Subject: Re: Time alignment vs reality
Posted by Paul C. on Tue, 09 Jul 2002 15:22:01 GMT
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Well, the piano, or any instrument is like Popeye... "I yam what I yam."It is not a worry about time alignment, or phase, as each key produces its sound, and it is intact, it sounds like it sounds. What we want to do is reproduce that artificially with recording gear, media, and reproducing equipment in our living rooms, and hopefully, do it well enough that it fools our ear into thinking it is the real McCoy.The piano has other issues... tuning! Did you know that the low end, middle, and top end, are not perfect octaves apart? The octaves are stretched slightly, about 3/100ths of a semitone per octave. This helps it sound in tune to the ear. That is another issue, not relevant here.There are a number of books and papers, mostly by Dr. Arthur Benade, a physicist and clarinetist, that are most interesting. Some of his mathematical analysis looks VERY much like horn speaker math!No, we can't make all the musical sounds arrive at our ears perfectly on the beat, unless it is electronically generated by synthesizers. and when music is played this way, from a midi file, it sounds very mechanical, souless. Some programs have a setting to slightly randomize the tempo, ever so subtly, and vary, for example, the piano touch, so that all the keys are not hit with precisely the same velocity (electronically, that is). This gives a more human feel to the music.And, part of the sound of instruments is also reflections, echo, reverb. When recorded dry, the tone is often dull, uninteresting. Even a slight reverb, barely heard, adds warmth to the tone.Once I was called into a studio, I thought for a recording gig. The keyboard player wanted to just sample my tone, and pay me for like 15 minutes of my time. OK, go ahead, I said. So, he sampled a few pitches. But when played back on his synthesizer, it did not sound like a sax, or a sax section. It sounded like a reed organ. Cheesy. Like the instrument patches in your sound card.There is a lot that goes to make up an instrument sound. The way a note begins ("attack"), sounds in the middle of the note ("sustain"), and ends ("release" or "decay"), the way notes are connected, the way a musician phrases, uses vibrato, dynamics (loud vs soft), phrasing, etc, all go into what makes a trumpet sound different from a soprano sax, even though both have nearly the same waveform. This is what makes Marshall Royal (lead alto with Count Basie) sound different from David Sanborn. The raw "tone" is the least of it.So, a lot of factors go into what we hear as a musical sound. What we want to do in recording is capture that as well as possible, and put it in the living room, and try to make it sound like Dave Sanborn is playing in front of you. We do not need to enhance the sound, degrade the sound, change it, we want to just reproduce it.The only place you need to worry about time alignment and frequency response is on the speaker end, we have pretty good control over all the rest of it.And I think, from my ears, horns, or at least, horns on the high frequency driver, best couple these sounds to the air in the most realistic fashion.