# grand fugue

## Ramsay

A musical sound, thus illustrated, is composed of 25 circles of vibrations, and each circle is a more or less developed sound. There are, therefore, 25 sounds in one musical sound.<sup>1</sup> When these 25 sounds, with 19 different ratios, are fully developed and standing in the same order and in the same proportions as that in which they naturally arise in a single sound, and in this fully developed condition all heard together, they produce one grand harmonious chord of chords.<sup>2</sup> The reason is obvious; these 25 sounds are distributed over six octaves. As B, the seventh in the octave-scale, cannot be developed save at the distance of five and a-half octaves above the fundamental sound, so on that account it has no octave in the chord, having only one circle of vibrations in Nature's **grand fugue**. D, the second of the octave-scale, arises at nearly five octaves up, and has only two circles of vibrations; G and E arise in the fourth octave, and have three circles each; A arises in the third octave, and has four circles; C arises in the second octave, and has five circles; while F, the fundamental sound, the genetic root of the whole system, has the first octave entirely to itself. It has also the seven circles of vibrations which embrace and enclose the whole six octaves, and give unity of structure to the whole system of vibrations. [Scientific Basis and Build of Music, page 17]

"To say that I was surprised at what Mr. Keely has discovered would be saying very little indeed ... It would appear that there are three different spheres in which the laws of motion operate.

1 - The first is the one in which Nature plays her **grand fugue** on the silent harp of Pendulums. In one period of **Nature's grand fugue**, as illustrated by pendulums, there are 19 ratios in 25 circles of *oscillations* ranging over 6 octaves; but all in *silence*. [Scientific Basis and Build of Music, page 86]

2 - In the second sphere the *tension* of strings and other elastic bodies imbues them with forces operating upon the elastic air, producing *vibrations* quick enough to awaken *sounds* for the human ear. Here Nature plays on her tuneful harp the same **grand fugue**; from which everything in music is derived. [Scientific Basis and Build of Music, page 86]

musical vibrations in both acute and grave harmonics, generate a concentration of mighty action, an everoutgoing of Nature's own power, so that she, by her own laws of vibratory motion, can reproduce and perpetually maintain outgoing power of action; and, again, play in perfect harmony her **grand fugue** with these tremendous all-resolving forces in that high and hidden and silent region in which Mr. Keely is experimenting. [Scientific Basis and Build of Music, page 87]

## Ramsay

Six Octaves required for the Birth of the Scale

EXPLANATION OF PLATES. [BY THE EDITOR.] PLATE I. "NATURE'S **GRAND FUGUE**."

THIS plate is a Pendulum illustration of the System of musical vibrations. The circular lines represent Octaves in music. The thick are the octave lines of the fundamental note; and the thin lines between them are lines of the other six notes of the octave. The notes are all on lines only, not lines and spaces. The black dots arranged in these lines are not notes, but pendulum oscillations, which have the same ratios in their slow way as the vibrations of sounding instruments in the much quicker region where they exist. The center circle is the Root of the System; it represents F1, the root of the subdominant chord; the second thick line is F2, its octave; and all the thick lines are the rising octaves of F, namely 4, 8, 16, 32, and 64. In the second octave on the fifth line are dots for the three oscillations which represent the note C3, the Fifth to F2, standing in the ratio of 3 to 2; and the corresponding lines in the four succeeding Octaves are the Octaves of C3, namely 6, 12, 24, and 48. On the third line in the third Octave are 5 dots, which are the 5 oscillations of a pendulum tuned to swing 5 to 4 of the F close below; and it represents A5, which is the Third of F4 among musical vibrations. On the first line in the fourth Octave are 9 dots. These again represent G9, which stands related to C3 as C3 stands to F1. On the seventh line

of the same octave are 15 dots; these represent the vibrations of E15, which stands related to C3 as A5 stands to F1. On the sixth line of the fifth Octave are 27 dots, representing D27, which stands related to G9 as G9 stands to C3, and C3 also to F1; it is the Fifth to G. And last of all, on the fourth line of the sixth Octave are 45 dots, representing B45, which, lastly, stands related to G9 as E15 stands to C3, and A5 to F1; it is the Third to this third chord - G, B, D. The notes which arise in each octave coming outward from the center are repeated in a double number of dots in the following Octaves; A5 appears as 10, 20, and 40; G9 appears as 18 and 36; E15 appears as 30 and 60; D27 appears as 54; and last of all B45 only appears this once. This we have represented by pendulum oscillations, which we can follow with the eye, the three chords of the musical system, F, A, C; C, E, G; and G, B, D. C3 is from F1 multiplied by 3; G9 is from C3 multiplied by 3; these are the three Roots of the three Chords. Their Middles, that is their Thirds, are similarly developed; A is from F1 multiplied by 5; E15 is from C3 multiplied by 5; B45 is from G9 multiplied by 5. The primes 3 and 5 beget all the new notes, the Fifths and the Thirds; and the prime 2 repeats them all in Octaves to any extent. [Scientific Basis and Build of Music, page 102]

together on radial lines from the center they appear grouped in various chords and combinations, dropping out and coming in in such succession as to constitute what Ramsay, whose genius was given to set this thus before us, calls "Nature's **Grand Fugue**." Beginning at F in the center at the top, and moving either to the right or to the left, after a run of 7 notes we have 4 consecutive Octaves, and then comes the Minor fifth, A-E, followed by the Major fifth, G-D; and this by another Major fifth, F-C; the combinations keep changing till at the quarter of the circle we come to F, A, C, E, G, a combination of the subdominant and tonic Major; and after another varied series of combinations we have at the half of the circle the elements of 2 minor chords, D, F, A and A, C, E, and one Major chord, C, E, G; at the third quarter we have a repetition of the first quarter group; and the various chords and combinations dropping out and coming in, fugue-like; finally we return to where we began, and end with the *three-times-three chord*, in which the whole 25 notes are struck together, and make that wondrous and restful close of this strange Fugue. No one can hear the *thrice-threefold chord* of this close and ever forget it; it is "the lost chord" found; and leads the saintly heart away to the Three in One who is the Lord of Hosts; Maker of Heaven and Earth, and all the host of them. [Scientific Basis and Build of Music, page 103]

### PLATE IV.

#### OSCILLATION AND VIBRATION.

Fig. 1 - The pendulums in this illustration are suspended from points determined by the division of the Octave into Commas; the comma-measured chords of the Major key being **S**, 9, 8, 9, 5; **T**, 9, 8, 5, 9; **D**, 8, 9, 5, 9. The pendulums suspended from these points are tuned, as to length, to swing the mathematical ratios of the Diatonic scale. The longest pendulum is F, the chords being properly arranged with the subdominant, tonic, and dominant, the lowest, center, and upper chords respectively. Although in "**Nature's Grand Fugue**" there are 25 pendulums engaged, as will be seen by reference to it, yet for the area of a single key 13 pendulums, as here set forth, are all that are required. It will not fail to be observed that thus arranged, according to the law of the genesis of the scale, they form a beautiful curve, probably the curve of a falling projectile. It is an exceedingly interesting sight to watch the unfailing coincidences of the pendulums perfectly tuned, when started in pairs such as F4, A5, and C6; or started all together and seen in their manifold manner of working. The eye is then treated to a sight, in this solemn silent harp, of the order in which the vibrations of sounding instruments play their sweet coincidences on the drum of the delighted ear; and these two "art senses," the eye and the ear, keep good company. Fig. 2 is an illustration of the correct definition of a Pendulum Oscillation, as defined in this work. In watching the swinging pendulums, it will be observed that the coincidences [Scientific Basis and Build of Music, page 104]

See Also

Ramsay - The Great Chord of Chords, the Three-in-One17