

IN SEARCH OF...

... THE PERFECT SPEAKER

Cookie Marenco digs down and dirty into a search for a sound [and a speaker] that makes perfect sonic sense.

When I first thought of writing this article, the plan was to compare, contrast, and evaluate the differences between a whole gang load of speakers. I found this to be nearly impossible, though, without having endless hours to record basics, or mix, or master, or casually listen and use *each* set in *each* application. I mean I've been doing that for more than 15 years and find it an ever-evolving process, at best.

But speakers deserve a solid treatment sitting, as they do, at the end of a long journey that starts with a mic. They let us move through history, raising folks from the dead so we can hear them as they were: Speakers bring a moment in time to life and reduce global distance to a breath.

Flash forward to now.

My world is a control room where I spend my time looking for the "perfect" mix: some chimera that rests on our ability to control the listening environment. After unmentionable years in my own studio, mixing in hundreds of rooms, from the top facilities to the



worst garage, you'd think it would be easy . . . but you have good days. And bad months.

And traveling from control room to control room as an independent engineer, you might be carrying your speakers, amps, and cable to minimize the unknown factor of unknown rooms. Or, you've got a back pocket full of CDs that let you learn something about the speakers you're provided; and you spend time moving them around (to the endless dismay of your client), testing left is really left and making sure tweeters

aren't blown, etc.

You learn how to make your environment as consistent as possible while dealing with the inexperience most artists have toward critical listening. Without meaning harm, an artist will ask for things that might not be what they really want in three months. A career as a producer or mix engineer is going to be built around how the musical content is received *outside* the control room. It's your promotional tool without the benefit of your anecdotal tales of the

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studio and how horrible the environment was to work in. So getting it right the first time has everything to do with *getting it right the first time* . . . something you'll never do with substandard speakers.

I never really thought of myself as a speaker whore, but *apparently* I have so many pairs it's now officially embarrassing. So, I'm going to focus on the how, when, and what of speakers, big and small, in my own control room at OTR Studios [and a few of my other listening environments].

THE OFFRANDES, JEAN MARIE REYNAUD SPEAKER DESIGN

For many years, I only listened in the control room and checked mixes where and when I could, mostly because there wasn't enough time



for casual listening. I used to joke about friends playing my "audiophile" CDs on their \$40,000 speakers knowing they were mixed on NS10s. During my days in A&R at Windham Hill, the speakers I had never worked on the right side. And, yes, the irony was lost on no one. It seemed my car speakers never worked on the right in those days, either, curiously enough.

But in 2002, I met Jean Claude Reynaud, an engineer/producer from France whose father, Jean Marie Reynaud, built audiophile

speakers for more than 35 years. As my production partner, Jean Claude taught me about speaker characteristics in ways I never considered, as well as listening from the consumer's point of view. He brought a pair of Offrandes with him, which we paired with Nelson Pass amps.

Jean Claude's style was that of listening to one kind of speaker both in the studio and in the home. I was an NS10 with 300 watts kinda girl. It took me awhile to get used to the audiophile speakers, but the incredible life-like clarity of the Offrandes was amazing, and shocking as well. The mid range provided reality where most speakers fell short. It was the first time the power of mid-range hit me, and it's not something to be gotten rid of: a great mid-range is the beauty of sound.

But as I started listening to all my previous productions on the Offrandes, I heard every nuance of reverb tails, imaging issues, and the slightest bit of over compression. At first, I was horrified by every mix I had made, when in actuality, they hadn't changed and were as good as ever. I had never heard them like this before. Listening to popular CDs on this system showed their faults as well. However, listening to a great recording was an awesome experience that you wanted more of . . . like a kid with candy.

Re-listening to recorded music over these speakers also made me appreciate the audiophile listener in a new way. They loved sound and music, and this needed to be honored and addressed. Those were the people buying my recordings. After 20 years of engineering records, I became an audiophile.

For the first time, I attended CES and checked out all the new speaker designs and thought it was curious that more engineers didn't attend. After all, this is where our music ends up getting played. These were the people most appreciating our work. It seemed irresponsible to not pay attention to consumer electronic equipment. We ought to know how they're building these things, whether in cars, AV, home theatres, or iPods.

So, at the moment, my home system is a 5.1 set of Offrandes where I listen casually and critically to CDs, surround and vinyl. My iPod is on continual shuffle of all my albums for when the need for miscellaneous sound outweighs the desire to locate the CD in the case.

WHAT IS FLAT RESPONSE?

"A hypothetical speaker response where all frequencies come out at exactly the same level from every angle. Phase accuracy should be included, I suppose. Flat response is theoretically AND practically impossible. However, we have more speakers today that approach a flat response than ever before."

—Dave Derr, Empirical Labs

"This has become an oxymoron. Flat response is an even frequency response . . . period. So many manufacturers claim flat response. I also honestly believe most strive for flat response as well, however. I also know there are popular speaker brands that tune by ear, no real science. Flat response also changes with listening position given room issues, and air absorption at very high frequencies (with distance)."

—John Johnsen, NHT and NHT Pro Audio

"What is a 'flat response'? Answer: A very silly term! Loudspeaker measurements look at the frequency response of a loudspeaker; however, what we hear is the response of the loudspeaker in the room. A 'linear

response' includes the interaction of the loudspeaker with other loudspeakers and the acoustical environment. The idea is that there are no notes either missing or jumping out! The response of the speaker is LINEAR."

—Sam Berkow, SIA Acoustics

"Flat response is 'no surprises.' Speakers that will yield a result that translates well to other environments, and are fun to listen to and non-fatiguing."

—David Glasser, Airshow Mastering

"It doesn't matter. It's never flat once it leaves the speaker."

—Leslie Ann Jones, Skywalker Sound

"Flat response: get the jack out and change the tire."

Flat audio playback response is something achieved via a total-system approach, with room acoustics being the most important element in this system. Build or modify the listening room for minimal modes and optimal RT60. Looking at the frequency response chart of a loudspeaker is OK, but really tells you nothing about how the speaker sounds. I've heard 'flat measuring' speakers

that sound just awful. When shopping for loudspeakers, use reference music that you know intimately — then select the loudspeakers that give you the most realistic presentation of your reference program. Don't forget to audition spatial imaging. Match the loudspeakers to a fine amplifier and line-signal path. Don't rush this decision. We spent three years searching for full-range listening room speakers."

—John La Grou, Millennium Music & Media Systems

"'Flat' to me means that mixes will transfer to other audio reproduction systems without adding anomalies from the original mixing environment. I say this (and walk around the controversy) because it is very hard to gain consensus on what 'flat' actually means."

I find this topic really fascinating because you hear from people that constantly compare high end, low end, crossover frequencies, SPL, mid-range reproduction, phase coherency, etc., etc., and rarely do they discuss how their mixes translate to other environments!"

—Mike Newman, Cerwin Vega

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TANNOY LITTLE REDS

At this point, I've adopted the habit of using the Tannoy Little Reds to cut basic tracks and listen on when I do overdubs in my control room. I really don't like them that much, but they're good enough and the artists seem to enjoy them. The Tannoys are big enough to not sit in a near-field position and aim slightly over my head when I'm at the console. I can play them louder than the other speakers and my ears aren't in the direct line of fire.



When cutting basics, the band is often listening to music in headphones at loud volumes. When they enter the control room, there isn't time for the ears to relax. The artist often requests volume levels that might kill a cow. Along those lines, overdubbing guitar or bass in the control room can have the same consequence. These folks are used to playing on stage in front of huge speakers . . . outside of setting up that situation (which sometimes happens), I'll put them in front of the Tannoys and run for cover, taking the remote with me.

These speakers have long been discontinued. I have been offered three times their retail price several times. Apparently, these were the choice monitors of many heavy metal engineers in the '80s. In my second control room, which was four times larger than the first, they have become tolerable to cut tracks on, though still they're not my favorites.

THE DIFFERENCE BETWEEN MONITORS AND SPEAKERS?

"The spelling? There is no difference. It's like the government giving the name IED (Improvised explosive device) for home-made bombs. Maybe it seems more legitimate or technical, but it's the same friggin' thing! I hate creating and using fancy terms."
—Dave Derr, Empirical Labs

"None except in application. We consider monitors as speakers for active or attentive listeners in the near field."
—John Johnsen, NHT and NHT Pro Audio

"Monitors are designed to accurately present the signal driving them (over their operational frequency range). General-purpose loudspeakers (for playback systems) can add a color to the sound — via frequency response

or distortion components that alter or color the sound. This may or may not be desirable, but monitors should strive for accuracy rather than added tonal balance."
—Sam Berkow, SIA Acoustics

"Aren't monitors what you hook up to your computer and mouse around on?"

For me, the room and ancillary equipment (console, amps) are part of the monitor system. For the speakers to sound right, the room has to be right: the right amount of bass trapping, diffusion, absorption, equipment placement."
—David Glasser, Airshow Mastering

"I think of monitors as being more of a reference. Speakers are just, well, speakers."
—Leslie Ann Jones, Skywalker Sound

AURATONES, NS10s, MEYER 833s, & RESISTING PUBLIC PRESSURE TO DIS THEM ALL

Typically, I start a mix on the HorrorTones (Auratones) for a number of reasons.

Reason 1: It's hard to get the artist out of the room and you run the risk of tiring their ears if you start on the higher end systems. Eventually, they get bored while you're on the Auratones and leave while you're working. That's the good news.

Reason 2: In the beginning of the mix, I prefer to be the one setting up the patches and cross patches on the board. While I might be patching a series of compressors and efx, I'm listening to the general balance of the instruments and making casual adjustments. I don't really want to be listening critically at this point and prefer to save my ears. The Auratones are pretty perfect for this.

Reason 3: When I go under the headphones (Beyerdynamics DT250) to fine tune the placement for the stereo image, the Auratones are less likely to interfere with my judgment and the artist can enter the control room, listen, and I don't worry they are ruining their ears. I could, and do, turn off the speakers, but it can be deadly boring in the control room for the others.

At low volumes, the Auratones show off distortion and intonation issues better than most of the high-end speakers. While you can't really judge bass response, the theory that "if it sounds good on the small speakers, it'll translate better in the final mix" still holds up for me. I will spend 50% of the time on the small speakers. It's probably the best \$60 I've ever spent.

Now's the time for adjusting the reverbs and creating the environment for the song to live in. I go first to the NS10s and reference at as low a volume as I can so that the room has no effect in the mix.

I know NS10s get a bad rap. I also know that I have three pairs of them. The popularity of NS10s cries for spending some time on them, if only to cart with you to some remote location you don't want to bring your \$6,000 speakers. It's a *myth* that they sound the

"One works for the CIA and reads my email. The other passes sound."
—John La Grou, Millennia Music & Media Systems

"A good monitor should allow for accurate transfers of audio reproduction to other systems. This often means that a bad mix is going to sound harsh on a good pair of monitors that strives for accuracy."

On the other hand, many home speaker manufacturers strive to 'sweeten' the sound a bit so that even harshly mixed songs will sound a little better than on recording monitors. I believe the majority of people want excellent detail but a slightly sweeter sound in their home systems."
—Mike Newman, Cerwin Vega

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same everywhere, though. My experience is the NS10s sound particularly different when powered with different amps, in various rooms, distance to walls, how they're placed and what they sit on, more so than most speakers. You still need to reference known recordings. And they won't sound as terrible if you make sure you have more than 300 watts of power.

At this point, I'm working quickly before my ears burn out, but I do start allowing the artist to make decisions about certain parts standing out more or less. I will reference to the Tannoys, then revert, and then reference to the Offrandes (which always sound so good, you don't want to leave them).

One trick that seems to save my ears? Using a second set of speakers while I'm working on the NS10s. Far in the back of my control room, I have Meyers 833s that seem to act as a kind of stereo subwoofer/tweeter aspect so that I can take the volume down on the NS10s, which are probably killing my ears at this point. Note: The Meyers alone sound really terrible unless they can achieve a high volume.

Now, there's a point, once or twice during a mix, when I give the mix some high volume. Kinda depends on my mood, but if I reference loudly too many times, I'll be shot for the rest of the day. I try to control myself no matter how pleasurable it might seem at the time. I'll turn up the volume, run quickly out of the control room,

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WHAT? WHERE?

"We record and edit classical music: all post-production is done in the big room on full-range loudspeakers. The room (23' x 29') was designed by George Newburn to exacting acoustic standards. The worst mode is about 4dB at 24Hz. Room RT60 is around 300ms, and spectrally consistent. Power amplifiers are Pass X350.5. Loudspeakers are Dunlavy SC5.

On location, we'll typically use Paradigm 3se minis, Sony active sub, and Pass Aleph amplifier. Headphones are Sennheiser 600 driven by a Millennia headphone amplifier."

—John La Grou

and listen to the mix in the adjacent room, where I've found it's the best place to test balances of bass to vocals to drums, etc. I'll take another 15 minutes of silence after this event.

Now we're just about ready for the final approaches . . . that's when I go to the Offrandes and hear every little %^*&^#% problem there is, and fix them. I turn down the volume and gradually increase to a comfortable level and do a mix. I might invite the artist in to check it out and ask for comments at this point, though I make sure the playback volume is the same so I can check for

artifacts and discrepancies on the 2-track.

At this point, I'll let the artists go to whatever speaker they want, though I'll usually try to advise them to bring the levels down as they start to increase and lose their judgment. When the mixes are acceptable, I'll go back to listening on the Auratones as we make copies to test for distortion, and listen on the headphones to make sure the stereo image is still intact.

WHAT SPEAKER MAGIC CAN DO

Over the years, I have tried the Mackies, 8" Tannoys, bought the Genelec 1031s (which are still in the box . . . I bring them out for parties), and

WHAT DO YOU LISTEN TO IN THE CONTROL ROOM? AT HOME?

"I have Mackie 2408s for relative flatness, UREI 809s for clarity, NS10s for familiarity, Tannoys, JBLs etc. ALL SPEAKERS TELL THEIR OWN LIES, BUT ONCE YOU KNOW HOW THEY LIE AND GET USED TO IT, IT DOESN'T MATTER. I have these little Pioneer speakers I like, too. Many times I will get the mix balances on a 2" mono speaker. It's great for a whole other LIE, but a stripped-down picture of the balances.

FINAL COMMENT: Ultimately, it doesn't matter what you mix on, as long as you are used to them and know how they will translate to many other speakers. This is why we add and still have NS10s. They were a standard. Headphones are a must for hearing subsonic problems, thumps, etc.

I think engineers will always do better in the long run if they mix in different places on different monitors, but nowadays, everyone has a home rig, and I think it's a damned shame. Music suffers too, because the urgency and pressure of having your stuff together before you start playing with buttons and recorders, is all but gone. People start writing the awful crap in the studio, without a raw song that stands on its own. More music than ever is just production dribble, without the guts of a 'good song' that people will listen to four years from now, let alone 30 years from now."

—Dave Derr, Empirical Labs

"In the control room, I use NHT Pro Audio A-20, M-60Xd, and M-00. I also occasionally flip on the NS-10s but shut them off almost immediately. At home I have a constantly rotating lineup of speakers connected to two or three

systems. For casual listening, I use NHT Pro Audio M-00s, both on my desktop and in a couple of rooms via Apple's AirPort Express and iTunes. This is as close as I can get to a 'wireless' system. I also use this setup outside on the patio. My laptop is the source and resides in the area I am in at the time. My 'serious system' is a Stello pre amplifier and CD spinner, up sampled to 24/192 through NHT's Xd system which, for all practical and realistic reasons, the most accurate speaker system I have ever heard.

My disclaimer: I work for NHT. I help conceive many of the products I use so I must be disqualified as biased. While acknowledging that, I would use any other brand if I felt it offered me some level of performance beyond what I have available to me from NHT. The only exception would be some gigantic credible speaker system with giant credible mono block amplifiers with close attention paid to every part of the signal transmission chain. It's really fun to listen to a really big speaker, the effortless dynamics, impact and low distortion they offer. The problem with this is availability of room, cost, and the fact that they tend to be one-trick ponies. That is, they do the big music really well but tend to exaggerate the size of things beyond reality. Sort of like Shaq playing a 6" acoustic guitar."

—John Johnsen, NHT and NHT Pro Audio

"In our mix room at the office we primarily use Genelec 1032, JBL LSR6328P, and occasionally TC Air-06s — my living room has Meyer HD-1s with a Sunfire sub.

Cookie's use of 833s behind Yamaha NS10s is the result of excessive drug use!! (really)!"

—Sam Berkow, SIA Acoustics

Cookie comments . . . on everything BUT the drug use allegations: Sam has the best subwoofer a girl can get. It was love at first sitting. And better than a puppy, you don't have to paper train it!

"In the studio: Dunlavy SC-V left & right, SC-IV center and surrounds with Ayre amplifiers and dual Paradigm Serve-15 subs. Room designed by Sam Berkow.

At home: a modest system with Kef 103.2 speakers and a Bryston 2B-LP amp."

—David Glasser, Airshow Mastering

"Well, 85 percent of my studio work is done on a B&W Nautilus 802 system with chord amplification and MIT cable. For pop and some of my jazz work, I also use my self-powered Tannoy 8 Limpets. This is also true of any 5.1 work I do . . . same proportion. When I travel or change rooms at Skywalker for 5.1, I use my Tannoys.


At home my main speakers are a 5.1 of B&W Nautilus 703s with MIT cables. I also have another stereo with JBL 4011s and a stereo with NS10s."

—Leslie Ann Jones, Skywalker Sound

"I think recording engineers gravitate to more of an accurate sound in their home listening environments. I use a pair of Celestion DL 8s for my home stereo. They have been used as recording monitors in the past because of their reproduction characteristics.

I like the KRK Expose monitor for my studio monitoring. (Cookie, what else would I say!)"

—Mike Newman, Cerwin Vega



used just about everything imaginable in other studios. In the long run, it's mostly about what you are used to. No speaker is going to stop you from getting a bad mix.

Of the new designs coming out, we just got a set of speakers from NHT, the XD series. NHT has only recently put them on the market. They have a wonderful system that seems to jump holographically out of the box and fill the room. While I haven't put them into the control room just yet, the freestanding model has been a great tool

for checking mixes out of the control room. You can walk around and not have the image distort, they sound great, and the artists love them as well. And they look beautiful, which, as we well know, helps the listening process. Yeah. And "gullible" is not in the dictionary either.

My computer system uses a \$100 Altec Lansing surround system. I like to emulate the home environment with it . . . speakers placed aimlessly everywhere. It's great. Recently, I purchased a \$30

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BURNING IN A NEW SET OF SPEAKERS

"I used to be a little cavalier about this, but it's true. Like a well-worn pair of tennies, every piece of electronic gear has a breaking in period. It seems the more expensive gear requires more attention to this detail. You can buy disks with specially created noise, that goes though the frequencies. You run it from 24 hours to days on end. Speakers are especially dramatic in their change. Most notably you will hear a 'harshness' disappear, a mid range develop, and the imaging broaden. If you can't get a test tone CD, put on a recording that uses the full range of frequencies for at least 24 hours. Or you can just enjoy the crispy high-end and wonder why your speakers are sounding different." —C.M.

mic/speaker for the iPod, which I love to check my mp3s on. My two cars have all both stereo speakers working now, I'm happy to announce, one a Bose system, one a Harmon. The point? It's impossible to compare. Matching the JMR Offrandes with the Auratones or NS10s or 833s yields subjective results. Yet in a stereo mix, it's nearly impossible to not use the less desirable Auratones and NS10s along with the high-end speakers.

The upshot? In the end, if you get a call from the artist or a fan that hears your work and compliments you on it, you've done your job. If in a year, you can still listen to your work and not cringe, consider yourself a success.

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