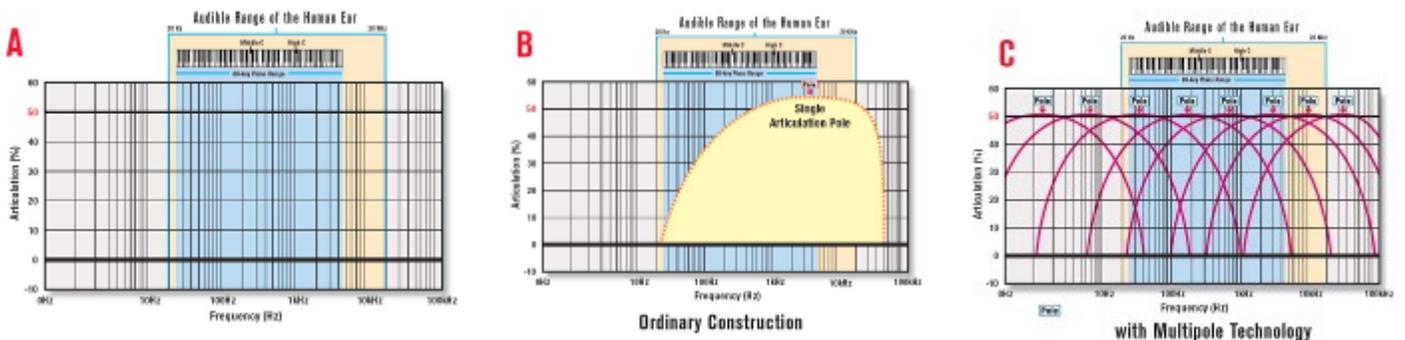
## Multipole Technology

From the MIT Website

**Graph A:** Represents the bandwidth of an 88-key piano, highlighted in blue, as it compares to the audible range of the human ear. We will use this graph to describe how well a cable articulates across the audible bandwidth.

**Graph B:** Standard (single pole) cables have a relatively narrow region (yellow arch) where the cable is articulating ideally. Note that the blue area remaining is considered less than ideal in terms of articulation.

**Graph C:** Using MIT's Patented Multipole™ network technology, MIT engineers add additional poles/points (8 shown) of articulation to further extend the articulation bandwidth of your audio system.





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### MIT Magnum I.3 Speaker Cable ... continued

fantastic and in my experience much better than average.

I found the MI.3 to be a substantial improvement from about 200-300 hertz up to the top of my tweeters range. In the bass region I had a problem! Please note I stated that "I" had a problem, not necessarily the cable. I have a dedicated stereo room that measures about 20.5' long x 14.25' wide and has 9' ceilings. All walls are drywall with a suspended concrete floor. Even though it is a dedicated listening room, I have employed a fair amount of room treatments (RealTrap, Marigo, Shakti, and Golden Sound products) to tame the acoustics. Room resonance modes are a fact of life. Many of the products I have used have helped but not eliminated standing waves including areas of suck-out and areas of over exuberance. What I discovered is the MI.3 added more power in areas that didn't help the overall sound. For example, the bass got stronger (not a good thing), didn't get tighter (not a good thing), and seemed out of proportion to the sound of the rest of the speaker. It was kind of like the effect you would get by using a small monitor speaker on stands crossed over to a subwoofer and the match was just wrong. The subwoofer was a little too strong, a little muddy, and just not synced up with the main speaker to give the sensation of a coherent music space. As I stated in the beginning of this review, this is what I heard in the context of my room and system. Your mileage may very well vary!

Another System/A Different Perspective

I took the MI.3 cables over to Greg Graff's house and tried to validate my findings. He has a great room that is substantially larger in cubic volume than my room (probably six to eight times larger). If my theory was right, he should have very different standing waves and more distributed room resonance issues than my system exhibits. Would the bass improve? Would the 200-300 hertz and up performance be just as good as what I experienced? Would the overall sound be positive or would we uncover more negative aspects that I didn't hear with my system?

Everything I heard in my system was validated from the lower midrange and up. Based on how I hear and experience music, I found the balance of sound to be exceptional. This system did not have the same bass issues that I experienced with mine. In fact, the bass sounded better on these speakers than I've ever heard in the past. Tight, tuneful, and well balanced with the upper bass/lower midrange. In this system the wire was bordering on amazing. The sense of a three dimensional image was substantially better than what I had heard before. One way to convey this is to use a ball as an example. A truly fleshed out three dimensional image should conjure a completely round ball from all angles. If the sound is short in depth, width, and

height then the ball is oblong and out of proportion to a real round ball. I heard a sound that was truly approaching a round ball that was almost fully inflated. If it was oblong or out of proportions it was minor compared to what I often hear from cables.

One area of discussion was on the sense of leading edge transients. Greg felt his wire did a better job in this area than the MIT I.3. I understand his point of view, but I don't agree with his conclusion. I believe a leading edge can be too quick and too defined within the context of a stereo system. If you play the guitar and have your ear right on top of the instrument then your perception of the leading edge transient would be very different from mine as a member of the audience. We each prize and listen for different aspects of sound that define real to each one of us. I don't play an instrument or sit within an orchestra. My perspective is that of a member of the audience. The leading edge transient is somewhat blunted by the distance, reflections, and people of the audience. To my ears, the MIT caught the right level of leading edge transient. From my perspective, I'm right, but then again I don't play an instrument. I have a different point of view and reality around this topic. My observation doesn't make me right or wrong but it is what I heard. No two ears hear sounds the in exactly the same manner. You need to listen for yourself and put the sound in context to your perceptions of

real sound.

It should be noted that Greg's speakers once belonged to me. I designed the speaker concept, picked the components and had some seriously smart friends help me design the crossovers, cabinets, and assemble the complete package. I know my limitations! Needless to say, I am quite familiar with this speaker including its strengths and weaknesses. I never got them to sound as good as I heard them with the MI.3 speaker cable. This experience demonstrated that the room and system context can have a huge impact on our perception of real sound.

I've asked Greg to add an addendum to the end of this review to share his thoughts and feelings about what he heard within the context of his system. Another perspective and writing style may help to make the overall impression of the product clearer. Our goal is to share our listening impressions and get you motivated to take a listen for yourself. Words from a reviewer convey sonic impressions but only you can decide what you hear in your system!

#### System Synergy Thoughts

Based on my experiences with this cable, I offer some thoughts for your consideration. If we lump ribbon speakers, electrostatics, planar magnetic, ceramic drivers, diamond drivers, and some high technology metal drivers (beryllium/



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### MIT Magnum I.3 Speaker Cable ... continued

titanium) together, we have what could be considered very articulate and fast driver characteristics. All of these can have the tendency to be so fast that they can be perceived to be a little on the lean side compared to paper or plastic drivers. If we take paper drivers, plastic drivers, and some lower technology metal drivers (aluminum/hybrids), we have a group of speakers that can be overly rich/ripe and sometimes not perceived as very articulate/fast. While these are gross oversimplifications, they both hold some merit in the marketplace today. My perception is that the MIT MI.3 might do very well with the faster and very articulate driver topologies outlined above. They would add a sense of harmonic structure and flesh out the areas where these drivers can be perceived as lean. The MI.3 might take a paper/plastic driver topology and attempt to add additional harmonic structure and flesh the sound out in a way that takes the sound in the wrong direction (overly ripe and less articulation). In this last example, we might want to consider a speaker cable with some seriously fast propagation delay that would balance the speaker to add some much needed speed. As I've point out in the past, system synergy is extremely important. All wires are tone controls to some extent; you just need to know which direction you will turn the control to get the sound you crave.

#### Boehler Conclusion

I really liked how the MI.3 worked within the context of my system from 200-300 hertz and up. It opened a window on the soundstage that was deeper, wider, and higher than before. The sound was more fleshed out and it added some additional harmonic structure to the sound and made it feel more like tube equipment in the critical mid-range. The highs were enhanced without grain or edginess and came across as more real. The bass was stronger but created problems that could not be overcome in my room. When we put the results in perspective to the value it offers and the dollars it takes to achieve this type of performance, I take some pause. In my personal view of value, I tend to equate the speaker wire as about 25 to 33% of the retail price of the speaker I purchased. Based on this formula, I would need speakers that retailed for around \$25,000 to meet my personal criteria. If you have speakers in this price range I would definitely give them a listen. If your view of value is different than mine, please use your personal formula and give it a try.

I have heard many cable sets over the years, but few within the context of my system. You really can't judge cables based on what you hear at a show or a dealer's showroom. What counts is how they sound in your system and in your environment. MIT's view of "real" sound may line up well with your perceptions or it may lead

you to consider other alternatives. Discovery is important to achieving success in this critical area. Best of luck on your journey and if you have a chance, give the MI.3's a try and see how you respond to their sound. I sure was impressed!

MIT has graciously lent both speaker wires and interconnects to the Colorado Audio Society so people can hear the product within the context of their own system. I would suggest CAS members call Art Tedeschi and take advantage of this unique opportunity to try a very expensive cable set and educate your ears. You have a unique opportunity to prove to yourself if the product cost is just snake oil and marketing hype or if the product really does have merit. There is no time like the present to take advantage of this unique opportunity. MIT will ask Art to mail back the product in the near future. Give it a try and share your thoughts with the Society members

Brian Boehler

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#### Greg Graff Comments – Another Perspective

When Brian brought the speaker wire over, I was curious how they would sound in my system, given his previous comments about the bass loading in his room. We spent about 10 minutes putting them together in the system. On the first 10 notes of Diana Krall "The Girl in the Other Room" I went OMG,

what soundstaging, what holography. I continued to listen and kept saying, "can you believe that soundstage." Brian was no less taken with them. We listened to "Dante's Prayer" from Loreena McKennitt. The introduction with the choir in the background was just stunning. The spatial clues were far greater with this wire than any other I had put in my system. I was just stunned. I had none of the bass loading problems in my room that Brian had experienced, just great music presented in true three dimensionality. I was beginning to think of how I was going to afford these.

We then put my flat wire back in the system and it was two dimensional in comparison; however, not all of the positive comparisons went to the MIT. I started to notice a lessening of the leading edge on strings. I also noticed the wire sounded a little "slow" and had some difficulties shading micro and macro dynamics.

I have spent the last three days listening to the wire and continue to be amazed at its soundstaging. This is both a blessing and a curse. When listening to marginally recorded music, it still sounds good. This led me to believe the wire was actually "enhancing" the sound, not just presenting what was on the recording. I listened to some rock songs that I know are not the best recordings in my system. On Lynyrd Skynyrd's "Yesterday's Gone" there was much more



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soundstage and “politeness” than is on the recording. None of the grit was coming through my system, just very polite music. The same thing occurred with Led Zeppelin’s “Hey, Hey What Can I Do” where the edginess of the guitar work is just not there, but again lots of great soundstaging.

This led me to try a recording I worked on with my sister’s hand bell choir. On Christmas, my sister gave me the final product and we loaded it on my computer and listened. We spent the entire time critiquing the performance of each of the ringers (they are an amateur group) and we agreed that some work needed to be done with some of the people in the choir - out of 11 people, I would say four or five are true musicians, the rest are just ringers.

Last night, I put this recording on again with the MIT wires. The difference was quite noticeable. This time everything sounded better, but the important details we critiqued earlier were not as noticeable. The turning of the pages was not as noticeable, nor was the lack of rhythm by some of the players. One of the problems we noted earlier was that some of the ringers played louder than others and this served as a distraction to the performance as a whole. This was not as apparent with this wire. Also, with the MIT, there was significant three dimensionality that was not there during the recording. The recording was done in a music room that was heavily

damped with one stereo microphone. Listening to it during the performance, both live and through headphones, there was very little ambient/spatial information on the recording. With this wire, there was more in the system than had been in the actual performance.

All of this leads me to believe the wire is emphasizing the upper bass/lower midrange region where the spatial clues of sound occur. Whether it also has a demphasis in the upper midrange/lower treble region or this is just a psychoacoustic shift caused by the emphasis in the lower midrange, I cannot tell.

#### Graff Bottom Line

All wires act as a filter in one way or another. The MIT wires do as well. The difference is that Bruce spends a lot of time tuning these filters to get the desired effect. I have always enjoyed listening/using his wires in my system. They are above all else, very musical. However, whether they are for you or not, is for you to decide. Wire is very system/room dependent and there is no one correct wire out there. These wires do some stunning things - things I have never heard from any other wire. I am still torn as to whether I want to make the (substantial) investment in these or look at something else. Maybe the Magnum MA?

Greg Graff

#### Art Tedeschi’s Comments:

I agree with Brian that wire, more than other audio component, has caused controversy and confusion among folks like you and me who attempt to extract as much musical pleasure from our audio systems as possible. I also agree that all cables act as filters of some kind and offer the cable manufacturer the ability to design a product that can be sonically stylized to enhance whatever aspect of the sonic signal they believe will be important to the potential buyer. The obvious question arises: Should cables be engineered to provide the most accurate signal path from amp to speaker, preamp to amp, source component to preamp, etc., or should the manufacturer view the product as a canvas that can be painted upon to reflect the designer’s vision of how the signal should be sonically modified as it passes through?

Up until the evening I seriously listened to my system through the Magnum I.3 speaker cables, I had always believed that cable manufacturers should set as their ultimate goal the non-invasive passage of signal from source to destination device. Now I’m not so sure. According to the MIT literature, as Brian aptly describes, MultiPole technology manipulates the audio signal in such a way as to provide a multitude of “poles” at various points in the audio band that, if I read the graphs correctly, present an optimized impedance between source and

destination devices at those points within the audio spectrum. Contrast this design philosophy with my current Nordost Heimdall cables with no network in the signal path. Surely, one design must be right and the other wrong?

I received the cables in November and was highly impressed with the professional job of packaging, something one would expect of a \$6500 speaker cable. These cables are thick and bulky, and are a bit tricky to connect to mono amps positioned closely to speakers (Rowland M501s to SoundLab A-1 electrostatics) due to their size and the large network box connected at the speaker end. After a 2-week break-in of constant music, I was prepared for a serious listen. (The sound continued to improve over the next few weeks when I finally handed the cables over to Brian. I would suggest a good month of break-in before they reach their sonic peak.)

At first I was a bit startled at how different the system sounded with Nordost cables installed. My initial impression was that the system seemed a bit rolled off in the extreme highs, but the upper bass and midrange was fuller with greater body and solidity and a feeling of heightened dynamics to the music. Also, the soundstage was fuller, with more air and ambience and instruments highly focused within an airy and darkened background. Now, I certainly expected to hear differences with a cable costing over 6 times what I was previously using, but not quite to this extent. I dragged out all my favorite CDs and vinyl and to a



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fault, each one shared some similar characteristics.

I believe a reviewer once made use of a visual metaphor of “luminosity” to describe parts of the frequency spectrum during a playback session. This seemed to be occurring with the MITs. The great majority of systems I’ve heard reproduce perhaps one or maybe two sweet spots in their presentation where various voices or instruments are highly clarified and allow the listener to follow the instrument’s musical thread with ease. Those sounds not accorded this level of grace require the listener’s attention and intellect to kick in, an effort not in accordance with what I would consider musical satisfaction. But the MITs accomplish this feat in spades, for a multitude of instruments – perhaps this is what MIT refers to as “articulation”. I don’t know, but these cables plaster a smile on my face like no others I’ve heard on my

system. I began, for the first time, to understand why they are priced so dearly, and even fantasized about how their higher-priced spread (upwards of \$20K) might sound.

Even though I knew that I would eventually have to give them up, I’ll admit that when Brian asked to audition the cables, I was hoping that he could use the bi-wired set that I also had on hand from MIT. Unfortunately, he was unable to use them, and immediately after uninstalling the MITs and replacing them with the Nordost, I took the opportunity to take another serious listen. Much of the excitement and “organic” quality of the music had diminished, but I did notice a smoother and more extended high end with the Heimdalls (after all, they’re no slouches either). The MITs did teach me something about the omissions my system was com-

mitting, and the most obvious was a lack of lower midrange and midrange body. As an attempt to restore some of what I was now missing after experiencing the MITs, I bi-wired the system with the Heimdalls and a set of Audio-Magic cables that I remembered had excellent bass response. Voila, some of what I heard from the MITs was restored, but I can attest that my cables were not the equal of the MITs.

My suspicion that the Magnums might be contributing a bit more to the overall dimensionality of the soundstage than was actually present in the recording was somewhat confirmed by a conversation with Greg regarding his experience with the hand bell chorus. He felt that the recording of the choir recreated a more spacious sounding environment than the actual recording site. Still, I must admit that these cables provided me with

more musical satisfaction than I’d previously experienced with any other cable (which is saying a lot, being somewhat skeptical of the cost vs. performance value of expensive cables).

So to echo Brian’s recommendation, if you own a system that may be a lacking solidity in the bass/lower-midrange regions, this cable’s spectral characteristics might just be what you’ve always been looking for. Conversely, if your system tends to be more heavily oriented to the lower ranges, this may not be a good match, frequency balance-wise. Either way, I might suggest that this cable could be the ticket to reliably providing more smiles the next time you listen to your system.



A break in the action at RMAF 2006.



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### Pass Labs PI Buffer

This is a review of the Pass Labs BI buffer, a no gain preamp used to match the output impedance of the source. This is not a passive preamp.(i.e dial with resistors.) This is a much more effective unit in terms of transparency and source matching. This makes the output impedance of the source more linear to the amp. It can be used just as you use a preamp with gain. It has places for two input controls and volume. It can be configured to run on batteries, 18v min required. However this will give the unit about 5-6 hours run time.

Hopefully more of you technically gifted individuals will contribute an article or project in the future. The main reason for reviewing this device: it's effective and inexpensive as long as it is built in kit form. The completed factory version is \$1000, which I don't know is available at the time of this writing. The kit version runs around \$40 with matching JFET's, the rest of the parts can be ordered from Digikey. A completed BI can be built for around \$120. I used all the recommended parts from Pass Labs with

the exception of the 10uf caps. Axon or Solen are recommended here, but I find them grainy, instead I used the PX Clarity Cap. This cap has a much lower dissipation factor (maybe there is something to all these measurements! That's for another article). Some say that non-cylindrical caps produce micro-phonics, well if they do I don't notice it. The Buffer has impressive measured performance and a sound to match. So anything up-stream is going to be "heard". With .0007 HD @ 1khz and .003 @ full bandwidth and a response of .3hz to 700khz this is truly a wide range, low distortion device. This is quite impressive and without feedback to boot. I cannot comment on the performance of the BI with a regulated power supply (next project). The BI is pretty good at rejecting noise but I did notice some 60hz byproducts coming out the speaker but reasonably down in level. I also have not finished the grounding scheme. Each standoff hole is connected to ground so make sure if you build it to use only

By Corey Patrick

plastic or insulated standoffs if you have a conductive bottom on your chassis. This will make sure you don't have multi-path to ground. Grounding is one of the most overlooked parts for the diy'er as well as the professional. Also I forgot to add, if you build it stick with the 25k ohm pot. as this is what it is optimized for. In a pinch anything up to 75k would work.

Well, for the subjective part of the review, and my subjective view is just about as worthless as anyone's. To give reference, my preference in sound is wide bandwidth, correct tonality, fast decay then stereo separation. I can't relate to words like "imaging" when separation measured in db's will do.

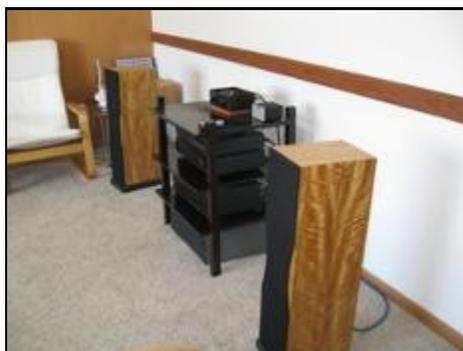
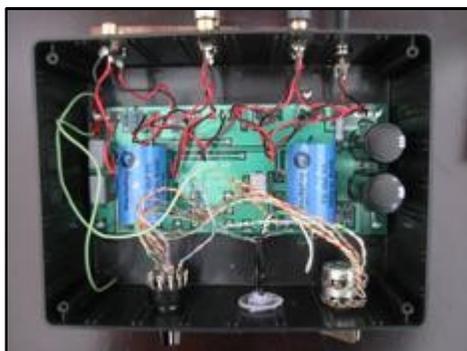
I first placed the BI with a traditional amp, a Sonic Frontiers amp 2. Without any breakin the buffer was most impressive with it's very wide stereo image. In fact it "sounded" much better in this department than existing SF pre-amp I was using, which is no slouch in this department with 100db of separation. The image was very

stable and holographic. One strange thing is on web forums people have commented on more powerful bass using the BI. I found just the opposite. The bass lines were very well defined not bloated. This must relate to the 15db of gain my preamp was boosting the signal. Remember the BI is a no gain device, it's sole job is to correct the input or output impedance. So make sure your cd player or phono preamp has enough output. Any combo today should not be a problem. With my combo I noticed no difference in sound output. With my diy chip amp the separation was not as good but the tonality was much cleaner.

Summing up, if you're looking for a very transparent buffer or preamp that does not impart a particular sound on your existing system, dust off the work bench and break out that soldering iron.

Corey H.

### Corey's Photos of his PI Buffer





## Journal 9

### The Importance of Mastering

By Andy Rogulich - High Fidelity Mastering - Albuquerque, NM

I frequently get asked what is mastering and why is it important in making an album. Simply, Mastering is the process whereby the mastering engineer prepares and transfers recorded audio from the original source material onto a master CD or DVD. This master is the source from which all copies are produced. It's crucial, therefore, that the master is made properly for the best transfer to occur at the production facility. This allows mass production of your recording at the best possible level of quality. You want to have a mastering facility for your recording, capable of providing the highest quality reproduction of sound that improves the original recording. By using a collection of specialized mastering equipment, the mastering engineer can create the sensation of being in the presence of the actual performance. This is accomplished by a variety of means, such as eliminating noise, adding depth, widening the soundstage, and increasing dynamic range of the recording. You also want to have your recording improved through various means such as equalization, compression, and expansion. Additional tasks, such as editing, pre-gapping, leveling, fading in and out, noise reduction, and other signal restoration and en-

hancement processes, are applied as necessary during the mastering stage. Program material is then put in whatever order you request. In the end, you receive a CD or DVD master that's ready for a production facility to produce as many copies you request. A mastering engineer listens to essentially everything in the recording to improve your original recording, such as :

- Proper tonal balance, depth and width of the soundstage
- Noise, distortion, sibilance in the vocal, and out-of-phase sound caused by improper microphone placement during the original recording
- Proper imaging of the vocal and placement of instruments to recreate the feeling of being at the original performance
- All songs at the same volume level from one song to the next

Mastering engineers take out the bad, accentuate the good, and make your talent shine through!

All professional musicians use a mastering facility. If you look on any CD or DVD made within the

last ten years, you'll find in the list of credits two very distinct recognitions: "Recorded by..." and "Mastered by..." Yes, all professional musicians use a mastering facility.

You want to have a separate facility master the recording you made in the recording studio. The reason is you want to have someone that is listening to your music for the first time to give your recording an unbiased listening evaluation of what needs to be improved for it to be ready for mass production. You also may find that after you have listened to what you recorded in the studio that you want to make some changes. Perhaps you find that you'd prefer that the vocals be more forward of the instruments. Or you may hear a buzz or hum you hadn't noticed before. Or you'd like to have a wider soundstage or a greater depth to the music. Or you may like more reverb, or perhaps more punch to the kick drum. You could return to the recording studio, but their studio time is more expensive than mastering time — and they may not have the equipment and skills needed to make the necessary changes, such as removing

clicks, pops, buzz, hum, tape hiss, unwanted transients, and distortion. You also may decide you want to convert your two-channel stereo recording you made in the studio, to a 5.1 surround sound recording. A state-of-the-art mastering facility can do this for you.

You may also have an old recording you made on vinyl, reel-to-reel, or cassette that you would like to resurrect for your next album. A good mastering facility will have the capability to take your original recording, in whatever format it is in, and enhance and restore new life into the recording, and finally transfer it to a CD or DVD for you.

For the mastering engineer, it takes more than equipment to do a good job of mastering. It takes years of experience in all forms of audio reproduction and the proper educational training in mastering. Only then, can you know what to listen for and how to improve it. You labored long on your song; make it sound it's very best by having it mastered.



Electrostatic speaker designer Dr. Roger West and Connie Frey of SoundLab Speakers at RMAF 2006.



## Journal 9

### Concert Recordings: Capturing the Live Performance

By Art Tedeschi

For the past few years the small pile of CDs in front of my equipment rack (reviewers call these reference disks) has been mostly composed of live concert recordings. Not that I don't appreciate quality studio recordings (an example would be the KBCO Studio C catalog), but it seems to make sense that any attempt to recreate a performance in the listening room must be contingent upon source material that recreates the acoustic of the recording site to some degree. I can think of no better example of this than a group of musicians playing together in front of a live audience in a real auditorium.

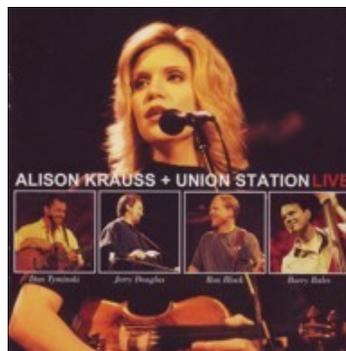
Of course, nothing is perfect. No doubt, microphone positioning plays a huge role, as well as the number of microphones used (the fewer the better) in the recording's ability to capture the ambient space as well as the individual spaces of the musical instruments involved. It has been apparent that during my years of listening to concert recordings, more bad recordings than good have been produced. The typical "bad" live recording presents vocals with little to no harmonic richness, compressed-sounding instruments layered in a narrow and flattened soundstage, little to no sense of the acoustic space, and most disappointingly, a diminished sense of dynamics.

Happily, we now have a good number of recordings that have seemingly transcended this unfortunate tradition. I can think of very few concert recordings, especially throughout the past few decades, that have successfully been able to capture a live acoustic space and concurrently reproduce vocals and

instruments in any sort of accurate manner. Obvious exceptions would be the many great classical recordings from the 50s and 60s that are so proudly included in the catalogs of RCA and Mercury (and their mostly pathetic recordings from later years).

So apparently the recordists responsible for the CDs reviewed below have, to some degree, become enlightened in the art of the live recording.

The following groups under review consists mostly of rock, folk and bluegrass genres. We hope to also cover great classical and opera recordings that perform the same feat of providing the perspective of the live event to the listener. So, without further ado ...



*Allison Krauss + Union Station Live - Recorded at the Louisville Palace in Louisville, KY  
Rounder CD 11661-0515-2*

I sometimes wonder why we rarely hear of quality recordings from the giant record labels. Some seem to be coming around as of late, but the current Rounder and Flying Fish (now

owned by Rounder) labels have consistently paid attention to the audio quality of their recordings. This Allison Krauss recording is a good example of that goal.

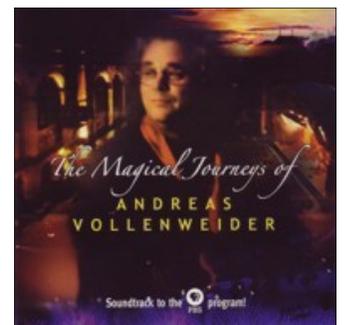
I knew very little of Allison Krauss' music when I first discovered this recording. I admit that I don't include myself as a fan of country music, but Allison's brand of music transcends the label "country" by her selection of a repertoire that incorporates the best of contemporary bluegrass styles coupled with the selection of compositions written by extremely gifted songwriters. Of equal relevance is the group of extraordinarily talented musicians assembled to make up her band (including Jerry Douglas, the undisputed master of the Dobro).

The recording includes a wide variety of both vocal as well as wonderfully orchestrated instrumental pieces, to include original music from the film, "Brother, Where Art Thou", the vocals of which were dubbed by Dan Tyminski, the principal male vocalist in Allison's group. I confess that most country songs leave me flat, but a few of the included cuts on this CD, like the heart-wrenching, "Ghost in this House", inspires admiration for the talent of Hugh Prestwood, who wrote this wonderful reflection of failed relationships.

Sonically, the recording is near or at the top of the heap. Whenever I seek a recording to evaluate my audio system, this is usually the first picked - and more importantly, gets played more often for sheer musical pleasure than most.

The recording preserves the harmonic integrity of the musical instruments as well as the naturalness of the vocals (seemingly rare for most live recordings), and the capture of the acoustic space of the Louisville Palace provides a front-row perspective that encompasses the listening space. Portrayal of the live dynamics of the performance is stunning, an example of which is the Jerry Douglas intro to "The Boy Who Wouldn't Hoe Corn" following by the towering vocals of Tyminski. The transition is stunning, and sure to impress anyone listening to this for the first time.

This performance is also available on DVD and is highly recommended, though the sonics are far better on the CD. Also available is the audiophile vinyl version of this recording, which is also very good. Strangely enough, the CD's sonics appear to be almost as good as the vinyl, a rare exception in my experience.



*The Magical Journeys of  
Andreas Vollenweider  
AVAF KIN 17597*



## Journal 9

### Concert Recordings: Capturing the Live Performance - cont.

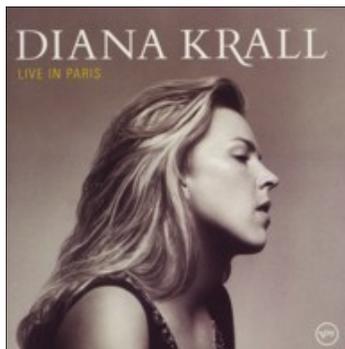
My admiration for Andreas Vollenweider's wonderful album from the mid-80's, "White Winds" inspired me to pick up the live concert recording. This Swiss artist's music has often been pigeon-holed as New Age, though his complex orchestrations and intelligent compositions easily transcend this categorization. His principal instrument is an electronically modified harp, though he plays several other exotic instruments on his recordings. His studio recordings as well as this live performance feature a multitude of musicians, many of them well known artists in their own right. This album is a compilation of several pieces recorded at several sites throughout Europe and Japan.

The opening piece of the album, "Stella" never fails to bowl over my friends who hear it for the first time. The dynamics and low bass reproduction are simply stunning. Included from "White Winds" is my favorite Vollenweider piece, "The Play of the Five Balls" which became a favorite of all my family members played many times during the 80's as a reference piece from the original album.

Soundstage air and ambient cues almost seem too prominent to be believed, but I fail to note any evidence of twiddling or tweaking to enhance these characteristics. Instruments are solidly placed throughout the voluminous soundstage along with an appropriate cushion of air surrounding each. In some cases, the sense of echo and decay portray a cavernous recording site, most notice-

able at the end of a piece when the music stops abruptly but a slight echo remains as it reverberates in the space.

This recording is a great example of the live concert done right. Highly recommended.



*Diana Krall - Live in Paris*  
Verve CD 440 065 109-2

This concert was recorded at the Paris Olympia on Dec. 2, 2001 and included Anthony Wilson on guitar, John Clayton on bass, and Jeff Hamilton on Drums, all featured artists themselves. Diana offers up several standards as well as a unique arrangement of Joni Mitchell's "A Case of You", the piece that originally attracted me to this live performance.

My friend Greg Graff holds this album as his ultimate reference, and for good reason. The musicianship demonstrated by this topnotch jazz combo gets toes tapping to the rhythms and jaws dropping to the amazing realism of the instruments and the huge soundstage surrounding the listener. The capture of Diana's

piano is of reference quality and is a reliable measure that can be used to evaluate audio components.

This disk provides you-are-there dynamics, and instruments and vocal do not suffer from the typical recessed sound of many live recordings.

An excellent DVD of this concert is also available as well as audiophile vinyl which I also own. As with the Allison Krauss album above, the vinyl is excellent and provides superior detail, but the CD comes very close and goes to further the argument that Redbook 16-44 digital can be very very good.



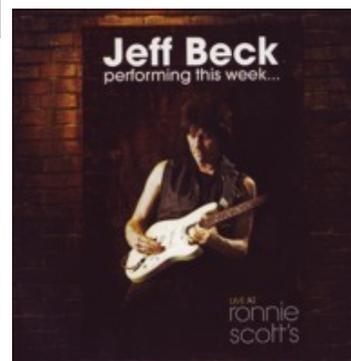
*The Eagles - Hell Freezes Over*  
Geffen CD GEFD-24725

I decided to add this recording to the list after a relisten during my evaluation of the MIT speaker cables reviewed in this issue. This album was a big favorite among the audio cognoscenti several years ago and was played to death at audio shows and CAS club meetings, but still deserves a mention here for its accurate portrayal of a group of excellent

musicians playing "unplugged" during their reunion tour. The 11 live tracks were originally recorded for a live MTV special and the 4 studio tracks included 2 new songs, "Get Over It" and "Love Will Keep Us Alive."

The "Hotel California" track remains a reference for many of us and continues to reveal hidden nuances as our playback equipment and listening spaces improve. This album, for me is all about stringed instruments. Steel string acoustic guitar, more specifically Glenn Frey's 12-string, is captured in realistic fashion and rings true both harmonically as well as in its portrayal of high-frequency string transients. Don Henley's and Frey's vocals have held up well over the years, and Timothy B. Schmit's tenor vocals don't seem the worse for wear (for the passing of years).

As with several of the above albums, this concert is also available on DVD as well as vinyl, both of which are excellent.



*Jeff Beck - performing this week... live at Ronnie Scott's*  
Eagle Records ER 20150-2



## Journal 9

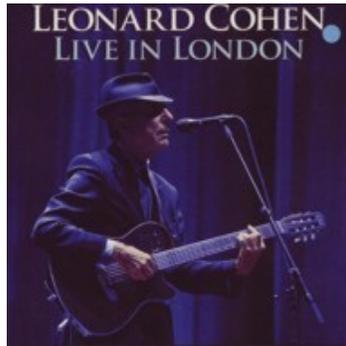
### Concert Recordings: Capturing the Live Performance - cont.

Jeff Beck staged a live performance at Ronnie Scott's intimate nightclub in London that was recently screened on cable channel Palladia, where I viewed it for the first time. Not being a huge fan of Beck's but respecting his importance in the annals of rock history (he is considered by many to be one of the top 3 rock guitarists of all time), I was prepared to switch channels but became transfixed on the music in this video. Continued viewing led me to order both the Blu Ray video as well as the accompanying CD, and as much as I enjoyed the video, I found the CD to be a stupendous recording of this live event.

Not being an aficionado of Beck's music (though I own some of his early albums on vinyl), I felt that his music in this live setting worked much better for me than on his studio recordings. The opening track, "Beck's Bolero", soars with Beck's crying Stratocaster with his excellent band as the perfect foundation. Each track on this disk provides a unique view of Beck's mastery of the electric guitar, as is the case in his version of the Beatles' "A Day in the Life."

Though the acoustic space of Scott's nightclub is successfully captured, the stunners here are the dynamics and harmonic integrity of the instruments that make up this wonderful recording.

The video includes the added bonus of Eric Clapton's walk-on duet with Beck. Needless to say, I am now a fan of Jeff Beck's music.



*Leonard Cohen - Live in London  
Columbia CD 8697405022*

During my college days in the late 60's, much time was spent in the appropriately named coffeehouse, The Gates of Eden, located near campus. Folk music was the thing here, and rock music was treated with sneers and revulsion. The notable historical event of Dylan going rock heaved everyone into a fit of depression at this betrayal! This is where I was introduced to the music of Canadian artist Leonard Cohen and learned that he had penned the song popularized by Judy Collins, "Suzanne" which was played incessantly by the various purveyors of stand-up folk.

Over the next 40 years, I had a passing acquaintance with Cohen's music, most notably from Jennifer Warnes' album and audiophile favorite, "Famous Blue Raincoat." Passing on most of his albums over the years, I was curious enough to pick up this live concert offering. Cohen, now in his 70's, performed this concert at London's O2 in July of 2008. Virtually all of the Cohen favorites, including the exquisite "Hallelujah" are performed. Surprisingly, his voice has fared

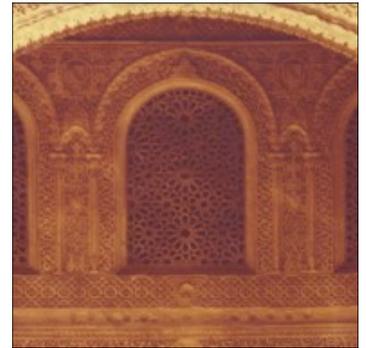
well over the years, and his baritone voice seems none the worse for wear.

I prefer the new arrangements of his songs over previous recordings mostly due to the wonderful musicians backing him up as well as the female backup vocalists, to include co-writer Sharon Robinson and Charlie and Hattie Webb, the Webb Sisters. This is a warm and friendly recording that creeps up on you over time, and I find myself going back to it frequently when I simply want to relax in my listening chair and immerse myself in the music.

Like the other performances reviewed, presentation of voices and instruments is outstanding. Soundstage air and a sense of the recording space are accurately rendered with a front-row perspective on the event. Also of note is the accurate rendering of the Hammond B3 organ which takes one back to the live concerts of the 60's when its use was popular.

The concert is also available on DVD and was screened on PBS recently during one of their membership campaigns. The video was being offered as a membership perk and in order to discourage viewers from DVR'ing it, they ridiculously shrunk in the sides of picture frame, making it almost unwatchable.

Addendum: Recently released was his concert at the Isle of Wight recorded in 1970 which I plan to lay my hands on soon.



*Loreena McKennitt - Nights from the Alhambra  
Verve/Quinlan Road*

One of the finest performance events I've been lucky enough to attend in recent years was the Loreena McKennitt concert held in October 2008 at the Paramount Theater in downtown Denver. As a longtime fan of her Celtic-flavored music, I moved quickly to secure tickets for seats up front and near the stage.

This live recording, captured in late 2006, seems to include the same songs and musicians that were heard in the Denver concert, so I was more than curious to compare. The package includes the concert video on DVD and 2 CDs that include all of the pieces rendered live. Like the other albums reviewed, the musicians accompanying Loreena's vocals are all excellent, and the arrangements lack nothing compared to her studio recordings.

Though sonics are not quite up to the standards of some others reviewed here, vocals and instrumental timbres are accurately reproduced. All in all, this is a lovely recording and highly recommended.