Opening Salvo

Welcome to the 10th issue of Copper!

It is of course July 4th everywhere in the world (plus or minus a few hours), but here in the US, it’s our Independence Day. In the midst of the chaos we see everywhere in the world, that should be significant--- and yet, I’m afraid I have nothing profound to say.

Oh, well.

We’re happy to welcome Malachi Kenney as a contributor. Mal’s analytical abilities are paired with a sardonic viewpoint that tends to make The Audio Cynic seem sentimental by comparison. We hope to have more from Mal and wife Kirsten Brodbeck-Kenney in the future.

We’re also happy to present Haden Boardman’s continuing series on record playback.

In this issue’s installment, Haden looks at turntable motor and drive systems, and how and why they matter.

For our readers in the US, we wish you a happy Independence Day, and we hope you enjoy your backyard barbecue and beer.

For our readers elsewhere---well, you can still enjoy a backyard barbecue and beer!

Finally: we’re grateful that our friends in Elephant Revival emerged unscathed from a tour-bus fire, recently. Unfortunately, not all their instruments were as lucky…. 
Tinnitus Needs to be Talked About

Dan Schwartz’s article on “I Have Tinnitus. Music, Audio and Other Illnesses” highlights just one issue that impacts many aging audiophiles and/or those who insist on playing their headphones at levels that are clearly audible to train or plane passengers several seats removed from them. Tinnitus is an unfortunate aspect of impaired hearing. Sometimes it’s a transitory experience lasting a few seconds - in other instances it is a permanent feature of an individual’s interactions with the outside world which can lead to a lessening of expectations in the auditory realm that leads to profound depression that becomes a vicious cycle.

It can be accommodated to as Dan describes but it’s cause is multifactorial - e.g., we really don’t know what causes it. By the same token, its potential treatment is a trial and error process that frequently involves homeopathic remedies and a placebo response on the part of the affected individual. Potential causes are an auditory gating dysfunction that many researchers think is related to aspects of the P300 (P3) wave potential signal that is involved in some bona fide psychiatric disorders, antibiotic-induced damage to the inner ear and the tympanic flaccidity that Dan also mentions. For non-musicians, he latter is often the result of too many changes in atmospheric pressure, e.g. take offs and landings, and my own permanent tympanic flaccidity - a perforated eardrum which is currently accommodated by hearing aids - reflects a 5 million mile plus frequent flyer account from my days of gainful employment. I’d like to thank Dan for raising the topic of hearing dysfunction - the elephant in the room to many audiophiles - and for Copper in covering this far from mainstream topic.

Mike Williams

Make Way For a Pretty Woman!

I went to the Newport show with my somewhat attractive thin white old self (SATWOS) and my attractive white wife. (It’s a 5 hr drive from San Luis Obispo) We got there early on Sat. and things were fine but as the day went on things got worse but I’d have to say the young guys were just as rude. I’m not shy either so I would make space when needed but all but the most socially hampered were happy to make room for a pretty woman.
The dealers and manufacturers were all very kind and accommodating to her when she asked to listen to something or had questions. The bottom line was as a non-audiophile she thoroughly enjoyed the show, the music and the people she met.

Best regards,
Ray Earl

More About the T-Word

In Dan Schwartz's article on tinnitus, he mentions an experiment, saying to “gently pop your ears and hold them in a popped position.” Just to clarify what he means, would this be like how you do sort of a yawn at higher altitudes to make your ears pop? Seems like it is but I wanted to be sure about that. Thank you.

Rickie Miyake

(I believe that is what Dan meant---Ed.)

You Are There vs. They Are Where?

Love the magazine. Love the topics, the diversity, the writers (Leebs is my fav, but then again, I've always liked marketing guys). Yeomen’s work for sure. Always fun to learn more about our industry. Oxymoronic sayings such as, “the more you know, the more you don’t know”, remind us that even beyond the wonder years of our childhood, life offers complexities producing awe and wonder well into our adult years, and that we can and should keep learning.

And speaking of awe and wonder, the audiophile experience certainly has the capacity to offer up plenty of both, at least for this adult. However, sometimes this audiophile life can be a frustrating one, especially when trying to explain it to a non-audiophile. It really serves no useful purpose to wax poetic about accuracy, macro and micro dynamics, imaging and soundstage, fundamental low bass, inner detail, pace, low noise floor, custom designed golden-ratio room dimensions, yaddy yaddy ya. After
all, the target audience may not be all that interested in critical, or serious listening, as we afflicted audiophiles often call it. Their collective listening experiences may only have been based upon a historical assemblage of Best Buy rigs, car stereos, iTunes via ear buds, or You Tube music videos on flat screens. Sigh.

But at least they have music in their lives. Music can be enjoyed anywhere, anytime, depending upon one’s mood. In the forefront or in the background. I understand that. So what? Well, in an attempt to introduce a newbie to a taste of the high end, and to bridge the potentially awkward, “I don’t get it” moment, I simply tell my listening room victims that the goal of my big rig is to attempt to recreate live music. Now, of course, this also opens another can of worms... including for me.

For example, and assuming that nearly everyone has been to at least a few live musical events in their lives, the possible expectation is that the playback will be REALLY LOUD. So, after seating them in the sweet spot, and before the first note of music is played, I cautiously state, “and by the way, this has nothing to do with sheer power and loudness. It has more to do with one’s ability to listen into the performance and experience all its detail and emotion.” Now, after already noticing my acoustical room treatments and also that my speaker wires are elevated off the floor via glass insulators, this last utterance from me surely confirms to them that I am indeed a whack job. They are probably thinking, what’s the point? And by now, and because I am a sensitive male audiophile (oxymoron?), I myself start to feel awkward and realize that I better shut up, cut my losses, and play some music.

In fact, I am now very anxious to get the music started before they ask me a hard question, such as what do I mean by the phrase, “trying to recreate live music.” Yeah, for sure it may encompass of all those things that I mentioned in the second paragraph, but the more subjective approach would be to go down the “you are there” or the “they are here” illusory path explanation. But, which one is it? And, more specifically is it the live sound of Avery Fisher Hall, or the Wilshire Theater? La Scala? The Blue Note? The Troy Bank in NY? Central Park’s Strawberry Fields? Your local outdoor amphitheater or stadium? Is it row 1? Row 13? Row 35? The mezzanine or balcony? The grandstands? Stage left or right or center? Of course, the answer is yes, and therefore, the sound of a live performance will sound different in every single case. Different attack, frequency response, balance, reverberation, decay, etc. So, what indeed is the reference? One can say: OK, just be true to whatever the recording venue was. But again, row 1, row 13, the balcony .... where? Rolled off highs? Nodal bass? Visceral impact vs ex-
tended decay times? Paper or plastic?

Audio nervosa personified. So what’s the point? The point is that there are always more questions than answers. Absolutes are hard to come by. Life is all about our personal preferences and choices. Nothing to get hung about. Enjoy the music. And, could you turn it up a bit louder, please? Well, I could, but the room will start “talking back”, and the images will start to blur, and ... , oh, what the heck, life's short, crank it up!!

Gary Gay
Microphones: What's the Difference?

David Bock began his business in the same way that many entrepreneurs do: by accident.

A veteran of Allen Sides' Ocean Way Recording studios, in 1995, Bock wanted to equip his personal studio with microphones like the classic condenser units he’d used at Ocean Way. Unable to afford such mics, Bock built his own.

Twenty-one years later, he still builds and repairs microphones for clients from all over the world.

David was kind enough to chat with me on June 22nd of this year. The Bock Audio website contains a wealth of information about microphones in general: ——Bill Leebens, Editor, Copper. (C)

C: In general, are different types of microphones for different tasks? For example, is one type better for vocals, another type for instruments?

DB: Without going into a long history—because obviously, people used to record phonograph records right into a horn, and that would record onto a disc—then they went on to carbon microphones, which really is no longer relevant. The condenser microphone has dominated the recording world since the ‘50’s.

C: The best-known condenser mic is, I guess, the Neumann U47? That’s a name that gets tossed around a lot.

DB: The U47 is certainly the most-iconic, but it’s not the only one. They made enough of them that it’s still the most known quantity.

C: What I’ve heard from recording engineers is that U47s are hugely variable.

DB: Well—something that was made in 1950 is now 60+ years old. We’ll be able to keep them going for a long time. It’s a brilliant circuit, but because of the nature of that circuit things vary just because of the vacuum tube, and that doesn’t even consider the capsule and transformer, which will also vary over time.
C: Condenser mics, then, are workhorse mics that are used for everything from vocals to instrumental close-ups?

DB: In the recording world, yes.

C: Has there been much in the way of development of condenser mics over the last half-century or so, or has it been pretty fixed?

DB: Outside of the addition of the transistor---which a lot of the biggest artists have never moved on to---there really hasn’t been much change. In fact, we like to call it the reverse technology model, where everything else in society gets better, safer, more efficient…this is the opposite, nobody has developed anything that’s surpassed the things that everyone loves about the classic Neumanns.

C: The mics that you build, are they largely based on the older technology as well?

DB: Very much so, but optimized wherever possible. If there’s an option that will produce less hum and noise, we’ll use that option.

C: Can you give a basic explanation of how a condenser mic works?

DB: It’s a metal film or foil that’s placed at a very close distance to a more-solid piece of metal called the backplate, and a charge is applied so that electrically, it looks like a capacitor. There is an analogous displacement of that foil or membrane to sound pressure, which is then impedance-converted or amplified, and that signal is pretty much an exact analog. You can get into elements like the mass of the membrane being the control…but it gets very technical, very fast.

C: Is it somewhat like an electrostatic speaker in that if you overdrive it, it could arc or fail?

DB: In 90% of products that are safety measures so that will not happen. The voltages are not comparable, and arcing is not a question. But it is pretty much an electrostatic speaker in reverse, yes.

C: Is there really anything in a condenser mic to wear out?

DB: Yes. Besides the vacuum tube, the plastics--- despite popular mythology---plastics change over time., and that includes adhesives, which are engineered not to [ change over time]---they will.
C: It sounds like old Magneplanar speakers, which eventually delaminated or pulled apart from the conductor...something like that?

DB: Yeah. It could go one of two directions: I’ve seen both cases, where tension increases, and tension loosens. There are also environmental conditions, where because the membrane is made of a very thin piece of plastic, mylar, that’s 6 microns thick, the conductor element is generally a piece of gold that’s been sputtered on to it, but that bond is imperfect, and it can fail over time.

C: So you might actually have the gold particles migrating?

DB: Yeah. They can re-evaporate, or flake off.

C: So you might find people searching the carpets in recording studios for gold dust? (laughs)

DB: (laughs) That’s NOT what they’re looking for. (laughs)

C: I know, I was being facetious. They’re looking for white gold.

DB: Exactly. They ARE looking for white gold. (laughs) That did happen.

C: The microphones that you make—are they utility mics, they’re used for everything? Or do they have different characteristics for different applications?

DB: The capsule tends to be the most-defining part of those microphones, and there a couple of basic different ways of making a professional capsule, that are optimized for low noise, gain versus noise.
C: You’ve got the different capsule types, the omis, the cardioids, the directionals….

DB: …even outside of the directionals, there are really just a few basic kinds of capsules. In America, people tend not to use directional microphones or multi-pattern microphones. They don’t use as much omni or figure-8, they just use cardioids.

C: Why do you think that is?

DB: I couldn’t answer that. People stick microphones in front of things, and they don’t want to hear the room, and the industry has gone on to have less-idealized spaces. The less-idealized the space is, the more you need a directional microphone.

C: Because the old, megabuck studios seem to be closing at a fearsome rate.

DB: There’s a few left. Right.

C: We’ve lost a number of recording studios just here in Boulder, and it seems like every week there’s news of some iconic studio closing in New York or LA.

DB: The construction techniques and lumber alone in those things make a huge difference in what a record sounds like.

C: Is there any particular type of microphone we would associate with a certain “house sound” of, say, Mercury Living Presence, or RCA? Was mic choice a part of their sound, or was it more the input from the engineers?

DB: I don’t know that it was intentional at the time for any label other than Pacific Jazz, which relied upon (AKG) C12s. Or ECM, which relied on compression (laughs). People do use dynamic mics in the studio; you never have to worry about overload with a dynamic mic.

C: Dynamic mics are used for vocals---?

DB: People sing on those, instruments, obviously, but probably not pianos.

C: That would be the lower-end category, Shures and the like?

DB: Yes. Another type of microphone that has seen a tremendous resurgence in the last 20 years is the ribbon mic. There are several companies making ribbon mics for recording studios or for on-stage.

C: Ribbon mics are generally used for vocals, like the old RCA 77DX, or…

DB: Oh no, no. That’s the least common application. If you look at old movies, it would appear that way, but with today’s technology, that’s the least common application. It’s used for instruments, mostly. You use it on drums or on electric guitar amps. It’s been the savior of the electric guitar amp.

C: Why is that?

DB: Because they just don’t grab as much upper midrange as a condenser does, immediately. Sort of
like a big giant low-pass filter.

C: So ribbons have a less aggressive sound, then?

DB: Yes. That’s a good way to say it.

C: What do you see changing in your business? Anything? Is it just that eventually they wear out and people buy new ones? How does it work for you?

DB: No, no, that’s why we repair them. We’d be able to keep your U47 going for at least another hundred years.

C: Wow. Is the majority of your business new manufacture, or repair and updates?

DB: Our primary business is manufacturing, but the product we’re most often compared to or evaluated against is a vintage microphone. That’s a unique position; most companies aren’t in that position.

So that’s a tough space we occupy, and you have to be technically savvy to occupy that space.

C: How did you get into the business? Microphones don’t seem like the kind of business where you’d wake up one morning and say, “I’m gonna build me one of THEM.”

DB: It almost kinda was like that. I had long ago gotten into the repair side most people in the studio are scared of repairing their microphones. When I worked at a very large studio called Ocean Way Recording, here in Hollywood, I wanted to have my own studio, and I wanted of course to have the same microphones that I was used to at Ocean Way, but there was no way I could afford that. So I started building own.

In 1995 when I started the business, there were six companies worldwide making new tube mics, including Neumann. Now there’s 120. It’s a little like the boutique guitar amps: it’s a clone business, and rather than depreciating the value of old amplifiers, it increased the value of the old amplifiers, and it increased the number of clones, which further increased demand. As the number of people who make U47 clones has increased, the number of actual U47s hasn’t increased, it’s probably decreased. And the prices of real U47s has gone waaaay up, and the demand for U47s has increased, so now there are even more clone manufacturers.

C: I see an analogy with vintage audio. Back in the ‘80’s I went through kind of an Indiana Jones period where I went into old movie houses and pulled out Western Electric and Altec equipment, and unfortunately didn’t keep any of it. These days there are a number of Asian companies that are trying to reproduce Western Electric gear, which has only served to drive up prices even farther on the real stuff. These days I could put my kids through college by selling a couple pieces that I had 30 years ago. Prices are just insane.

DB: That’s a little like the vintage microphone market. We had a large collection of U47s at Ocean Way in 1990, not because they cost a lot at the time, we didn’t spend a lot of money, but because we were looking for bargains. There was a whole period where radio stations in Germany were saying, “we don’t want this old tube garbage any more, we have transistors that are much better.”
C: Much tidier, that German attitude…. Well, it’s a little sick to get attached to technology, but there you go.

DB: It’s still there, and people will pay a premium for it.

C: If you were to summarize what your average audiophile geek should know about mics, but doesn’t, what’s the big, dark, dirty secret?

DB: Well, there’s plenty of mythology to go around: fewer mics are always better. Not true. Or that omni is the only pure microphone? Also very untrue. That a recording engineer’s job is either to very accurately capture something or to seduce the listener. And microphones are a big part of how that’s accomplished.

C: I appreciate the insights, and certainly thank you for your time.

DB: It’s been my pleasure to talk with you.
QUIBBLES  
AND BITS

By Richard Murison

I wrote last time about noise shaping, what its general principles were, how it could be applied to some (albeit marginal) benefit with CD audio, but was of little consequence for 24-bit Hi-Res music. Rather, it is with DSD – in all its forms – that noise shaping finally comes into its own. Time to devote a column to that subject.

The general principle underlying noise shaping is that the noise floor can be lowered at the low frequencies and the removed noise moved into some unused high frequency space. 16-bit CD audio already has a low noise floor, although to be fair it could really benefit from having it lowered a little. But with its 44.1kHz sample rate, the audio band occupies virtually the entire available frequency space, so there is no unused high frequency space into which to dump the removed noise, which as a result can only be added to the high-frequency end of the audio band. With 24-bit audio, however, the noise floor is already plenty low enough and we don’t need noise shaping.

The benefit of noise shaping is perhaps most useful in the particular circumstance of having a very low bit depth and a very high sample rate. That way, although the quantization-limited noise floor which needs to be reduced is very high, at least we have a large expanse of unused frequency space into which we can shape it. In the limit, lowering the bit depth takes us to 1-bit where the SNR (Signal-to-Noise Ratio) is only ~6dB. [At 16-bits it is ~96dB and at 24-bits it is ~144dB. For audio applications with serious high-end pretensions we need something of the order of ~120dB which is equivalent to about 20 bits of bit depth.] So the noise shaping challenge with 1-bit audio is to remove ~114dB from the noise floor all the way across the audio band.

When it comes to noise shaping, the theory that describes what is and is not possible is called Gerzon & Craven, after the authors who invented it. Gerzon & Craven tells us that there isn’t really a hard limit on how much we can reduce the noise floor, provided there is some place to put the noise. With 1-bit audio there is an absolute maximum of 6dB of headroom available across the unused high frequency space, and realistically, we can only hope to fill something like 3dB of it. Given that we want to remove ~114dB of noise from a ~20kHz bandwidth, Gerzon & Craven tells us that we will need a minimum sample rate of about ~1.5MHz to provide enough unused high frequency space in order to accommodate it all.

DSD Raises Its Hand
To accomplish such a dramatic signal processing task we will need something more elaborate than a simple noise shaper. The tool for that job is an advanced version of a noise shaper called a Sigma Delta Modulator (SDM). [These are sometimes also called Delta-Sigma Modulators (DSM) but I use the term SDM.] SDMs, and their joys and limitations, will be subjects of another column some day. Suffice to say that SDMs are indeed up to the task, but that their practical performance falls somewhat short of what can be achieved in theory. So, in order to get the noise shaping performance we need for high quality 1-bit audio we will need a sample rate of the order of 3MHz.

In actual fact we settle on a sample rate of 2.8224MHz, which sounds somewhat arbitrary until you realize that it is a multiple of 64 times 44,100 which will end up being very convenient. This format – 1-bit 2.8224MHz – was used by Sony and Phillips for their SACD joint development, a format which they grandly botched upon launch back in 1999. They called the format Direct Stream Digital (DSD) as a marketing term, although they never had any plans to launch it as a standalone format.

DSD delivers a SNR of approximately 120dB across the audio band, along with a hefty background of high frequency noise that starts rising just above 20kHz and continues all the way out to 1.4MHz. Its technical performance, together with its perceived sonic attributes, give it a seat at the table at the forefront of high-quality digital audio formats. Right from the start, however, DSD has provoked controversy. At the same time as SACD was launched, a rival format called DVD-A (based on conventional high-resolution PCM) was also introduced, resulting in a ‘format war’ between proponents of the two. This format war served only to feed a “pox on both your houses” reaction, and both products withered and died on the vine, although, to be fair, SACD does still pootle along with sufficient support to sustain a critical mass. [Side note: An unusual aspect of DSD – and one which is quite frankly more of an academic oddity than any kind of practical feature – is that the waveform representing the digital bitstream is identical to its own analog representation.]

Regardless of your position in the PCM-vs-DSD debate, there is little doubt that 1-bit audio has proven itself to be a valid format for the representation of extremely high quality digital audio. And let’s be realistic about this – there is a lot to DSD that renders it highly impractical for deployment in the real-world everyday business of manufacturing recorded music products. But a lot of people like the sound of it. And while SACD continues to be a format going slowly nowhere, DSD is garnering a lot more attention, and is imposing its influence on the high-end audio equipment market in a way that SACD never did.

Richard Murison enjoyed a long career working with lasers, as a researcher, engineer, and then as an entrepreneur. This enabled him to feed his life-long audiophile habit. Recently, though, he started an audiophile software company, BitPerfect, and consequently he can no longer afford it. Even stranger, therefore, that he has agreed to serve in an unpaid role as a columnist, which he writes from Montreal, Canada.
The Illusion Of Nostalgia

By Bill Leebens

I grew up as a nostalgist, longing not just for times past, but for times before my birth. At age 11, I was a member of the Nostalgia Book Club, supposedly their youngest. It’s one thing to wistfully recall times in one’s own life; it’s quite another to wish for times to which you have no real connection, or real understanding.

That form of nostalgia is particularly reductionist, selective, and naïve. That was me, wishing for silent Lon Chaney movies, Duesenberg Js, and Orson Welles’ War of the Worlds, without considering the pesky realities of the Depression, widespread disease, or short lifespans.

I find that many audiophiles are nostalgists, feeling that society and the music world peaked with Living Presence recordings, Miles Davis’ playing on Kind of Blue, and the Garrard 301. The downfall of this framework is, of course, that it is a virtual construct of an imaginary world for those who not only want to cherish those works, but the time in which they were made.

To put it plainly... that’s delusional.

For starters, yes, many Living Presence recordings were brilliant, and Bob and Wilma Cozart Fine were artists and magicians. They were also romanticists, and presented a very limited portrayal of a limited variety of music. To relish the Miles of Kind of Blue is likely to deny the equally-influential Miles of Bitches Brew. Again, a romantic view. And the 301? Yes, a good one is very good indeed...but how many are good ones? How many more require a complete rebuild and decaking and replacement of many parts of marginal quality?

Romance. That stuff will kill you by making you too sensitive to live in the modern world. Really, though, doesn’t focusing on only the high points, taking the Leave It To Beaver view, make you too sensitive to live in any world, even one’s own carefully-constructed bubble world?

I encounter such selective amnesia a lot, in everyday life, and certainly audiophiles often latch onto
snippets of the past and hold them near and dear. The problem is that they’re usually mistaken, mis-guided, or mis-remembering (as said by Bush 42—- not to be confused with Blink 182).

Change is continual, ongoing, and sneaky. We remember things in the context of their time, and as we viewed them with the sensibilities we had then. Those sensibilities evolve without prompting, without notice.

For example: as a pudgy teenaged gourmand, I recall being highly impressed by Eli’s cheesecake. In Chicago recently, I had a piece of Eli’s. My reaction?

Meh. Not terrible, not great. Nothing special. Did the cheesecake change? Maybe. More likely, my tastes had, and I’d become both more demanding and more discerning. And I’d also learned how to bake a damned good cheesecake.

Ever have that happen with music? I certainly have: a lot of psychedelic and art-rock music that I loved from the mid-’60’s to mid-’70’s is now unlistenable for me, twee and pretentious and laughable. Oh, well. I grew up. Matured. Or so I’d like to think.
(On the other hand, I sang along loudly and joyously when It’s A Beautiful Day’s “White Bird” miraculously appeared on the car radio the other day. It may be precious, but I still love it.)

Ever have that happen with audio gear? Stuff you lusted for as a young married but couldn’t afford, you finally found in perfect shape for next to no money…did it leave you flat? Uninvolved? Sad? Well??

>crickets<

It happens. Maybe the gear changed, and needed restoration or just cleaning, but I’d bet that more than anything, you’d changed. Greater experience has heightened your abilities, made you more demanding and less-forgiving of flaws that once escaped your notice.

And if it happens to you—when it happens to you—-in whatever area of your life, don’t beat yourself up. Don’t mourn the loss of an old love (or lust): just know that you’ve grown, and learned, and changed.

And be grateful.

Bill Leebens is Editor of Copper and Director of Marketing at PS Audio. He has been in and out of the audio business for over 40 years. Each time he returns to it, he becomes more cynical. He does not intend to go quietly.
We All Shine On

By Dan Schwartz

49 years ago, in the first international worldwide television broadcast, John Lennon sang to us, “There’s nothing you can do but you can learn how to play the game – it’s easy. All you need is love.” It was an invitation that opened doors through which millions flowed. Many years later Nelson Mandela suggested that what frightens us most is not the possible darkness inside us, but how unbearably bright we might shine.

We perform all our actions along a scale that exists between our purest state, love, and our most perfect state of resisting that love: fear. You can see that in so many of our endeavors, and very much so in the world of music and its interaction with business. Music is one of the purest expressions of human souls, the language of love, the voice of longing for God. It’s seemingly part of the nature of many people in business to be fearful, to be conservative (in the sense of conserving). We can all easily understand and empathize with the impulse to hold on to what we already have. But no innovation, no strides, have ever been made through that sort of conservative behavior. It’s always fallen to those in pursuit of a vision to take the risks and reap the rewards. (For example the mere survival, let alone the triumph, in the present moment of Apple Computer in an environment, which a Darwinian perspective on business suggests would have eradicated it, proves the strength of individual vision, of the determination to deliver something better. Apple existed for some time not out of acting on fear, but out of acting on the vision of a few men’s vision).

The explosive flowering of music 50 years ago came not from business but from people, from hearts and minds opening across the culture --- and the existing industry responded, often in the same understanding spirit (e.g. Warner Bros./Reprise’s reputation for being nurturing and artist-friendly). Music lovers ran the labels. But of course, things have changed, as our friend Bob Zimmerman says. The current state of business in our society is deeply mired in fear. There is a prevailing sense that things are getting worse and are going to get even worse, and that if you’re going to get what you can get, you better get it now.

My brother Peter Schwartz (then of Global Business Network), writing with collaborators, put forth an idea in Wired magazine in 1997 that they called “the Long Boom,” specifically to counter the fear that
runs through those concerned with the state of economics in the West. His premise was that whatever the ups and down, we were in the midst of an overall rising tide, and that there is only reason for optimism when one takes the long view. (Steven Pinker makes a similar, although more convincing, argument about violence in the world). The bursting of the tech bubble appears to run counter to this idea and disprove it --- perhaps it does. But if one looks at real estate (and note the word “real”) the irregular dips and peaks in home values are seen in a steadily rising line, even in places that are currently enduring the more conventional real estate bubble. When the world of speculation disappoints, people put their trust in the real, the tangible. We come back to our essential values, the things we know, and the intrinsically human. Like music --- one of the essential human expressions.

The remains of the music business as it exists today aren’t in any condition to nurture this value; the functionaries who seek employment in it, and what’s worse, seek desperately to hold on to that employment out of fear, have demonstrated no ability to promote the well-being of the very life blood of the industry they’ve invaded. We got here the same way we got to this state in many other industries: by democracy. The responsibility of corporate officers to produce shareholder value may work in some industries to keep behavior within the company in line (though we should ask – in line with what? This is one of the essential questions asked in the American business world today, as we all recognize).

But we should also ask, does it necessarily mean that such industries need to work out of fear? In the music business, greed alone hasn’t been the over-riding concern: it’s been the increasing fearfulness for more than 40 years. And since international conglomerates took over the industry in the early 90s, it’s been fear of not meeting those quarterly expectations. This is by its very nature opposed to risk-taking; opposed to acting out of vision, opposed to acting out of love. Protecting market share has nothing to do with music. It led to a monolithic culture. It’s indeed hard to imagine how much more narrow the permissible range of music might become, but the permissible range of music-making has been reduced to one method – a computer manipulated hallucination of “perfection.”

And, regrettably, as the visionary musician and record-producer Brian Eno has stated, “musicians have shrunk to fit” this demand. Producers in their 30’s now complain (to me) that the bands they produce that are their age or younger can no longer play through a song in the studio but can only perform a brief part of a song once - they expect the technical staff to simply “loop” it in their computers to simulate performance.

In the meantime, those who came of age and entered music as their life at Lennon’s invitation have been shoved aside. Those who can write, who can sing, who can perform without the aid of computer crutches are deemed un-market-worthy. This makes perfect sense. They are older. Wider. Grayer. They have less hair. They might not look so good on You Tube or in a Calvin Klein underwear ad, which make them less useful for marketing synergy. But they are now deeper, more experienced human beings and they know how to make MUSIC. And the industry, so obsessed with its terror of failure, won’t let them in. The engineers who know the skill of recording a group of musicians playing together are aging and their skills aren’t being passed on. Today’s starting engineers know only how to plug in computer cables. They can’t set up microphones for a drum kit or a string quartet. These days, in the rare moments when an older musician gets hired to play on something new, they have to teach the engineer how to record their instrument. Long ago, I took control of getting my sound recorded.

The irony of this situation --- which has become a tragedy --- is that the remaining labels primary value
is in back catalog, in the ownership of recordings by musicians who are no longer allowed in, recorded with methods that are considered outmoded. Older, imperfect and very human recordings are and remain these corporations' strongest sellers year to year and yet the companies fear to find and release such music now. This is short sightedness to a suicidal degree.

In 2001 a band that broke up 31 years before was the number one band in the country --- with recordings all made between 1963 and 1970. Pop and rock music of 40 and 50 years ago is our new classical music. And I fear we are stuck in a semi-permanent loop of nostalgia.

The recording industry is and always has been about preserving magical moments in time. The worrisome part is that, in recording at least, there seem to be so few new magical moments.

**Dan Schwartz** is a parent, sort of a husband, and has been a musician of some years, having played on quite a few records - and even a few good ones. He’s recorded or played with Rosanne Cash, Bob Dylan, Jon Hassell, Brian Eno, Bernie Leadon, Dave Navarro, Linda Perry, Sheryl Crow, Stan Ridgeway, and was a member of the Tuesday Night Music Club. In his spare time, he used to write for Harry and Sallie at the absolute sound and the Perfect Vision. Professionally, he keeps trying to leave music, but it keeps coming to get him.
Beyond The Four Seasons

By Lawrence Schenbeck

Wait. What’s wrong with The Four Seasons?

Nothing. But there are 400 other Vivaldi concertos out there. Plus lots of music by Bach, Telemann, Rameau, Handel and others that’s just as much fun. Why not play more of it?

I tend to recoil from anything that, instead of making music more human-and-alive, makes it more stuffed-and-mounted.

So I really don’t want to hear The Four Seasons every year. My bias may also explain why you’ll never see a Top Five list here, or a Record to Die For, or a detailed comparison of fourth movements of the Tchaikovsky Fifth as executed by Karajan, Furtwängler, Bernstein, Boul, Boulez, and Barbrolly. Such comparisons are a pretty good sign that someone’s heard that music a little too often.

I’d rather tell you about great Baroque works you may not have heard yet.

One of the undeniable charms of The Four Seasons is its pictorial nature. You can hear thunderstorms, birds singing, even a barking dog. Guess what? Other Baroque music goes there too. Here’s a new 2-disc release from Jordi Savall, venerable Catalan conductor and viol master. Full title is Les Éléments: Tempêtes, Orages & Fêtes Marines (Alia Vox AVSA 9914; hi-res download available). All the music, by Jean-Féry Rebel, Matthew Locke, Marin Marais, G. P. Telemann, J.-P. Rameau and—yes—Vivaldi, depicts nature at its stormiest. Rebel’s 1737 ballet Les Éléments begins with a “representation of chaos”:

Rebel goes on with representations of Earth, Wind, and Fire, not to mention Water, apparently linked with tempests forever in the 18th-century mind. In fact, Savall’s all-star orchestra offers Matthew Locke’s incidental music for The Tempest (1674) and follows that with Vivaldi’s La Tempesta di mare (1729). If you get that far, you will have detected a pattern: these are nearly all suites, i.e., collections of short,
stylized dance numbers in contrasting moods and meters. Maybe that’s good. Other than two overtures, no single movement lasts more than a minute or two, providing continual variety. Or maybe that’s bad. Nothing much ever “develops,” and you can only wring so much variety from a bunch of Airs, Galliards, and Gavottes. Mr. Savall does manage to include a wind machine (doubtless authentic!) in at least one movement of each work. By the third or fourth time you hear it, though, you may question his choice. It’s a novel sound, certainly picturesque, but once the novelty fades, what remains is a bunch of less-than-novel Airs, Galliards, etc.

All of which makes his inclusion of a characterful, concise Vivaldi concerto most welcome. Here’s a bit of La Tempesta:

Now that’s a storm! I do think you’ll enjoy this album. It features top-notch performances. The sound is spacious and sumptuous. Savall’s program booklet is, as usual, both attractive and useful. Just try not to get through the whole thing at once. Remember, there’s a wind machine involved.

While we’re delving into the less familiar, let’s consider Bach. You know the Brandenburg Concertos, right? And you’ve probably heard Bach’s violin concertos once or twice, right? (In Copper #8, I recommended a good recording.) Maybe it’s time to try something quite different. How about concertos by two of Bach’s sons, Wilhelm Friedemann and Carl Philipp Emanuel?

Owing to a few bad habits, Friedemann (1710–1784) became the Rodney Dangerfield of Bach offspring. Apparently he sold some of his dad’s (priceless!) manuscripts to pay off old bar bills and gambling debts. Too bad about his image problem, because W. F. also wrote fascinating music. Harpsichordist Maude Gratton and her chamber orchestra Il Convito have recorded a nice album of concertos and orchestral works (Mirare MIR 162). This music is not as thoroughgoing or complex as J. S. would have made it, but precisely because of that, it’s delightful. You can’t always tell what’s going to come next. Although Friedemann avoided the extreme Sturm und Drang in which brother Emanuel indulged, his music still strikes a personal note. Emotions lie closer to the surface; moods seem fragile and pass more quickly.

Speaking of Emanuel (1714–1788), there’s a French cellist you ought to know better, Ophélie Gaillard. She has a chamber orchestra too, Ensemble Pulcinella. To honor Emanuel’s anniversary year, they’ve released two albums of C. P. E. Bach’s cello concertos and other music. Last year I praised Gaillard’s Latin collection; her engagement with Emanuel is far more substantial and satisfying. She has the technique and temperament to handle the most passionate, volatile stretches of this music. Check out this clip from the first album (Gaillard enters at 1’12”):

The official trailer for volume 2 offers a behind-the-scenes look at recording sessions and Ms. Gaillard’s commentary (in French, mais oui). I downloaded the hi-res files; hearing them renders me happy as a clam. (Suggested official Aparté blurb: “Schenbeck heureux comme une palourde avec Ophélie Gaillard.” Although “aux anges avec Ophélie” might be more idiomatic.)

We done yet? Not quite. Let’s get you some vocals—beyond Messiah, of course. In ascending order here are my picks: first, Philharmonia Baroque’s sunny new release, La Gloria di Primavera, a huge serenata by Alessandro Scarlatti created for a royal birth in 1716, forgotten afterward. Sample a lot or a little here.
Next, Buxtehude and His Circle, Paul Hillier’s tour of early Baroque music in north Germany and Denmark (Da Capo 6.220634). Dietrich Buxtehude was one of Bach’s mentors, but his own vocal music is simpler, more intimate. Sample it here.

And now my favorite: a collection of grave, graceful motets and élévations for the chapel of Louis XIV by Henry Du Mont (1610–1684). Sébastian Daucé and Ensemble Correspondances do it up right, adding to their list of triumphant re-explorations of 17th-century France (Harmonia Mundi HMC 902241). With ravishing music like this at hand, why does the French Baroque remain unfamiliar to so many? Strongly recommended.

**Lawrence Schenbeck** was born on a mountaintop in Tennessee. In spite of that, he became a historical musicologist. He is the author of two books, many more scholarly articles, and countless liner notes, music reviews, and “casuals.” He lives in the Atlanta area with his family and too much music, Tchaikovsky being the least of it. Literally.
The Girl Rocks

By Duncan Taylor

There has been a groundswell of national interest in a Colorado-based musician in recent years. A Colorado-based guitar player, to be exact. A 15-year-old homeschooled girl guitar player, if we’re getting really specific.

She may not yet be in the national news, but she’s already in the hearts and minds of members of national acts like Robert Cray, Anders Osborne, Umphrey’s McGee, Michael Franti, Blues Traveler, and many more.

Her name is Jaden Carlson, and she is as much a natural local wonder as our famous Red Rocks Amphitheater.

Jaden got her start a decade ago, first grabbing the attention of Michael Franti when she was 5 or 6, and holding an acoustic guitar that looked about the same size as she.

Her early years of strumming, songwriting and winning Nordic ski competitions rolled by, and before long she had recorded three full-length albums, penned two books and had picked up serious musical support from some of Denver’s best players. Members of The Motet (not to be confused with The Brotet from issues 6 & 7, and more about the Mo’s in a future column) took this little bird under their wings, and brought her fertile mind into the world of high-level musicianship.

By the time she first came to my studio at age 12, Jaden’s playing and singing chops were already blossoming. She could rip off an improvised solo, and she littered her compositions with complex chords and partial chords. Most impressively, she could come into a video recording studio and without hesitation lay down great takes in front of the lights, cameras, and our small audience. Confidence and fortitude are just part of her story.

But there was, there still is and will always be something very special about the way she interprets and creates music. I recognized it instantly, and I wasn’t alone. It’s her grasp of melody, and specifically her
ability to come up with a melodic line that makes you go “holy cow…”

At age 12, her growing fanbase consisted largely of recording engineers, guitar teachers, musicians in other bands and music writers. Even at 12, she was a musician’s musician.

And after that first recording of ours, I too jumped squarely on the bandwagon. I got to know Jaden and her world-class mom better over time, and have followed her success with great interest.

Around age 13 her music mentors in Denver began to assemble a knock-out backing band for her. Drummers out there may have heard of Dave Watts, the band’s leader and famous drummer of The Motet. Dave had been mentoring a young hot shot named Will Trask, who was at the time the Motet’s drum tech.

Meanwhile, Eric Luba, another young musical wonder, was just moving to town. He had studied for years at several places, including SUNY (State University of New York), and was a world-beating keyboardist in any genre. One specific talent he had worked hard on was “left hand bass.”

Now, I had already been a longtime fan of New York trio Soulive, whose shows would have you asking where the bass player was hiding. Mesmerized by their abilities, it would blow my mind to see Neal Evans soloing hard on the Hammond B3 while a riveting, active bass line came from… somewhere. Look closely and you would see the bass player was actually Neal’s left hand.

Inspired by Neal’s ability to segment the mind and play two wildly different and active lines with different hands, Luba honed that skill into an impressive talent.

Will and Eric (both 23 back then) jumped at the chance to create with Jaden the youngest and hottest trio in the state. By the time the group came in to see me, they had composed an entire album and were blowing the doors off of venues and gaining a serious reputation in the state.

The trio decided to play their songs conservatively for our videos, in the clean style of Soulive’s first major album, Turn It Out. I just love that decision, and it reflected the band’s maturity level and mental presence.

Recording was pretty straightforward, so I won’t bore you with the details. The real story is that prior to this recording, I had seen the group enough to know that every take of every song was played a little differently, depending on the evening. These were very young players, but they were also true musicians and could adapt their songs at will, and always looked for ways to have fun. It was great to hear a slightly new take on tunes I was already becoming familiar with.

Later on, months after our recording, I actually managed to snag the band to play at my wedding. I have a lot of musicians in my family, so it was fun to see the expressions on their faces when the Jaden Carlson Band was ripping.

I could go on for pages about this band, about Jaden and about the life full of music-making she’s set-
ting up. Watch the videos below, and don’t stop there -- at this point there are many videos online of bands like Umphrey’s McGee, Lettuce, The Nth Power, Twiddle and TAUK pulling Jaden up on stage to play with them when they’re in town. She is, after all, the youngest musician to legitimately play Red Rocks Amphitheater, and her jam onstage at Red Rocks with Umphrey’s McGee was featured on the band’s 2015 best-of live performances album.

You could spend a whole day on YouTube or Facebook seeking out the moments of musical brilliance from this little guitar slayer. But make sure you start your journey with the clean crisp sound they laid down for me back in 2014. If any of that strikes your fancy, also be sure to download Jaden Carlson Band’s album Polychromatic, available on iTunes, Tidal et al.

If you love music at all, you’re going to love the energy and skill of this talented munchkin.

Duncan Taylor is a product specialist at PS Audio, and recording engineer and producer of live-track video recording studio Second Story Garage. He also plays a few instruments, pens a weekly music column for college students, and likes to build speakers and amps in his spare time.
Jensen: The Man, the Company, Both Forgotten---Part 2

By Bill Leebens

We ended part 1 in 1915 with Peter Jensen and Edwin Pridham’s feedback-drenched first exposure to their “loudspeaking telephone”, their newly-invented moving-coil telephone receiver coupled to a gramophone horn. Following the initial horrific burst of noise they quickly disconnected the speaker, but knew they were on to something.

In his autobiography The Great Voice, Peter Jensen wrote that while they were familiar with feedback, “What made us fail to recognize the phenomenon immediately was the terrific intensity of it. The ‘howling’ was probably thousands of times louder than any we had heard before, and it burst upon us so unexpectedly that we were amazed….As yet we had not heard a voice through the system for in our eagerness to disconnect everything, no one thought of shouting into the microphone.”

Reconnecting the system, Jensen and his colleagues “…were prepared for anything by now, and sure enough our voice came thundering out of the horn. It was a giant’s voice, such as we had never heard before, but it was grotesque and indistinct due to the mingling with the feed-back howl. We disconnected the system again, but we knew now we stood on the threshold of something great.

“In the shortest possible time, we ran a line up to the roof of our bungalow, and we placed the loudspeaker on top of the chimney, with the horn pointing northwest, out towards the open country. Albertus and I were outside listening while Pridham did the talking from inside the house. My brother, Karl, sat on the chimney, holding on to the horn, for we feared the violent shouting coming through it would shake it off its lofty perch. Pridham’s voice, now without the feed-back howl, sounded to us like a voice not of this earth. Had I closed my eyes it would have been easy to imagine that a supernatural colossus was shouting up the chimney.

“Then Albertus and I started to run across the open fields. It was no longer a question of hearing the voice across the room; it was a question of hearing it for hundreds of yards, or perhaps miles….I had stopped to listen now and then, and Pridham’s voice did not seem to diminish in strength until I was about a quarter of a mile away. At about the half mile mark, the voice was still loud, but when I was finally a full mile away, I had to be standing still in order to understand what was being said.
“…There was naturally great jubilation among us that day. We felt we had taken part in history in the making, for on that winter day in Napa we had heard a human voice which was far louder than any ever heard before anywhere in the world. It was certainly the beginning of ‘the great voice’, and the beginning of the changes that day brought about.”

I apologize for the lengthy quotation from Jensen, but if there is a more vivid telling of such a seminal moment anywhere in the literature of audio, I’m unaware of it. It’s just a great story, and truly marks the beginning of what we might think of as modern audio, even without the presence of amplifiers; again, with Jensen’s initial experiments, the signal level was determined by the output of multiple microphones. Vacuum tubes existed, but amplifiers were not yet readily available.

Jensen and crew demonstrated their loudspeaker to their investors, who had been about to cut off funding for the team. Seeing the unique device, further funding was pledged, and the group was able to address other issues---such as what to call their creation. Clearly, “dynamic loud-speaking telephone” was awkward and unwieldy.

A number of comical Latin-based names were considered, including telemegaphone, following the lead of telephone (“distant sound”) and telegraph (“distant writing”). Megaphone literally means “million sounds” in Latin, and telemegaphone, meaning “million sounds at a distance”, while descriptive, was nearly as awkward as “dynamic loud-speaking telephone”.

The desire was to name the entire category of devices, not just come up with a brand name; as mentioned in Part 1, Jensen felt “loudspeaker” to be “an ugly-sounding word”. The name that was ultimately chosen is, oddly enough, familiar to us now only as a brand name: “Magnavox”, or “great voice” in Latin.

Jensen, Pridham and crew continued to refine their device, and develop additional applications. An electrical phonograph was designed and quickly patented, but as basic patent protection for the moving-coil loudspeaker itself was still shaky, the decision was made to not exhibit at the 1915 Panama Pacific World’s Exposition in nearby San Francisco. In spite of that, a series of demonstrations in Napa proved that “Magnavox” could be heard miles away, and the decision was made to show the device in the big city.

"Magnavox" was demonstrated at Golden Gate Park in San Francisco on December 10, 1915, and the occasion was enthusiastically reported the next day n in the San Francisco Bulletin :
“MAGNAVOX TESTED AT THE PARK
“Wonderful Invention By Californians Solves Many Problems

“The inventors put on a band record and many hurried down from the top of Strawberry Hill thinking the Marine Band was rehearsing...(Magnavox) increases the carrying capacity of sound in the most marvelous manner....The remarkable feature is that you can stand within ten feet of the horn...without the effect being at all deafening.”

Following the successful demonstration, the publishers of the Bulletin asked the Magnavox crew to provide sound reinforcement for their annual Christmas Eve celebration, to be held in a large open plaza in front of the new Civic Center. The Bulletin reported, “100,000 people cheer at Christmas celebration....(the Magnavox) showed itself to be so utterly essential that one wonders what the world has done without it before.” Local luminaries, singers, and phonograph records were all heard with ease by the massive crowd.

In 1917, the Magnavox Company was formed, with Jensen and Pridham jointly sharing the title of Chief Engineer. The loudspeakers made by Magnavox began to be sold with electrical phonographs made by the Sonora Phonograph Company, a large California company. That year the US entered the World War, and Magnavox was asked by the Navy to develop pilot-copilot communication systems for US warplanes. They quickly discovered that the overwhelming noise of the plane’s engines was faithfully transmitted through the system’s microphones.

Jensen and Pridham deduced a solution to the problem which is still utilized by the present generation of pilots and passengers: a noise-cancelling microphone, which eliminated much of the engine noise, and made speech intelligible. Their system worked the first time out, and was quickly put into production and patented. Again: this was in 1917. The Bose Corporation owes Jensen and Pridham a debt of gratitude, for pioneering the technology that made those ubiquitous noise-cancelling headphones possible.

Magnavox focused solely upon defense work until the war ended. The company emerged from the war financially secure, and no longer reliant upon investor funding. Vacuum tube amplifiers became readily available, and allowed the company to provide sound reinforcement for a speech by President Woodrow Wilson in 1919, the first time an American President had addressed a crowd electronically. In early 1920, the company provided sound reinforcement for a major speech by the Prince of Wales, who was visiting San Diego. The Prince and Lord Louis Mountbatten were greatly interested in the technology, and discussed the possible use of loudspeakers on British ships.

1920 also marked the end of Magnavox’s monopoly on loudspeaker technology and the sound rein-
forcement market, as AT&T developed PA systems that were used at both the Republican and Democratic Party conventions that year, and subsequently at the inauguration of the new President, Warren G. Harding. Magnavox continued to thrive, struggling to meet demand for its loudspeakers for radio sets. Radio had started as a hobby for a few technically-inclined amateur builders, but radio-trained veterans of the World War increased demand for commercially-built, complete radio sets. As that market boomed, so did the fortunes of Magnavox.

In 1922, Jensen traveled to Europe, ostensibly to visit his elderly mother in Denmark. A brief stop in England turned into a four-month stay, during which he negotiated terms of UK distribution for Magnavox and supervised a massive public demonstration in London using Magnavox loudspeakers, which served to kickstart the British radio market.

During his UK stay, Jensen was introduced to Guglielmo Marconi, often considered the father of radio. Marconi spoke to Jensen as the elder sage, despite being only 12 years older (48 to Jensen’s 36), presciently saying to Jensen, “You have seen the glories of the past, but you are a young man, and it will be nothing compared with what you will see during the rest of your lifetime.” In his autobiography written 25 years later, Jensen simply said: “And he was right.”

Magnavox’s longtime backer and supporter Richard O’Connor passed away in 1925. O’Connor had always shielded Jensen and Pridham from the financial wranglings of the company and its investors, and left them to invent and develop new technology; without O’Connor’s middle-manning, Jensen quickly tired of internecine feuds. In 1925, Jensen left Magnavox—the company he had helped to found, and to name.

Peter Jensen left California and in 1927, founded the Jensen Radio Manufacturing Company in Chicago. The primary products were OEM-produced loudspeakers for radio manufacturers, and within two years, Jensen supplied 60% of independent radio producers in the US.

From that position, Jensen became an early developer of what we think of as high fidelity sound reproduction. We will discuss those developments in the final installment of our look at Jensen the man, and the company.

Bill Leebens has bought and sold vintage gear since the days when it was new. He regrets that a goodly number of classic American components now reside in Japan, because of him. Mea culpa.
Continuing on from my last piece on the difficulties of record replay, I thought it worthwhile to discuss the drive system of your turntable, the pros and cons, and how these audibly manifest themselves in our music replay systems.

The earliest high fidelity turntables used an idler drive system. The World’s first high fidelity system was introduced quite quickly by the English DECCA Record Company after WWII, on the back of research conducted by Arthur Haddy, a DECCA engineer involved in military research throughout the war developed the FFRR, Full Frequency Range Recording. This used 78 RPM records, but pushed the bandwidth up to 12,000Hz. This was quickly followed by Columbia in America introducing the 33 1/3 RPM LP, and RCA with the small 7” 45 RPM.

Pre-war, most pick up arms tracked in ‘pounds’ rather than ‘ounces’. Record decks needed pretty big motors to maintain constant speed. In America in particular, the professional decks had enormous motors to cope, approaching the size of the motor in your washing machine! In England, by the mid 1950s Garrard’s classic 301 had been launched. Sold as a ‘motor unit’, with no plinth or arm, this mass-produced deck became an instant hit. The more expensive (in England) Thorens TD124 came a few years later, but never sold in the same numbers. EMT broadcast decks took a line somewhere between the American and the British approach!

Idler decks are simple enough. A motor is coupled to the platter by a small rubberised metal wheel, which has a reasonable amount of spring loading. From a standstill, the spring is quite a dominant force;
but as the platter speeds up, inertia decouples the idler wheel from the motor, and literally the wheel ‘idles’. Problems with idler drive are motor and idler noise, plus mild speed drift. The Garrard 301 uses a substantial motor, shaded poles, and good quality bearings. A complex suspension system attempts to decouple the motor from the die-cast chassis. Lesser decks did without decoupling, and motor mechanical ‘hum’ can be heard on playback.

On a high end system, you can hear a ‘roar’ from the rubber idler. It is well below the level of record noise, but it is there. The 301, and later 401, from 1964, used a magnetic eddy current brake to tweak the speed. This sits on top of the motor, and after studying it for 25 years plus, I’ve reached the conclusion that it isn’t so bad. The rival TD124 has the motor driving a small belt to a separate drive wheel, in which their own version of an eddy current brake is fitted, which then couples to the idler. By 1970 Thorens had abandoned idler drive systems, although Garrard, Dual, and BSR had not.

The most common system currently, and the easiest to implement, is the belt drive system. A belt connects the drive motor to the platter or sub platter periphery, and drive is engaged. The first two decks to utilise this system of drive are the AR XA deck, and the Thorens TD150. Both decks also introduced a suspended sub-chassis, on which the bearing and arm sat upon, with springs decoupling from the surrounding plinth. In Europe, the XA is a very rare bird, although I’m confident that is not the case on the other side of the Atlantic. The TD150 was fundamental in influencing record deck design. The Ariston RD11 was the first refined version of the concept, which led directly, and mischievously, to the classic Linn LP12 (a story for another day, perhaps). But the influence of both decks can be seen from 1970 onwards with B&O, ERA, etc...

By the late 1970s, more budget decks had swapped from crude idler drive systems, to belt drive. Thorens had swapped idler drive for belt drive on their new top of the range TD125, with electronic speed control. By 1980, the vast majority of Japanese decks utilized a simple crude plastic molding, unsuspended chassis, and a belt-driven small, lightweight platter. To compete with these, the British firm Rega hit back with a very basic deck, using a small plastic sub platter, a rubber band belt, all mounted to a very light plinth.

For high end purposes, I find most belt-drive designs to be a compromise. The motor pulls and stretches the belt on the take up side, and a little like “two tin cans and a piece of string”, the motor noise is conducted down the belt and into the platter. In addition, the belt slips a little, and as the tension is high...
on one side of the motor pulley, the belt stretches and contracts as it goes round the larger platter. A motor that has enough torque to start the platter spinning has energy to spare when up to speed, and can become audible. All this introduces ‘flutter’ which manifests in to the sound as a ‘dithering’ and smearing of dynamics.

By refining the motor, and by fitting a powerful power supply, of course improvements can be made. But the fact that fitting a DC motor, or a decent power supply, can change the sound so much, proves there are issues. Peter Voyd tried fitting three motors, Alphason two; the additional motors ameliorate the issues, but don’t eradicate them. The best system remains Tom Fletcher’s ‘inertia’ drive on the Nottingham Analogue / Fletcher Audio decks; the motor is so weak, it cannot even overcome its own inertia and spin with the belt disconnected! A very heavy platter requires a manual start; a push with your hand. The little motor then simply tops up the lost kinetic energy.

Final development used sophisticated electronics, and a direct drive motor. Japanese family-run firm Matsushita launched the National / Panasonic / Technics SP10 in 1969, followed by 1,000s of different Japanese decks! Technical specs for the early SP10 are impressive, and the deck itself is impressive. A stable oscillator drives a three channel power amp, which in turn drives a complex series of windings. The deck starts quickly, and is near-silent in operation. The early MkI has a power supply mounted on the deck, and yes, it introduces hum! The MkII corrected this, and also included a much bigger power supply, a quartz-referenced oscillator, a more complicated feedback system, a mechanical brake, a ‘power start’, and logic control system which may have been overly complex!

Speed stability is legendary on a MK II, but sonically, not massively improved. (All the early Technics Direct Drive decks used a similar motor ‘hub’. And the Mk I SL1200, SL120 etc can have this motor hub removed and fitted to a proper plinth. By the 1980s Technics had it down to a fine art. The famous DJ deck, the SL1200/1210 Mk II (etc) started life as a decent hifi deck.)

Similar to a Garrard, the plinth is part of the sound, and as with the Garrard, is critical. The direct drive system does generate some rather odd noise artifacts, which I have noticed on both SP10 MkI and MkII. Very very low, and appearing out of phase, a rather weird “wowowowowow” noise (I suspect it might be cartridge dependent, picking up stray magnetic fields from the powerful motor).
There are many other makers of direct drive decks, Denon, JVC, Sony etc. Some were successful, some not. But from a 'high end' point of view, I'm keeping this simple. I'll mention one more, the EMT 950, which flipped things on its head by using an incredibly lightweight platter, and a massive power amp/supply.

The drive system has a direct effect, no pun intended, on the sound. To my ears, idler and direct drive are preferable. But it is a matter of cost. The 'new' Garrard 501 popped up a good few years back, and bless them, Technics have come late to the party with a new, super limited version of the classic '1200 MkII. Both these decks costs thousands of dollars, so compromise, according to budget, may be needed. Not everyone's like me, happy with second hand. It is simply not economic to manufacture these two systems down to a price. And with the refinement in motor technology, belt material, and electronic power supply, good sounds can be had for a few hundred bucks. As explained in the last article, it is a complex subject---much more complex than 'just' the drive system.
Mark Twain was famously misquoted as having said, "Reports of my death have been greatly exaggerated." Apparently what he had actually said was, "I can understand perfectly how the report of my illness got about, I have even heard on good authority that I was dead. James Ross Clemens, a cousin of mine, was seriously ill two or three weeks ago in London, but is well now. The report of my illness grew out of his illness."

But I like the original quote better, and it reminds me of something that’s been often reported in the Audiophile press. The imminent demise of the high end audio business.

When I first started in this industry, way back in the pioneering days of the early 1970s, high-end audio was in a growth mode. High end or low end, at that time everyone had a stereo system. Soldiers returning from Vietnam bought mega receivers and loudspeakers at the post audio stores, and no person in their 20s or 30s was without a stereo system. And the over 40s crowd still treasured their high-end separates. Times were good. Everyone played their systems at home.

The fortunes of high-end audio companies began to change in the 1990s and have been changing ever since. Several events have been the cause of those changes. First, the introduction of the personal computer in 1981, which hadn’t much impact at first, but got us used to the idea of communication with a machine in ways we had never considered.

Then came 1982.

No sooner had we been dazzled with the possibility of computers in the home than the CD hit the street. The CD turned everything upside down—not right away, but like a flood that rises slowly, we were
all sure to get our feet wet. Reviled by most Audiophiles, the notion of a 4.5" silver disc replacing the venerable 12" vinyl disc went over like a turd in a punch bowl. At least at first. Soon the computer and the CD became agents of irreversible change, change that many felt was the death knell of high-end audio—and reports of its demise have circulated ever since.

I have a slightly different take on all this. In fact, from my viewpoint, high-end audio isn’t in the throes of death, but rather the cradle of a resurgence of sorts.

We’re told Audiophiles are aging and will not be replaced. We’re told the younger music lovers have more interests in MP3 than quality audio. And while there’s some truth to the younger MP3 crowd, here’s what’s not being said.

In the 45 years I’ve been involved in high-end audio, there’s been an age divide that starts at about 40 years old. Prior to that, few people have the time, interest or income to spend money on better quality music reproduction equipment. That seemed true when I started, it remains true today.

High-end audio is a continuum. As olders people leave, younger ones come of age and move in. It’s been like that for as long as I’ve been involved and it’s unlikely to change.

I do not believe the high-end audio industry is dying, nor do I believe it is being threatened from external sources beyond our control. Indeed, I think high-end audio is alive and well—flourishing actually.

What we’re seeing when sales and interest seem to ebb and flow is change. Constant, inevitable, change.

High-end audio isn’t the same as when I started. It’s different now and it’ll be different in the future.

But reports of its death have been greatly exaggerated.
Hold My Beer

By Malachi Kenney

It should be clear by now that this magazine is a purely romantic notion. At its heart, it’s just a bouquet of flowers that we send to all things audio. Of course, some weeks it’s hard to decide whether to send a dozen roses and a love letter or a bucket of daisies and a “Get Well Soon” card. You probably understand that conflict.

Face it: audio has a reputation problem. You may not want to hear this, but normal folks tend to think that audiophiles are a bunch of cranky, old coots who spend their weekends cosplaying as sound engineers. Between their home-built padded rooms, ruby-studded cables, and fetish for purist recordings of The Norwegian National Sweater Band (on holy Reel-to-Reel only, thank you very much), an audiophile’s social standing is on a pretty equal footing with the deluded guy carrying an end-times sandwich board in front of Taco Bell.

We’ve earned that reputation, too. Have you talked to a self-proclaimed audiophile recently? Did you hear the words “soundstage” or “air?” Did he (because this sort is almost always a he) try to sell you on the merits of DSD? Did he have an opinion about MQA? Did he say that he didn’t like “the rap music?” Did this guy (this sort is almost always a guy) mention his turntable’s model number and expect you to know what it was, as though he were a five year old who’d memorized the name of every dinosaur? Did you consider stabbing yourself in the face with a pair of safety scissors just to get away? Did you ever even talk about music?

Anyone who’s experienced that side of audiophilia probably thinks that daisies are the better choice. In fact, they’d probably prefer to skip the flowers altogether in the hope that our hobby would just drown itself in the bucket. Don’t feel too guilty; we all feel that way from time to time.

For all of nuttiness of our little world, though, I want to send the roses.
I have to love the fact that this is a hobby — and a wacky industry — built around the pure joy of listening to music, the one art form that can short circuit your brain and reach right into your heart. Audio itself is just an art whose highest goal is making you forget just how long you’ve been sitting down, and one that makes you need to look at a clock when you stand up. There’s nothing practical about it. There’s no greater payoff. It’s just fun.

It’s just pure, unrepentant, lunatic fun.

Fun, in fact, is the one thing in audio that you can’t escape no matter how hard you try. There’s something too utterly ridiculous about a turntable that looks like it got scraped off the deck of an Arleigh Burke-class destroyer to take it seriously. There’s something too magnificently looney about speakers the size of my bedroom with tweeters made of fire, to believe it’s sane. There’s something too transcendentally odd about a production line that spits out glowing tubes that were obsolete by the time Eisenhower shipped off for WWII to think that it’s rational. How can anyone believe that this whole business is meant to be anything other than fun?

After all, audio isn’t about practicality, and it sure isn’t just about music. At its best, audio lies in the confluence of pure feeling, obsessive engineering, and industrial art. Practicality and sanity have nothing to do with it. Audio is absolute craziness. It’s a high dive into a wading pool. It the industrial equivalent of saying, “hold my beer; I wanna try something.”

And, honestly, how can you not be completely in love that?

Malachi Kenney listens to awful music and writes about stereos. His hobbies include soldering, chain smoking, and playing with his dog. He dislikes biographic blurbs and detests writing about himself in the third person. He will not let you hold his beer.
By Ray Kuntz

I live in Chicago, my system is used for entertaining guests and for casual listening.

The system is separated into two parts, one is for headphone use only and the other is for regular listening.

The Klipsch Forte II speakers have a wonderful punch to them and the Kenwood KA-907 pre amp drives them with ease. My system continues to amaze my even after all of these years.

The J.A.Mitchell GyroDec with the SME 309 arm and Mark Levinson Carnegie One phono cartridge is very detailed and exacting, a pure pleasure.

The Mitchell is well suited for Jazz and higher quality rock recordings.
The Mitchell is too detailed for lesser quality recordings, that is where the Bang & Olufsen RX2 turntable shines.

The headphone system with the Empire 698 turntable and Shure V15 Type 4 cartridge or the Meridian 506 24-bit CD Player as the main source is absolutely wonderful.

The Woo Audio WA6 headphone amp dives all of my headphones with ease.
Colorado Farm
by
Paul McGowan
Vail