Subject: Breaking in New Drivers
Posted by Bob Brines on Sun, 17 Sep 2006 12:16:08 GMT
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I am amused at claims of long break-in times for audio equipment. Everything from drivers to interconnects. From my personal experience:When I first fired up my Lowther DX2's, it took a couple of hundred hours for the speakers to settle down and give a decent, pleasing sound. This confirms the conventional wisdom that Lowther drivers take a long time to break in. I installed phase plugs in a pair of Fostex FE167E's. It took about a week for the speakers to settle down to an end state sound. Therefore, it takes maybe 50 hours for phase plugs to break in.Wait a minute! It takes 50 hours for a piece of wood to break in? That's crazy.More experience:I manufacture a small number of speakers. The last step in the process is to take new drivers out of the manufacture's boxes and install them in the new speakers. I then play a test CD through the new speakers to check that all is well – no rattles, buzzes or anything else untoward. At the end of 10-15 minutes of testing, the new speakers sound EXACTLY like my demo's that have thousands of hours on them.The answer is that break-in has little to do with the physical equipment and is primarily a psychoacoustic phenomenon. I haven't discovered anything new. This has been discussed on the web any number of times by those more learned than I. I am just confirming the fact. What happens is your brain becomes accustomed to whatever you have listened to for a protracted period of time. That sound is learned as "correct". When you change a component, the new sound is not "correct" and must be learned. The more different the sound, the longer it takes to learn that sound. THIS is break-in. Because my ears are used to the sound of the speakers I built, no break-in is required, or at least only a very short period of time. However, when I installed phase plugs, the sound changed quite a bit, so it took some time for my ears to become accustomed to the new sound.There are any number of techniques for breaking in new drivers, particularly for testing. The most common method of breaking in woofers, and full-rangers fall into this category, is to run a low frequency test tone, 10-20 Hz, through the driver for a number of hours. Then the T/S measurements are taken. Problem #1: Unless the driver has been exercised to Xsus, break-in hasn't happened. Problem #2: Unless the driver is allowed cool down for a number of hours, the T/S parameters obtained will be wrong. (This is for small signal T/S measurements. Large signal testing is different, but not generally necessary for full-rangers that will be operated at less that a one watt normal level.) I have found that simply pushing and pulling a driver to Xsus one time with my fingers produces at least 90% of the needed break-in. Retesting a driver after many hours of use produces the same numbers within the normal range of error.I don't know how long it takes to break in the high end of a driver. My experience is that it is probably as short as a few minutes, but no longer than a very few hours. The massively long break-in periods generally reported have nothing to do with drivers and everything to do with psychoacoustics. You don't believe me? Well, the only test you can do is to is replace your well broken-in drivers with brand new ones straight out of the manufacture's boxes. Then see how long it takes for them to settle down. You will be surprised.Bob

Subject: Re: Breaking in New Drivers
Posted by Manualblock on Sun, 17 Sep 2006 17:06:00 GMT

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Always wondered about that whole break-in time thing. My only observation regarding sound is how to explain the times you walk in a room and know the sound is correct within ten seconds. How does that phenomenon square with the phsycoacoustic changing memory theory? If that was absolute then you would have to adapt to every system you were exposed too; and do it every time you spend a few days listening to something else as that something else would sound odd to you until it re-integrated with your aural memory based on this hypothesis. Yet people can remmember instantly the sound of systems they owned twenty years ago. Try walking into a room with a Pioneer reciever and a pair of Large Advents;.. even if you don't see the equipment, You get that instantaneous flashback; knowing immediately what that sound is. How could you remmember that if your aural memory changed so thoroughly?I think people who ascribe to this theory ignore the minds capability of processing vast quantities of data intuitively. We who believe there is a period of adaptation disregard exactly how the mind empirically processes information; we look at it as if the brain was a computor; which it most certainly is not and does not process in a linear fashion like machines.

Subject: Re: Breaking in New Drivers
Posted by Bob Brines on Sun, 17 Sep 2006 21:26:54 GMT
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The brain is indeed a computer, and one thing that it is very good at is pattern recognition. The “break-in” process is imprinting. Once the sound of a particular system is fully imprinted, then the next time you hear that pattern, even a long time later, you recognize the pattern and say’ “Ah, a Pioneer receiver and a pair of Large Advents!” I have no trouble recognizing a pair of Lowther’s from a pair of Fostex. Those patterns are fully imprinted. However, when I installed the phase plugs, I didn’t recognize the sound and the pattern had to be imprinted.When you walk into a room where an unknown or otherwise foreign system is playing, it may sound right or not. If the new sound closely matches something that is imprinted in your brain and you have declared it “correct”, then it will sound correct. The closer the match, the more correct the new sound will be. The sound could also match a pattern that you have determined to be “bad”. Then you will instantly know that the new system sucks!Bob

Subject: Re: Breaking in New Drivers
Posted by Bill Martinelli on Mon, 18 Sep 2006 01:31:06 GMT
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I'm with you Bob. A few hours on new drivers and thats the way there going to be. For sure the first five minute is noticable.

Subject: Re: Breaking in New Drivers
Posted by Manualblock on Mon, 18 Sep 2006 12:48:18 GMT
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How do you explain perfect pitch? No imprinting there but an individual can tell a perfect scale; what mechanism exists in the brain that allows for that?I mean how are you born knowing the musical scale?I ask as a general question of interest.The brain as computor thing; the last artcle on brain chemistry I read resulted ina perplexed group of neuro-scientists who could not understand how information could be processed in one part of the brain when the neural connections were severed with anothewr part of the brain; yet the information was available in a part of the brain that had no connectivity. They tried calling it Neural intuition as part of a neural net. But they remain perplexed. As do I.The pattern recognition is a theory that resolved from brain studies and was applied to the study of programmming algorythims; But that doesn't make the brain a computor; it makes certain aspects of thought to resemble computation. To say the brain is a computor is like saying the ruler is the distance. Or the backhoe is the building.No dispute here; just speculation.

Subject: Re: Breaking in New Drivers
Posted by GarMan on Mon, 18 Sep 2006 13:54:40 GMT
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MB,I don't think perfect pitch is something you're born with. For most people, it's something that's learned through exposure and practice. It's like a person's ability to tune a guitar. At first, you use a fork, then through exposure (and as Bob calls it, imprinting), you're able to do it without any aid.

Subject: Re: Breaking in New Drivers
Posted by Manualblock on Mon, 18 Sep 2006 14:18:36 GMT
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I would agree except they have studies done with very young children who had no training; maybe something in the environment provided clues or past experience of some kind.Like the way a tiny chick just born knows to run when they show the shadow of a hawk overhead on a projector.

Subject: Re: Breaking in New Drivers
Posted by GarMan on Tue, 19 Sep 2006 01:51:56 GMT
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The thing with the chicks. I think that's different. Survival instincts are built into every species. But somehow, I don't think having perfect pitch is part of it.Some may be born with musicality, but by and large, I believe it comes from formal and informal training. And informal training can be as simple as exposure.

Subject: Re: Breaking in New Drivers
Posted by Manualblock on Tue, 19 Sep 2006 12:48:43 GMT
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You may be right; but think of this; maybe perfect pitch has some survival value that we are not cognizant of. And also; can people be taught to have perfect pitch? I don't mean relative pitch were you can tune a guitar by ear; I mean perfect pitch were you can identify any tone exclusive of any other tones. I am not sure if that describes what I mean.

Subject: Re: Breaking in New Drivers
Posted by geaugafletcher on Tue, 19 Sep 2006 15:32:15 GMT
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If I play enough chamber music, I get some weird form of 'pitch' where I can tell if a note is in tune or not - but not what pitch it is. In other words, I'd walk into a room with a refridgerator and say 'That hum is really out of tune' and Johann with perfect pitch would say 'GOD! That's halfway between a B and B flat! Get me out of here!'I've only met a few people with perfect pitch and they weren't trained specifically to have it, it just developed naturally without any conscious pursuit.Some people claim that perfect pitch can be taught. You probably could learn it, but it would take such a huge amount of time and work (compared to somebody "born" with it) that it wouldn't be worth it.Some questions...Musicians in places where they use non-western 'scales', what kind of perfect pitch do they get?Do people with p.p. hear a well-tempered scale? Pythagorean? 'Just' intonation?Ever run into somebody who associates pitches or tonalities with colors? (It's pretty cool...) Many of these people share perceptions, e.g. key of "D" sounds light blue.Sorry about the tangent, hopefully a musician's input provides food for thought...

Subject: Re: Breaking in New Drivers
Posted by GarMan on Tue, 19 Sep 2006 16:34:23 GMT
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I for one have been taught what a 60Hz tone sounds like because I'm exposed to it everytime I listen to my stereo system. Damn ground loop!

Subject: Re: Breaking in New Drivers
Posted by Manualblock on Tue, 19 Sep 2006 17:46:16 GMT
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I would assume even a non-western scale has to be made up of a note vibrating at a constant freq. That would be the pitch right?

Subject: Re: Breaking in New Drivers
Posted by Wayne Parham on Tue, 19 Sep 2006 18:04:55 GMT
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The ratios between adjacent notes is different in different scales.
Musical scales

Subject: Re: Breaking in New Drivers
Posted by geaugafletcher on Tue, 19 Sep 2006 18:07:49 GMT
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"I would assume even a non-western scale has to be made up of a note vibrating at a constant freq. That would be the pitch right?"Yup, but I've never met anybody from another culture with pitch. The point really was that p.p. is not present from birth, but learned. It's just that some people _are_ born with some faculties that make memorizing pitches essentially automatic.The concept of a 'scale' is very different in some cultures - but that vague statement is about the limit of my ethnomusicology understanding. In middle eastern music, what you might call scales are really more like culturally-standardized jazz riffs. They also use quarter tones - half sharp, half flat, that kind of thing.Oh yeah, one more question - do all people with pitch use A = 440hz as their standard? Can they calibrate their sense to 442, 438, etc?

Subject: Re: Breaking in New Drivers
Posted by Manualblock on Tue, 19 Sep 2006 19:53:10 GMT
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Perfect example; the Blues pentatonic scale. The old guys flatted the third and seventh to get an approximation of African scales. But I am not sure perfect pitch is dependant on a particular ethnic musical scale. I think it is something different. If you decide to make all your music in the mixolidean mode that shouldn't mean someone with perfect pitch no longer could distinquish notes.Then again I don't have perfect pitch so I really can't say.Ask a good piano tuner.

Subject: Re: Breaking in New Drivers
Posted by geaugafletcher on Tue, 19 Sep 2006 20:24:35 GMT
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Yeah, with perfect pitch, a person associates a certain frequency with a certain note name. Most used example: A above middle C is 440 cycles per second.Modes, scales with intervals larger than a second, etc. don't matter - but quarter tones would.

Subject: Re: Breaking in New Drivers
Posted by colinhester on Wed, 20 Sep 2006 23:31:54 GMT
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I think the Maggies I owned may be an exception. Out of the box they sounded like crap. They were as bad as I've ever heard. It was a week or two of constant playing before I could even sit down and listen for more than a few minutes. When they finally settled down, they were very nice. I really wanted to send them back after the initial listen (and well before the free trial period expired) but I'm glad I kept them. I really don't believe there was any psychoacoustics involved.....C