Subject: Musical Instuments and Time Alignment
Posted by Paul C. on Sun, 11 Aug 2002 03:17:29 GMT
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In another post a few weeks ago I had discussed time alignment, and how it relates to musical instrument. First, I point out that the overtones are fixed in position with relation to the fundamental (as explained in the paper below). Second, shifting these overtones around, in relation to the fundamental, is not audible in sustained tones, though this will affect transient sounds.Then there was the question of "time alignment" in the concert hall... that is, due to a listener's position in relation to instuments on a stage, the sounds arrive to the listener not quite syncronized. Also, there are multiple reflections.I have found a 1984 paper by noted acoustician Arthur Benade, PhD, titled "Wind Instuments In The Concert Hall." If you will go to this site: http://www-ccrma.stanford.edu/marl/Benade/ ... you will find this paper by scrolling down and clicking where it says Writings, and then finding 1984. In the 1984 section you may click on the hyperlink and read this paper, which should answer your questions much better than I can.In case you wonder about who the heck Benade is... I rub elbows with a number of instument designers, and his name is often invoked anytime the conversations gets technical... Benade says X, Benade says Y... well, you get the picture.

http://www-ccrma.stanford.edu/marl/Benade/