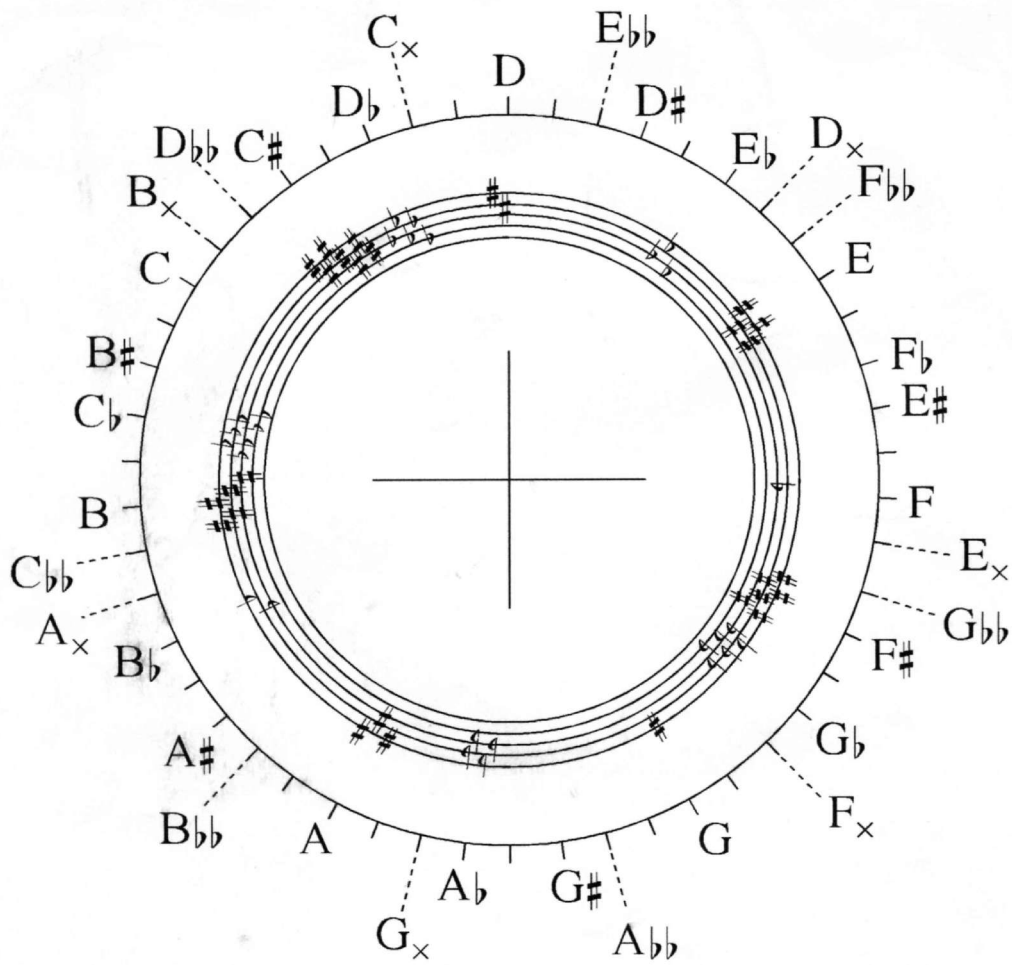


# The Harmonic Diagram

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## An Explanation of the Harmonic Diagram

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The difficulty attending the acquirement of Musical Theory has been the principal cause of the little attention paid to it by the generality of practical students. The intention of the Harmonic Diagram is to diminish this difficulty, and to render the groundwork of the science more familiar. For, as on a geographical chart, the relative situations and analogies of the various places can be more readily comprehended than by the most accurate and diffuse independent explanation, so on the Diagram, which is a representation of the principles from which the Science of Music is derived, the rules constituting the theory, from the apparent mutual connexion of their elements, are rendered more evident than they could be in a desultory treatise. The author does not, however, pretend to obtrude his invention as a substitute for either of the many excellent theoretical works now published; but he ventures to hope it will be found a useful preliminary and accompaniment to any publication on the subject; and, as it is intended to convey to the practical musician the foundation only of the theory, the explanation has been confined to that kind of information more essentially necessary, and immediately conducive to the means of instruction.

*Definitions.*—A NOTE\* is a musical sound at a determined pitch or degree of

\* It is productive of considerable inconvenience that the most useful and elementary words employed in the theory of music should be so vaguely and promiscuously applied. A NOTE originally signified only the written character of a musical sound; but for want of a more appropri-

tune, and is termed *graver* than one that is higher, and more *acute* than one that is lower.

An INTERVAL is the distance between two notes : the graver sound is generally considered as the base when compared with a more acute sound.

MELODY is a succession of notes.

A CHORD is the co-existence of several notes.

HARMONY is a succession of chords, or the co-existence of two or more melodies.

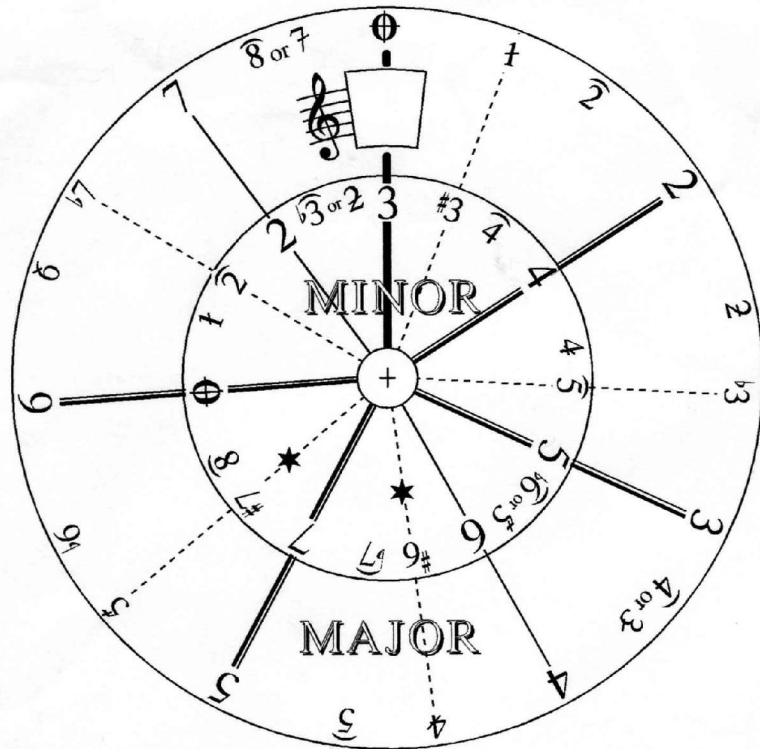
### *Part the First.*

#### THE ELEMENTS OF MELODY.

§ 1. The circumference of the diagram represents a perfect octave. In this interval all the principles of musical variety are contained; and all notes situated above or below a certain octave in theory are considered the same notes as those bearing similar names within it. Therefore all musical intervals may be regarded as comprised in this compass.

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ate and exclusive term it has been adopted in this new sense, not only in the language of the science but also in that of literature and common colloquial intercourse. There are many other terms similarly equivocal. Tone is a *general* word for a musical sound, as a fine tone, a sweet tone, a grave tone, &c. The same word is also employed to signify a particular diatonic interval. The TUNE of a sound is usually understood to be its pitch, and *to tune* is bring each of the notes of an instrument to its proper pitch; but *to tune* is also used synonymously with *to play*, and a *tune* is the same as a *melody*.



## An Explanation of the Harmonic Diagram

§ 2. *Scales*.—A *scale* is a regular progression, commencing and terminating with notes of the same name, and included within the interval of one or more octaves. The *genera* of scales regard the number of notes in the octave : of those there are three—*Diatonic*, *Chromatic*, and *Enharmonic*\*.

\* There is another scale, more simple in its construction than either of these; but it has not hitherto been described in any theoretical work, and is therefore not included in this enumeration of the scales generally admitted. It consists of five notes, the succession of which forms, like the other scales, two species of intervals, which in this are the tone and the minor third. It is indicated on the diagram by the double lines; and the diatonic scale is derived from it by dividing each of its minor thirds into a tone and a major semitone by the lines representing the 4th and 7th notes of the diatonic series. This scale possesses several remarkable peculiarities. A diatonic scale has always a determinate key; but this progression of notes has no decided tonic, and, according to the rules of composition, it may be considered as belonging to either of five different keys deprived of the notes which divide their respective minor thirds: thus the progression C, D, E, G, A may be regarded as the diatonic major key of C with the omission of its 4th and 7th notes, as the minor key of D without its 3rd and 6th, as the minor key of E wanting its 2nd and 5th, as the major key of G omitting its 3rd and 7th, and as the minor key of A deprived of its 2nd and 6th. We see from hence the cause of the apparent irregularity in the termination of melodies composed from this progression.

There are many reasons for believing this series of notes to have constituted one of the most simple and original forms of the enharmonic scale of the ancients (for the Greek names applied to the modern scales do not at all accord with their ancient significations); and we have undoubted evidence that the aboriginal airs of most of the European and Oriental nations are entirely constructed upon it. The peculiar character of Scottish melody is owing to this disposition of the intervals; and from hence it has been occasionally called the Scottish scale; but as the melodies of India, China, and Persia equally derive their

Diatonic scales consist of seven notes, represented by the seven lines of the moveable circle : the intervals between them, viz. *tones*, of which there are five, and *major semitones*, of which there are two, are shown by the distances between these lines. These scales are the most important, as all regular musical compositions are constructed upon them.

Chromatic scales are formed by the addition of a note in each tone of the above, subdividing it into a major and a minor semitone; these additional notes are shown by the dotted lines.

Enharmonic scales are formed by the subdivision of each major semitone in a chromatic scale into a minor semitone and *diesis*, thereby adding to it seven additional notes : these are shown by small marks between the major semitones.

The note commencing and terminating a scale is termed its *tonic* or key-note.

§ 3. *Modes*.—The different dispositions of the intervals between the successive notes of a diatonic scale are called *modes*. When the intervals are situated as represented by placing the index of the upper

character from it, the term NATIONAL SCALE may be substituted as more appropriate.

The five black keys of the pianoforte correspond with the notes of the national scale; and it may easily be proved by trial that any real Scottish air, as "Roy's Wife," "Auld Lang Syne," &c., with the omission of the unessential notes introduced by transcribers, may be performed upon them; and in the same manner successful imitations of the Scottish style may be composed. Melodies thus constructed owe their peculiarly pleasing effect to the simplicity of the intervals between the notes composing them; in addition to all the consonant intervals, the minor seventh and the perfect second only are in requisition, whereas, in the diatonic scale, the imperfect second, the superfluous fourth, the imperfect fifth and the major seventh are also additionally employed.

### *An Explanation of the Harmonic Diagram*

circle to the key-note, the mode is major; it is minor as shown by placing the index of the lower circle to the key-note. In musical compositions the major mode is most important, and the minor considered in regard to it is either *relative* or *tonic*. The minor is relative when its key note is the sixth of its major, in which case the notes (and consequently the signatures) of both scales correspond. The minor is tonic when it has the same key-note as the major scale, from which it will be seen by the Diagram to differ in having its 3rd, 6th, and 7th notes nearer the commencing note, the others remaining the same in both scales.

§ 2. *Keys*.—A scale may commence on any note; this constitutes the difference of *keys*. All keys are named from the note on which they commence and terminate; and the seven notes of the progression are in alphabetical order, two of the same letter never occurring. Those notes of a scale to which in their progressive order a sharp or a flat is affixed, to avoid repetition transfer their signs to the commencement, which forms what is termed the *signature* of the key. The signatures of all the keys which are in use are shown on the Diagram when the index points to the corresponding key-note.

§ 2. *Problems on the Keys and Modes*.—To discover the progression of any key in the major mode, place the index of the outward circle to the key-note, which will show the signature, and the lines will point out the seven notes of its scale. Example :—Let D be the key-note, to which place the index : the signature will be shown to be two sharps, and the lines will correspond with D, E, F#, G, A, B, C#.

To find the progression of any key in the minor mode, place the index of the inward circle to the key-note, and the notes

and signature of the key will be shown as before. Example :—Let C be the key-note; having placed to it the minor index, the lines will point out C, D, E<sub>b</sub>, F, G, A<sub>b</sub>, B<sub>b</sub>, and the signature will be shown to be three flats. N.B. Those notes which keys in the minor mode ascending borrow from their relative majors are shown by a \* on the corresponding dotted lines.

The relative minor to any major key will be found to commence on the 6th of the latter : consequently, when any major scale is shown without altering the circle, its relative minor is likewise seen. Example :—Let the key-note of the major be C, and its scale shown as directed above; the minor index will then point to A, its sixth note, and the two scales will be seen to be formed of the same notes and possess the same signature.

The tonic minor of any major key may be shown by placing the minor index to the major key-note. Example :—Let C be the major key-note; by placing to it the minor index its tonic minor will be found to be C, D, E<sub>b</sub>, F, G, A<sub>b</sub>, B<sub>b</sub>, and its signature will be formed of three flats.

§ 2. *Progression of the Keys*.—To explain the progression and relations of the major keys, place the index upon C, which key has neither flats nor sharps; then by removing it to the note pointed out by 5, the fifth above, the scale of the key having one note sharpened will be shown, and every removal the same degree higher will show the key with one sharp added, which additional sharp will invariably be on the 7th of its own and 4th of the preceding key. By descending in the same manner from C (removing it to 4, the fifth below) the progression of the keys with flats will be shown, and the additional flat will be ob-

## An Explanation of the Harmonic Diagram

served to occur on the 4th of its own and 7th of the preceding key.

The progression of the minor keys may be similarly demonstrated by commencing on A and substituting the minor circle for the major; each additional sharp will then occur on the 2nd of its own and 4th of the preceding key, and each additional flat on the 6th of its own key, and 2nd of the preceding.

To render these operations more evident, under the index of the key-note is shown the number and order of the sharps and flats to the corresponding key.

§ 7. *Transposition of Keys.*—Transposition or changing the key is effected by raising or lowering all the notes of a composition in an equal degree, still reserving the true intervals between the notes of the melody. The rule for the operation is as follows:—Place the index (major or minor, according to the mode) to the tonic of the key in which the piece is written, and write down the progression shown by the lines; proceed the same with key into which you would transpose it; then by substituting the notes of the latter for those of the former, the transposition will be effected. When a note accidentally sharpened or flattened occurs, its transposition will be shown by a dotted line. The alteration of the signature shown under the index must be observed; and it is necessary to remark, that major keys can only be transposed into other major keys, and minor into other minor keys.

§ 7. *Intervals.*—Intervals derive their names from their distances between the tonic and other notes of the diatonic scale\* ;

\* In a former part (§ 2) of this explanation, other terms not thus derived are used to express those intervals which exist between the successive notes of the different scales. The *tone*, the

on the movable circle of the diagram are exhibited the characters of all those in practical use. If it be required to know the interval between any two notes, the index must be placed to the lower note, and the intervallic character will appear under the higher.

Intervals are classed by theorists into perfect, major, minor, imperfect, superfluous, and diminished. Perfect intervals are those between the tonic and those notes of the scale which are in common to both major and minor keys: they are unison, 1<sup>1</sup>, second, 2, fourth, 4, fifth, 5, octave, 8. Major intervals are those between the tonic and the notes peculiar to the minor mode, and are respectively less than the major intervals by a minor semitone; they are denoted by prefixing a flat to their characters,  $\flat 3$ ,  $\flat 6$ ,  $\flat 7$ <sup>2</sup>.

Imperfect intervals are perfect intervals diminished a minor semitone, and are expressed by a slur placed over the characters— $\hat{2}$ ,  $\hat{4}$ ,  $\hat{5}$ , 8. Superfluous intervals are the perfect and major intervals increased by a minor semitone; they are denoted by placing a line across the figures,  $\bar{1}$ ,  $\bar{2}$ ,  $\bar{3}$ ,  $\bar{4}$ ,  $\bar{5}$ ,  $\bar{6}$ , 7. Diminished intervals are the minor

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larger interval of the diatonic scale, is identical with what is here termed the *perfect second*; and the *major semitone* with *imperfect second*. The *minor semitone* and *superfluous unison* are also the same: the first mentioned are generally employed in explaining the construction of the scales; the latter (with all those enumerated in the present article) in explaining the principles of harmony.

<sup>1</sup> The unison cannot in strictness be termed an interval; it may be defined as the collision of two notes of the same degree of tune.

<sup>2</sup> These characters of the major and minor intervals are, as they should be, employed in major scales; but in minor scales the minor intervals, being of most importance, are denoted by plain figures, and the accidental major intervals are distinguished by prefixing a sharp.

*An Explanation of the Harmonic Diagram*

intervals diminished by a minor semitone ; they are expressed by a slur place over the minor characters,  $\flat\hat{3}$ ,  $\flat\hat{6}$ ,  $\flat\hat{7}$ .

Two intervals are reciprocal when, added together, they form an octave. And the difference or complement of an interval to an octave is termed an inverted or reciprocal interval : thus , 4 is an inversion of 5, and *vice versâ*. Intervals are likewise divided into consonant and dissonant ; 1,  $\flat\hat{3}$ , 3, 4, 5,  $\flat\hat{6}$ , 6, 8 are the consonant intervals ; all the others are dissonant.

Simple intervals are those not exceeding that of an octave ; compound intervals are any of the simple intervals compounded with one or more octaves, as 9th, 11th, &c., which in every respect are analogous to the 2nd, 4th, &c.