



Performance Media Industries, Ltd.

Am I Out of a Job?
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by A. Grimani

They're showing up all over town these days: automated electro-acoustic room correction systems. They can be standalone boxes, or built into receivers and even speakers! The most visible in the crop are the latest Meridian 861 upgrade, the TacT processors, the Pioneer and Elite flagship receivers with the MCACC feature, the Yamaha receivers with the YPAO feature, and the Bang & Olufsen BeoLab 5 loudspeakers with a really cool "moving microphone" analysis and correction system. Actually, these auto room correction things have been around for a while now. Back in the early nineties, SigTech showed up with processors that did a great job of measuring the direct sound energy and the 50 ms following that, then compensating for the negative loudspeaker-room interactions. They worked very well and even did wonders for speakers that exhibited poor axial response. JBL developed a semi-automated scheme for their Synthesis line. Efforts from AudioNord, NAD, and Snell Acoustics yielded more processors throughout the nineties. So what's taking so long? If this is the cat's meow, why hasn't it taken hold already? Well, I think a combination of skepticism, misunderstanding, performance limitations, and apathy have held back what, to me, seems like a big step in the right direction.

And who am I to support these droid-like schemes that look as if they are aiming to put me out of a job? (As you may or may not know, I spend countless hours of my life in the company of a suitcase filled with measurement and test equipment, tuning the sound and picture of theaters, studios, boats, or any other place people conceive to put sound. I once tuned a theater system in a man-made cave!) I am not threatened; that is who I am! As it turns out, I believe that the process of doing super-accurate room correction (a.k.a. equalization) takes a lot of intelligence in the correction decisions. It is beneficial to do basic low frequency room correction to smooth out the most audible errors, the room standing waves. This should really be done with some amount of averaging over the listening area. Then, you need to decide which frequency regions to cut or boost, based on the time and phase response of the errors, and you must carefully set the mid and high frequency responses based on psychoacoustic rules of the human hearing system. That all gets really complicated and requires the assistance of a humanoid. Notice that Luke flew the X-wing fighter, not R2...

These days there are many automated rail systems in airports around the country. That's all fine and easy when the things go pretty much straight ahead on a predictable course. Do you think anyone is working on an unmanned New York City cab? No siree! There is just too much chaos there for any automated system to keep track of it all, and chaos is what a room calibration can very easily turn into. A set of perfectly good speakers are put in a sealed enclosure (that some call a room), and they spray sound all over, which gets reflected, compressed, and resonated to a point so unbelievably complex that it can be hard to recognize the perfectly good speakers! For the best results, you need to untangle the room issues one by one and fix them individually in order to avoid the lumped-model band-aid approach that just isn't appropriate.

As I see it, this new trend toward automatic systems is a good thing even if they aren't yet fully capable of replacing the human factor. Now a bunch of marketing executives will dish out tons of money to educate the world that rooms need calibration. Automated systems may be great for basic correction of the roughest spots in the room's acoustics, but the best results are only achieved through manual fine-tuning. Also realize that a room with bad acoustics, echoes, strong reflections, and super-nasty standing waves (because it is square), just can't be corrected by strictly electronic means. Acoustic treatments, room re-dimensioning, seat repositioning, and speaker placement tweaks are something that only a trained human being can do.

Maybe at some point in the future processing systems will develop to the point that intelligence can be built into the analysis and correction of A/V systems, and I will no longer bring home the bacon (or Tofu) by tuning the darn things. By then, I won't need to work any more than an hour a day because everything else will be taken care of for me by robotics. I'll be able to spend the whole day watching movies on auto set-up displays and speaker systems in a motion-activated chair with auto-molding to conform to the contour of my derriere. Until that glorious day, I'll continue to spend time tuning those pesky SU carburetors on my British car, so that I can drive down the road to the pool and get some exercise!

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