Welcome to Copper #84!

Being the picayune sort, it annoys me when people celebrate the birthday of one long dead, and say, "this is Mozart's 263rd birthday." That may even be proper usage of the term, but unless you can actually sing "Happy Birthday" to someone---meaning that they're alive---it seems to me that "commemorating the anniversary of a birth" is more like it, rather than "---th birthday".

Again: it may well just be me, and that may be perfectly acceptable in common usage.

Along the same lines, I hesitate to say, "May 6th is my parents' anniversary," when they're both dead. Yes, it is the anniversary of their wedding, 78 years ago---but they were only married for 46 years, until my dad died in 1987.

"Only"? That's a damned long time. Anyway: I'm obsessing again....

We have a very full issue this time around, with some pieces that are a little different from our usual contributions.

Prof. Larry Schenbeck will be taking a sabbatical for a spell. I'm grateful for Larry's good humor and incredible knowledge of music---we expect he'll be back around the fall. Meanwhile, in this issue Larry brings us a group of performances of Prokofiev piano concertos---and thanks for that, Larry.

Dan Schwartz tells us about the landmark album Noir et Blanc; Richard Murison looks into HD Vinyl---and it's not at all what I thought; Jay Jay French tells us about one that got away; Roy Hall observes cultural differences while traveling the world; Anne E. Johnson's Off the Charts brings
us some unusual cuts from Tori Amos; Woody Woodward hilariously reviews those "best 100" lists; Anne’s Something Old/Something New introduces us to some beautiful organum from Notre Dame; and I wonder if there's a right size to audio shows, in The Audio Cynic; and try to untangle the history of Empire in Vintage Whine.

I'm really pleased to have an interesting, detailed Make It Yourself article from Danish reader Sebastian Schlager on his experiments with horns. Part 2 will be in Copper #85.

The Copper Interview brings us Part 1 of John Seetoo chatting with versatile producer/engineer Jack Joseph Puig.

Rudy Radelic’s feature on Axpona concludes in this issue---and thanks to Rudy for his hard work.

Longtime audio industry veteran Michael Stuart Baskin is, like many of us, of a certain age---and has written his memoir, 363 Days in Vietnam: A Memoir of Howitzers, Hook-Ups, & Screw-Ups From My Tour of Duty 1968 to 1969---phew! I'm pleased to be running excerpts over the next few issues. Don't worry---it's more like a gentler MASH than Apocalypse Now. I hope you enjoy it.

Copper #84 wraps up with the mysteries of botany from Charles Rodrigues, and a Parting Shot from---my morning commute?!?

Christian James Hand is tied up in live sessions--we wish him all the best, and hope he'll return soon.

Meanwhile: I'm off to Munich!

Cheers, Leebs.
What I’m writing about this week:

Sergei Prokofiev (1891–1953) and his five piano concertos. Also, concertos by Huw Watkins (b. 1976). Plus, backstory from W. A. Mozart, especially his twenty-odd piano concertos and last two symphonies.

Why?

Because those Prokofiev concertos are worth hearing, and they tell us a lot about how and why 20th-century music developed in the odd ways it did. Prokofiev was whip-smart and spoiled half-rotten. Like a lot of precocious young people, he couldn’t abide stupidity, which seemed to run rampant in the universe. He got into the Saint Petersburg Conservatory when he was 13 but gave his teachers, including Rimsky-Korsakov and Liadov, a rough time. After squeaking through their composition curriculum, he thought he’d give piano and conducting a try. There he did better, possibly because he’d grown up a bit. His piano teacher Anna Esipova threatened to expel him if he didn’t buckle down, so he did: Prokofiev’s deficiencies lay not in technical acumen but in a reluctance to cultivate tonal warmth or lyricism. (He wasn’t overly fond of Mozart or Schubert either.) His conducting mentor Tcherepnin helped by encouraging him to explore the newest creative trends.

You might think experimenting comes naturally to clever youngsters, but it doesn’t. They can be disinclined to venture onto fresh pathways. It’s easier to show people how clever you are by doing the standard stuff but way better. Sergei Sergeyovich’s difficulties point up the way that cultures shift over time. Twentieth-century musical culture shifted very fast; talented children like Prokofiev had to shift with it. He struggled with a genre that Mozart, living in a more stable era, had already perfected: the keyboard concerto.

Consider the disruptions of the new century: hard on the heels of the Great War came the two
Russian revolutions of 1917, fomented by growing unrest from 1905 onward and capped by creation of the USSR in 1922. In 1910 Prokofiev’s father died, leaving the family far less secure and forcing the young composer-pianist to consider how he would make a living. In 1914 he made the first of many trips abroad, making contact with influential members of the artistic avant-garde including Diaghilev and Stravinsky. The latter would become an important but seldom-acknowledged influence.

Around 1920 Prokofiev settled in Paris. His professional activities for the next fifteen years were increasingly successful, so it shocked some observers when, in 1936, he decided to return to Mother Russia. Why? Homesickness. In spite of the cosmopolitan company he kept, most of his friends in the West were Russian emigrés. He longed for the ready intellectual stimulation of those like Myaskovsky and Asafyev, who had remained behind. Prokofiev was also quite naïve about political developments in his homeland; he couldn’t foresee the catastrophic social effects and personal suffering that Stalinization would bring.

Prokofiev’s five piano concertos were composed between 1911 and 1932. As a Russian expatriate and “novelty act” for most of that period, he was automatically placed in competition with two countrymen, Stravinsky the scandalous provocateur and Rachmaninoff the late-great-Romantic piano wizard. Sergei P. struggled to balance virtuoso display with authentic personal expression, while facing a constant demand—from critics, from audiences, from his own notion of genius—for something genuinely new.

In 2016, when Vadym Kholodenko’s first SACD came out (Harmonia Mundi HMU 807631), what fun it was to hear Concertos 2 and 5! I didn’t know either work at the time, and they were radically dissimilar. No. 2 was virtually a student composition; Prokofiev wanted to show off every part of his game. It’s in four movements, the outer two of which are lengthy, ponderous, and rhapsodic in the manner of Liszt, with enormous solo cadenzas that can bring the action to a standstill. If you want to understand No. 2 in context, you’ll need to absorb No. 1, completed a few months earlier. That was Prokofiev’s graduation piece: he played it at his “leaving recital” in 1914 and walked off with the Rubinstein Prize. Its Tchaikovskian opening theme (which returns several times, including at the very end of the work) leaves no doubt as to the identity of the triumphant hero—it’s our young composer.

I eagerly awaited Kholodenko’s volume 2, with concertos 1, 3, and 4. But then three years elapsed, perhaps because of the Fort Worth Symphony strike and/or because Harmonia Mundi’s new owner shuttered its Production USA wing and pink-slipped producer Robina Young (who “continues to consult”). In the meantime, pianist Olli Mustonen released both of his Prokofiev concerto discs for Ondine. They are more than competitive. Backed by the Finnish Radio SO and conductor Hannu Lintu, Mustonen delivers what may be the first truly definitive set of the 21st century. I’ve made it my reference, even though I still enjoy Kholodenko’s now-available completion, which contains some stunning pianism and offers useful comparisons. Nevertheless, let’s hear a bit of Mustonen in No. 5. (And yes, that was Mustonen in the first clip too.)

No. 5 gives us Prokofiev, in Paris in 1932, doing his best to borrow some of Stravinsky’s “new simplicity” (I think of it as musical Cubism): phrases of uneven length that may end abruptly; octave displacements in the melody; eccentric percussion accents; unexpected changes of timbre or texture. It’s in five movements, all relatively short—another Stravinskian trick, and a logical outcome of the quirky style within. But Prokofiev had trouble making the new sounds an integral part of his language. Although he strove for simplicity, he conceded that “in the end it turned out to be complicated.” A preening, scampering second movement, self-consciously arch, is followed by more
slaps and bumps in the Toccata. Finally the Larghetto offers welcome relief:

As you heard, a hyperactive interlude ushers in more of the old Prokofiev—grandiose lyricism anchored by brass attacks, bass-drum thwacks, and more.

Prokofiev's best piano concertos may be those from the middle of the stack: No. 3, written in fits and starts between 1913 and '21; and No. 4, written in 1931 for left-handed pianist Paul Wittgenstein, who never played it. We know No. 3 because it became a favorite of many celebrated artists including Martha Argerich. Well, who can blame them? In the right hands, it's a perfect energy machine.

http://www.youtube.com/watch?v=UsL6eXDhRvM

Incidentally, this isn’t the only Prokofiev concerto with a trick opening, in which the first few bars suggest a piece other than the one you're actually about to hear. But it’s certainly one of the best such sneak attacks.

Tricks do not abound in No. 4, and that’s also nice. One gets the feeling that Prokofiev, freed from the burden of presenting his own “personality,” was able to get on with producing gorgeous absolute music. Certainly the Andante contains more than its share of grave beauty, never straining for effect.

The following Moderato offers another “monumental” march, its symphonic weight enlisted shrewdly and economically (perhaps because Prokofiev wanted to avoid swamping his one-handed soloist).

And now a word from our Ghostly Sponsor, i.e., Mozart: if you want to “get” the Tema con variazioni of Prokofiev’s No. 3 or the tag ending of No. 4—two minutes’ worth of fun following the Moderato—you should check out the last movement of Mozart’s Piano Concerto in G, K453 (23:00 in the video below). Compare his way of using variation form to structure a narrative.

http://www.youtube.com/watch?v=0xzvFxW5kR0

Then, if you’re still in need of fun, try Huw Watkins’s Flute Concerto. Like Mozart and Prokofiev, Mr. Watkins is a born dramatist. I’m not sure whether his organic means of creating a narrative owes much to them, though. (He’s definitely the new master of the trick ending, but that’s another story.)

http://www.youtube.com/watch?v=t7ozLUmyWEo

More Short Takes:

Bill Frisell: *Epistrophy* (ECM). Second of two live sets from dates at the Village Vanguard with bassist Thomas Morgan. Mixes Frisell’s trademark Americana with quirky post-bop treatments of jazz standards. Cerebral fun of the first order.

Caroline Shaw / Attacca Quartet: *Orange* (New Amsterdam / Nonesuch). This group and this composer seem made for each other. Engaging, enjoyable acoustic minimalism with surprises.
Josef Mysliveček: Complete Music for Keyboard. Clare Hammond, piano; Swedish CO, Nicholas McGegan cond. (BIS). Two keyboard concertos, six Easy Divertimenti, and another six Easy Lessons from a friend and contemporary of Mozart, neglected by German historians and critics because he was Czech and based in Italy. Spirited, elegant performances on a Steinway D, ably abetted by a reigning master of Baroque HIP. Crystalline recorded sound.

Mozart: Symphonies No. 40 & 41. NDR Radiophilharmonie, Andrew Manze cond. (Pentatone). Another warhorse pairing from Manze, and one of his very best. You don’t “need” this, but its razor-sharp execution and glistening sound make it hard to resist.
In 1983, one of my favorite records was released: Zazou/Bikaye/CY1’s *Noir et Blanc*. I thought I might try to tell you a little about it.

A collaboration between composer and producer Hector Zazou, Kinshasan/Belgian vocalist Bony Bikaye, and electronic musicians Guillaume Loizillon and Claude Micheli (known as the duo CY1); the title might, most obviously, refer to the races of the people involved, or it might mean nothing at all. In those years, I met lots of white Americans who flattered themselves that they were making grey music --- but this music is anything but grey.

Zazou would go on to do quite a few more records. (I met him before his death when he was in LA working with Jon Hassell in ‘97 or so --- he and singer Barbara Gogan came by my house for a few hours.)

The album was reissued a couple years ago --- and thank whatever-you-like for that. It’s on Crammed Discs (cram025 or cram105). I’ll make a lame attempt to describe the music --- but as we know, one should never, ever try to discuss in words what *wouldn’t exist if words would do*.

When you hear it, you’ll understand what I mean when I place *Noir et Blanc* squarely in amongst my favorite albums --- like Eno/Byrne’s *My Life in the Bush of Ghosts*, Talking Heads’ *Remain in Light*, Peter Gabriel, the third of his self-titled albums --- and yet it’s also very different. But it lines up among the “tradition” begun by Holger Czukay’s “Boat Woman Song” from 1969’s *Canaxis*, which featured Vietnamese singers, heisted from some recording somewhere.
It’s largely a blend of CY1’s analog electronics (synths, for the most part), with digital processing only in the mix, and layers and layers of Bikaye’s voice, sung in some African dialect (it doesn’t sound much like French). The percussion is largely analog-generated electronics, in a fairly light style --- more akin to the high-life drumming heard in King Sunny Ade’s music than anything rock. And being generated by analog electronics, the sound is also very light, for the most part. Then there’s the rest of the electronic texture --- the pitched stuff; sequences and the like. It’s also similar in quality: light. That doesn’t mean that it’s not intense --- it is. But it’s also very different from what we’ve come to expect in the intervening years. There’s also some actual percussion, as well as sporadic guitars, horns and violins all over the place. Zazou himself either directs without playing, or plays some keyboard --- I’ve seen both credits. From the Wire: “a strong attractor, the hub of a conferencing system through which musicians of the world meet.”

This all adds up to a remarkable “brew” of some of the most innovative music of the time (again, 1983) --- and now, and into the future. What I mean is that, like ...Bush of Ghosts, this is largely sui generis --- music that is, for the most part, only referencing itself. It needs to be heard to be grokked.
With the reissue came quite a few reviews, all glowing. I won’t repeat any of the praise here --- if you’re reading this, you have access to them. But I endorse every single, one of them.

http://www.youtube.com/watch?v=edfTcPbprig
Second-guessing is at the heart of online forum behavior, and I wouldn’t want to rob anyone of the joy that comes from being an expert on a subject of which you know absolutely nothing.

One subject that is discussed to death on forums and anti-social media is that of audio shows: what was good, what was bad, how it was too small, or—in a recent novel turn of viewpoints—how it was too big. Yup. Attendees upset because they got too much for their money.

Wow. I'm sorry: I paid for a Jetta and was given an S-class. How dare they??

When it comes to the audio world, few jobs are more thankless (I know, it sounds oxymoronic. It’s not.) than that of show organizer. I’ve witnessed this as well as experienced this, as an attendee, an exhibitor, and as a show organizer. With the New York show in 2012, I heard from Teamsters, hotel staff (at the über-snoopy Waldorf Astoria, mind you), exhibitors, attendees...is there anyone I’ve left out? I fully expected to walk down to the curb on Park Avenue and have passing cabbies yell, "You suck!" at me.

Sheesh.

I get it: a show is a high pressure environment, with money, gear, and reputations at stake. Exhibitors compete for attention, doing what they can to get a few column-inches or a couple million pixels of exposure. Since that’s the case, wouldn't you think that a small show would offer exhibitors
a better chance at getting attention from media and attendees?

That NY show was the inaugural effort in a very tough market indeed, and as you'd expect, getting space at the Waldorf was far from cheap. The upshot of that: only 40 exhibit rooms. Given the hassles and expenses associated with navigating midtown Manhattan, some attendees were not happy, expecting more. Oddly, most exhibitors---once we got past the nightmares of a threatened union shutdown, access and set-up---were thrilled with the results.

Why was that?

Because attendees didn't feel compelled to rush from room to room to room in order to snatch sonic snippets of hundreds of rooms, and there was usually some breathing room in those 40 rooms, the exhibitors could actually spend time talking to attendees who were seriously interested in their products. Relationships were developed; sales were made.

I've heard positive comments from exhibitors at a number of smaller shows, such as the California Audio Show, the Capital Audiofest, and the new show recently held in Tampa. It's often said that there are "fewer tire-kickers and brochure collectors."

Huh.

Online comments will often mention the relative size of such shows, but they will often also focus on the relaxed atmospheres and collegial spirit. That sounds good to me, and I've enjoyed those shows.--But yes, there will always be complaints from those who expect more more MORE.

It was a shock, therefore, to see complaints on Facebook that the recent Axpona show was too big. Now--unless one is troubled by some relentless internal drive, an obsessive-compulsive need to see every single exhibitor (and perhaps touch each doorknob three times, no more, no less)---what's the problem? Pick what you want to see, and just stop. That's probably un-American, but whatever.

At Axpona there was not just an incredible variety of exhibitors in a terrific venue, there was honest-to-God worthwhile entertainment, in the form of Shelby Lynne, and others.

I'm sorry if that offends you. I'm sorry if that's just too much. Maybe they can shoot for lowered expectations and less-ambitious goals in the future.

A sidenote: this is the floorplan of the 1964 New York High fidelity Show, a show intended for the general public in the days when regular folk bought audio gear. There are almost 200 rooms---more than at any recent US show (though if you counted booth vendors, Axpona would likely top that number). Just a little historical perspective.
It was all the way back in the 1980’s that consumer digital audio suddenly took root in the form of the CD, and before you knew what had hit you the good old vinyl LP was being consigned to the junk pile of history – what my father-in-law used to call a GROBA (Gleaming Relic Of A Bygone Age), except that he was generally referring to his cars. But vinyl has steadfastly refused to go gentle into that good night. Here we are in 2019, and not only has the LP failed to crawl away and die, it is exhibiting an incredibly strong renaissance.

But this resurgence has not been entirely painless. The process itself is as old as the hills, and hasn’t changed significantly since the Eisenhower administration (ignoring inherently limited niche processes such as Direct Metal Mastering). You would have thought we’d have done better than that, wouldn’t you?

Günter Loibl certainly thinks so. Günter is CEO of Rebeat, an Austrian company from Tulln, near Vienna, active in various aspects of the music business. His latest venture is called HD Vinyl, an initiative that seeks to bring the process of producing and manufacturing vinyl LPs kicking and screaming into the 21st Century. I had an interesting chat with him, and he took me through the process he is busy developing. I found it quite fascinating.

The existing process for producing vinyl discs, unchanged for more than 60 years, seems almost Dickensian. It has a kind of Steampunk quality to it. There are variations, but essentially the process goes like this. First, a master is cut in a soft acetate lacquer coating on an Aluminum platter. The cut is made using a cutting stylus with a sharp edge to it – the point being that it has a significantly different shape than the stylus used for playback (if the playback stylus was the same shape, it too would cut the vinyl!). This lacquer disc is then plated with a thin coat of Silver. I say “thin”, but bear in mind that the thickness of this layer is substantially greater than the amount of groove modulation that would make an audible difference to the sound quality. This is the first of a number of “lossy” steps that impose themselves between the freshly-cut surface of the master lacquer and the finished vinyl LP on your turntable.

The next step has Nickel electroplated onto the silvered lacquer mold. When removed, this Nickel casting is referred to as a stamper, and is then coated with a thin layer of Chromium to help protect it. For a typical LP release, multiple stampers will be produced from the master lacquer. Back in the mass-production days of yore, these first-generation stampers would be referred to as a “Father”
stampers, and only used to make multiple second-generation copies called “Mother” stampers, which would be the ones actually used to stamp LPs.

Finally, the stamper is used to press hot molten vinyl into the LPs that you ultimately buy and play. However, molten vinyl itself is an aggressive substance, and every individual pressing eats away a little bit at the surface of the stamper, which means that every LP stamped is of slightly poorer quality than the one before it. After a while, the stamper will have degraded sufficiently to audibly affect the sound quality of the LPs being produced. It will be up to the manager of the pressing plant to decide when that point has been reached, but as a rule of thumb as few as 500 pressings might be a reasonable limit for an audiophile LP, and perhaps 1,500 for a regular commercial release.

In summary, while this was impressive technology for the 1950’s, it is pretty clumsy by today’s standards; and quite frankly, it beggars the imagination that it is able to produce a product which engenders such a passionate, committed, and quality-conscious following. Günter Loibl thinks it is high time we came up with something better. And who would want to disagree with that?

Günter sees two primary areas in which a modern process could substantially improve upon its traditional counterpart. The first would be to reduce the number of lossy processes between cutting the lacquer and stamping the LP. And the second would be to increase the number of LPs that can be produced from a single stamper without losing quality.

One key aspect of Günter's approach is to manufacture the stamper directly, using a stamper material that will not degrade at the rate Nickel stampers do. His choice is a ceramic material. Using a ceramic stamper, he has tentatively established that he can stamp out upward of 10,000 LPs without any measurable degradation in quality, which is a major improvement.

The second leg in the chain is to introduce the grooves directly onto the stamper itself, so that there are no lossy intermediate stages. The problem with this approach is, since this is a stamper, it is not grooves that you need but the “negative” of a groove – a ridge. You need a spiral of ridges on the stamper, so that it produces a spiral of grooves in the vinyl LPs that are stamped from it.

But you can’t write ridges onto the surface of a ceramic stamper. The best you can hope to do is start with a flat ceramic surface, and machine away everything except the ridges you want to leave behind. And this is what Günter is working on. He is developing a laser-based process that machines away the ceramic, leaving just the desired ridges behind. So just what kind of a task has he set himself? Well, if you take the best performance specs that vinyl playback has to offer – let’s simplify things and say a dynamic range of 65dB – it turns out that pickup cartridges must be responding to groove modulations down in the nanometer range. That basically means right down at the molecular level. Quite extraordinary, when you stop to think about it. This is the challenge Günter has set for himself.

While lasers can indeed be used to machine away bits of material, it is not done smoothly like a knife cutting through butter. For reasons we don’t need to go into here, laser micromachining is done using intense bursts of laser energy called pulses. In other words, material is machined away in discrete chunks. So it is important to understand what sort of finish you need from your micromachined surface, in order to develop a suitable laser machining process. Günter has examined LPs at extreme magnification, and even at the highest magnifications the surface texture of the vinyl is extremely smooth – no doubt this is at least one reason why LPs are able to sound as good as they do. So a laser machining process is needed that can generate such a smooth surface.

Günter has opted for an “ultrafast” laser for this job, and as an ex laser jock myself I do concur. This type of laser emits pulses of such infinitesimal duration that they defy description. The pulse
durations are of the order of femtoseconds. By way of illustration, it takes light about 300 femtoseconds to traverse the diameter of a single human hair! Ultrafast lasers represent the absolute cutting edge (pun not intended!) of laser technology. The physics underlying such lasers is quite extraordinary, and making them is very challenging. Until very recently, they were only ever used as probe tools in even more exotic scientific experiments.

So, not only does Günter need a laser beam of the most exotic variety, but he needs to mount it in a system that can position the laser beam with nanometer accuracy, across a ceramic plate about 12” in diameter. Problems like that keep laboratories full of Intel engineers awake at nights! It is fair to say that getting an ultrafast laser working smoothly, and integrating it into its opto-mechanical platform, are going to be the thorniest problems Günter will face in developing his new technology. Once those are up and running, the rest should be much smoother sailing.

But almost as big as developing a micromachining system whose capabilities will impress NASA, is the requirement for software that will work out what the finished groove needs to look like, and provide the ‘cutting pattern’ for the laser. In effect, this is the shiny new tool that the Mastering Engineer will use. In a traditional LP cutting setup, the Mastering Engineer sits hunched intently over the cutting lathe with a selection of switches, sliders, and dials at his fingertips. In real time he is adjusting the groove spacing, the recording volume, and various other parameters, because there is no other way of doing it. He will have no idea how well – or how badly - it has all worked out until it is done. With Günter’s new technology all of this is performed at a computer workstation, before the cutting laser is even fired up, and with a lot more precision and flexibility.

Günter’s mastering software will allow the groove spacing and recording volume to be determined using algorithms, so that the result is as fully optimized as can be achieved. No grooves need be too close together so that you hear pre-echo, nor excessively far apart that the available playing time is compromised. You can optimize the settings for maximum playing time, or for maximum audio quality, or anywhere in between. You can even home in on individual regions of the LP and manually edit a part of the signal which has perhaps over-modulated slightly. And once the groove design is complete, the software can even simulate the effect of a stylus tracing its way through the finished groove, and generate the resultant music signal. Only when the mastering engineer is happy with the result does the process move on to machining the stamper. And, of course, the Mastering Engineer doesn’t actually have to be in the same building, or even on the same continent for that matter.

I wish Günter Loibl and his HD Vinyl project the very best in their endeavors. If his technology works out the way he expects it to, we will have a new LP manufacturing process which gets the quality of the stamper much closer to that of the original cutting lathe than has ever been possible up to now – even closer than Direct Metal Mastering, which has demonstrated excellent results – and will be capable of producing an almost limitless run of LPs from a single stamper without any degradation in quality.

Of course the process will have its share of skeptics, non-believers, and plain old haters. Some - after all, this is Audio we are talking about - are already lining up. LP manufacture may be a house of flaws built upon flaws, on flawed foundations, and yet it somehow works. And when it all comes together properly it works quite staggeringly well. So maybe those flaws aren’t all bad after all, and maybe by eliminating some of them we will somehow end up throwing bits of the baby out with the bathwater. Not a good visual, I know! But however it works out, the proof of the pudding will be in the eating, although I for one am delighted just to see the effort being made.

Günter tells me he is hoping to be able to produce the first actual playable LPs using the HD Vinyl system later this year. This will almost certainly not be a commercial release, but rather a
demonstration of capability. He tells me that there has been great interest from within the industry, so if the technology delivers, he won’t be short of customers. If I ever get hold of a playable sample, I will be sure to report on it in *Copper*. 
The One That Got Away

TWISTER SYSTEMS
Written by Jay Jay French

The day I just missed a 1959 ‘Burst

As an avid guitar collector, I’m often asked about my method and reasoning behind the guitars that I own or have owned.

To begin with, I never thought about “collecting” guitars until years after I became a professional musician in 1973.

At that point I had already had about a dozen guitars that had passed through my hands but never considered myself a collector.

My first guitar in 1965 was a Hagstrom bass which I bought with my dad for $25 from a pawn shop on 8th Avenue.

My first new purchase was a Fender Telecaster bought from a 48th Street guitar store, called Jimmy’s, in 1967 for $135.00.

My next new one was a Gibson SG Special in 1968. That one cost $242.50.

I remember each purchase and the prices like it was yesterday.

At this point, at the age of 16, I started to immerse myself in interviews with all my guitar heroes and started buying guitars as they kind of came to me through friends.

I owned a Gretsch Country Gentleman for about a month, a Fender Strat, courtesy of a Vietnam war vet newly returning and needing money, and finally my first Les Paul Jr. that I bought from a drug addict in Central Park for $275.00 (I way overpaid) on a beautiful sunny afternoon on May 1st, 1970. Why do I know this date? Because, for some reason, I made this guy sign a receipt for me in case the guitar was stolen.

Along the way over the next couple of years, I bought a new Fender Precision bass at Manny’s and a succession of used Gibson Les Paul Customs (both black & white versions) that averaged about $300.00 each.
I started to hang out at the legendary Dan Armstrong guitar store on LaGuardia Place in Manhattan and started to notice the Les Paul model nicknamed “Gold Tops” (so named because the color of the top part of the guitar was painted gold) and Les Paul Standard “Sunburst” models (so named because the actual bookmatched wood veneer could be seen as you look straight on due to a translucent finish that looked slightly orange in the center and as the finish made it to the edge of the guitar the color was almost solid red color, looking like, well...sunburst) that were hanging for sale on his wall. I also was aware that both Eric Clapton and Mike Bloomfield were playing the Sunburst models. Dan Armstrong even had Bloomfield’s Gold Top (the one he traded for a Sunburst) as well as other famously owned Les Paul Gold Tops for sale. The prices for the Gold Tops were $550.00 which, in 1970, seemed really out there and about $200.00 more than I could afford at that time. It surely was way out of my price range. These Gold Tops were all manufactured by Gibson from 1952 to 1957 so I understood the idea of them being classic, but it was only 12 or so years after they were actually made and I didn’t understand why the prices were so high.

By 1972 I clearly remember walking down 48th Street and seeing a 1959 Gibson Sunburst color Les Paul with the price tag of $1,500.00. As you can see, the upward trend of increasing value was starting to take hold.

In the fall of 1972, however, I didn’t have $1,500.00 for a 1959 Gibson Sunburst. I knew that the closest I could get to one was a Gibson Gold Top but Dan Armstrong’s was closed and I didn’t know where I could find one. Also, I had no idea if the price had increased in the intervening 2 years.

Suddenly, in September 1972, as fate would have it, I was walking by a store in the West Village called The Music Inn. In the window was a 1953 Gibson Gold Top. The price was $700.00. I walked in and asked if they accepted trades. I told the owner that I had a 1969 Gibson Black Custom. He said that if I gave him my Gibson and $400.00 cash he would sell me the Gold Top.

I did it and that was my first real acquisition of a vintage Les Paul.

Although I now owned a 1953 Gold Top, I still really wanted a ‘59 Burst.

Twisted Sister began playing in January 1973 and although I bought, sold, and traded many newer Gibson Les Pauls, the Gold Top was my main guitar until 1978.

It was then that I met a Long Island Luthier named Steve Carr (not the Steve Carr of Carr Amps). Steve had built Kiss’s first stage guitars. By 1978 a real ‘59 Burst was going for $2,500.00 and still well out of my price range. He told me he could convert my Gold Top into a ‘59 Burst complete with Humbucking pickups and a stop tail.

It would only cost $500.00

I gave my Gold Top to him and waited 6 months to finally have my own ‘Burst.

It came back to me complete with the words “Disco Sucks” in pearl inlay carved into the fretboard.

It never played correctly, even after Steve worked on it some more, and I put it under my bed and pretty much forgot about it.

My regular guitars at this point were a 1978 Gibson “Norlin era 10-pound boat anchor tobacco burst” Les Paul and a 1976 Ibanez Explorer. Both custom painted by Steve Carr.

And then, one day in 1980 fate came calling.
Twisted Sister was playing at a club in Norwalk, Conn. called the Fore 'N' Aft. Located close by was the Calzone Case Company and I had become friends with Joe Calzone who made some road cases for us.

He asked if he could come down to sound check. When he showed up that afternoon he came with a guitar case. He opened the case and there was a beautiful 1959 Sunburst Les Paul. He asked me if I wanted to play it during sound check. Then he asked me if I wanted to buy it.

I asked how much and he said that he wanted $3,000.00 for it.

As you can see, the price had doubled from 1972 to 1980.

I started to think about how I could come up with that kind of money.

I took the guitar and went up on stage.

We started to play “Hell Bent For Leather” for the sound check. As the song was progressing, Dee lifted the mic stand and started to flail it around. I was standing next to him. In a split second the mic stand was thrust toward me and missed the headstock by a hair. I was so traumatized that I walked off the stage, handed the guitar back to Joe and told him to get it out of the club before something happened to it.

The thought of spending $3k on a 1959 Sunburst Les Paul that could be damaged so easily was too much for me to risk.

And so...I let it get away.

I have never really gotten over it.

Why? Well that guitar today would sell for about $275,000.00!!!!
France.

When my kids were small, we rented a house in Provence, France for a couple of weeks. It was a lovely Old Provencal style house, which was once a mill, thus the name, “Moulin de Ribas.” It was perfect for our needs with a big kitchen, lots of rooms, a lovely garden with a large outdoor table under the trees and a stream that ran through the grounds. Unfortunately the water was rather overgrown with weeds and unsuitable for swimming. Provence in August is hot – very hot. As the house did not have air conditioning, not having access to a pool was a pain.

There was a solution. Nearby was a municipal pool, which we visited daily. One day while exiting the water, my big toe caught on a broken tile on the side of the pool. It was a deep cut and started to bleed profusely. I limped to the front desk and was given first aid. Then the ‘pompiers’, fire fighters and medical responders were called. They came quickly and drove me to the hospital where the wound was stitched and dressed. It was also x-rayed (just in case). I was told to return a few days later to have the stitches removed. As I was leaving the hospital, I saw a cash desk; expecting to pay, I asked how much I owed them. They looked at me in astonishment and explained (as if to an idiot) that the desk was there to give you cash in case you needed a ride home or other basic essentials.

A week later, healed, I returned to the hospital. My kids were with me and, as normal, were acting
like animals. They were noisy, climbing everywhere and making a real nuisance of themselves.

Sitting opposite me was a mother with 2 children. The girl was about 7 and the boy, 10. What caught my attention was the fact that both of them were not only well dressed and polished clean, but that they sat quietly next to their mother while she waited. The contrast between them and my 2 brats was startling.

I remarked to my wife that I never understood how the French always seem to have well-behaved children. No matter what we tried, our kids were monsters. At one point the mother said something to the kids, stood up and walked out of the room. The boy, on checking his mother had left, balled up his fist and whacked his sister so hard, she screamed and went flying across the floor. I smiled and felt reassured. On the other hand, my kids, stunned by what they had just witnessed, quietly joined us and sat silently until we left.

**China.**

On a recent trip to China, David, my friend and business associate, and I drove north from Shenzhen, then west across the Pearl River to visit a factory in Daliang, near Foshan in Guangdong province. It was a brutally hot day and the traffic was worse than normal making the 60-mile trip endlessly long. We finally arrived at the factory and on entering the compound we saw a large tree with lots of shade under it. David parked the car and just as we were about to leave the car the guard rushed over to us and started yelling. David looked bewildered and said to me, “I have no idea what he is talking about. He’s yelling in Cantonese, and I only speak Mandarin.” I remarked that it must be something about the parking space. The guard walked away and immediately returned holding a large mango in his hands. Speaking a wordless common language he pointed up to the tree, which was bursting with huge mangoes each weighing about 3-4 pounds.

We understood.

**England.**

My friend Ivor, from Linn Products in Glasgow, Scotland, invited us to his oldest son’s wedding in London. We happened to be vacationing in France, so we hopped on a plane to attend what turned out to be quite a lavish affair. It was held in a function hall fairly close to Piccadilly Circus. Natan, the groom, was marrying a London girl, so the crowd was half Scottish and half English. At one point during the meal, I approached the top table set on a dais overlooking the guests. As I was talking to Ivor, I surveyed the room. On the left, the English guests were sitting quietly at their tables neatly eating with knives and forks.

On the right, the Scots were incredibly raucous. Some were arguing among themselves, one group was singing Jewish liturgical music to Scottish melodies. Others were dancing. Most were drinking copious amounts of alcohol. Overwhelmed by the contrast between these two groups of British Jews who live less than 400 miles apart, I immediately returned to the Scottish side—and glass in hand, joined in the singing.
Empire, Part 1

VINTAGE WHINE
Written by Bill Leebens

The primary reason I began writing these articles (and a similar blog on Audiogon, back in another lifetime) is that there are few cohesive sources of information about the history of the American audio industry. There are scattered pieces here and there, and from those historical and contemporary sources I try to assemble a coherent story for these columns. In general, the audio biz has done a poor job of documenting itself; having known a number of oldtimers in the biz, I've gotten the sense that they felt that the history of their business wasn't important enough to write about. It was just a business. I find that sad.

I don't know if that can be attributed to some type of inferiority complex, or just being so caught up in day to day affairs that the big picture becomes lost. Given that the hi-fi industry really boomed post-war alongside more glamorous engineering fields like the aerospace and automotive industries, I suspect it's a bit of both.

It's sometimes a challenge to even find information on the founders of a brand, not to mention tracking the changes in business entities—-that's certainly been the case while looking into the history of Empire---initially known as Audio Empire.

When I became interested in audio in the late '60s and early '70s, there was not the proliferation of
high-end products that we see today. Most products were what we'd think of as "mid-fi" these days, meaning that their aspirations were primarily just to provide home entertainment—and I don't mean that in a pejorative sense. Home entertainment as an industry is fiercely competitive and many companies don't survive.

Back then, the number of glamorous, high-buck halo audio products that aspired to the state of the art were few and far between on the US market. In speakers, there were the JBL Paragon, the ElectroVoice Patrician, the Bozak Concert Grand, various Altecs, the Klipschorn, the KLH 9, and in a smaller size, the AR 3a (things changed with the appearance of the Infinity Servo-Statik around 1968-70, but that's a story for another day). Amps and tuners—McIntosh, Marantz, some Fisher, and HH Scott (in my mind, all had passed their peak by then, but I'm a tough audience). Turntables—in changers, the Dual 1219/1229; in manual tables, the Thorens TD125—and the oddball, rarely-seen Empire 598 in all its golden glory.

So—where did Empire come from? As far as I've been able to determine, the brand Audio Empire first came on the scene in 1959. It was the hi-fi brand of a precision machine shop/manufacturer called Dyna-Empire, which is still around, while (spoiler alert!) the Empire brand is not. —Well, the brand is still around—just not as an audio brand. And for whatever it's worth, I've been in some impressive machine shops, but look at this list of production machines at Dyna-Empire—truly amazing.

But I digress.

An "Industry People" column in the September, 1959 Audio magazine is the first mention I've found of the company; it also mentions Herb Horowitz, who would lead the company for many years:

"Herb Horowitz, occasional contributor to these pages, has been appointed director of Audio Empire, high fidelity product arm of Dyna-Empire, Inc., Garden City, N.Y. Before joining Dyna-Empire, Mr. Horowitz spent many years as chief engineer of Electro-Sonic Laboratories and chief of audio products for CBS/Columbia, during which time he was responsible for a number of outstanding advances in the design of high fidelity components. Duties will include marketing and production as well as engineering supervision."

"Occasional contributor to these pages"? The previous year, Horowitz had written "Toward an Optimum Stereo Cartridge" (Audio, October, 1958) while still chief engineer at ESL (as Electro-Sonic Laboratories was commonly called). The article described the design of ESL's then-new stereo moving coil cartridge.

The earliest Audio Empire ads I could find appeared in magazines with a cover date of October, 1959, featuring the Empire 98 "Stereo/Balance Transcription Arm" and the Empire 88 "Stereo/Balance Cartridge". The two were clearly designed to go together, and would set the stage for the complete turntable packages which would become the company's best-known products. As you can see—assuming you can read the 4-point body text in the image below—the pitch was on balanced output from both sides of the stereo (45/45) groove. This was at the beginning of the stereo LP era, and so all many of criteria were presented in ads as being "breakthrough!", vital, unique, yadda yadda.

Having said that—the language may be a little breathless, but the points presented are legit. In order to present a believable stereo imaging, both channels must be at the same output level, and separation between the two channels should be as high as possible: thus, the awkward "Stereo/Balance" label. The 98 arm included a feature that was carried through on all subsequent Empire arms: dynamic balance, with stylus pressure applied by a spring. It's interesting to note the
98's resemblance to the tonearm made by ESL, Horowitz' previous employer. Conversely, the ESL cartridge Horowitz described in his article in *Audio* was a very complex moving coil cartridge, but the new Empire 88 cartridge was of (in the words of the ad) "the much-acclaimed moving magnet principle." I'm guessing the moving magnet 88 was better-suited to large scale production.

The first year of the company's existence appears to have been devoted to just that arm and cartridge. I've been unable to confirm or discard a bizarre mention in the December, 1959 issue of *HiFi Review* (precursor to *Stereo Review*): "Underwater music for swimming (is there a Mr. Handel in the pool?) is a possible application for Hartley's new waterproof loudspeakers, originally developed in England to cope with London's fog. The speakers were demonstrated in a goldfish bowl at the recent New York Hi-Fi Show. Fish also featured prominently in the Audio Empire exhibit, where the conversation of guppies was overheard by an underwater microphone."

>cough<

Sure. As one does. Let's take a brief moment to analyze this: the Hartley demo (which I believe actually happened) had some purpose for being. Why would a company making a tonearm and phono cartridges have any kind of display involving fish? I suspect this was just a goof on the part of some editorial staffer who had friends at Audio Empire. Nothin' to see here....

In 1960, the company came out with their first turntable package called the Empire Troubador, a name that would be used for Empire turntables for the next quarter century. The model 208 turntable featured an individually-balanced platter and a "lapped mainshaft [which] rotates in micro-honed bearing well. Tolerance is less than .0001". That impressive spec would be a part of all of the brand's turntables, and would still be impressive today. Also characteristic was a massive Pabst hysteresis-synchronous motor, also used by several other upper-end turntable brands.

The 208 had an unsuspended chassis, and is thought by some vintage audio fans to be the best of all the Empire tables. One such fan is Ralph Karsten of amplifier maker *Atma-Sphere*, who offered a *tweaked 208* a few years back.

Empire was back in *Audio*'s "Industry Notes" in the November, 1961 issue: "Horowitz Builds Empire. In a move obviously calculated to increase consumer recognition Audio Empire has shortened their name to Empire. At the same time in recognition of the outstanding services performed by Herb Horowitz in gaining consumer acceptance of the Empire line, Mr. Horowitz has been elevated to the post of President." The emphasis and gushy language was in the original, and is a bit different from the neutral tone adopted in trade announcements these days.

That same issue of *Audio* carried a review of the "Empire 'Troubador' Model 398 Record-playing system". The company's nomenclature gets a little confusing here: the 398 package included the 208 table, an upgraded model 980 arm, and a base for $165; the new 108 cartridge was optional, and was priced at $35. Let's consider that $200 package for a second: that equates to almost $1,700 these days, a price-point similar to a lot of good turntables these days, though not the massive sculptures that meet or exceed the cost---and sometimes weight!---of an S-class.

Reviews were positive, in the non-specific way that was typical of turntable reviews of the pre-Linn Sondek era---meaning, the sound quality was never mentioned, though specs were cited. *Audio*'s conclusion: "...it just reaffirms something we all know; higher quality means higher costs. The Model 398 is an excellent buy for those who want the quality." Similarly, *High Fidelity*'s February, 1962 review said, "...the parts of the 'Troubador'---taken separately---stand up as first rate audio
components. Taken together, they form one of the finest and handsomest record players available."

The confusing nomenclature I mentioned? Well, after both those reviews appeared, the 1962 Radio Shack catalog featured the Audio Empire 298 package, consisting of 208 turntable, the older 98 arm, and base. Optional cartridge was the 88. Both the company name and the package were old. What gives? As you can imagine, it's tough to sort out such mysteries, 57 years later. I try to NOT invent things....

That High Fidelity review mentioned that the company name was now Empire Scientific. That coincided with an address change, and my understanding is that the Horowitz family purchased the audio division from Dyna-Empire. Again: it's tough to get accurate info and confirm one's conclusions 57 years later, but I'm working on it. We'll continue the story of Empire, including their shift into speakers, in the next issue of Copper.
Crossover artists seem to become fashionable in waves. Still, there aren’t many who have combined classical chops and a pop sensibility with as much popular and critical success as Tori Amos. What makes this even more surprising is how flagrantly she flaunts her personal oddities. Then again, maybe that’s the secret of her success.

Born in 1963, Amos grew up in Washington, D.C. and was such a wunderkind at the piano that the famed Peabody Institute in Baltimore accepted her at the age of five. While she’s never stopped playing classical music, she quickly became interested in writing her own songs. Or, as she has put it, she is visited by songs in the form of “light creatures” or “light filaments.” The result of these visitations are bizarre but thoughtful and original compositions with an underpinning of sophisticated musicianship.

Ten of her singles and most of her albums have charted, and she’s been nominated for six Grammy Awards. So she’s clearly done something right. And the timing of her career – signing with Atlantic in the early ’90s, when many American and British teens were ready for something deeper than synth pop but less hopeless than grunge - could not have been more perfect.

She entered with a splash, releasing her debut, *Little Earthquakes*, in 1992. Rolling Stone called the newcomer’s songs “smart, melodic, and dramatic; the deeper you listen, the hotter they get.” Amos quickly became known for telling it like it is. Witness the terrifying “Me and a Gun,” about a rape victim alone in the middle of the night, waiting to see her attacker again. The choice to do this a cappella is one of the great lessons in “less is more.”

http://www.youtube.com/watch?v=RN3zdTXOQAM
Of course, most of her songs use instruments, and few are quite so devastating. In a completely contrasting style, the high-energy single “Cornflake Girl,” from *Under the Pink* (1994), solidified Amos’ mainstream popularity.

But Amos isn’t the sort to fill an album with toe-tappers. After a quiet start with just piano accompaniment, “Cloud on My Tongue” shows why *Under the Pink* employed so many session musicians. She’s got a whole chamber orchestra working on this track.

http://www.youtube.com/watch?v=gxe7afmGG7w

The album *Boys for Pele* (1996) also uses orchestra, but with an unusually Baroque focus on acoustic non-piano keyboards: harmonium, harpsichord, and clavichord. Besides tickling the ivories, Amos set herself another challenge: For several years before this album, she’d been involved with Eric Rosse, who had produced her previous records. Their breakup left her not only without a romance, but also without a producer. Undaunted, Amos produced this one solo for the first time.

Despite being deemed “radio unfriendly,” *Boys for Pele* charted in both the US and UK. Amos has called the album a “bid for independence,” and has been open about using psychedelic drugs and participating in shamanic rituals while writing it.

Given its unconventional nature, it’s surprising that the album yielded five singles. Among the album-only tracks is “Doughnut Song.” There seem to be at least three types of keyboard going at any given time, ranging from harpsichord to synthesizer.

http://www.youtube.com/watch?v=dbJrXJREeNo

Amos has a thing for old-school concept albums. Maybe she dreams of being a novelist. In any case, her releases in the 21st century tend toward deep worldbuilding. The concept album *Scarlet’s Walk* (2002) was Amos’ first release for Epic after splitting with Atlantic. The songs express the point of view of a semi-autobiographical character named Scarlet as she travels America.

Given the timing, it’s no surprise that the 9/11 terror attacks had a big impact on this album. “I Can’t See New York” is devastatingly sad. The melody is layered under electronic sounds and samples like the Manhattan skyline behind a haze of building dust.

http://www.youtube.com/watch?v=HRUNACbbfZs

Another concept album that would have fit in during the prog rock era, *American Doll Posse* (2007) integrates songs into a complex fictional world. Amos is listed as one of five composers, the other four being alter egos -- women (or “dolls”) of her own invention, inspired by Greek mythology.

For example, the doll named Pip is based on the goddess Athena and described on the liner notes as a “confrontational warrior woman, unafraid and aggressive.” Here’s one of Pip’s songs, “Velvet Revolution,” complete with Greek-inspired rhythms and harmonies. (That’s Mac Aladdin making his mandolin sound like a bouzouki.)

http://www.youtube.com/watch?v=11_W38GKuGs
Classical music has become increasingly important in Amos’ compositions. The Deutsche Grammophon label asked her to create a record that used her conservatory training in a profound way. Amos’ answer was *Night of Hunters* (2011), a set of songs built on pre-existing classical pieces by folks like Bach, Chopin, and Debussy.

The underlying concept of the song cycle is very long and detailed, but this will suffice: A modern woman, recently split from a relationship, has an encounter with creatures and rituals of ancient Ireland. Some of the tracks feature Amos’ daughter, Natasha Hawley, who was only eleven years old, but already an intriguing and powerful singer.

For all its melodramatic nature, *Night of Hunters* met with critical acclaim. Here’s “Nautical Twilight,” a song based on one of Mendelssohn’s Songs without Words. Mendelssohn’s work is for solo piano; Amos added the vocal line, and arranger John Philip Shenale provided the orchestration.

http://www.youtube.com/watch?v=s7LP3_WHK2Q

After several years focused on infusing classical music into her work, Amos was ready for more straightforward pop. In her own peculiarly baroque manner, anyway. First she co-wrote a musical *The Light Princess*, with Samuel Adamson, which was performed at London’s National Theater in 2013. Then she headed back to the studio.

The title of *Unrepentant Geraldines* (2014) prepares you for the mix of sardonic humor and anger to be found in its tracks. By “Geraldines,” Amos means women who live their truth no matter what society thinks.

Masterworks of visual art play an important role in some of the songs on this record. According to Amos’ liner notes, “16 Shades of Blue” was inspired by Cézanne’s still-life painting *The Black Marble Clock*. The lyrics seem to be a commentary on the difficulty of women aging in this society, with lines like “There are those who say you’re too old to play.” Needless to say, Amos isn’t taking that lying down.

http://www.youtube.com/watch?v=ysbuo4Ktr84

*Native Invader* (2017) is Amos’ most recent album. While she started out intending to write a nature-inspired set of songs in the Smoky Mountains, 2016 brought two types of trauma that she couldn’t sidestep artistically: Her mother had a stroke, and America felt like it was coming apart at the seams politically. Hence the intense album title.

“Bang” uses a fable-like cosmology to express Amos’ belief that we’re all equally insignificant and magnificent. “Immigrants, that’s who we are, ‘cause we’re all made of stars.”

http://www.youtube.com/watch?v=635L9skICrg
Why horns?

Some might ask, why horns? These big and sometimes odd-looking creations of ancient times, can't fit through a normal door opening, much less being set up in a living room without rearranging the whole room, instantly conflicting with the infamous WAF. Rumor also has it, they sound colored with a shouty, aggressive, nasal midrange, a harsh top end that can't reach bat territory frequencies and are normally “integrated” with a front loaded bass driver (direct radiator bass) that sounds badly-integrated with the horn drivers, seemingly behind the horns, giving it a “slow” paced bass.

I'm sure most audio folks have experienced horn speakers that tick off some of the above description--- so one could say, that there definitely is some truth to the rumors. So why even bother with horns, when you can have a little 2-way speaker like the legendary LS3/5A, that through decades has been praised, as a very accurate speaker, with a balanced sound, totally abandoning all the frequency anomalies of horn speakers? Well, first and foremost, just as all direct radiator speakers are not created equal, the same thing applies for horns. Secondly, good sound is not just about an even frequency plot (although I'll be the first to admit, that it helps a lot on the final result). There is definitely more to the audio “picture” than meets the ears.

You see, horns are very atypical, compared to “normal” hifi speakers. Yes, both types try to reproduce the source material as faithful as possible, hence the term “high fidelity”. The main difference between them being, that horns work with the laws of physics. By doing so, they are also compelled to follow these very same laws. So for horns, form follows function.

Basically a speaker, horn or not, is a transducer that takes the electrical source signal and transform it to movements of a cone or diaphragm. This movement will produce a pressure wave which is perceived as sound. Similarly, when we speak, we send electrical signals from the brain to the vocal cords, which move and make sounds. Now put a megaphone in front of your mouth, and the sounds become much louder. You have just increased the efficiency of the system (voice/horn combo). Because the horn makes your voice so much louder, you won't have to shout yourself to death. Same
thing applies, if you put a horn in front of a loudspeaker. The speaker can relax without strain, and that is very important to good sound quality.

Put differently, a horn has two purposes.

1. Loading of the driver
2. Directivity control

Horns are an acoustical transformer that provide a better impedance match between the driver and the air it is coupled to. This impedance-matching is important, in order to transfer as much energy from the source (audio signal) to the load (driver). The beginning of the horn where the driver is, also called the throat, constricts the area and air volume. By doing so, the normally-low impedance of the air (because of its low density) is raised to come much closer to the high acoustical impedance of the driver. This impedance matching allows the driver to transform the soundwave, as it travels down the horn’s length, from a high pressure soundwave with a small amplitude at the throat, into a low pressure, high amplitude soundwave at the mouth, which can efficiently be radiated into the air. Overall, when a driver is properly horn-loaded, the efficiency will increase up to 75%, where 100% is theoretical max, and acoustical gain will increase with 10 dB or more. More realistically we can expect a sensitivity of 100 -110 dB/1w, with most horn loaded speakers.

This gives us an efficiency between 6.3 – 63 %. In comparison, a normal direct radiator loudspeaker with a sensitivity of 89dB/1w, will have an efficiency of 0.5%. So only a half percent of the electric energy (signal) is transformed to acoustic energy (sound). Therefore, you are losing the vast majority of your input energy (99.5%) to heat.

Directivity control plays a big role in sound reinforcement systems, where a large audience should have the same distribution of low and high frequencies. For domestic use it serves to “control” the nearfield listening space and can, to a certain point, minimize the reflections of the room. As a result, you will hear more of the speaker and less of the room.

My journey towards horns:

You have probably already guessed that I’m a horn aficionado--- that’s why all the rant about horns. But I have not always been a horn lover; I haven’t always known what horns could do for the listening experience. But before I go on about my “discovery” and admiration of horns, allow me to take a quick step back in time. My reason for being in this sometimes-crazy audio world, where claims run all over the place (especially in advertisements, with no substantial arguments to back them up) is of course the music. It all starts and stops with the music. I grew up in a home full of music, mostly played back on some big Cerwin Vega 316 and an Accuphase E-302 amp. I remember my father toying around a guitar from time to time, but I was also being fed the tunes of The Beatles, Pink Floyd, Dire Straits and many of the big names of the ’60s, ’70s and ’80s, from early age. Classical music was also on the menu, although I didn’t appreciate it until reaching my 30’s. Then all the classical music I had involuntary listened to as a child, came in handy, because I could recognize it and appreciate it almost instantly.

And so, a seed of love for music was sowed as a young child. My father of course couldn’t ignore this, so he got me an old receiver and some small speakers from B&O (yes I’m Danish!) plus a turntable and off I went, “borrowing” LP’s from my father’s collection. From around 6 years old I daily listened to the likes of The Beatles - *Help*, Simon & Garfunkel - *Bridge Over Troubled Water*, Eric Clapton - *461 Ocean Boulevard*, Rod Stewart and many more. In 1982 when I was 10 years old, something special happened to my music world. My family was on a visit at some friends. They had two boys, a little bit older than me, they had bought this new album, and the cover was so cool, with
some kind of a monster standing above and puppeteering the Devil. And the music was every bit as fantastic as the cover. Iron Maiden – *The Number of the Beast*, expanded my listening habits to include this dark, fast and feisty metal genre, even till this day.

While growing into my teens, my playback system had also grown. Compact Disc was the new black and from my confirmation money, I bought a Denon 920 amp, Denon CD player and some Cerwin Vega D7 speakers. I remember how I loved the way they could fill the room with loud music, some would probably call it noise. I was not really into the quality of the sound, yet, and more about the quantity.

I was having fun.

Then one of my friends got a set of JBL L80T. They had a very different tonality than the Cerwin Vegas, and were in general easier on the ears. Still they could rock the house pretty good. Then I got a chance to buy a used set of JBL 120TI. Next thing was to replace my Denon amp with a Pioneer A77X, which I upgraded with new and bigger electrolytic caps. I later moved on to some JBL 150A and then to a rare set of Seas DD Tower.

Around 2006, for some reason, I got the idea of trying some stand mount speakers and a subwoofer. So I found a set of Infinity Modulus, without subwoofer, so I ran them with a Dali SWA15 sub. Now I had jumped on the DSP wagon and had a Behringer DCX 2496, so I had some control over the x-over to make a better integration between the mains and the sub. At the time I didn't pay attention to speaker efficiency, so when I wanted some fun, the delicate Infinity ribbon tweeter would bail out and the protection system would kick in. This I did find quite annoying, so the Infinity speakers were swapped for a set of System Audio 2K Master. This pairing lasted a few years until one of the bass speakers got fried at a party. The x-over had even been sat at 150 Hz, but little did it help. When push comes to shove, they couldn't take the abuse!

At that point, I was aware that I had to re-think my whole approach to speaker type vs my demands for uncompromised high SPL. After some self-studies on the web, I settled with a DIY dipole line array, consisting of 6 x 8” upper bass drivers and 6 x B&G Neo8S planar-magnetic ribbon drivers, coupled with 2 LAT 700 subwoofers with 800 watt plate amps. Finally, I got a speaker that did not bail out, before my ears. I now knew I could never go back to “normal” speakers with sensitivity in the 87 – 90 dB range.

My need for new experiments, led me to build two big tapped horns, which I used for garden parties. They were parked in my garage during the winter months. At that time, I had seen a guy on the web (Inlowsound.com) who made horns out of paper and wood glue. Thinking it was a cool idea, I initially thought it was too complex and wasn't there something about horns, making them sound a bit off?

In the next couple of months, compelled by the idea, I re-read the making process and it began to crystalize into my brain. Furthermore, this was a cheap DIY project: some plaster, copy paper and glue, with the biggest expense being time, the DIY guy's greatest resource. Of course, compression drivers would be needed, but if I bought them second hand, I could always sell them again, with minimum loss. From that point of view, it felt very much in line with my thinking. A project that would be fun to try, cheap, and if I did not succeed, I could disregard it as an experiment and an experience, but not for me. On the other hand, I had this feeling, that maybe it could be my path to my “Holy Grail Of Sound”. As I saw it, I had nothing to lose, so off I went.
This 190 Hz tractrix horn loads to around 400 Hz. As a general rule a horn loads from two times the cutoff frequency. Another general rule is, that a horn loads max 3.5 octaves. Using it to 5000 Hz is well within the range. In fact, one could, with some eq, use it to around 16 kHz, at the expense of some driver break-up above 10 kHz. An initial test run, proved very good to my ears. Even only playing 500 to 16000 Hz, I could immediately hear, that this was very different from what I was used to. The sheer power and dynamics produced by the 110 dB/1w sensitivity horn combo was overwhelming. Only some equalization would be needed to “tame” the horn a bit. I liked it a lot.

The tapped horns could only play from 30-100 Hz, so I needed an upper bass solution from 100-500 Hz. Having already gotten my feet wet with the tractrix horn, I felt that the only solution to suit the midrange/tweeter would be a horn loaded one. Luckily, Inlowsound also had a 100 Hz upper bass horn on tap. Simulating in Hornresponse, made it very easy to pick the right driver and know the shape and size of the horn.

[ Sebastian's tale of his adventures with horns will continue in the next issue of Copper--Ed.]
Last Christmas I was up late with my boys drinking Scotch and talking about music. Before things got too sloppy the subject came up on the ridiculous nature of best of lists, like the Top 100 Vocalists, Guitar Players, etc. We’ve seen these before and scoffed at the fact that somebody like John McLaughlin was below Ann Wilson from Heart. Honestly.

Nathan is a classic kibitzer and pot-stirrer. He knew that getting Dean to read a list of any kind from Number 100 to Number 1 would be hilarious, if only to see the look on Dean’s face.

Dean is a very serious young musician. If you ask him how to rate a vocalist he will spend the next 2 hours explaining the 6 tools a vocalist must have to be considered a great. By the way they are, as follows:

- Range
  - For instance, Elvis Presley had a 5-octave range. Pretty remarkable
- Tone
- Pitch
- Vibrato
- Aerobics
Like executing runs

- Grit or Growl
  - This is not rasp, but the ability to sing a note and then add the grit. Johnny Winter and Tom Waits were/are particularly good at this.

Dean mentioned we don’t have to include Grit and maybe there were only 5 tools. But I pointed out that without Grit, Winter and Waits would be down to two tools. Not fair. Gotta get those guys in somehow.

So we started with the list of 100 best vocalists. Immediately we were in trouble. Joe Cocker was listed at 97 and BB King at 96. We should have stopped there and turned on a Spiderman movie. Dean was already getting sick to his stomach just imagining how many dildoes were going to be above BB King. Sure enough, Annie Lennox at 93 and Willie Nelson at 88. This was going to be a long haul as each vocalist we came to he’s yelling ‘He’s above BB? Really?!’ Could have been uncomfortable with Dean in so much pain. But we’re family. We enjoy watching each other’s pain. It’s why you drink Scotch at Christmas.

[See for yourself right here—Ed.]

There are some real clunkers in the middle numbers, especially Mariah Carey at 79 and Iggy Pop at 75 (“Iggy fucking Pop above BB!!! I’m going to kill somebody!”) Hilarious.

Gregg Allman at 70. 70. Should be in top 30. Thom Yorke (Who!!?) at 66 and Axl ‘Dick Brain’ Rose at 64, above Gregg. Muddy Waters at 53. Hahaha! Neil Young at 37. Guy has a voice like a masturbating cat and he’s 16 spots in front of Muddy. Bono at 32. Fuck THAT asshole. Janis Joplin at 28. At that point the entire room exploded!

I love Janis and her ability to belt it out, but my boys can’t see it at all. I can’t even discuss Janis in front of them for fear of getting my bed short-sheeted. Or even worse the hand in the pan of warm water trick.

Dean considers Michael Jackson at the top of any vocal list, and that’s hard to argue with. Definitely top 5. He was #25. I do not give a shit saddle horn blast about all the swirling crap around this guy. Dude could SANG, and influenced a generation. But he’s behind Van Morrison, Hank Williams (!!!) and Johnny Cash! I’m having some kind of fun at this point.

Then you come to the top 10. Here we go.

At 10, 9, and 8 James Brown, Stevie Wonder and Otis Redding. It’s hard to argue putting those three in the top ten.

At #7 Dean puts his head back into the chair and stops talking. What? What? Who?! He looks me straight in the eye.

“This is your generation’s fault! I can’t fucking believe this idiot is the #7 vocalist of all time!”

“Who?”

“Bob Dylan.”

“Wow. That is fucked up. Wait, how is that my fault?”

“I don’t know, it just is.”
When done with the list, Nathan and I had such a ball we wanted more. Dean being so passionate was exhausted, but there was a half bottle of Scotch left and we’re all guitar players so Scotch prevailed. We’ll do the Best 100 Guitarists. That’s when the real trouble started.

[Look here for yourself, and howl at the moon --Ed.]

We only recognized a few in the 91 to 100 category...Robby Krieger from the Doors was 91. That just got a scoff from the group. You may love their music but no one can say they were master instrumentalists.

The 80’s went OK until David Gilmour at 82 and Derek Trucks at 81. Trucks just happens to be one of Dean’s gods and the same with Gilmour for Nathan. This stalled the list for a bit while the two of them ranted about the injustice of Life and somehow dragged in that you can’t trust women either no how. It was a weird moment.

The 70’s got me going with Johnny Winter at 74 and Joni Mitchell at 72. If asked I will tell you Johnny Winter is in my top 5, might even put him over Hendrix just because he was so blasted fun and at his height could blow the doors off anyone even Hendrix. Yeah I said it. But 2 spots behind Joni Mitchell? A beautiful songwriter and arranger but guitar? OK.

In the 60’s Steve Howe from Yes and Eddie Van Halen were 8 spots behind Ike ‘wife-beater’ Turner.

In the 50’s Lou Reed went higher than Ritchie Blackmore and Jorma Kaukonen.

In the 40’s John McLaughlin and Frank Zappa were beat out by John Fogerty. Remember now, this says John Fogerty was a better guitar player than Eddie Van Halen, Johnny Winter, David Gilmour, Derek Trucks, John McLaughlin and Frank Zappa.

They did manage to slip in Scotty Moore, Elvis’ guitarist and a really influential guy. Nice.

The 30’s did get in Brian May, Bo Diddley, Steve Cropper, Dick Dale and Buddy Guy.

But In the 20’s we got George Harrison at #21. Think of the people that Harrison was considered better than. Luckily the Scotch had started to get to us so this just caused general hilarity.

The rest of the way was paved with good folks, like Jerry Garcia, Ry Cooder and SRV.

But at #3 BB King.

Now these inebriated walruses that put these lists together got BB and his skills completely backwards. BB was a great vocalist and blues interpreter but he was a not a great guitar player. Iconic and unmistakable, but he wasn’t the best guitar player in his own band. Crazy.

The point of this rant I’m doing is the number of folks that are listless. Jim Heath from Reverend Horton Heat is not on the list but Joni Mitchell is. Blind Willie Johnson is not on the list but Neil Young is. **Yngwie Malmsteen** is not on the list but George Harrison is. David Bromberg isn’t on the list but Stephen Stills is. Elvin Bishop isn’t on the list but Robby Krieger is. Joe Bonamassa isn’t on the list but BB King is #3.

More importantly, no jazz guys. I won’t get into the classical and flamenco people. That’s a different category and discipline. But if you have rock and blues guys you have to include swing and jazz. Those are related idioms and need to be referenced together.
They didn’t call their list Best Rock and Blues Guitarists. It’s labeled Best Guitarists. You cannot put together a list of Best or Most Important Guitarists without Django Reinhardt. For those of you who don’t know who that is you are in for a treat. My next two columns will be devoted to Django. All the great guitar players on the original ‘inebriated walrus’ list point to Django as a major influence.

Next. The caravan.
On April 15, 2019, Notre Dame Cathedral in Paris was severely damaged in a fire. As it happens, that church has a special place in music history. Construction on Notre Dame started in 1163. It took almost 200 years to complete, but it’s in those early decades, around the year 1200, that the cathedral starts to matter musically.

In this column, I usually discuss a few recent recordings of a particular repertoire, but this time there’s only one that I’d call recent. So I’ll fill in with a few important earlier releases.

We’re talking about Notre Dame organum (accent on the first syllable). The term “organum” meant a Gregorian chant decorated with other notes sung against it in counterpoint. In the Middle Ages, both composers and monks/nuns experimented with making chant more interesting to listen to and sing (oops, I mean more glorious for God to hear, of course!). The innovations in organum by composers at Notre Dame not only established how to turn a simple chant into a big, rich piece of music; they also served as the seeds for basic techniques of writing polyphony that you can still hear in the likes of Bach and Beethoven.

The earliest Notre Dame composer whose name we know was Léonin (Leoninus in Latin). He’s credited with inventing a new way of decorating chants in a specific pattern. For Léonin, each phrase of the chant proceeds like this:

1. A few words are sung in unison, like a traditional plainchant.
2. One syllable is held for a long time by most of the monks. A soloist sings ornaments against the held note. This part is always in triple time (which they called “perfections”).
3. For a few seconds, the held voice moves to different notes, but not quite as fast as the solo voice.
4. The chant phrase is finished in unison.

Léonin’s music was written down using a new kind of notation that could capture rhythm – as long as it was in triple time. Léonin’s book then taught Pérotin, an even more brilliant organum composer in the next generation of Notre Dame.
Using the same structure described above, Pérotin upped the ante. He made items 2 and 3 longer, plus added one or two extra voices in the counterpoint. “Big deal,” right? Right! Pérotin was creating the first sustained three- and four-voice polyphony in history.

Now that you know what you’re listening to, let’s get to some recordings.

The gold standard is *Perotin* (Harmoni Mundi, 1989) by the Hilliard Ensemble, led by Paul Hillier. They did everything right: Pythagorean tuning (which makes their perfect fifths and fourths ring true), an acoustic space that takes advantage of the pure tuning, and a strong sense of the triple rhythm that still manages to be lilting rather than robotic.

Here’s Hilliard singing Pérotin’s famed “Viderunt omnes,” an organum built on a two-voiced Léonin original, with two more voices added:

http://www.youtube.com/watch?v=Q2JvIyStzNA

Paul Hilliard was part of a movement in the 1980s to fix a wide range of misconceptions about early music as it had been recorded in the 1950s and 60s. Of course those earlier pioneers got some stuff wrong -- there was very little scholarship to draw on. It’s incredible that they bothered with this weird old music at all. People like Alfred Deller are heroes to me. They forged the way for early music performance practice.

Here’s the Deller Consort, originally recorded in 1966, on a re-release from Deutsche Harmonia Mundi, singing Perotin’s “Alleluia Nativitas.” You’ll notice many stylistic differences from that Hilliard recording. In terms of vocal production, the vibrato is the most jarring from our vantage point. But the interpretation of the rhythm is also a big issue (as it is for most early-music attempts from that period). There’s a halting, self-conscious sound to it, as if they’re afraid they might break the music if they barrel through.

http://www.youtube.com/watch?v=jmXv1cF6oac

Given their name, it only seems right to include Ensemble Organum in this discussion. Under the leadership of Marcel Pérès, in the '80s and '90s this French group was one of the most intense hunters of medieval authenticity, with an emphasis on spiritual authenticity. Their concerts were full worship services. Pérès’ musical choices served the expression of his faith, never mind what scholarly eyebrows he raised.

Here is Ensemble Organum in 1985, singing Léonin’s Mass for Christmas Day on *Ecole Notre-Dame: Messe du Jour de Noël* (Harmonia Mundi -- are you seeing a pattern with this label?). But, typical of Pérès, it’s the entire Mass, not just the parts Léonin set as organum. You can hear some polyphony starting at around 37:20.

Pérès barely acknowledges the long and short beats that make up triple meter in most renditions. For him, the “perfections” seem to be more about which notes to stress than which have more value. Still, his interpretations are always compelling, in a mantric sort of way.

http://www.youtube.com/watch?v=IZE5jeOpIoM
Another group with a long history of singing the Notre Dame repertoire is Ensemble Gilles Binchois, directed by Dominique Vellard. Their first try was in 1986, *Ecole de Notre Dame*; in 1993 they released more from this repertoire on the similarly titled *Ecole de Notre Dame de Paris*.

This is the same “Viderunt omnes” by Perotin that the Hilliard Ensemble sings above. Vellard’s performance is slower, with softer edges. You might say it’s more personal and prayerful, but I miss Hilliard’s focus on the acoustical properties (which Perotin is thought to have understood).

http://www.youtube.com/watch?v=95Xnak28i-c

Since the mid-1990s, there have been a handful of other discs devoted to Notre Dame organum. Orlando Consort, Tonus Peregrinus, and Diabolus in Musica, among others, have produced recordings worth checking out. All of them owe a debt to the earlier groups I’ve mentioned.

The only new release in the past year – one wonders if all the media attention will soon inspire more – is *Pérotin: The Scottish Source*, by a group called Iuchair. It is on their own indie label, Yoker Music. As the title implies, Iuchair made a new edition based on a manuscript at St. Andrew’s Priory in Scotland.

Their interpretation is fascinating – wild and rousing, almost raunchy, more like something you’d expect to hear outside than in a cathedral. I applaud them on their daring, and for trying to move the historical conversation forward.

http://www.youtube.com/watch?v=gDtYyOj4qHU

In case you’re concerned, all the medieval music written at Notre Dame is housed in the Bibliothèque nationale and other manuscript repositories, so it was safe during the fire.
Amassing an impressive body of engineering and producing work, stretching over 4 decades’ worth of record credits, Jack Joseph Puig has been behind the glass for many hit albums and critics’ favorites. Having worked on records by a diverse group of artists --- Mary J. Blige, The Black Eyed Peas, Green Day, Stone Temple Pilots, Aimee Mann, John Hiatt, Shelby Lynne, Semisonic, Barbara Streisand, and Diana Ross, as well as many others --- he continues his streak of making great records as a producer and mixing engineer. Puig has also performed A&R duties as an Executive VP for Interscope-Geffen-A&M Records and has recently been helping the next generation of audio engineers through his work with Waves Audio and their customized plug-ins for audio processing.

John Seetoo: You are known for your work with John Mayer, Goo Goo Dolls, Fergie, U2, The Rolling Stones, No Doubt, and many other famous artists. However, you have won Grammy Awards for your work with Jars of Clay and Steven Curtis Chapman, who are contemporary Christian music artists. It is a genre that sports some very talented but overlooked artists with large catalogs, such as Martin Smith (Delirious?), Amy Grant, and Phil Keaggy, whom you have also produced and engineered. Your work in CCM has included some landmark albums that arguably define its sound.

Can you tell us how you got involved with that music scene, how it compares and differs with your mainstream artist work, and what your relationship with artists in that genre is now?
Jack Joseph Puig: It really doesn’t differ. At the root of what we are communicating is a message. We create poems that go into the world and have the ability to change lives, whether it’s about God or a Universal Truth.

At the end of the day, all of the music we make is social commentary; music, films, podcasts, and broadcasts are emotional and spiritual commentary. Whether it’s U2 or CCM, they are both inspirational, and whether it’s about God or not about God, the inspirational message is still the same. All we do is empower the song to create the best emotional connection of the artist’s feelings, thoughts, and vision of what they want to communicate to the listener.

Since the message is so similar in many cases, it’s the tonality of what you’re presenting in the song that is crucial in delivering the right intent in the communication.

When you think about it, tone is the universal connector --- even more so than music. Tone can make people feel different ways. Tone is the carrier. If I go to a foreign country where people don’t speak my main language, which is English, they may not know the “f word” but if they hear me using the “f word” with harsh tones, they’ll know something’s not right.

I have always been a tone junkie; that’s where it’s at. Tone is the delivery system that the heart and soul of a lyric and melody ride on in a song.

I haven’t worked in the CCM field in a while, but the door is open. My relationships with those artists are all good. If I got a call tomorrow for the right project, I would have no problems to keep me from working on a CCM record.

J.S.: Are there any instances you recall from working with virtuosos like Phil Keaggy, John Mayer, or Eric Clapton, whose songs range between quiet acoustic to raucous electric guitar, where you were able to apply techniques or approaches learned or developed on one project and apply it on another’s?

J.J.P.: You’re constantly on the hunt for more knowledge and skills to improve what you do. I don’t believe that you ever truly arrive, because if you think you have, it’s already over. There are benefits to experience and projects increasing elements like, your ear training gets better, and you find certain things in the tools you have available to help you get there faster.

You learn what basic sounds just work well, like a Neve/API/SSL preamp, or that a simple SM-57 (Shure mic) will probably not let you down on a guitar recording, and you pick up more along the way: how to better use subtractive EQ instead of always additive. Compression --- how release and attack differs, and how the different units can sound. All of this is beyond a basic explanation, but it’s true.

J.S.: You have spoken in the past about records where the songs stand up when stripped down to just a voice and a guitar, versus others, such as Janet Jackson’s Control, which were created out of the producer’s vision of manipulating and building sounds, and the songs themselves are dependent on the production for their impact. Can you cite an example?

J.J.P.: John Mayer’s, "Daughters". That song wanted to be stripped down. It just didn’t work as well with the extra instruments. I TRIED 10 DIFFERENT DRUMMERS!! The label always wants more production --- all the bells and whistles --- but “Daughters” needed to be stripped down. Everyone took a risk with that song, but it wound up winning the Grammy (for Song of the Year - 2005).

J.S.: You have spoken on a number of occasions about the use of harmonics, which may be noticeable or subliminal, to enhance or transform emotional content in music. Can you elaborate and
cite some examples as to how this may have been achieved in the past and how you deploy and control it currently?

J.J.P.: I think of harmonics as the “rainbow” of audio. All of the rich elements that exist in audio and in human hearing are found in harmonics. The human ear can detect many complex sounds, harmonics are different spectrums of layers, which is why I use the term, “rainbow”.

When I was creating the Puigchild Compressor plug-in for Waves, we analyzed a classic Fairchild compressor. We discovered that there was a circuit that was effectively a harmonic generator. So we also created just that portion of the Puigchild plug-in, to essentially have a harmonic generator in software form.

I don’t see it as adding distortion, but overtones. As a result, we can now create 3D audio by adding depth and width to sound through harmonics. Harmonics in low-end or high-end sound create a presence that allows the ear to pinpoint location. The sound of a train or truck rumbling will generate low-end that can be heard and felt, but not always be determined from where. The ear can immediately place direction on something like the sound of a coin being dropped, through all of its harmonics.

J.S.: When wearing both producer and engineer hats on a project, how do you combine and separate the two decision making processes into a successful working protocol, and how do you maintain a sufficient mental and emotional distance from a project to refrain from imposing your own sound and processing preferences to the point of subsuming the artist (i.e., keeping the “Phil Spector urge” tamed)?

J.J.P.: I know exactly what you’re talking about. It all starts with the understanding that you’re a facilitator. It’s not your name on the front cover of the record. Mick Jagger actually asked me this same question. My answer to him was, “It’s not my wedding, it’s your wedding.”

There’s a pecking order to keep in mind that goes along with the roles. First is the artist, the one who has to perform the songs, perhaps write them, and bring the emotional content. Next is the producer, who has to create the environment to capture that. The engineer is there to be the right hand of the producer, to technically make sure nothing gets lost.

J.S.: Coincidentally, you mixed the platinum album America Town by Five For Fighting, a project which included equipment of mine that I personally had lent to producer Gregg Wattenberg. At the time, John Ondrasik was a relative unknown. The single from that album, “Superman (It’s Not Easy)” became a hit in part from its association with 9-11 first responders, some of whom perished when the World Trade Center towers fell. The record sounded nothing like Ondrasik’s previous records, and other than the song, “100 Years” from those same sessions, still stands apart sonically from the rest of his work, even on subsequent projects he did with Gregg. Was there something unique about the way you approached the mix to differentiate it from the previous record? Was it merely a serendipitous collaboration between artist, producer, and mixer, or was there something else involved?

J.J.P.: I would say, probably a serendipitous situation. The songs were probably different between his previous and later records. All art is a synthesis of what came before. Artists all go through different phases. It always happens --- new influences, new instruments --- artists will always tell me their latest top favorite records they’re listening to and how they “want to try something like on so and so’s record.” A confluence of different events regarding the artist always affects the overall sound of a record more than any single other person.
The conclusion of John Seetoo's conversation with Jack Joseph Puig will appear in the next issue of Copper. Photo courtesy of Mr. Puig's personal collection—Ed.
One of my show favorites last year was the system from Eikon Audio, the new company founded by Gayle Sanders, co-founder of Martin Logan [with Ron Sutherland---the company name used their middle names. They learned from Mark Levinson's mistake---Ed.]. The idea behind Eikon's product is a powered speaker system fed by a custom preamplifier with highly advanced DSP which adapts the speaker to the room, not only through frequency response but also through timing characteristics of the sound within the room, yielding a balanced response in a wider portion of a listening room. The DSP helps to create the unified wave launch that Sanders and Sutherland first experienced with their electrostatic designs. This year, Eikon had a production model of the system on display, sounding every bit as good as I remember it. The diminutive cabinets belie the large sound this system creates, especially the amount and depth of bass present, while the imaging and soundstage are sharp and focused.

As the Eikon demo room was too dimly lit to get a suitable photo, here is a display model from their suite, in carbon fiber.
Got tubes? Here are some large specimens for you bottle lovers out there. These are the KRT-1610 tubes, a triode capable of 22-50 watts in class A, as used in one of KR Audio’s Kronzilla power amplifiers.
Schiit brought some new, umm, Schiit to the show. The new Aegir amplifier, configurable as a stereo 20 watt per channel amplifier or an 80-watt monoblock, runs in Class A, and were paired with Salk loudspeakers. Also debuted was the prototype of Schiit’s upcoming Sol turntable, featuring a carbon fiber uni-pivot arm with on-the-fly VTA adjustment. It is expected to retail in the $700 range when
released. The Sol and the Aegirs flank the rack of Schitt from top to bottom:

Here’s one for the “no séance required” segment of our show report: The Mag Lev Audio turntable. Your eyes do not deceive—the platter floats above the plinth and rotates using a magnetic field, which does away with belt drives, direct-drive motors and idler wheels. The arm is a Pro-Ject Carbon. The Mag Lev was on display in the marketplace, but next year I would like to see them show the turntable in their own room, so we can determine how it sounds. Regardless, it’s intriguing to watch this turntable play a record!
Vinyl lovers who are tired of pops and clicks on their records may want to give this product a try. A few years ago, the SweetVinyl company debuted their SugarCube digital click and pop remover. The system converts the analog signal to 24-bit/192kHz resolution, applies their proprietary and very sophisticated noise removal algorithms, then outputs the audio with the worst of the noise removed. If anyone remembers it, this is a 21st Century equivalent of the old SAE 5000A Impulse Noise Reduction unit, which your humble author here has owned for decades, much of that time with it sitting unused. (A nice way of saying that it really did not work very well.) The SugarCube works its magic without any audible shift in sound quality, and given that all of the SugarCube models offer a digital output in addition to analog, we could use its output straight into a DAC of our choosing, or send the data to a computer for recording.

All parameters can be adjusted via the front panel, or via a convenient app for your smartphone or tablet, since the unit connects to your network in order to receive software updates. The newest
version of the software (2.0) has been improved so that it may now detect scratches properly without affecting electronic music (like Kraftwerk, and a lot of recent EDM releases).

Originally starting with two models (the SC-1 and SC-2), the lineup has now expanded to include four models. The SC-1 is now available in three flavors. The SC-1 Mini provides the noise reduction, plus analog and digital outputs. The SC-1 Phono adds a phono stage, with an infinitely adjustable load for moving coil cartridges. The SC-1 Plus adds a digital input.

The SC-2 is the top model, which adds the ability to record your cleaned vinyl to USB stick, external hard disk or a network drive. It accesses an online database to retrieve the metadata for your record, and automatically splits and tags your files, making your needle drops a very simple process.

Top to bottom are the SC-1 Mini, SC-1 Phono, and the SC-2.

I made a video of the SugarCube being used on their “dustbin” record, Steely Dan’s *Aja*, to give an example of how well it works.

httpv://youtu.be/HYsWf-IgUnM

Once again, one of my favorite rooms at Axpona was the room presented by Precision Audio & Video, featuring the Martin Logan Expression ESL 13a speakers paired with Constellation electronics, Auralic streamer, and a turntable setup from Continuum Labs. As stats can be very revealing of source components, there is something magical about this system which just works. (I have heard these same speakers powered by Luxman and McIntosh, and in both cases was disappointed.) The
Expression 13a is smaller than the Renaissance 15a pair they brought last year, and the smaller size worked perfectly in the hotel room. Everything has great synergy, and I enjoy my time in this room each year. My friend, who enjoyed the earlier system, later told me he was “gobsmacked” by this one as well, and another blog yesterday counted this among their top three rooms at the show. Sorry for the poor picture on this one!

I also spent some quality time in the PS Audio room, located on the first floor near the show registration area. The two big introductions this year were the AN3 loudspeakers, and the two-chassis Obsidian Series Ted Smith Signature DAC, shown as a non-functional display. Ted Smith was given free rein to develop his ultimate DAC as he originally envisioned the DirectStream concept years ago. The digital chassis features a glass display across the entire front of the unit, while the analog chassis will strictly be limited to clean analog output; they will be joined by a fiber optic cable (not Toslink) to keep electrical noise to a minimum.
The AN3 speakers will eventually be a middle-range system between the flagship AN1 (a set of 7½ ft. tower speakers to rival the legendary four-piece Infinity IRS V) and AN2, and a series of less-expensive speakers in the Stellar range. The AN3 builds on the design principles of Arnie Nudell, and the driver array consists of an air motion transformer tweeter (front and back), a Bohlender Graebener planar midrange, a mid-bass coupler, and a side-mounted woofer. The latter two are driven by separate internal 700-watt amplifiers, and DSP will be available to tune the lower frequencies to the listening room. Initial impressions of this prototype AN3 were very favorable by all who heard them, despite the odd nearly cube-shaped room and typically noisy show conditions. The removable wooden side panels are beautifully finished, as you can see below.
Finally, an honorable mention goes to the upcoming Stellar Phono Preamp, designed by Darren Myers, who also assists in the development of many other PS Audio products, including the upcoming speakers.

One final salvo before I wrap this up. If anyone recalls, my first Copper contribution bemoaned the state of demonstration music in the rooms of the show. There was a lot of the same music being played in several rooms, while others were poorly sequenced, and some were just too damned loud.

With this year’s show, I heard more diversity than ever. While many exhibitors still bring their own recordings (anything from selected LPs to hard drives full of tunes), I have a feeling the depth of Qobuz’s millions of available tracks may have had a hand in it (and Tidal’s, to a lesser extent). Good, high-quality music is now just a few taps away, and exhibitors can jump from their own selections to visitor requests in an instant. A win-win for everyone involved.

Well, that’s a wrap on Axpona for the year. Thanks for reading, and keep the tunes spinning!
Most of what the average person knows about the Vietnam War is gleaned from movies, TV dramas and documentaries like the one Ken Burns' produced in 2018. Almost every one of those (even the documentary to an extent) revolves around the infantry: their horrific combat, courageous heroes and historic battles.

What everybody doesn’t know is that for every infantryman, there were between 6-7 soldiers working to support the infantry in a myriad of ways. Put another way, less than 20% of the guys in Vietnam were in the infantry. The +80% of us that weren't 'grunts' have ALL kinds of stories to tell even if they’re not 'war' stories, per se.

Since getting back from Vietnam, I've occasionally shared my experiences (orally) with interested friends and acquaintances. Subsequently, a number of them asked why more vets aren't willing to talk about their experiences in Vietnam.

Over the years I've given that question some thought and here's what I think . . .

It's possible the vet feels like his stories might not live up to the heroic expectations his audience might have. If a soldier was a mechanic or cook or electrician or had one of the scores of non-combat jobs, he might not think he had a story worth telling 'cause it was just a 'job' - a job that wouldn't be very much different (except for the heat, humidity, bugs, snakes, exposure to disease and various, constant threats of death) in any other place.
He may have done regrettable stuff - participated in or witnessed atrocities. Or the guy may have been unheroic in a life-threatening situation. Unless you were there, there's no possibility you could understand the reasons for the decision(s) guys in those situations made and there's no way to predict who's going to hold someone in contempt over what they did or didn’t do.

Maybe the vet killed in self-defense but hasn’t come to grips with the moral or emotional consequences. Even if a person killed out of self-preservation, beliefs might condition him to feel guilt. And what would the reactions of others be if you told them?

What if the vet suffers from PTSD? A vet probably isn’t going to share much if he’s haunted by nightmares.

What if the vet had participated in some kind of retribution against one of our guys?! Or what if he had fathered or ‘might have fathered’ a child while there? Or something else? Only that vet knows - the ghost of regret wears a thousand faces.

All Vietnam vets as well and their peers grew up hearing about WWII from their parents, TV shows, TV documentaries and the movies. We all knew only too well how heroically our side had answered the call and subsequently won. The Vietnam vet’s story could never favorably compare to the justifiable heroics of WWII.

Even though we may have won every battle in Vietnam, ultimately, the war was lost. For a vet to tell his story, he has to tell it in spite of the military failure even if it wasn’t our failure.

Let’s not forget how unpopular the war was or how little fanfare accompanied the vets’ return after serving. Some of us even had to endure criticism for our participation!

Last but not least, a vet may not be all that verbal - he may not know how to tell his story – he may not be a good storyteller or writer.

It could be a combination of some or all of the above.

I wasn’t dissuaded.

When I considered writing my recollections of Vietnam, I didn’t know where it would lead – 50 years had past before I got inspired to record those experiences. How many stories did I have/how many could I remember? How well could I tell them? And, of course, would anybody care?

Regardless, I launched into it and like a line of dominoes, one story after the other seemed to fall from my memory onto the page.

I’ve tried to keep the prose real without being vulgar. Some events involve themes that include sex, drugs and gore. It gets very personal, somewhat controversial and, at times, there’s no way to avoid how gruesome it was.

Some (friends) would suggest simply omitting potentially offensive events. I haven’t done that. It would reduce my story to a histrionic, year-long sleepover in Vietnam. Censoring those parts would make the story not worth telling.

This is what I experienced - it’s complete and it’s true. Nothing is added, nothing is invented.

My story may seem unusual, but there were tens of thousands of non-infantry, Vietnam vets who confronted similar situations, challenges, screw-ups and disasters. Every G.I. having boots on the
ground in Vietnam during the war would have stories like these. When added to the existing
narrative, I believe these stories help to complete the picture of what happened during those tragic
times.

**July 13, 1968: DAY 1**

... I landed in Vietnam. No, it wasn’t a Friday.
My immediate impression was, 'I'm going to have to get used to this heat' which, luckily, I eventually
did.
At the 'In Country' orientation I couldn’t not be distracted by these 2-foot long lizards darting in and
out of holes on the side of a bull-dozed dirt berm 30 feet from where I was seated ... over and over
again. They'd scurry out of one and into another - it seemed surreal and totally appropriate.
Then somebody passed out duty assignments and loaded most of us on a Chinook helicopter - the
first of dozens of chopper flights - the only way to get anywhere in Vietnam.
I don't think I was issued my M16 - everyone's constant companion - until I got to my artillery
battery in Chu Lai. We didn’t visit the mess hall, take a shower or sleep without having our M16
nearby. I didn’t keep a round in the chamber, but the 20-round clip was always inserted and always
full.
The dress **code in the field** was somewhat relaxed - shirts were optional. Mustaches were okay but
had to be neatly trimmed. All buttons and insignia's were embroidered with black thread - shiny
objects on one's shirt were visible from long range by snipers. All the clothing issued to us was
OLIVE DRAB GREEN - the socks, undershirts, handkerchiefs and boxer shorts.

I was 10,000 miles from home, surrounded by an invisible enemy sworn to kill me if he got the
chance and total stranger-comrades whose implicit priorities were to stay away from danger and
keep themselves safe above all else. It wasn’t 'every man for himself', but it felt like it to this new
arrival.

I was disoriented and anxious. If there had been a **cause** worth fighting for, it might have been
different, but there wasn’t. The thought of spending the next 364 days in this primitive, dangerous
country was overwhelming – like being in a tunnel without a flashlight.

**Day 21**

My first military mission was to accompany Sergeant Bob on a 'search and capture'. Our battalion
commander (a Lieutenant Colonel) wasn't happy with the folding, wood-framed cot Uncle Sam had
provided. He directed us to find and procure an inner spring mattress and steel frame so that he
could sleep better. Sergeant Bob knew just where to look.
At daybreak (or maybe after breakfast) we set out for the Naval base a couple miles away.
The base was somewhat shocking - it felt like we weren't in Vietnam anymore. The buildings looked
like they had been flown over from the States! They were so much better built than the crude,
sandbag-covered bunkers and wood-frame hootches us Army guys had. There were even sidewalks
and some landscaping. It was a different world.
We entered one of the buildings and there was a **Navy** bed, waiting in the entry for us - it had a six-
inch thick mattress on a steel frame with crisscrossed steel wire support.
After some obligatory small talk, Sergeant Bob disappeared, presumably to work out the deal.
Visions of TV's Ernie Bilko bartering for a case of beer flashed through my mind.
When he returned, we quickly loaded the bed on our ¾-ton utility vehicle and we were off. Mission
accomplished.
I didn't get to see the Lt. Colonel's reaction, but he must have been pleased - it was quite the
upgrade.
Now, I don't know what naval rank a G.I. needed to qualify for this luxurious bedding in a combat zone, but I'm pretty sure a seaman didn't have to be a Lt. Colonel and DIDN'T have to trade a case of Jameson. For the sake of comparison you should know that 'Lt. Colonel' is two ranks below General. So all you mothers out there take note: don't let your sons grow up to join the Army - the Navy has the best beds.

Day 34

According to Commanding General, Westmoreland, to ultimately win THE WAR, we G.I.’s first needed to win the hearts and minds of the South Vietnamese people. So the commanding officer of the 3rd of the 16th Artillery thought he would do his part by providing material support for an orphanage in Quang Ngai. Naturally, he delegated the actual work to Sergeant Bob who organized a convoy to hand deliver medical supplies and some toys.

Sergeant Bob had a job for me, too: gunner on the lead jeep.

I don’t remember thinking I had any choice in the matter and besides, it sounded kind of adventurous. Famous last thoughts.

Quang Ngai was maybe 40 miles south of LZ Cherry Hill. The route was infamous Highway 1, which was routinely mined overnight by Charlie. What us worry?

Our jeep was equipped with an M60 machine gun mounted in the jeep’s middle, behind the front seats. The convoy consisted of only 3 or 4 vehicles.

It was a beautiful, sunny day. Highway 1 had more potholes than any road I’d ever been on and we took it slow – 25 MPH or less. I wore my helmet and flak jacket and kept one hand on the M60 to keep it from flopping around.

Up to that point I had never fired a machine gun on ‘full automatic’ and was itching to fire the M60. I negotiated with Sergeant Bob to test the gun. At some point when we seemed to be in the middle of nowhere, he motioned to stop and pointed in the direction I should fire. It worked just fine.

Quang Ngai was more than a village but not quite a city. The orphanage had two stories, some big trees and lots of kids. My job was to mind the vehicle while most of the other guys delivered the goods.

Once the mission was accomplished we were off towards Cherry Hill. At some point I remember the driver getting impatient with the pace and speeding up.

Almost immediately, the cotter-pin holding the M60 on the mount gave out while I was holding the gun with both hands. In the blink of an eye, me and it were airborne. Both of us landed on the gravel road hard. I remember thinking I’m going to get run over, but the driver of the deuce and half (truck) behind us saw everything and stopped in time.

One hand and forearm and one knee were scraped and my brand-new birthday watch had a smashed crystal, but I was fine. Sergeant Bob and the driver instantly ran to my aid and were extremely apologetic. I was shaken but slightly embarrassed by all the fuss.

The driver took it slower and I cradled the M60 like Schwarzenegger in Terminator for the remainder of the trip.

[We'll have another installment from Michael's book, 363 Days in Vietnam, in the next issue of
Copper. You can see the book on Amazon, here.---Ed.]
A Sensitive Plant

RODRIGUES

Drawn by Charles Rodrigues
Vanishing Point

PARTING SHOT

Taken by Bill Leebens