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## The Teachings of Harmony as a Basis of Ear Training

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DECEMBER 11, 1900.

W. G. McNAUGHT, Esq., Mus. Doc.,

IN THE CHAIR.

*THE TEACHINGS OF HARMONY AS A BASIS  
OF EAR TRAINING.*

BY FRANK J. SAWYER, D.Mus., Oxon.

IN commencing a paper the writer frequently feels it a duty to begin with an apology for introducing such a subject. In the present case I feel that no apology whatever is needed, for to those interested in the teaching of music, the training of the ear of their pupils is a subject which is rapidly becoming one of the greatest importance. It is still in its infancy, but to the large number of conscientious teachers it is presenting itself with an ever-increasing force. We have been at great pains in England to secure that the rudiments of music shall be taught intelligently to the young pupil. Every scheme of examination in practical, as well as in theoretical, music has insisted on all candidates properly understanding the basis of the art. How greatly the musical perception and intelligence of the average pupil has improved by this means, anyone may see who will but compare a musical schoolgirl of twenty years ago with one of to-day.

But we are, if we are true to our art, always trying for further progress, and thus it has become apparent that in our endeavours to teach the rudiments, we have done so too much from the theoretical standpoint only, and have not combined with it the practical side.

The child is taught that a certain shaped note is called a half-note or minim, while another shaped note is called a quarter-note or crotchet, and that the latter is half the length of the former.

This is the theoretical side. But do we at once try to train the practical side by singing or playing a passage and asking our little pupil to tell us which were the half-notes and which were the quarter-notes? In other words, do we train the child's ear to recognise the *musical fact* which was represented by the *musical symbol*?

## 52 *The Teachings of Harmony as a Basis of Ear Training.*

Again, we teach our pupils major scales, minor scales, and intervals, *on paper*. They can, perhaps, tell you all about them when they *see them printed*; but the training of the mind's eye by means of the ear we have hitherto neglected.

We are now beginning to recognize that it is *not* sufficient if our pupils can show us a major third on paper! They must be able to tell it when heard. Hence, in this desire on the part of teachers to train their pupils as well as they possibly can, the subject of ear training—*i.e.*, the development of the power of hearing to analyse sounds, has become of more and more importance.

Considering, therefore, the great bearing that it has on the further progress of our musical art, I feel no apology is needed as a preface to any attempt to further aid the study of ear training.

As preparatory, it may not be amiss to briefly notice the history of the subject in England. Practically for the last fifty years, until a few years ago, it has been only taught in connection with class singing, and in class singing only by those who taught on tonic sol-fa principles. Grasping the great doctrine of good teaching—"the fact before the sign that represents it"—the late Mr. Curwen sought to find qualities pertaining to each scale degree, by which the singer might recognise on what step of the ladder of the major scale he was.

Hence the tonic was called the Strong or firm note.

The dominant, the Grand or bright note.

The mediant, the Steady or calm note.

The leading note was the Piercing tone.

The supertonic, the Rousing tone.

The submediant, the Sad or weeping note.

The subdominant, the Desolate tone.

By the perception of these peculiarities, the child's mind was taught to recognise and name each degree of the major scale.

While we may be tempted to smile, especially those of us who imperfectly realise as yet that the relationship of every note to its tonic is the basis of all music, these first attempts at locating the mental effects of each degree have proved an important beginning to the development of ear training.

In many of them there is the germ of truth, even if in others there is a superabundance of picturesqueness.

It is hardly necessary to do more than mention the fact that in sight-singing teaching, tonal relationship has far outgrown its early connection with the tonic sol-fa, and has practically become the recognised method of teaching the young singer to read music.

*The Teachings of Harmony as a Basis of Ear Training.* 53

Turning to the history of ear training in *instrumental* music, until a few years ago it was almost a blank in England.

In the old Society of Arts' Examination in practical music a test was given, but that was in *absolute* pitch. Notes were struck having no connection with each other, and the young candidate was required to tell the absolute pitch of these sounds.

Such tests were, of course, a farce, because the pupil was either endowed by nature with the gift of absolute pitch and so could not help answering rightly, or nature had not given her the gift and in such early years she had not been able to acquire it. Special marks might therefore just as well have been awarded for the possession of blue eyes.

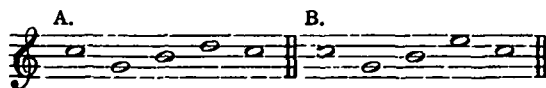
The pioneers of the subject of ear training seem to have been the professors of the dictation classes at the Royal College of Music and at the Royal Academy. Gradually an interest in the subject was aroused, and the authorities responsible for the examinations in connection with Trinity College and the Incorporated Society of Musicians decided to require tests in ear training from *all candidates*.

At the annual Conference of the latter body—the Incorporated Society of Musicians—at Plymouth, in January, 1899, a most important advance on the subject was made in an admirable paper on "The Training of the Ear," by Dr. Shinn. It is not too much to say that in the eloquent and forcible address that he gave, he did more to drive into us the immense importance of his subject—not in the realm of sight-singing alone, but in *all* musical study—than has anything that has taken place.

Following on this excellent paper Dr. Shinn produced last year the first part of a text-book on the subject.

Such is the brief history of ear training up to the present time.

In the further development of the subject it has occurred to me that it may not be inadvisable to approach it from an absolutely fresh point of view. While the singer treats it from the melodic standpoint, our piano pupils will approach it from a harmonic. Again, it has been said that no ear receives a melody without instinctively supplying a simple harmony. This is certainly true to some extent, because those who examine in sight singing know that passages in which the singer's mind cannot apply a natural chord progression are always the more difficult. For instance, a singer will readily sing:—



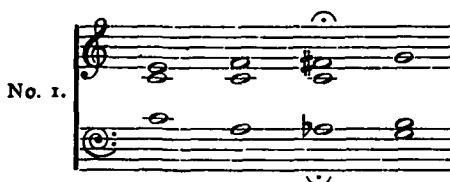
## 54 *The Teachings of Harmony as a Basis of Ear Training.*

C, G, B, D, C, because the ear accepts the dominant harmony of G, B, D. A singer will find C, G, B, E, C more difficult, since it implies a stranger chord, G, B, E, the major thirteenth.

Apart from such interesting considerations as these, it must be palpable to all that harmony is the essential factor in the music of the present day as we meet with it in our everyday work.

Let us therefore subject the teachings of harmony, as it appeals to the ear, to a more critical examination. We will begin with discords, as being those which strike the ear most forcibly in desiring definite progression.

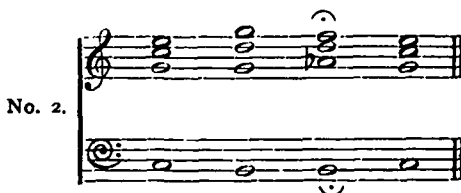
If I play the progression at No. 1—



and pause on the third chord, the ear immediately demands that the F sharp shall ascend while the A flat descends.

The chord A flat, C, F sharp is the augmented sixth on the flattened sixth of the scale. We may therefore say that the mental effect, that is, the effect produced on the mind by the augmented sixth, is that the extreme notes shall move away from one another by diatonic semitones. Although other progressions are *possible*, yet to the ear this is the most *natural*.

Examine the progression No. 2, first on paper, and then in actual fact, pausing on the third chord :—



What does the ear demand? The bass must ascend, the A flat and the F must descend. When, therefore, we strike this chord of the diminished seventh the ear receives a definite mental picture, and instinctively requires that these notes should move as given above.

*The Teachings of Harmony as a Basis of Ear Training.* 55

Descending from these more extreme discords, let us take the milder discord of the dominant seventh, as given in progression No. 3:—



Pausing on the second chord, the ear at once asks that the treble shall ascend, the alto descend, and the bass return to the tonic. Even if we invert the chord and put it in five parts as at No. 3, *b*, still the same mental effect is apparent; the subdominant—the F in the melody—falling, the leading note—the B in the bass—rising, and the dominant seventh being most naturally followed, according to the teaching of the ear, by the tonic triad. This, therefore, is its mental effect.

From this study of discords—both extreme and mild—we may deduce the fact that the ear makes of each a definite picture, and that picture of each is in these cases dependent on the resolution to something which will produce on the mind a state of rest.

This constant striving after a point of rest is a feature in our music, the importance of which we hardly at first realise. A German writer has said that the desire of contrast is the underlying principle of all music, and he even traces in the simple progression of tonic, dominant, tonic (No. 4), the germ of musical form. Thus, the tonic chord, which in itself is at first satisfying to the ear, at length begins to pall, and we ask for something to contrast with it, to which the dominant chord responds, affording exactly the counterpart by its brightness and moving power. But this again brings about in the mind a desire for repose, which is satisfied by the return of the tonic. The same writer goes on to show that the early song form is but an extension of this idea of “rest—motion—rest.” The first section is in the tonic, the contrasting section is in the dominant or other key, from which the ear demands we shall return, and repeat the first section, ending on the tonic.

This desire to return to a state of rest is therefore a salient feature in harmony, and we shall find that it will afford us most useful aid.

It is, in the first place, necessary to determine what are the points of rest to which all chords seem striving. They are to be found in the notes of the tonic triad itself. On these, and on no others in the scale will the ear rest satisfied. The

56 *The Teachings of Harmony as a Basis of Ear Training.*

typical feature of the tonic chord is the feeling of perfect completion which it contains. It is this feature which we regard as the mental effect of the chord. It is true that it has various degrees of completion, according to the position of the chord. Thus, the tonic chord, with root in the bass and an octave of the root in the treble, gives the best idea of rest, while the weakest effect of rest is apparent in the second inversion of the tonic chord, where the interval of the fourth with the bass makes itself felt as a discord demanding further progression.

Not only is the tonic chord satisfactory to the ear as a point of rest, but melodically it will be found that each of the notes of which it consists will also, in a greater or less degree, satisfy the ear and demand no further progression. Thus, the tonic most fully arouses this feeling and seems to spread around itself a home-like feeling or sensation of finality. In a similar manner, though in a lesser degree, the fifth of the tonic chord—the dominant of the scale—will satisfy us, and ask for no further motion; while the third of the chord—the mediant of the scale—also contents us, and gives the ear such a feeling of rest that no further progression is compulsory.

Thus we see that while in harmony it is the tonic chord which is the central power of repose in the scale, that power is so strong in the chord that its force is extended to each note of which the chord consists.

Having sounded our tonic chord, let us now sound the dominant triad immediately after it:—



In this conjunction what have we found? Is the ear satisfied with this second chord? Is it at rest? No; assuredly not. The feeling of rest and repose has entirely gone, and we recognise in the dominant chord that a bright expectancy has been awakened of further motion. This bright feeling of further progression is typical of the dominant chord even without the seventh of the chord being added. It may be called the "mental effect" of the chord on the fifth degree.

The position of the chords in No. 4 is such that the tonic in the melody falls to the leading-note, and the primary sensation produced in the mind is that this "leading-note" should, as its name implies, "lead up" to the tonic. Even



supposing there is someone in this room who has never heard of notes of the scale producing effects on the mind, yet I suppose no one present will deny the desire or tendency of the leading-note to ascend to the tonic. I have only met one such person, and it may not be amiss to digress for a moment to consider this exceptional case. Those who possess the gift of absolute pitch (and I do not think they are 1 in 10,000 of the population) are often either entirely unable, or else only partially able, to understand how music appeals to us who, not having the gift of absolute pitch, hear and accept our music by *relative* pitch.

To such people, tonal relationship—that is, the relationship of every note to its tonic—appeals only very slightly. Thus, if the possessor of absolute pitch listen to a symphony in C he will hear the second subject in G. They will be to him two absolute and separate keys. But to those of us who have *not* the gift of absolute pitch, we should hear the principal subject given out in the tonic, and, when the second subject arrived, we should hear that it was in the dominant of the original key, and thus the inter-relationship of the two sections will be established. In fact, to quote the words used recently by Mr. George Langley, “the whole appreciation of the centre of pitch is (after the first note of a composition has been heard) merely one of relativity.”

To the possessor of absolute pitch it is not always so, and, to such, a note will sometimes appeal so fully as a certain definite sound at one definite pitch, that its tonal relationship will be entirely obliterated.

It was in this way that the musical student in question perceived sound. I struck the leading-note as part of the dominant triad, but the student honestly assured me that she could not perceive that it had any tendency to ascend, and that she had always wondered why it was called the “leading-note.”

In conclusion of this little parenthesis, this fully explains the difficulty that teachers *with* absolute pitch have in teaching ear training to pupils without it.

Returning to Example No. 4, the leading-note may therefore be taken as the note having the strongest of mental effects in its tendency to lead up to the tonic.

This is the case in all triads in the scale which contain the leading-note:—

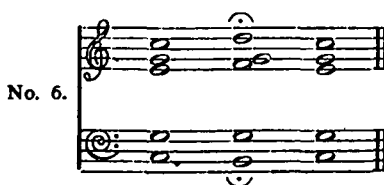
No. 5.

The musical notation for Example No. 5 consists of two staves. The top staff is in treble clef and contains four triads labeled a, b, c, and d. Triad a consists of the notes C4, E4, and G4. Triad b consists of the notes D4, F4, and A4. Triad c consists of the notes E4, G4, and B4. Triad d consists of the notes F4, A4, and C5. The bottom staff is in bass clef and contains the same four triads. Triad a consists of the notes C4, E4, and G4. Triad b consists of the notes D4, F4, and A4. Triad c consists of the notes E4, G4, and B4. Triad d consists of the notes F4, A4, and C5. The notes are written as whole notes on a five-line staff.

## 58 *The Teachings of Harmony as a Basis of Ear Training.*

The mediant triad is most satisfactorily followed by one which admits of the leading-note ascending, either, as at No. 5, *a*, to the submediant chord, or, as at No. 5, *b*, to the tonic chord. In the diminished triad, either in uninverted form (as at *c*) or inverted form (as a *d*), the same desire of the leading-note to ascend is palpably clear.

Let us now place the tonic and dominant chords in another position, in order to discover what harmony teaches us about the supertonic of the scale. Striking the first and second chords of No. 6—



and, pausing on the second, we instinctively feel a desire that the second degree may fall again and the tonic chord be resumed. It is true the second degree might ascend to the mediant, but that is not what the ear regards as the most *natural* progression, and for this reason: were the supertonic to rise to the mediant it would reach a note which is not so strong a point of rest as is the tonic, and hence the ear leads us downwards. That this tendency of the second degree to fall to the tonic is, melodically, very marked, I presume few would dispute. It is the penultimate note of every *canto fermo* in counterpoint, and it is therefore self-evident that the ancient writers considered "supertonic, tonic" as in their time the natural termination of every melody. On turning to the first twelve tunes in Macfarren's "Old English Ditties," ten out of the twelve thus end. Since, therefore, the striving after a point of rest seems inherent in every chord other than the tonic, which itself is the point of rest, we may regard the two notes of the dominant chord as desiring to seek repose in passing to the tonic.

The mental picture of the leading-note is to *ascend* to the tonic.

The mental picture of the supertonic is to *fall* to the tonic.

And what does the octave of the dominant itself do in this progression?

The dominant being itself a point of rest it remains stationary. Returning for a moment to No. 5, *a* and *b*, we find that in the progressions of the mediant triad the same thing was apparent: the octave of the mediant, being itself a point of rest, remains stationary. Do not misunderstand my

*The Teachings of Harmony as a Basis of Ear Training.* 59

meaning. I am far from saying that the teachings of harmony *always* show that the tonic, the dominant, and the mediant *always* remain stationary. I would simply say, taking the simplest progressions of the primary and the chief of the secondary triads this is so.

The tendency of the supertonic to fall is also found in other chords besides the dominant triad—



Thus, in No. 7, *a* and *b*, as octave of the root in the supertonic chord itself, or at *c*, as third of the diminished triad, it seems natural to thus progress.

Let us now turn to the subdominant triad and place it to follow the tonic triad as at No. 8, pausing on the second chord—



It is necessary that we first notice the peculiar effect of the chord itself. It does not possess that firm stability that belongs to the tonic chord, nor does it produce that bright effect of motion that we found to be characteristic of the dominant chord.

Its effect is one of dulness, or, as suggested to me by Sir Hubert Parry, a "clouded" effect. In this it seems the antithesis of the dominant, and hence the three primary triads present to us three clear contrasts: the tonic, stability and rest; the dominant, brightness and motion; the subdominant, dulness or cloud. It was this clouded effect of the subdominant, both as chord and as scale degree, which was evidently felt by the late Mr. Curwen, when he wrote as the mental effect of "fah" that it was "desolate or awe-inspiring."

As I said before, even if we smile at this ultra-picturesque description yet there is a germ of truth in it.

## 60 *The Teachings of Harmony as a Basis of Ear Training.*

The general effect of the subdominant triad we may thus take to be its dulness; and this is also apparent in the melodic nature of the fourth degree of the scale.

But harmony teaches us more than this. Let us sound again No. 8 pausing on the second chord. Is the ear at rest? No! it is not, but it feels instinctively that the simplest progression would be to follow the subdominant chord by the tonic, the fourth degree thus falling to the third. Let us examine other simple chord progressions in which the subdominant note occurs—

No. 9.

In No. 9, *a*, we have the dominant seventh in which the fourth degree is that discordant seventh, and therefore desires resolution by falling to the third. Wherever, in the dominant series of discords, the original seventh (the subdominant) is present, it will thus always want to descend. Thus in No. 9, *b*, we have the major ninth, where the *F* desires to progress downwards. At No. 9, *d*, we have the diminished triad, which is here of course only an incomplete form of a dominant seventh with the root omitted. Here also the subdominant descends. Even in No. 9, *c*, where *F* occurs as third of the supertonic triad, it still wants to descend.

Hence we may say that harmony teaches us that the effect of the fourth degree on the mind is "dulness," and that it has a desire or tendency to fall to the third degree. We have now to examine the other note of the subdominant chord—viz., the submediant—

No. 10.

Let us again hear the tonic chord, this time with the fifth degree at the top, and follow it by the sub-dominant chord with the sixth degree of the scale in the treble (No. 10), pausing on the second chord.

The ear is again *not at rest*, but desires that the tonic chord may be resumed as a point of rest, the sixth degree thus falling to the fifth of the scale.

We have now to examine other simple progressions to see if they substantiate this tendency of the sixth degree to fall—



In No. 11, *a*, we find that the triad of the sixth degree passes naturally to that on the mediant. The bass here rises a fifth; there is one note in common between the chords; it is the most natural progression from the sixth degree, *and*, in the melody, that degree *falls* to the fifth. In the second progression, at *b*, the sixth degree appears as the fifth of the minor triad on the supertonic, and that chord is followed in its most natural way by the dominant chord—in fact, we may regard this as the most usual use of the supertonic triad. Here again the sixth degree of the scale falls to the fifth, passing thus to a point of rest. On other occasions in the same progression we find the sixth degree passing up through the leading-note to find its ultimate goal in the tonic.

We may therefore rightly say that the sixth degree of the scale has a *general* tendency to fall to the dominant. As regards a distinct mental effect to the sixth degree we may seek in vain. It has been called in Mr. Curwen's description the "sad note." This definition is clearly based on the fact that the relative minor scale begins on the sixth degree of the major, and, as the minor mode is more melancholy than the major mode, the degree on which it starts—the sixth degree of the major—was called the "sad note." But this is illogical since we are treating of the sixth in its relationship to its tonic, and not when it has become itself the new tonic of a minor scale. Again, harmony teaches us that the sixth degree is far more often used *not* as part of the relative minor chord than *as* part of it, since it is the third of the subdominant chord and the fifth of the supertonic, and in neither of these chords does the sixth degree give the ear an idea of sadness, as the following simple melodic passages will at once show—



In No. 12, *a*, *c*, and *d*, the note A is naturally harmonised by the ear with the primary triad of the subdominant. At *b*,

## 62 *The Teachings of Harmony as a Basis of Ear Training.*

the progression shows the A in this example as part of the supertonic triad. In none of these cases does the sixth degree produce a "sad" effect on the mind.

Gathering together the results of our examination of the movements of scale degrees in the simplest harmonic progressions, we find that we have evolved an easy way for the young beginner in ear training by which each degree may be recognised.

Firstly, the degrees of the scale prove to be of two kinds in the effects that they produce on the mind: one class, which have been called the "strong notes," satisfy the ear, and consist of the tonic, which gives the most perfect idea of conclusion and rest; the dominant, which, in comparison with the tonic, sounds clear and bright; and the mediant, which sounds peaceful and calm. On these three scale-degrees, and on these only, the ear will rest satisfied and require no further progression. They are the three "points of rest" in the scale.

The other degrees are incomplete on the ear, and *require* further progression, and have for this reason been called the "weak notes."

Of these four, the leading-note, as its name implies, has a desire, or tendency, to lead up to the tonic; while the supertonic has a distinct tendency to *fall* to the tonic; the subdominant appeals to the ear by its dull or clouded effect and its desire to fall to the mediant; while the sixth degree—a rather colourless note—desires to fall to the dominant.

These deductions we are clearly entitled to make from the foregoing examination of simple harmonic progressions. I would, however, most emphatically ask that no one present should imagine that these tendencies and mental effects are *always* present. They are not, and no one would be so foolish as to say that they were. But this we can, and do say, that basing our suggestions on simple chord progressions, we have here a set of generalisations which will aid the young pianist or violinist to recognise and name the single degrees of the major scale.

To illustrate my remarks, I have brought with me a young pupil of about 14 years of age who has had *one hour's* total teaching in ear training, divided into twelve little lessons of five minutes each. I believe you will find her able to tell you accurately any degree in the chromatic scale that you may strike (having first given her the tonic) and also that she will be able to name every interval sounded between the tonic and any degree of the chromatic scale. And this is after *one hour's* teaching by means of the harmonic effects of the notes!

(Illustration with Miss Blakiston.)

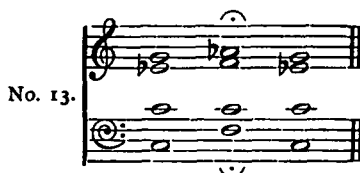
*The Teachings of Harmony as a Basis of Ear Training.* 63

Extending our examination of harmony to the chief chords of the minor mode we, of course, take the tonic minor; for if the essence of all music is the relationship which exists between the tonic, or key-note, and the various degrees of the scale, that essence is as essential in a minor as in a major, and therefore C minor and C major must be compared—not C major and A minor.

Comparing C major with the harmonic form of C minor, we find only two notes different—viz., E flat, the minor third of the scale, and A flat, the minor sixth of the scale. Tracing the origin of the scale in the primary triads of the key we find the tonic a minor chord, having the minor third as its middle note, this minor third imparting to the whole chord a more sad or melancholy effect than had the major chord. The key-note and the dominant retain exactly their former character, the one of finality, the other of brightness.

The dominant triad remains as in the major, and the leading-note still desires to rise, and the supertonic to fall.

The subdominant triad contains the flattened sixth degree, being F, A flat, C. The subdominant F retains its character of dulness and its desire to fall. Comparing the minor sixth with the major sixth, we find that the desire to fall to the fifth is greatly intensified in the minor sixth—



This imperative tendency of the flattened sixth to fall is borne out in every chord in the minor mode which contains that note—



In No. 14, *a, b, c, d*, we find this true, nor is it difficult to account for it, since in the majority of cases the flattened sixth degree may be traced to its derivation from the dominant root, from which it is the minor ninth. Hence its strong feeling of a desire to fall in resolution.

## 64 *The Teachings of Harmony as a Basis of Ear Training.*

But three other notes remain to complete the chromatic scale of harmony—viz., D flat, F sharp, and B flat. Of these the flattened seventh is easily recognised by the ear, since it builds with the tonic a minor seventh, desiring to fall, and so affording a strong contrast to the major seventh, which desired to rise.

The augmented fourth (F sharp) is seized on by the ear as being the leading-note to the key of the dominant, and thus, in its desire to rise, it contrasts itself with the diatonic fourth degree, which, with its dull effect, desires to fall.

Lastly, the flattened second degree (D flat), which harmony shows us is so often used as part of the Neapolitan sixth (as shown in No. 14, *d*), desires, though in a more intensified manner than did the second degree, to fall to the tonic.

We have now, by the teachings of harmony, been able to formulate a method by which our young pupils can tell us any degree of the chromatic scale which we may strike, always provided the tonic is first given.

Since the method is based entirely on the relationship of each note to its tonic, the pupil will, when once the plan has been mastered, be able as easily to work in one major key as in another.

(Illustration in the notes of the chromatic scale by Miss Blakiston.)

We are of course to-day only dealing with the *very* elementary work of ear training, and therefore, in conclusion, I shall very briefly show how the elements of harmony enable the pupil to tell intervals. These we will divide into two classes : those of which the tonic *is* the lower note, and secondly, those intervals in which it is *not* the lower note.

In preface to this portion of the work we may well remember that if it was true that the ear supplied harmonies of a simple nature to the single notes of every melodic passage, it is doubly true that the ear receives every simultaneous sounding of two notes—*i.e.*, every interval, as *part of a chord*. Therefore, if harmony has proved to be a basis of recognition by the ear of single notes, far more so will it be in the detection of intervals.

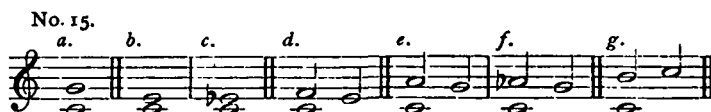
In the majority of cases the old mental effects which we found pertaining to the notes as scale degrees will be found still existing in intervals; but it must also be noticed that some intervals have in themselves so strongly a special harmonic effect that the melodic effect is overridden. Thus any minor seventh, as a part of a chord, has so marked a harmonic effect in the desire of the upper note to resolve downwards, that it will overcome the melodic effect of the upper note. Thus, seconds, sevenths, and perfect fifths often have harmonic tendencies, which supersede the melodic tendencies of the various notes of which they consist. It will



*The Teachings of Harmony as a Basis of Ear Training. 65*

be found, however, that in the majority of intervals this is *not* the case, and the old mental effects of the scale degrees will remain, and be of the greatest use in the determination of the interval.

Thus the perfect fifth between tonic and dominant is at once recognised by the bright mental effect of the fifth degree (No. 15, *a*)—



The major third (No. 15, *b*) still sounds calm and peaceful—in fact, I leave it to you to decide whether the third degree makes the interval calm, or whether the interval of the major third makes the degree calm! The minor third (No. 15, *c*) is sad and melancholy. The perfect fourth essentially desires the resolution of that fourth on to the third degree (No. 15, *d*). The major sixth (No. 15, *e*) desires to fall to the dominant, the minor sixth (No. 15, *f*) imperatively demanding to do the same thing. Even in the interval of the major seventh (No. 15, *g*), the tendency of the leading-note to ascend is not completely overcome, but the ear seems to grasp the seventh degree as a retardation of the tonic.



Of the other intervals from the tonic, the influence of harmony will be more directly apparent. Thus in the minor second (No. 16, *a*) the ear demands the resolution of the lower note a whole tone downwards to resolve it on a consonance—the minor third. In the major second (No. 16, *b*) the lower note has a tendency to fall a semitone, and is less fierce in its discordancy than was the minor second. The augmented fourth (No. 16, *c*) the ear seizes on as creating a modulation to the dominant, and it recognises the interval because of the desire of the two notes to *move away* from each other by a degree. Lastly, in the minor seventh (No. 16, *d*) the teaching of harmony and the desire of the ear for resolution agree, and the interval is known by the tendency of the upper note to descend and of the lower note to rise a fourth.

(Illustrations by Miss Blakiston.)

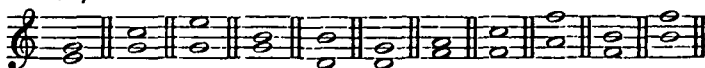
We have treated of the class of intervals arising between the tonic and the various notes of the harmonic chromatic scale. This scale, which ascends by flats with the solitary

## 66 *The Teachings of Harmony as a Basis of Ear Training.*

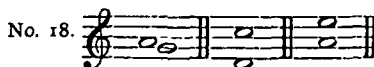
exception of the sharpened fourth degree, is, as Sir Hubert Parry says in Grove's Dictionary, "obviously the most consistent," since it was "such accidentals as can occur in chromatic chords without changing the key in which the passage occurs." It is very interesting to note that the ear, that infallible judge in all matters musical, fully endorses this; for it is in this way that each of the degrees of the chromatic scale will appeal to the ear. Thus C—E flat struck alone will never sound to the ear as C—D sharp; nor will C, F sharp sound as C, G flat and the upper note desire to descend instead of ascend.

I must not trespass on your time in dealing fully with intervals of which the tonic is *not* the key-note. Briefly let me point out that in these, as was the case in the other class, frequently the mental effects of the scale degrees will still remain. This is the case in all intervals derived from the primary triads, as No. 17 will show:—

No. 17.



In all these cases the ear can trace the notes of the intervals by their individual peculiarities. In other cases, the power of the harmonic effect of the interval will partially, if not entirely, override the more simple melodic effect of the scale degree. Thus, in No. 18—



each of the intervals has its own harmonic effect; but on hearing the tonic first the ear of the pupil will readily grasp some fact that will aid it, and thus by systematic practice every interval struck will be readily named. Further than this I must not go to-night.

What has been the object of our researches? To try and evolve from the harmony which is constantly surrounding our little pianists and violinists some few salient facts—"generalisations," if you like to name them so—which can aid the young ear to analyse the sounds it is hearing. Thus, by utilising the brain, as well as the ear, a far more intelligent pupil will be produced, the acuteness of perception will be greatly enhanced, because the pupil will not only interpret *symbols* into *sounds*, but also—the great reflex side—will learn how to interpret *sounds* into *symbols*.

The quick and ready way in which any well-trained schoolboard boy will name in his sol-fa the sounds sung

*The Teachings of Harmony as a Basis of Ear Training.* 67

to him must put many of us staff musicians to the blush. It need not do so, if we will take the matter up, and with our greater and more adequate knowledge of music will try to teach it on a rational plan. It is perfectly easy to do; in our desire to advance our pupils' musicianship it is demanded of us that we teach it them. Therefore, if in the very near future the great subject of ear training is not considered a *sine quâ non* for every young beginner when learning the *rudiments*, and for every student of harmony from the time he learns the *primary triads*, we have not done our duty to the great art of music which we profess to love and desire to serve.

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## DISCUSSION.

THE CHAIRMAN.—I am sure we are all much indebted to Dr. Sawyer for the very instructive lecture he has given us. He manages to put a great deal in a small compass, and I am sure you will all look forward to seeing this paper in print. I have always considered this subject as of supreme importance. I have had a great deal to do with it in the course of my life. For some thirty years ear training has been part of the musical work for every schoolmaster in the training college, and it is an essential feature of the Education Code under which some four or five millions of children have been plied with ear exercises throughout the country. Dr. Sawyer alluded to instrumentalists rather than the singer at large, and there undoubtedly he is right. The subject has been woefully neglected in these quarters. It bids fair now, I think, to be taken up; and with such teachers as Dr. Sawyer and Dr. Shinn about, I hope a great reform will be accomplished. The supreme question in relation to your exercises always will be how to arrange the order of teaching. Many efforts have been made during the last century to devise plans of ear training. Some of them go upon an apparently high logical basis, but are really governed entirely by the form of the notation which is used; and so you may pick up a book on ear training in which everything seems to be arranged admirably, and yet the method fails miserably when it is applied to the average pupil. That is because it has been governed more by the form of the notation than by what I may call the psychological treatment of the subject. There is really no rational way of approaching ear training, except by finding how the average pupil works; and the average pupil, I am sure, does not work by absolute pitch. Dr. Sawyer has told you so, and with his great experience

68 *The Teachings of Harmony as a Basis of Ear Training.*

and that of many others before us, we must conclude that we cannot base methods on the assumption that ordinary pupils can gain the sense of absolute pitch. There are two other courses open to us. We may observe the interval as perfect fifth, perfect fourth, major third, &c., without regard to the tonic. As every piece of music may be said to present a set of intervals, this method may seem feasible. The perfect fourth certainly has a definite, somewhat ghastly effect; the perfect fifth is comparatively bright; the major third is sweet; and so on. That was the plan adopted by some teachers. It is not possible now to give anything like a history of the subject. I am sorry Dr. Sawyer did not notice Ritter's Musical Dictation, which was published in Novello's Music Primers in 1887. It represents an honest and hard-working effort to bring the subject before the British musical public. But I am afraid that the public was not then in the mood to receive it. Unfortunately, Ritter bases his plan too much on the observation of intervals. He begins by asking the pupil to tell major seconds, minor seconds, and so on, and it looks very logical to take gradually larger and larger intervals till you get to the octave. But though I think the book deserves attention for many things in it, I must say I do not like the principle on which it is based. You can observe intervals, I think, pretty well, and can teach pupils to observe them when they are struck together; but it is much more difficult to take them in melody. Many, I think, hear the mental effect of the scale degree and afterwards translate it into terms of intervals. When C and E are struck together the memory is not called upon for the purposes of the comparison. It hears them both at once, just as when you see these two books together you have a clear idea of their relative size; but if I showed you one and a little while afterwards the other, it would not be so easy to decide. I noticed that the young lady you have just heard first had the notes played as scale degrees and then she named the intervals—minor sevenths, &c. But the main reason why melodic intervals are found difficult to recognise directly is that scale degree effect occupies the mind and draws attention from specific interval effect. The third plan is to try to awaken this sense of tonic relationship. That is the only plan that you can assume as possible on the part of the average pupil; and that, I am glad to see, is the plan which Dr. Sawyer has adopted and Dr. Shinn also, I believe, agrees. All music courses, no matter what their object, should include ear-training. If it is necessary for the training of children in elementary schools, it is necessary for our pianoforte pupils. I am sure we shall be very glad to hear other speakers; but, before I sit down, I should like to have the pleasure of proposing a very hearty vote of thanks to Dr. Sawyer.

*The Teachings of Harmony as a Basis of Ear Training.* 69

Perhaps Dr. Shinn will second that, and take the opportunity of letting us know what he thinks on the matter.

Dr. SHINN.—I think I should be particularly ungrateful, both to Dr. Sawyer and to yourself, if I did not rise to thank you for your generous references to me. It was Sir Walter Parratt who first introduced the subject of ear training to me, and my book on musical memory is dedicated to him as a slight recognition of what he did for me in this direction. His classes at the Royal College of Music are largely devoted to musical dictation exercises. With regard to Dr. Sawyer's method, I may say that very largely it is my own—at least, so far as regards the treatment of the tonic as the basis. At the same time I do not agree with everything he said. I am afraid there is not time to do justice to the paper in this respect, because we could very well go on discussing it all night. With reference to the tendency of the supertonic to fall, we find this note many times where it is not the last note but one of a melody and in such cases it does not suggest falling to the tonic; and I do not think the effect of the supertonic is necessarily to suggest a fall to the tonic as Dr. Sawyer seemed to think. Then in Example 5, *a*, he played only those two chords. I do not admit that the progression is in the key of C as it stands. The same holds with respect to 5, *b*. I do not mean to say that if he had prefixed the chord of C the effect would not have been as he represented it; but suppose he put the chord of C first, and then took the B down to A, I do not think it would be an unnatural progression. Even if you begin with the chord of C and then harmonise the leading-note with the dominant chord and take it down to A, I do not think it is at all unnatural. You speak of how we may base our teaching on more than one principle. If I might venture to speak on the subject, I think it is largely a matter of mental development. The historical development of music has been the gradual gaining of control by the human mind over the sensations of sound. The human mind developing through centuries has continually endeavoured to discover fresh combinations of sound, and as these new combinations came to the race, so, to a very large extent, they must come to the individual mind. The study of ear training is a vital part of the study of harmony. To make harmony the basis of ear training is somewhat analogous to taking grammar as the basis for the study of the meaning of words. You do not go to grammar to explain the meaning of a word; and I do not think you ought to go to harmony to explain the sound of a chord. Unless you take ear training as the basis of harmony, harmony is a non-musical subject. The two first examples strike me as illustrations of the influence of

## 70 *The Teachings of Harmony as a Basis of Ear Training.*

environment. Dr. Sawyer said *A*, is more readily grasped than *B*. That is because we hear it very much oftener. It has occurred in music so frequently that the human mind and ear have got to the condition of accepting *A* more readily than *B*. If Spencer's theory of heredity is right—and many men of science believe in Spencer—the human mind through generations has been familiarised with particular combinations and progressions, and we have inherited a tendency to accept what our ancestors accepted more readily than what is novel and unfamiliar. I think that is the foundation of the whole thing. It seems going a long way off, but I believe that is really at the bottom of the subject. Harmony must be taught as we teach ear training. You must introduce your chords to the ear first of all and then you introduce them on paper. We owe a great deal to sol-faists for what they have done; and I say this the more readily because I am not a sol-faist. Dr. Sawyer spoke about the chromatic scale, and said we would never think of C—E flat as C—D sharp. I think that is a matter which will depend on the influence of our environment upon us. With regard to C going to F sharp, I should not agree with him. I do not think we hear an augmented fourth more often than a diminished fifth. With regard to G sharp, I admit that an augmented fifth is a rarer interval than a minor sixth. The whole basis of the question is what one's mind is used to listen to and what is familiar to one. In seconding this vote of thanks I am sure that we all feel that we owe a great debt of gratitude to Dr. Sawyer. The paper is not one to be discussed at a moment's notice; but it is a paper we should all read carefully and from which we should learn something. With regard to this subject of ear-training, we seem to be passing through the second of those three stages mentioned by Herbert Spencer. A few years ago we were unanimous in our ignorance; our present stage represents the differences of opinion of the inquiring, and many are coming forward to tell us what they think best. Then in the third stage we come to the unanimity of the wise. I hope we shall some day reach that happy condition.

The vote of thanks was then passed unanimously.

Mr. W. HARDING BONNER.—One thing occurred to me while these illustrations were being given, and that is that two chords do not always mark a key. For instance, I heard No. 8 as clearly in the key of F. I think Dr. Sawyer should have played more chords in order to establish the key. I should always play five or six chords so that the pupil might have the key well established. The ambiguity is often heard in Tallis's Responses and similar passages in the Church services. I think Dr. Sawyer's plan is the right

one. We must begin with the very easy things. One of the critics, in reviewing Dr. Sawyer's new book, says that he thinks he goes too far in the subject of the mental effect of notes. Of course these things should be learnt in childhood; and if you commence at the beginning of musical knowledge you will find children will learn most easily from the scale effect. After they have thoroughly imbibed the mental effect of scale notes they can then go on to more difficult things; and there, I think, the study of interval comes in. The effect of chords depends very largely on the intervals contained in them; and in teaching chords it is always well to analyse those intervals. The different inversions have totally different effects, largely because of the different intervals introduced. The effect of interval is a strong point which we must not omit; but it is not wise to commence with it. Certainly the mental effect of the scale is the best way of training the ear at first. The question of the minor key we had better not go into. But the intervals of the minor scale certainly have a very different effect from those of the major. The effect of an interval, I agree, is not so obvious, because this effect of scale tone governs everything. This study is a most interesting one, and if care is taken in teaching children at the beginning, we find they can do a great deal more than we should expect from them. But later in life very little can be done, as a rule, unless pupils are gifted musically.

Dr. SAWYER.—I will not take more than a minute, because I think we have far too much encroached on the time of Mr. Rose, whom we are all looking forward to hearing. It is curious how we all look at the world from our own point of view. I looked at it from the point of view of staff musicians, which is the real musical world. Outside there is a small world who learn tonic sol-fa and know a little about the staff. Well, now, considering that not, perhaps, more than four or five per cent. of those children would ever learn the staff, the influence of that teaching is entirely lost when they leave the Board schools, whereas these children whom I have in view are all, or nearly all, familiar with the staff already. I entirely agree with Dr. McNaught about intervals. But it is most interesting to note what a different mental effect the same pair of notes have in different combinations. Sound B flat—G alone. They probably suggest the minor chord of G. Now add E flat below. You have the major chord of E flat. Or, instead, we may add C. The combination appears to be a dominant seventh in F. Or add A. It now appears as a dominant ninth in D. The effect of the two upper notes is wholly different in each case. I think the experiments I have made with pupils who have learnt that way is that they soon get very hopeless. With regard to the

72 *The Teachings of Harmony as a Basis of Ear Training.*

supertonic, Dr. Shinn must bear in mind that we should take the simplest possible progressions. I have used that basis now for the last ten years, and have never known it to fail at all in appealing to the ear of an instrumentalist. The proof of the pudding is in the eating. That is the point we want to get at. With regard to the teaching of harmony, that, of course, is the way in which I have applied it. I do not, of course, mean to say that these tendencies are always apparent. I have simply tried to evolve from the simplest passages that which will be of help to our little pupils. You noticed, time after time, that the student whom I questioned instead of telling what I wanted gave the name of the scale degree. I think the classes that are carried on at the Royal Academy of Music and the Royal College of Music, though they are taught by very able men, are not taught on the right system. The teachers have both of them a fine sense of absolute pitch, and they are not able to realise the difficulties that their pupils experience. I should, of course, have taken care to establish the key properly if I had had time, but I was obliged to give it you cut and dried. No. 5 would, of course, strike you as in E minor, if you were not previously led to C major; but that is a condition you were not intended to assume. I am very much obliged to you, because not a word seems to have been found fault with in the deductions that I have tried to make from harmony.

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