

... from Greek (*he*) *dia pason* (*chordon symphonia*) ... (the concord) through all (the notes) ... “a burst of harmonious sound ... a full deep outburst of sound” (*Webster’s*) ... also an organ stop, and (earlier) the octave; (still earlier) the set of pitches which might “fill” an octave, i.e., a scale or mode. Here I am using it to refer to a band of seventeen adjacent harmonic partials of a very low fundamental (a Bb at approximately 29 Hz.). This band is not stationary, but moves very gradually from one pitch position to another within the harmonic series, and as it moves, the bandwidth changes as well. For example, near the beginning and the end of the piece, the “diapason” includes harmonics from the 48th through 64th (thus defining an interval of a perfect fourth), whereas at the dynamic climax of the piece (at about two-thirds to three-quarters of the way through) it includes the first through the seventeenth partials (a little more than four octaves). The harmonic sense of the work depends to a great extent on how precisely these pitches are tuned, and since most of the partials in the harmonic series do not coincide with pitches of the standard 12-tone equal-tempered scale, some unusual procedures are required to perform the piece. These include the following: (1) all of the string instruments are retuned in an elaborate *scordatura*, such that the pitches of every open string and its natural harmonics correspond to some subset of the harmonic partials of the same low Bb; (2) wind players are free to choose from the set of pitches being played at any moment by the string players nearest to them, carefully matching their pitches to the string tones by ear, but timing their entrances in a quasi-improvisational way; and (3) to facilitate this process, each wind player is seated between two string players, or is, in fact, surrounded by from 4 to 6 string players, whose pitches can thus be matched in this way.

One might well ask why we should go to such extraordinary lengths to produce these unusual pitches, and my answer is that I believe we have entered a new music-historical era during which there will be a resumption of the evolutionary development of *harmony*, a development which had reached an impasse in Western art music in about 1910 because the specifically *harmonic* resources of 12-tone equal temperament had been exhausted. And whereas the hegemony of 12-tone equal temperament had begun to be undermined by work with quarter tones (and other equal divisions of the octave) at about the same time (*ca.* 1910) by composers like Hába, Carrillo, Ives, Wyschnegradsky and others, it was not until the pioneering work by Harry Partch, beginning in the 1930s, and the aesthetic revolution brought about by John Cage in 1951, that the harmonic limitations of 12-tone equal temperament began to be understood, and a way could be

imagined in which *harmony* could serve other non-syntactical purposes than it had during the preceding three and a half centuries. For Partch, the crucial factor was *just intonation* i.e. using pitches tuned in such a way that the intervals between them may be characterized by relatively small *integer ratios* between frequencies. For reasons that are both theoretical and practical, I have come to the conclusion that a certain amount of *tolerance* must be assumed, with respect to both the precision with which it is possible to tune acoustical instruments in the “real world”, and the acuity of our auditory systems in distinguishing small pitch differences, although the size of the tolerance range I have come to accept (about 5 cents or one twentieth of a tempered semitone) is much smaller than that which I believe is implied by the performance of triadic-diatonic music of the common practice period on a tempered piano (at least 15 cents, and sometimes as in the case of the dominant seventh chord as large as 31 cents, or nearly a third of a tempered semitone).

I have written elsewhere (in “Reflections after *Bridge*”, 1984) that while Partch’s contribution to this new situation in which we find ourselves was primarily technical, Cage’s contribution was primarily aesthetic. I would now suggest that the aesthetic revolution wrought by John Cage in 1951 is absolutely essential to any truly progressive evolution of harmony, because without its decisive shift of focus from *the thoughts and feelings of the composer* and their “communication” to a relatively passive audience to *the immediate auditory experience of the listener* which may be said to be “occasioned” by the work of the composer, but assumes an active, participatory audience the future of music would remain mired in the past. Before harmony can evolve, the *role of music itself* must evolve. Otherwise we will simply be replaying an earlier scenario with minor, “cosmetic” changes in the details.

While celebrating the profound influence on my own work of both Harry Partch and John Cage, I should also mention some aspects of much of my music and *Diapason* in particular which are peculiarly my own. The first involves my fascination not only with just intervals but with a particular subset of these the *harmonic series*. It is perhaps the only thing given to us by nature (as distinct from culture), and is intimately involved in our perception of the vowels of speech as well as the timbre of musical instruments. What I have done that may be new is to find a number of different ways to use the harmonic series as the basis for an entire piece (first in *Clang* for Orchestra, 1972). The second involves my concern with *form*, not as a rhetorical device (as in the sonata), or as a means to ensure “comprehensibility” (Schoenberg’s motivation), but simply as another *object of perception* like the sounds themselves, but at a larger holarchical level. In

*Diapason*, the form is determined primarily by the changes in the pitch-boundaries of the band of adjacent harmonics, and secondarily by changes in dynamic level, both as a function of time, as shown in the figure below.

[*Diapason* form drawing]