Maria Renold, Intervals, Scales, Tones and the Concert Pitch C = 128 HZ

Maria Renold conducted very simple experiments, limited to two pairs of tones based on the concert pitches c=128Hz/A=432Hz and A=440Hz and their octaves. The frequencies of the two pairs of tones were as follows [1, p.74]:

(1) c = 128.000 Hz and c = 130.813 Hz (located a lower octave of C = 256.000 Hz and C = 261.626 Hz, see Table 1)

(2) a1=108.000 Hz and a1 = 110.000 Hz (located two octaves below A = 432.000 Hz and A = 440.000 Hz, see Table 1)

Aural experiments were carried out with these two pairs of tones on more than 2000 people of all ages and different occupations in the USA, Italy, Germany and Switzerland, and the results were recorded. Efforts were made to create an atmosphere as natural and unconstrained as possible. The listener were told that the frequency of the tones was not important, but that we were concerned with the character of each one. The tones were played one after the other as required, and the sequence was varied. The cardinal question was: do the two tones in each pair have a different effect, although their difference in frequency is minimal?

Quoting Maria Renold "the results were extraordinarily interesting and unequivocal. Almost all of the people questioned said that the two pairs of tones and their octaves had unmistakably and individually different qualities for them as listeners. It was not easy to put these qualities into words as the experience was new and unexpected [...] Over the course of the years many comparisons of this type were made, using [the monochord and], for example, home made bamboo flutes, student violins and concert instruments, with the tones played on the better instrument and then on the less good instrument. The result was always the same, with each tone proving to have an inherent quality and this quality remained constant, no matter in which register or on what instrument it was played. We may therefore stipulate that the individual quality of the tones originates in the tones themselves and not in the instruments in which they are played" [1, p.74].

over 90% of listeners preferred 432

Percentage of listeners	440 HZ	432 HZ
3-8%	- sounded beautiful - had a stimulating effect	- sounded impersonal
over 90%	- sounded uncomfortable - oppressive - irritating and very aggressive - caused pain in the inner ear	- sounded correct and complete - peaceful and clear - pleasing - had light

After having established that the chosen tones have definite inherent qualities, it was attempted, in spite of the expected difficulties, to find out from the listeners more exactly what the aural impressions of the pairs of tones were. The participants were asked which of the two tones in each pair they preferred. Their answers were surprising: "Although a1=110Hz (440Hz) was the more familiar tone, only 3-8% of participants preferred it; c = 130.828 Hz (261.656Hz) was preferred by even fewer. In other words, over 90% of listeners preferred c = 128 Hz and a1 = 108 Hz (the lower octave of A=432Hz)" [1, p.76].

The listeners were then asked to give the reason for their preference. The tones were played again as often as required. As explained previously, all these experiments were made over the course of 20 years and with many people. Here we report a brief summary of the collected answers [1, p.76-77]: