Subject: A Really Stupid Question
Posted by wunhuanglo on Sat, 05 Apr 2003 15:03:42 GMT
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I have wondered forever about something, so I thought I'd pose the question here. I'm not sure I will be able to express this correctly, but here goes: a loudspeaker (let's assume a single driver for the moment) is a "serial" device. It gets a single voltage level at a time, sequentially driving the voice coil outward to varying positions. But what I hear is massed violins, an oboe line underneath, tympani in the background, etc... What I mean is I seem to hear a bunch of voices simultaneously, at varying pitches. But the speaker is being driven to one position at any given moment, at one frequency only. What is it, then, that I hear - a composite frequency, an average frequency at any given instant in time? And then after a few moments my brain is able to interpret multiple instruments from that frequency that is being produced by no instrument at all but all instruments at once? Another way to express what I can't understand is to say that sitting in front of an orchestra I hear about 80 or 90 independent, parallel channels. In front of a speaker I hear those 80 or 90 parallel channels reproduced serially over a single channel? How does that work?

Subject: My feeble attempt to answer
Posted by spkrman57 on Sat, 05 Apr 2003 18:19:08 GMT
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My take on it is this, when you attend a live orchestra with all the instraments playing, you still are hearing with only two ears. So I am guessing that sound is multiple complex waveforms that are riding each other, much like a carrier wave used for radio transmission. Yes they are all a part of each other composition. And we do really have this everyday, you only really notice when 2 separate intensities occur at the same time, such as: hearing a motorcyle go by, and then a jet flies overhead. You are always pulled in to the stronger signal source, but hear them both until like the jet overrides the sound of the motorcycle completely. I don't know if this is close, I just thought I would take a stab at it. Cheers, can't wait for MAF in Lima next week :-) Ron

Subject: Holism and reductionism
Posted by Wayne Parham on Sat, 05 Apr 2003 19:26:15 GMT
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You never hear an instantaneous pressure. That's what is the result of any instantaneous voltage applied to a loudspeaker. Instead, you hear exactly what you described - a series of pressure changes.And I find (spkrman57) Ron's description is right on the money - that these waveforms all ride on top of each other. In fact, every signal can be reduced to a composite collection of sine waves. It can also be viewed as a holistic single wave shape. Both are accurate ways to

describe a signal. But one is a "forest view" and the other is a "tree view." The "forest view" is the one that we "hear" - Maybe you could say it's the illusion we percieve. We don't hear the individual pressures or sines and only hear the whole, which requires time and space to develop within.

Subject: Thanks guys! <nt>
Posted by wunhuanglo on Sun, 06 Apr 2003 02:56:19 GMT
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