

# Westlake Audio

## MANUFACTURING GROUP

2696 Lavery Court Unit 18  
Newbury Park, California 91320-1591  
**(805) 499-3686 Fax (805) 498-2571**  
<http://www.westlakeaudio.com>

### **P. E. DISTORTION™: THE LAST BARRIER TO HIGH FIDELITY?**

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So here we are, perfect sound forever, virtual power of a million dollar recording studio in a box for cheap, instantaneous distribution of all the software known to man available to most knowledgeable individuals around the world at the press of a button... for free! Where do we go from here?

Well for one thing, while technology guru's, legal beagles and the entertainment giants come up with a new business model that makes sense for them, the production side of the business known collectively as "Pro Audio" and the consumer side known as "Hi end" or even Consumer Audio in general, need to take account of "How are we doing?" We'll leave aside the subjective issue of how good is the "art", and just ask the question: "How good is the Quality of the listening experience"? And here, the answer is very mixed.

The fact that a 1970's vintage Tandberg portable transistor radio, running on six "D" cell flashlight batteries can at times, effect a more pleasing musical experience than listening to a 2004 state of the art auto sound, Hi end Hi-Fi or Pro stereo system, leaves one to wonder. Or the fact that vinyl record playback with its finicky mechanics just won't completely die out, no matter how hard we kick it. Or how some engineers prefer to master to analog tape; in spite of having recorded, edited and mixed entirely in the Digital Domain. Or in spite of supposed limitations of 16 bit/44.1 KHz samplings, a C.D. of old time favorites from the 30's and 40's, if sourced properly and skillfully mastered, can produce a sound that in spite of the bandwidth limitation and harmonic distortion of the original master, allows the musical message, especially the human emotion in the vocals, to come through loud and clear. This although the same C.D. format, carrying a more modern production with endless bandwidth, speed and dynamic range, leaves us struggling to hear the musical message! Or why the big disparity among professionals and hi-enders as to what are the good sounding pieces of gear or systems? Or why the same individuals using the same gear at different times and/or venues have such varying results? This, in spite of the fact that when given the same experience, most knowledgeable listeners will agree as to good or bad sounds.

Why do most adults in the population at large have a very detached attitude about high quality sound, preferring to spend their disposable income on something more predictable or tangible like a faster computer, new car or vacation trip or home?

Is there something going on here? Or is this just subjectivity run amuck?

Well the old saying "necessity is the mother of invention" comes to mind here. Westlake Audio has produced quality loudspeaker systems for over 30 years and has been subject to the same unpredictability of user response as the above examples. Producing what are considered by some as "the best reproduction systems in the world", the reaction to our products by some people has not always been entirely complimentary. Indeed even our own listening experiences have occasionally been in opposition to engineering improvements. The company and staff are well familiar with psychological issues (I don't like that tune, tired, bad day, ear fatigue, etc.) as well as potential equipment consistency issues that enter the picture. Still the question persisted. Why good results sometimes, but not all the time.....?

Most professional audio engineers, reviewers and audio enthusiasts are familiar with the term distortion. In this application distortion means any modification or addition to the original electrical signal or sound that is added while recording, processing transmission or replay. Specialized distortion measuring technologies have been devised over the years to quantify various phenomena. A brief summary of the major distortions might include, clipping (the most egregious), harmonic, phase, intermodulation, transient intermodulation (T.I.M.) and it's close cousin slewing distortion. A catchall description for various audio distortions was first described by Deane Jensen in the 70's as "Spectral Contamination". Noise (both self and interference, including power supply artifacts) both static and dynamic under load, can add to the above distortions in a destructive or complementary fashion but are indeed distortions. Phase or waveform fidelity can be compromised and its audibility has been questioned repeatedly without consensus. Inter channel phase error and crosstalk is agreed to be destructive at some amount.

Enter "P. E." Distortion.™

It occurred to Glenn Phoenix, Westlake Audio's President and Chief Engineer, that it was time to acknowledge the existence of a category of effects and distortions that were not readily identified by conventional terms and testing methodologies. Thus the P.E. (Phoenix Effect) Distortion term was born. Underlying the term itself is an understanding of cause and effect "that has been gleaned from 40+ years of experience in tape recording, recording studio, acoustics and loud speaker system designs. The proprietary nature of technical information detailing P. E. Distortions prohibits their full disclosure in this communication. However, interested parties are invited to consider becoming a P. E. " Distortion licensee.

It is Westlake Audio's position that P. E. Distortion is the explanation (or at least a key component) of why:

- One cable sounds (looks) different than another, even when most known electrical values seem similar and don't apparently support the differences.
- One amplifier sounds different than another with almost identical specifications.
- Why vinyl record, playback and even MP3 can in some systems sound better than a high resolution format.
- How systems can sound different after a break in period.
- An amplifier with exceptionally low conventional distortion levels can sound "veiled" or have poor sound stage depth.
- Tube electronics may have a countering effect for P. E. Distortion elsewhere in the system.

**Westlake Audio is dedicated to making the listening experience as good as the specifications of the equipment will allow.**

To do this, the system's "effective" dynamic range (what we hear?) must be brought to a level that is closer to the "potential" dynamic range (equipment specs).

Westlake Audio Low P. E. Distortion products (loudspeakers and cable systems) are tools that the dedicated audiophile or recording engineer will require to optimize the "effective" dynamic range of their systems.

For more information see "Low P. E. Distortion™"; The New Improved Sound of Westlake Audio Speaker Systems" or contact us at (805) 499-3686, Fax (805) 498-2571 or visit [westlakeaudio.com](http://westlakeaudio.com)

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