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A STUDENT'S GUIDE TO ORCHESTRATION

BY

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(PRICE FIVE SHILLINGS)

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To
Donald Francis Tovey, Mus.M.
Reid Professor of Music at the University of Edinburgh

In Gratitude and Admiration

PREFACE

IN the present contribution to the literature of the orchestra, I have embodied the results of long-continued observation in a series of chapters in which I review in turn the most important technical and psychological situations, often difficult to describe in words, that arise in the course of the progressive orchestration of musical ideas. Contrary to the usual practice of writers, who—with a few exceptions like Marx and Riemann—devote the bulk of their attention to the solistic properties of instruments, I envisage the latter as units of a corporate body, and allude to their individual characteristics only when essential to my purpose, or in order to draw attention to some feature insufficiently emphasised elsewhere. I venture to hope, therefore, that the present book may prove a useful supplement to the standard works on orchestration.

Although my book is rather the outcome of first-hand observation than of theoretical study, it would be churlish to omit all mention of the writers to whom I owe so much for the *guidance* of my observation. I enumerate them here, indicating with an asterisk those whose works are specially suitable for beginners:—

- Berlioz*, "Modern Orchestration and Instrumentation" (Novello).
- Bussler*, "Instrumentation und Orchestersatz" (Carl Habel, Berlin).
- **Carse*, "Practical Hints on Orchestration" (Augener).
- Corder*, "The Orchestra and How to Write for It" (Curwen).
- Forsyth*, "Orchestration" (Macmillan).
- Gevaert*, "Nouveau Traité d'Instrumentation" (Lemoine, Brussels).
- Hoffmann*, "Praktische Instrumentationslehre" (Dörffling & Francke, Leipzig).
- Marx*, "A Treatise on Musical Composition," Vol. 1 (Breitkopf & Härtel).
- **Prout*, "Orchestration" (Novello).
- „ „ „The Orchestra," 2 vols. (Augener).
- Riemann*, "Catechism of Orchestration" (Augener).
- Rimsky-Korsakoff*, "Principes D'Orchestration" (Edition Russe de Musique).
- Heinrich Schenker*, "Neue Musikalische Theorien und Phantasien," 3 vols. (Universal-Edition, Vienna).
- „ „ „Das Meisterwerk in der Musik," 2 vols. (Drei Masken Verlag, Munich).
- „ „ „Beethovens Neunte Symphonie" (Universal-Edition).
- D. F. Tovey*, Programmes of the Reid Symphony Orchestra Concerts, including monographs on Beethoven's Ninth Symphony and Missa Sollemnis.
- Villiers Stanford*, "Musical Composition" (Macmillan).

In examples 49, 56, 87, 90, 112, 124, 134, and 136, the transposing instruments are noted as such. All the other examples reproduce the actual notes sounded by each instrument.

JOHN PETRIE DUNN.

EDINBURGH, August, 1928.

CHAPTER I.

WHAT WE HEAR WHEN LISTENING TO THE ORCHESTRA

1. The constituents of orchestral music are the following :—

(1.) *Melody.*

I use the word in its widest sense. Melody may take various forms, ranging from the simple, symmetrical tune to the theme that is built up in successive instalments (motives or phrases), the cumulative effect of which is that of reasoned musical speech. Whatever form the melody may assume, it forms the surface of the music—that part of it to which the ear is instinctively attracted, and to which all else is subsidiary.

(2.) *Counter-melody.*

We possess the faculty of following two or more melodic threads simultaneously. This faculty, in view of the unique opportunities for polyphony afforded by the contrasting tone-colours of the orchestra, is exercised more frequently, and on a larger and more varied scale, in orchestral music generally than in any type of music not professedly contrapuntal; hence the extreme frequency of a counter-melody pitched either above or below the melody, or interwoven with it. Sometimes the counter-melody is of subordinate importance, sometimes it ranks equally with the melody. It is one of the most potent weapons in the composer's armoury, and many passages in orchestral masterpieces bear witness to its charm, its grandeur, and its dramatic effect.

(3.) *Harmony.*

(4.) *Rhythm and Movement.*

(5.) *Accentuation.*

This very important aspect of orchestration is discussed fully in the sequel.

(6.) *Tone-Colour and Timbre.*

This essentially orchestral aspect of the subject will shortly be dealt with. Suffice it here to say that the presence of this or that instrument in the scoring often is due to considerations of tone-colour rather than of part-writing or harmonic volume. The doublings, fillings, and reinforcements added for tone-colouring purposes are often relatively very powerful—more so than would be necessary were the composer aiming merely at harmonic richness.

(7.) *Atmosphere.*

This aspect is closely related to the foregoing. The orchestral atmosphere is continually varying in density. Sustained notes, *sotto voce* "asides," doublings in octave or in several octaves, passing reinforcements of notes and harmonies, create incessant variety and contrast, and imbue with colour the pencilled lines of the fundamental melodic and harmonic parts. In orchestral music, our faculty of *comprehensive listening* is exerted to the uttermost, and it behoves us to rid ourselves of the elementary conceptions of clarity of presentation which, rightly enough, hold good of the simpler vehicles of musical thought. The task of the listener is to follow the melodic thread through a multitude of atmospheric phases ranging from sunlight to twilight, from summer serenity to winter storm. The task of the conductor is to reveal the beauty and meaning of the orchestral colouring, while never permitting the melodic thread to be broken or submerged. The conductor is the viceroy of the composer.

CHAPTER II.

ORCHESTRAL HARMONY

2. Orchestral writing is based on harmony of three or four (less commonly two, five, or more) real parts. For the sake of the psychological effect, or in order to modify the tone-colour, or to secure depth, volume, or density of harmony—in a word, to take full advantage of the resources of harmony and tone-colouring afforded by the orchestra—the composer may double one or all of the parts in the octave or unison.

The nucleus of the harmony must be a correctly conducted progression, and the octave doublings, or any necessary re-arrangement of the added parts, must not do violence to the correctness of the original. The following is a typical instance of good orchestral part-writing :—

Beethoven, First Symphony, Introduction.

Ex. 1

[The pizzicato notes for the strings are omitted as they merely duplicate the wind parts.]

Beethoven here refrains from filling up the gap in the second chord by the insertion of the note A, for this could have been done only at the cost of harmonic purity, or by weakening other notes which he desired to sound clear and strong. In such situations, the impeccable conduct of the parts reconciles the ear to the hiatus in the harmony.

3. When doubling in one or more octaves, the composer suits the doubling to the instrument. He has the right to continue it an octave lower or higher than its authentic pitch, if thereby he can situate it more conveniently. This may lead to a passing interchange of parts, and occasionally to a slightly excessive doubling of one or the other, but these circumstances are outweighed by the improved melodic carriage of the parts.

Suppose, for instance, that the harmonic nucleus of a *tutti* were as in (1)—

Ex. 2

the result of the doubling of the bass and the melody would be as in (2). This, however, might involve the middle instruments in inconvenience, besides leading to undesirable effects of spacing and balance, bad melodic carriage of the parts, &c. If necessary, therefore, we re-arrange the middle parts in such a way as to make them move in small intervals:—

Ex. 3

Another arrangement would be to allow the tenor part to take over the melody together with the soprano, and then to add the note F by means of extraneous instruments. This would yield a still greater gain in conjunct motion —

In all three chords, the note F is a good doubling: in the first, because it is the bass of a cadential second inversion; in the second, because it is the root; in the third, because it supplies the missing fifth of the triad. And there is another reason just as weighty: the addition of the octave F by extraneous instruments not only completes the harmony but gives greater emphasis to the rhythm (*cf.* §§71, 72).

It is, of course, not implied that the above settings are the only good or possible ones. On the other hand, many circumstances can be imagined in which it would be undesirable to allow the heavier harmonic instruments (trumpets and trombones) to leap about in wide intervals for the sake of conserving the part-writing of the harmonic nucleus, and the above examples show how this may be avoided.

4. The number of the parts may be increased or diminished at any moment, provided that the alteration is effected in such a way as not to cause bad spacing of the harmony, or to make an "unstable" note (the leading-note, for instance) predominate unduly. In other words, one or more voices may be silenced, or a new part may be added; or, again, the doubling of a real part may itself become a real part.

Beethoven, First Symphony, Finale.

Ex. 5

Allegro molto

Bar 1.—Three real parts, the viola doubling the bass in the higher octave.

Bar 2.—The viola now branches off from the bass and adds a fourth real part to the harmony.

Bar 3.—The horns add two parts, but their rôle is not merely to thicken the harmony, but to reinforce the rhythm as well. They are, in fact, not only harmonic instruments, but instruments of percussion.

Later on I shall return to this extremely important aspect of the employment of instruments, the brass in especial.

5. In altering the number of real parts (*i.e.*, in transforming a real part into a doubling) the composer is largely influenced by the resultant spacing of the harmonies. A simple example from "Tannhäuser" will make this clear:—

Ex. 6

Sehr gehalten (Molto sostenuto)

The nucleus of this is the mainly four-part progression :—

Ex 7

In the first bar, parts 1 and 2 are doubled by trb. I. and II.

In the second bar, at the note C, trb. II. abandons part 2 and doubles part 4 instead; this is to avoid the doubling of the note A $\sharp$, which has the force of a leading-note. Trp. III. takes over the doubling of part 1, in order to allow trb. I. to double part 3 in its high and penetrating register.

In the third bar, trb. II. doubles part 3, in order to secure a better spacing for the last chord of the bar :—

Ex. 8

In bar 4, trb. II. again doubles the bass, for reasons of spacing :—

Ex. 9

We see, therefore, that when we quit the domain of elementary harmonic procedure (harmony without octave doubling, or so constituted that the doubling can be effected mechanically without inconvenience or bad effect), we are faced by a series of minor problems which oblige us, when once we have fixed our orchestral setting, to feel our way often from note to note.

6. The most important principles of orchestral harmony are the following :—

I.—When, for the sake of tone-colouring, richness, or atmospheric effect, a part is doubled in one or more octaves, the octave doublings rank—harmonically considered—as unisons.

In other words, the ear instinctively reduces a widely spaced harmonic progression to its nucleus of two, three, or more correctly conducted parts. In doing so it is greatly assisted by the contrasting tone-colours of the orchestra, and by the relative weakness of certain groups of instruments.

II.—Arising out of the foregoing, it often happens that the middle parts and even the melody encroach on the bass octave. The application of the above principle is therefore subject to the following precaution :—

The bass must assert itself as such ; that is, it must be sufficiently predominant to prevent the parts near to it from usurping its place.

The above principles permeate all orchestration and clarify countless situations which, looked at from the standpoint of the pianist, appear at first sight chaotic.

7. Many illustrations are called for here. The first is from the G minor Symphony of Mozart ; its nucleus consists of three real parts :—

Ex. 10

Allegro assai

Mozart orchestrates as follows :—

Ex 11

The flute and oboe parts are merely a condensed doubling of the violins. The bassoons likewise double, but at a distance of two octaves, which interposes them between the octaves of the bass. The effect, however, is not in the least confused, because the ear associates the bassoons harmonically with the upper wood-winds, and disintegrates them from the bass.

The bassoons give resonance to the tenor region without detriment to harmonic clearness; their extremely adaptable tone, like that of the horn, predisposing them for this rôle in orchestral harmony. True, it would be a very different thing if their parts were given to instruments of commanding power, for then impurity and confusion would result. Supposing, for the sake of argument, that a quartet of heavy brass were added to the scoring, the lowest instrument would inevitably be called upon to assist the bass :—

Ex 12

8. In the following example the bassoons double important notes of the string parts in the lower octave, and so involve themselves with the string basses. The effect is excellent :—

Beethoven, Pastoral Symphony, first movement.

Ex 13

Allegro ma non troppo

In the parallel passage in the exposition, the doubling of the melody in the lower octave is intermixed with the accompaniment. The collisions arising therefrom exist

only on paper, the wonderful organizing and classifying power of the ear enabling the melody and accompaniment to be heard as though the former lay entirely above the latter.

Ex. 14

Ob. *p dolce* *f*

Fag. *p*

Vl. *p*

Vln. *p*

Bassi *p*

9. The next example is even more drastic :—

Beethoven, Pastoral Symphony, second movement.

Ex. 15

Andante molto mosso

Clar. I *p*

Clar. II *p*

Fag. *p*

Fl. *p* *cresc.*

Hrn. *p* *cresc.*

Vl. I *p* *cresc.*

Vl. II *p* *cresc.*

2 Vcl. Soli con sordino *p* *cresc.*

Bassi *pizz.*

* Note in passing that such accompaniments, when performed by a large body of strings, are relatively far less obtrusive than when played on the pianoforte.

The nucleus of this eloquent passage is the following :—

Ex 16

I Melody

II Counter melody

III Middle Parts

IV Bass

Its components are four in number :—

IV., the bass, is a tonic pedal reiterated by the second horn, and touched in by the *ripieno* 'cellos and basses *pizzicato*. Recollect that the effect is the same as though the bass were sustained in long notes.

I., the melody, is doubled *two* octaves lower by the two muted 'cellos, for atmospheric effect. (The celebrated solo 'cellos, with their dark, willowy tone-colour, are a stroke of genius.) These instruments thus interpose themselves between the octaves of the bass.

II., the counter-melody, is doubled one octave lower by the bassoons, for the sake of balance and of warmth of tone-colour. Later on, it is suddenly taken up by the flute, in order to re-establish the pitch of the ensemble in consistency with the earlier course of the movement (bar 6, *seqq.*).

The lavish doublings cause many minute collisions between harmonic and non-harmonic notes. They produce no bad effect, thanks once more to the discriminating faculty of the ear.

10. The following passage comes under the same heading :—

Ex. 17 Wagner, "Die Meistersinger" Overture.

Here, the violins have the vital, *i.e.*, the leading melodic part. The horns double them in the lower octave and, in so doing, make rather untidy part-writing with the remainder of the brass. The ear, however, disregards this, for the violins and horns are heard as one, and the upper octave is authoritative for the conduct of the parts, just as though the horns were altogether absent :—

Ex. 18

Incidentally, this passage is a useful illustration of the fact that, in the *tutti*, the rôle of the horns is often differentiated from that of the trumpets and trombones, in that the former attach themselves to the strings or wood-winds, while the latter supply the middle register harmony. (Compare the exactly similar situation in the passage quoted in §100).

11. From several of the above examples it is abundantly evident that the middle parts and even the melody may at times overlap the bass, so that Rimsky-Korsakoff's rule ("Principes d'Orchestration," p. 73) that "the bass part should not intermingle with the other three" was unknown to the greatest masters of orchestral euphony. It is of course quite true that, in the nature of things, the bass is more often unencroached on by the other parts than not, and that when overlapping or encroachment occurs, the bass is usually standing fast and the other part moving, or vice versa, as in such simple and common situations as the following:—

Mozart, Symphony in E flat, first movement.

Ex. 19

Allegro
p

Beethoven, Pastoral Symphony, Finale.

Ex. 20

Allegretto

The condition on which the application of the present principle depends is the one already stated : that the lowest part or octave be sufficiently marked to ensure our hearing it as the real bass. If the higher doublings of this part were so numerous or so powerful as to place them on a footing of equality with the real middle part or melody, the result would simply be ungrammatical harmony. It requires but little insight into the nature of part-writing to realise the badness of the following progression :—

Ex. 21

The doubling of the progression G sharp-A in the higher parts would raise the bass into the prominence of a counter-melody. The correct conduct of the upper parts would, of course, be :—

Ex. 22

12. After what has been said, it will easily be recognised that in successions of chords of the sixth, or of the sixth and fourth, in which each part is doubled in the octave, the consecutive fifths formed by certain notes are ignored by the ear, and are therefore innocuous. Examples :—

Ex 23

Ex. 24

13. The question, to what extent consecutive fifths caused by the doubling of notes in less uniform progressions than the above are justifiable, is one which can be answered only on the merits of this or that particular case. The following, if played by instruments of the same type, would be a little crude, because the octave doubling that circumscribes the upper parts tends to draw attention to the fifths :—

Ex. 25

The following version would be more euphonious and also more interesting to the ear :—

Ex. 26

If, on the other hand, the tenor part (F-G) were assigned to an instrument of a different type, no exception could be taken to the progression.

14. Note that it is customary in chord progressions like the first-named to allot the imperfect consonances to instruments of the same type.*

Ex. 27

* V. the additional remarks on this subject in the Appendix.

CHAPTER III.

MINOR DETAILS OF ORCHESTRAL HARMONY

15. In pianoforte writing, the compass of the hand often renders it necessary to circumscribe every chord in the upper part by an octave. This is unusual in orchestral writing, except when all parts lie close together, as in the passage from Brahms quoted in §84. When the bass separates itself from the upper parts, the pianoforte type of spacing would sound thin and gaunt. Compare the following :—

Beethoven, Sonata, Op. 2, No. 2, second movement.

Ex. 28

(1) Pianoforte Spacing.

(2) Normal Orchestral Spacing.

In the vast majority of cases, the setting of such a passage would have to conform to the spacing indicated in (2).

This situation affords me an opportunity of pointing out that we have to consider every orchestral setting on its own merits, carefully segregating those which conform to a widely accepted principle from those which derive their very effect from their departure from the principle.

For instance, in the justly admired melody for strings and flutes in the slow movement of Mendelssohn's "Italian" Symphony (quoted by Prout in "The Orchestra," I., §86), we have an instance of pianoforte spacing: melody in octaves, bass in octaves, and flutes completing the harmony in quicker notes that lie between the octaves of the melody:—

Ex. 29

Andante con moto

Fl. *p*

Vl. I. *p*

BASSI

(col 8^{va}) sempre staccato e piano

The effect of this is extremely fine, and we have to reflect that a "well-nourished" middle part (*e.g.*, violas doubling the flutes in the lower octave) would have detracted from the solemn clarity of the chant. Exactly the right atmosphere is supplied by the silvery shimmer of the counterpoint of the flutes—the calmest of all instruments.

16. Although coming rather under the heading of Timbre, or Tone-Colour, the fact should be mentioned that to the vital or fundamental parts composers very often add thickening parts. These may take the form of a sustained note (very frequently allotted to a wind instrument), or of a very simple touching in of certain outstanding notes of the harmony or melody. The object of such additions is not to complete the harmony, but to secure either greater volume or smoothness of tone, or clearer definition of bass, melody, or middle part. A fine example:—

Beethoven, "Coriolanus" Overture.

Ex 30

Allegro con brio

Vl. I. *p*

Vcl.

Here, the smooth, subdued tone of the bassoon supplies the finishing touch, and steadies the figuration of the 'cello.

The following holding note for the horns in the middle of the harmony (for the sake of fullness and smoothness) is typical of passages to be found in every score :—

Beethoven, Second Symphony, Larghetto.

Ex. 31

This is an instance of orchestral atmosphere. The impalpable tone of the horn throws a gloss over the precise bow-strokes of the stringed instruments (*v.* §28).

17. The elaboration of a harmony, involving many non-harmonic notes, is often sounded together with the harmony itself, or with a stationary note or pedal point sustained by instruments of a different timbre.

Wagner, "Tannhäuser" Overture.

Ex. 32

In all such cases, the clash of the non-harmonic with the harmonic notes is simply non-existent.

The contrasting timbres of instruments render possible and even beautiful all manner of harmonic collisions which in pianoforte writing would be gratuitously ugly. The slow movement of Beethoven's "Pastoral" Symphony contains a number of striking illustrations of this.

18. The melodic treatment of the middle voices, even in the full orchestral *tutti*, is of very considerable importance. The rule here is very simple: make the middle parts as vocal, natural, and attractive to the player as possible. Crabbed, unlovely middle parts detract from the general effect, and chill the enthusiasm of the performer.

The fundamental principles here include some of those to which the student is introduced at a very early stage—namely, in the *cantus firmus* of Strict Counterpoint: the avoidance, as far as possible, of augmented intervals, good balance of melodic line, and the judicious blend of conjunct and disjunct motion.

Take, for instance, Wagner's treatment of the middle parts in his "Meistersinger" Overture. Not only does he succeed in making his accompanimental parts sound natural and flowing, but he frequently crosses the parts with one another so as to avoid the iteration of notes and give the more obscure instrumentalists something interesting to perform. And even when the middle parts cannot be made interesting, they at all events make sense.

For example, Wagner will take the trouble to write—

Ex. 33

in order to make the individual parts more interesting, and to inspire the player to greater distinctness of "attack."

The spacing of the harmony in the scores of the great masters can often be accounted for by their desire to render the conduct of the individual parts as rational and as attractive to the performer as possible.

CHAPTER IV.

TIMBRE AND REGISTER, GENERAL REMARKS

19. The timbre and registers of all the orchestral instruments have been so vividly described by all the outstanding writers on orchestration that it remains for me only to survey rapidly certain aspects of the subject that commonly escape the notice of the student.

Waiving for the moment the instruments of percussion, we may characterise the three main orchestral groups as follows:—

Strings: the "Universal" Instruments.

Wood-Winds: the "Soft" Instruments.

Brass: the "Hard" Instruments.

The horn occupies an intermediate position, in that it is as much at home in the wood-wind family as amongst its natural kinsfolk.

The Strings.

20. The Strings have a much wider dynamic range than the wind band. Their *fortissimo* is a tempest, but they can soften their tone in all registers to the merest shadow of a sound, hence the relatively good effect of closely spaced string harmony in low register.* The registers of stringed instruments are markedly distinctive, and yield a variety of beautiful tone-colours, but the homogeneity of the string band is so perfect that glaring miscalculations such as can easily occur in wind ensembles are almost impossible.

21. A special phenomenon of string tone must here be considered, namely, the "fluffiness," the nervous, quivering restlessness of the violin as compared with the liquid jet of sound poured forth by the wind instruments. It is as though the tone of the violin consisted of a sonorous central core surrounded by a halo of vague, vibratory sound. This is not in the least to disparage the tone of the stringed instruments; it is simply to state a fact that accounts for its unique effect on our senses. For the orchestrator, the practical outcome is that, waiving such spacings of chords as are entirely irrational, because contradictory to the musical situation, there is comparatively little danger that string harmony will sound thin or ugly, provided that the approach to difficult intervals, the correct preparation and resolution of discords, &c., are correctly managed.

22. The characteristic vibratality of string tone is enhanced by rapid movement. The rushing string passages in the *Coda* of the third "Leonora" Overture fill the air with sound, and the *Minuet* of Mozart's G minor Symphony, in which the strings sweep up and

* Tschaikowski, "Pathetic" Symphony, concluding bars.

down in large intervals, is almost incredibly powerful. Again, we might expect the following passage from the "Fantastic" Symphony of Berlioz to sound clear and transparent :—

Ex. 34

Allegro agita.

The musical score for Ex. 34, titled "Allegro agita.", is a short orchestral excerpt. It features a complex texture with many notes and rests, characteristic of a "pizzicato" effect. The score is written for a full orchestra, including Flute (Fl.), Oboe (Ob.), Clarinet (Cl.), Bassoon (Fag.), Violin (Vl.), Viola (Via.), and Cello/Double Bass (C. B.). The tempo is marked "Allegro agita." and the dynamic is "mf". The score shows a complex, dense texture with many notes and rests, characteristic of a "pizzicato" effect.

In point of fact, it sounds rather opaque.

It is the admixture of a subordinate part for a stringed instrument (chord figuration, tremolo, or even an isolated note or double stop) that often renders it difficult for the ear to analyse the sound and determine the exact disposition of the scoring. The presence of string tone makes for density, opacity, and vagueness of tone-colour. This tincture of agitation or fluttering excitement is often artistically desirable as a stimulus to the tone of the winds, which—*collectively speaking*—are more placid and matter-of-fact than the strings.

The Tremolo.

23. The *tremolo* magnifies the vibratory effect of string tone and the density of the ensemble. *Ceteris paribus*, it is more difficult for other instruments to make themselves heard against a *tremolo* than against a sustained chord for strings.

The Pizzicato.

24. The *pizzicato* transforms a bowed instrument into one of the harp type, or into a percussion instrument pure and simple. The sound loses practically all its sustaining power and becomes the embodiment of *staccatissimo* tone-production, while retaining all the tonal precision of the bowed note.

In *pp*, the *pizzicato* is of æthereal delicacy ; in *p* and *f* it is dry, precise, and neutral ; in *ff* it can be almost surprisingly explosive, more especially in high pitch.

It is noteworthy that the stringed instruments each assert their characteristic timbre in *pizzicato*, notwithstanding the extreme brevity of the sound. The first string of the viola has a fascinating metallic ring, the third and fourth strings of the violoncello are resonant and thudding, while its first and second strings sound very graceful and pure—rather like

the harp, only drier and more *staccato*. The *pizzicato* of the double-bass is so resonant that it represents the standard means of giving just the necessary degree of weight and precision to the bass, when bowed notes would sound too heavy.

The *pizzicato* of the string band, while conserving harmonic clearness, enables delicate wood-wind detail to be followed with perfect ease, hence the extreme usefulness of this vehicle of harmonic accompaniment.

The Wood-Winds.

25. Double-bassoon, bassoon, and all the members of the oboe and clarinet family have a resonant low register. The lowest notes of the horn, in *piano* smoother and more reticent than those of the other instruments, possess a most beautiful dark sonority. It follows, therefore, that low-pitched ensembles of all or several of these instruments are resonant, both in close and in extended spacing. The high register of the double-bassoon, the middle register of the bassoon, bass clarinet, and clarinet, and the low and middle register of the flute and piccolo, are mild. The middle register of the oboe and cor anglais is vibratory, plangent, and penetrating, but is capable of great tenderness. The soprano register of the clarinet is bewitchingly soft in *piano*, and clear and ringing in *forte*. The high register of the flute, clarinet, and oboe, is brilliant, ringing, or shrill. That of the piccolo has a pebbly hardness of delightful effect in *piano*, and extremely penetrating in *forte*. The highest register of the bass clarinet and the cor anglais is slightly dull and undistinguished. The middle register of the horn has very great command of light and shade, and is highly adaptable; in *p* and *pp* its limpid purity is rivalled only by the clarinet. Its high notes are a little tight and strained.

The Heavy Brass.

26. The tone of the trumpet and trombone in high register is metallic, firm, and clear, and—in *f* and *ff*—extremely powerful. These qualities experience a progressive reduction as the instrument descends to its middle and low register, in which latter the *forte* acquires a certain hoarseness and unsubstantiality.

In the case of the tuba, the last remark holds good only of the very lowest notes of its scale. Its tone is uniformly round and musical throughout its practicable compass, and is slightly broader and heavier than that of the trombone.

Except in their highest register, all the instruments of this class have an admirable command of *p* and *pp*.

CHAPTER V.

GUIDING PRINCIPLES OF TIMBRE AND REGISTER

27. Every instrument asserts its timbre most clearly when entirely unaccompanied, or when separated by a wide interval from its accompanists.

28. When two or more instruments are combined, each imparts a measure of its own timbre to the other, and the result is a blend or compromise of timbres. The blending is the more complete the closer together the instruments lie, and is most complete when they are playing in unison. Thus, a flute playing in unison with the violin imparts some of its smoothness to the vibratory violin tone. "Wind tone solidifies string tone."

29. Soft instruments soften hard instruments, and vice versa.

Thus, a trumpet or trombone by itself sounds "hard." Double it in unison by the horn and the result is a big volume of tone that is less round and pure than that of the horn, and less hard and imperious than that of the trumpet.

30. Instruments of the same family amalgamate best, *e.g.*, clarinet and bass clarinet, oboe and English horn, trumpet and trombone.

31. Instruments amalgamate best in corresponding registers. The combination of contrasting or contradictory registers, however, yields all manner of interesting tints, nor is it always possible or desirable to be consistent in the combining of registers.

Observe, in this connection, that the high notes of low instruments sound higher than the same notes performed on the low register of high instruments. Centre C, for example, sounded on the violoncello or bassoon, sounds higher than if sounded by the violin, flute, or oboe. This well-known fact is accounted for by the sensation of effort attending the production of the high notes of instruments—the wind instruments in especial (*v.* §119).

32. Contradictory registers are most strongly felt in the wood-wind family. Instances are: the combination of the soprano register of the clarinet with the glassy middle region of the flute ("vox humana" effect); the middle register of the oboe with the lowest notes of the flute (solemn); the high notes of the bassoon with the low notes of the flute (peculiar, eerie).

The brass are far more homogeneous than the wood-winds ; so are the strings, but here, too, we must carefully impress on our ear the effect of contrasting registers, *e.g.* :—

Ex. 35

Normal quiet sonority.	Reserved, aloof, through viola.	Poignant, through violoncello.

Viol. I Vla. Viol. II Vcl.	Vla. Viol. I Viol. II Vcl.	Vcl. Viol. I Viol. II C. B.

33. The doubling of a part in unison by two or more instruments generalises it, *i.e.*, it gives it greater power and breadth, but neutralises the personal shades of expression inevitably imparted to it by a solo player. Excessive unison doubling sullies the prevailing tone of the orchestration and wearies the ear. To be permanently attractive, an orchestral work should contain an abundance of passages in which the compact mass of the *tutti* and large ensemble is relieved by solistic or antiphonal phrases in which the wood-wind instruments and the horn can display, be it only for a few bars, their unique individual qualities of timbre and expression.

34. The doubling of a part in the lower octave dignifies it and darkens its colour. Doubling in the higher octave brightens it greatly.

35. Instruments assert their timbre more strongly in *tenuto* than in *staccato*. The *staccato* neutralises or levels timbres of contrasting quality. *Staccato* chords, for example, sound more homogeneous than *tenuto* chords.

A special instance of this calls for notice here. In *tenuto*, the strings and the heavy brass combine only indifferently well, and are heard, so to speak, concurrently and separately. In isolated or *staccato* chords, however, they amalgamate very satisfactorily, *e.g.* :—

Ex. 36

36. Wood-wind instruments not only combine uniformly well with stringed instruments, but they serve as intermediaries between the strings and the heavy brass. The bass trombone, for example, combines better with the string basses when the latter are doubled in unison, or otherwise seconded by one or both bassoons.

37. All combinations of timbre are possible, and there are but few that could be described as ugly or worthless. Between instruments, as between individuals and nations, there subsist all manner of subtle mutual affinities.

CHAPTER VI.

BALANCE OF TONE

38. *The Strings.*

In a well-found symphonic orchestra, the strings are a homogeneous assemblage of instruments, and no problems of balance arise that cannot be dealt with by the ordinary give-and-take of ensemble playing.

The first string of the first violins is, on the whole, the most powerful thing in the orchestra, and can hold its own against all the other instruments combined. In almost every large *tutti* (more especially when the heavy brass is involved) it plays a leading part, and for various reasons (§86, end) is very frequently doubled in unison or octave by the remaining violins, the violas, or one or more wind instruments.

The other strings of the violin are inferior in penetrating power. That is to say that a passage not lying on the first string is drowned or obscured by closely-spaced harmony for wood-winds, horns, and trumpets (and, *a fortiori*, trombones), more especially when accompanied by a drum roll.

39. *The Brass.*

The trumpet and the trombone are equally matched in every degree of loudness. In *forte*, and especially in *fortissimo*, they are more powerful than the horn, for which reason the latter is then usually doubled in unison (*see* the examples of spacing, §60).

40. *The Wood-Winds.*

Generally speaking, wood-wind harmony is well balanced when the instruments involved are playing in equivalent registers. The principal danger to good balance lies in the different timbre of the oboe and the flute, which causes the former instrument to predominate somewhat when both lie close together and are pitched high, but it is for the conductor to take measures towards rectifying this defect. The combination of flute and oboe is so charming that it would be absurd to restrict its employment because of a danger that can easily be averted by a little goodwill on the part of the players.

In larger wind ensembles, the supremacy of the flute is often ensured by doubling it in unison or octave by another flute, or by the oboe or clarinet.

As the lower register of the flute is relatively weak and glassy in tone, a solo passage in that region calls for a very gentle accompaniment, as in the *Trio* of Mozart's C major Symphony :—

Ex. 37

41. When the horn takes part in a wood-wind ensemble, it is treated as equivalent in power to a wood-wind instrument. In high register, however, it tends to predominate.

* * * * *

I come now to the balancing of one group with another.

42. *Strings and Brass.*

The strings and the brass are fairly equally balanced, nor must it be forgotten that their timbre is so markedly distinct and the rôles allotted to them in the *tutti* as a rule so different, that each group asserts itself adequately without prejudice to the effect of the other (see also §35).

The trumpet or the trombone is very seldom employed to supply an additional harmonic part to the strings. Its great dissimilarity of timbre would cause the added part to appear as an effect of tone-colouring, rhythm, or atmosphere than as a harmonic part proper.

43. *Wood-Winds and Brass.*

In *piano* and *pianissimo*, the wood-winds and the brass are more or less equally matched. From *forte* upwards the balance of power inclines more and more to the side of the brass. In the following progression from the "Ruy Blas" Overture of Mendelssohn, for example—

Ex. 38

the wood-winds broaden and generalise slightly the tone of the brass, but all that is distinctly perceptible is the reedy resonance of the bassoons. If flutes were added, and the upper parts re-arranged thus—

Ex. 39

the wood-winds would assert themselves more, but their parts would impress us rather as the overtones of the brass harmonies than as the equivalent of the latter. In other words, the trumpets would still remain the leading melodic instruments.

44. *Strings, Wood-Winds, and Horns.*

In *forte* harmony, the violin is approximately equalled by two wood-winds playing in unison, or by one horn; in *piano*, one oboe, clarinet, bassoon, or horn is usually sufficient for harmonic purposes. If, for example, five-part harmony is required, the fifth part may be allotted to a single wind instrument in *piano*, or to a brace of wind instruments in *forte*. (Even in *piano* the wind instrument in question is sometimes doubled in unison when playing in its softest register.)

The following passage is perfectly balanced and of exceptionally good effect :—

Wagner, "Die Meistersinger," Act III, shortly before the Quintet.
Ex. 40

The fifth part is here supplied by one horn. Its place could be taken by one bassoon (or by two clarinets) without detriment to balance, and with but slight alteration of tone-colour. Observe that the two most important middle parts are assigned to the second violin and viola, it being the normal procedure to assign to the extraneous instrument the less vital notes, such as the fifth of a triad, or notes already present in the other parts.

The horn and the wood-wind instruments (especially the bassoon and the clarinet) assimilate themselves so perfectly to the tone of the strings that, if rationally pitched, there need never be any fear of their assuming undue prominence.

45. From what has been said in the above, it should not be inferred that a string chord is equalled in power by a group of wood-wind instruments playing the same notes. In *forte*, at least, the wind band requires to be much more heavily manned, and the spacing to be far closer, if wind harmony is to hold its own against that of the strings. The latter are inherently powerful, whereas the wood-winds become so only by cumulation and concentration.

Here we must note another important fact. The dynamic range of the wood-wind band is narrower than that of the strings, in the direction of *piano* and *forte* equally. Curious situations arise out of this. In the following progression, for instance—

Ex. 41

The musical score for Ex. 41 is arranged in two systems. The first system includes staves for Flute (Fl.), Oboe (Ob.), Clarinet (Clar.), Horn (Hrn.), Bassoon (Fag.), Violin I (Vl. I), Violin II (Vl. II), Viola/Div. (Vla. div.), and Cello/Double Bass (Bassi). The second system includes staves for Violoncello (Vcllo) and Double Bass (Bassi). The score is in 2/4 time with a key signature of one sharp (F#). The first system starts with a *f* (forte) dynamic, and the second system starts with a *pp* (pianissimo) dynamic. The woodwinds and strings play a similar harmonic progression, with the woodwinds playing a more complex, multi-note chord in the first system and a simpler chord in the second system.

the strings preponderate over the wood-winds. In the bar marked *pp*, however, the strings recede into the background, whereas the wood-winds, being collectively inferior to the strings in their command of *decrescendo*, stand out and appear relatively powerful, even though the players may be trying their hardest to moderate the power of their instruments.

46. The balance of power between the strings and the wood-winds is a topic on which all writers have bestowed much attention. The following general principles will be found useful :—

1. The inferior power of the wood-winds makes itself felt principally in *fortissimo* and *forte*. In *piano* the two groups are fairly equally matched, while, in *pianissimo*, the balance inclines more and more to the side of the wood-winds.

2. In *forte* the wood-winds cannot assert themselves *thematically* against thick *tenuto* or *tremolo* string harmony at the same pitch, although they can make their presence felt in other invaluable ways (tone-colour, volume, movement, atmosphere). This is especially the case when one or both violins are playing on the first string.

3. On the whole, the strings assert themselves most powerfully when moving rapidly (*tremolo*, *figuration*), whereas the wood-winds are most powerful when standing still (*tenuto* harmony).

In the following passage the tone-colour of the six wood-winds is palpably felt :—

Ex. 42 *Beethoven, "Eroica" Symphony, 1st movement.*

This musical score for Example 42 shows a passage from the first movement of Beethoven's "Eroica" Symphony. It features six woodwind parts (2 Flutes, 2 Oboes, 2 Bassoons, 2 Trumpets, and 2 Horns) and string parts (Violins I and II, Viola, and Basses). The woodwinds play a melodic line with long, sustained notes, while the strings provide a rhythmic accompaniment. The dynamic marking *f* (forte) is present.

Now suppose the passage re-arranged in such a way that the wood-wind and violins ran thus :—

Ex. 43

This musical score for Example 43 shows a re-arranged version of the passage from Example 42. It features three parts: 2 Flutes and 2 Oboes, 2 Bassoons, and Violins. The woodwinds and violins play a melodic line with long, sustained notes, while the bassoons provide a rhythmic accompaniment. The dynamic marking *f* (forte) is present.

Even if the brass were silent during the two bars, the sense of the passage would be inverted, in that the violins would appeal to us as the leading (thematic) part while the wood-winds, although audible to a listener intent and forewarned, would appear microscopic by the side of the strings. This would still be the case even though clarinets were added to the score. If, however—for the sake of argument—a piccolo doubled the flutes in the higher octave,

the balance would be considerably better, for in that case the violins would lie below the highest wind part. And if, in addition to this, the horns were conducted melodically—in some such fashion as this—

Ex. 44

the wind band would be sufficiently prominent to ensure its being heard thematically. Nevertheless, with all these aids to distinctness, it would still fall short of the resolute, masterful diction of the stringed instruments.

4. In the accompaniment, the *staccato* and everything of the nature of *staccato* (rests and intermissions in general) are eminently conducive to the clearness of the leading part.

In the following passage from the "Marcia Funebre" of the "Eroica" Symphony,* the delicate articulation of the string parts is of immense assistance to the ear :—

Ex. 45

Ex. 45 is a musical notation for a passage from the "Marcia Funebre" of the "Eroica" Symphony. It shows a multi-staff arrangement. The top staff is for Oboe (Ob.) and Horn II (Hrn. II). The middle staff is for Violin I (Vi. I) and Violin II (Vi. II). The bottom staff is for Viola (Vla.) and Basses (Bassi). The notation includes various musical symbols such as notes, rests, and articulation marks, illustrating the delicate articulation of the string parts.

We have only to imagine all the string parts played *legato* to realise how tame and flat would be the effect, and how much less conspicuous the entries of the solo wind instruments.

* The whole context should be consulted.

In the same connection, note that a composer will often write—

Ex. 46

rather than—

Ex. 47

in order to create at regular intervals those gaps in the accompaniment which are so immense an aid to the ear in following the trend of the melodic part.

The second subject of the *Finale* of Tchaikowski's E minor Symphony, in which a few solo wind instruments stand out with absolute distinctness, supplies an excellent example of the employment of rests in the interests of clearness.

CHAPTER VII.

FURTHER INFLUENCES REACTING ON BALANCE OF TONE

47. *The remoteness of the melodically important part from the others.*

The wider the dispersion of the parts, the more clearly can each be heard, and vice-versâ. Thus, a flute lying high can compete with the strings when pitched low.

48. *The relative weight of the instrument or group of instruments to which the melody is confided.*

Thus, a horn—and still more a trumpet—can, if necessary, easily make itself heard as a solo instrument, even when occupying a middle part.

49. *The register of the instrument or instruments to which the melody is confided.*

If the melody lies in the weak register of an instrument, it must not be accompanied by powerful instruments or by the powerful registers of other instruments. Thus, a clarinet playing in its middle register, if placed between the violins, would be heard as a subordinate harmonic part. If intended to be heard as a solo instrument, the correct balance could be obtained only by the commonsense measure, which, of course, is always at our disposal—that of making the accompanying instruments play much more softly than the solo instrument. This would require to be expressly indicated by the composer or enforced by the conductor.

50. *Contrast of Timbre.*

A contrasting timbre, when of a penetrating kind, tends to stand out, wherefore it behoves us not to assign meaningless or undignified parts to the oboe, trumpet, trombone, or even to the horn, when for other reasons there is any danger of their standing out prominently.

Secondary parts, when confided to powerful or penetrating instruments, should be either simple and dignified, smoothly flowing, or vocal in character, *e.g.* :—

Mendelssohn, "Italian" Symphony, 1st movement.

Ex. 48

The musical score for Ex. 48 is written for three parts: Violins 1 & 2 (Vl. 1, 2), Oboe (Obce), and Viola/Bass (Vla. Bassi). The key signature is one sharp (F#) and the time signature is 4/4. The music is marked with a piano (*p*) dynamic. The Violins play a melodic line with eighth and sixteenth notes, while the Oboe and Viola/Bass provide harmonic support with sustained notes and chords.

51. *Contrasting Movement or Rhythm.*

Too great reliance must not be placed on this, for experience teaches us that many passages which, in the printed score, at once leap to the eye by reason of their shorter notes and quicker speed, are often practically inaudible in performance because they are absorbed by the more deliberate and sonorous notes of the adjoining parts. In estimating the relative penetrating power of such passages, we must fall back on the general principles already enunciated :—

Ex. 49

Allegro

(a) Very indistinct (b) More distinct (c) Distinct

Clar. in A

p or f

Vl 1 & 2

p or f

Vla. Basses

p

Via.

p

Cello

staccato

The last example demonstrates what has already been said—that a *staccato* accompaniment is far less overpowering than a *legato* one.

52. Two further hints :

1. When a middle part is intended to sound prominent, the neighbouring parts should not encroach upon it. Ex. 49 (b), above, illustrates this.

2. Similar timbres absorb each other. An important middle part assigned to a wind instrument should not be enveloped in wind tone, unless a special effect of atmosphere, sonority, or colour is desired. So also, *mutatis mutandis*, with string tone. (A violoncello, playing on the first string, can, however, easily predominate over the violin and viola in their middle register.)

It is, however, hardly necessary to state that when an alto or tenor melody is confided to a powerful instrument or to several instruments in unison (*e.g.*, 'cello and bassoon, viola and English horn, 'cello and horn, &c.), fewer precautions are necessary.

53. In conclusion, it should be said that no aspect of orchestration is so difficult to discuss as that of balance, for the purely material side of it is beset by considerations of register, timbre, and movement, and is still further complicated by the psychological factors which I deal with in Chapter XV.

Over and above this, I would remind the reader of what was said in §1—that in listening to the orchestra, our comprehensive faculties are exerted to the uttermost, and that a problem of balance is often a question not merely of what instrument or group shall be

the victor, but of the total effect which the orchestral harmony with its bass and its tiers of doublings is intended to produce. To take a very common case: a violin melody in middle or low register is accompanied in four-part harmony by the remaining strings and the softer wind instruments, and is doubled in the higher octave by the flute, or by flute and oboe. (For an example, *see* the "Academic" Overture of Brahms, shortly after letter E.) What instrument is here the victor? None; and it behoves the listener not to mar his enjoyment of the music by futile speculation, but to take in, with impartial ear, the fine broad neutral tint of the entire ensemble.

CHAPTER VIII.

SPACING AND SONORITY

54. We have now to consider the effects of sonority produced by the various spacings of the orchestral ensemble. The only general statement possible here is that the upper parts are usually spaced more closely than the lower. Individually considered, the following spacings are at our disposal:—

- a. The extended spacing of low sounds produces gravity, grandeur, and resonance.
- b. The extended spacing of middle-region sounds produces normal, calm, dignified sonority. (According to the instruments employed, it may sound weak or dull.)
- c. The extended spacing of high sounds is bright, calm, æthereal, or transparent, but it may sound thin, hollow, or weak, if misapplied.

- d. The close spacing of low sounds, such as occurs often in pianoforte writing, is abnormal in orchestration. It sounds opaque, gloomy, mysterious, menacing, or turgid, according to the instruments involved.

e. The close spacing of middle-region sounds is rich, solid, sonorous, or powerful.

f. The close spacing of high sounds is brilliant, penetrating, or shrill.

Generally, therefore :

g. The more we reinforce the lower tiers of an ensemble, the heavier do we make it ; the more weight we give to the middle tiers, the more sturdy and strenuous does it become ; the more we strengthen the highest region, the brighter, harder, more brilliant, or more strident do we make it.

To this may be added :

h. Extended spacing is of better effect in the string and the brass than in the wood-wind band. Apart from special effects of colour and atmosphere, wood-wind writing is normally of close texture.

55. In addition to the above, we have to take into account the effect of :

a. The Intervals Sounded.

Seconds, thirds, and fourths, when pitched high, are brighter in sound than their inversions ; when pitched low, they sound heavy and dull.

The octave is inherently a majestic interval. Octave doubling is grander than unison doubling. This, of course, is a matter not merely of sonority but of expression as well.

b. Register.

The " placing " of each instrument in an ensemble modifies the total effect, according to the register in which it is playing.

If the student will keep the above general principles in mind, he will be greatly aided in forecasting the effect of a score which he is about to hear for the first time. Some practical examples may now follow. It should be noted that they are intended to exemplify different types of spacing, and not merely the orchestration of given chords.

CHAPTER IX.

EXEMPLIFICATION OF THE PRINCIPLES OF SPACING

The Strings.

56. Extended Spacing :—

Ex. 52

Sombre. Solemn. Lighter. Solemn. Sonorous. Beautiful, pure sonority. Subdued. Normal, well-balanced sonority. Broad and calm.

Viol. I. Viola. Violoncello. Basses.

Serene. Light. Bright and penetrating. In forte, fairly powerful. In piano, suggestive of remoteness.

Viol. I. Viol. II. Viola. Violoncello. Basses.

Aetherial. Grand. Powerful.

Viol. I. Viol. II. Viola. Violoncello. Basses.

Close Spacing :—

Ex. 53

Opaque. Rough in forte, woolly in piano. Sombre. Gloomy in piano. Rich and powerful in forte. Slightly rough in fortissimo. The same. Harder. Rich. Dignified.

Full. Not very powerful. Sonorous. Rather more powerful. Soft and full. Slightly metallic timbre, owing to Viola. Powerful. Sharp. Commanding. Dense. Bright.

57. As regards closely-spaced string ensembles in which the violins and violas are divided, it should be noted that the division of the parts thickens the ensemble, but somewhat reduces its energy and penetrating power. For this reason, string ensembles that occupy a large vertical space are almost always eked out by wind instruments. (Cf. §61, the quotation from Schubert's "Unfinished" Symphony.)

58. Whenever the violoncello is uppermost, it outlines the melody with a beautiful metallic resonance. The same holds good, but in a far more subdued and reserved way, of the viola, especially when playing on the first string.

59.

Wood-winds, with or without Horns.

Ex. 54

Very resonant. Resonant. Reedy. Full. Softer and smoother. Unobtrusive. Very soft. Aqueous.

Bright and ringing. Refined. Rather pointed. Bright. Powerful. Sharp. Sonorous. Luminous. Picc.

The Brass.

60. The heavy brass (Trp., Trb., Tuba), if spaced widely, sounds majestic in all degrees of loudness and softness. Spaced closely in high register, its effect in *forte* is extremely loud; in low register it is menacing and awe-inspiring, but even in *fortissimo* much less overwhelming than in high register.

Ex. 55

Ex. 55 illustrates various brass textures and dynamics. The first system shows five measures with the following characteristics:

- Gloomy.** *p* (piano): Trb. and Tuba in low register.
- Formidable.** *ff* (fortissimo): Trb. and Horn in low register.
- Thick. Menacing.** *f* (forte): Trb., Horn, and Tuba in low register.
- Majestic.** *p-f* (piano-forte): Trb. in high register.
- Grand and imposing.** Trp. and Horn in high register.

The second system shows three measures with the following characteristics:

- Bright.** Horn in high register.
- Sharp and full in piano. Extremely loud in forte.** Trb. and Horn in high register.
- Bright.** Trp. and Horn in high register.

61. The spacing of heterogeneous ensembles and the full orchestral *tutti* is governed by the general principles stated in §§56-60. Each of the three main groups influences the ensemble in the sense of its own particular spacing. Two contrasting settings of the same

progression, from the first movement of Schubert's "Unfinished" Symphony, are a convenient illustration of this:—

Ex. 56

The musical score for Ex. 56 is divided into two parts, (1) and (2), illustrating contrasting orchestration techniques. The instruments listed on the left are: Fl., Ob., Clar. in A, Fag., Corni in D, Trp. in E, Trb., Timp., Vl. I & II, Vla., and Bassi.

Part (1): This section is marked *pp* (pianissimo). The instruments are playing in low or middle registers, creating a dark and sinister tone-color. The woodwinds and strings are active, while the brass instruments (Trp. in E, Trb., and Timp.) are mostly silent.

Part (2): This section is marked *ff* (fortissimo). The instruments are playing in high or highest registers, creating a forcible and strenuous effect. The woodwinds and strings are active, while the brass instruments (Trp. in E, Trb., and Timp.) are also active, contributing to the overall intensity.

In (1), flutes, trombones, and basses are in low or middle register, while the remaining instruments are in their softest register. The tone-colour is dark and sinister.

In (2), the instruments, with the exception of the basses, are playing in high or highest register. The effect is forcible and strenuous.

CHAPTER X.

SUPPLEMENTARY REMARKS ON SPACING AND SONORITY

62. *The Treatment of the Bass.*

In calm, slender ensembles, or in light, rapid movement, it is often advisable to give the bass to the violoncellos alone, or—according to circumstances—to the viola, bassoon, bass clarinet, bassoon plus viola, or some similar combination. Elsewhere, however, the doubling of the bass in the lower octave by the double-bass (or double-bass plus tuba or bassoon) not only gives majesty to the ensemble (a very important point), but enhances its sonority as well, and is therefore essential to the effect of grand, massive, or vigorous ensembles in which the strings play the leading part. This explains why the entry of the double-bass after a pause impresses us not merely as a reinforcement of the bass, but as a marked accession of power. For one thing, it stands to reason that the long, resonant strings of that big instrument must give off a large volume of overtones, which, like filings to a magnet, attach themselves to the more delicate tones of the higher instruments, and so enhance their sonority. Be that as it may, the student ought carefully to impress upon his ear the divergent effect of the string band, according as its bass is doubled in the lower octave or performed by the violoncellos alone.

Ex. 57 *Elgar, Theme of the "Enigma" Variations, Op. 36.*

The musical score for Ex. 57 shows two versions of the same passage. The first version is marked *Andante* *p molto espress* and *ten.* (tension). It features a double bass (Vcl.) and a double bass (C.B.) playing in the lower octave. The second version is marked *Later* and *ten.* (tension). It features a double bass (Vcl.) and a double bass (C.B.) playing in the lower octave. The first version is marked *simile* and *pp* (pianissimo). The second version is marked *cresc.* (crescendo).

Here it is instructive to compare the two versions of the same passage. The difference is much more striking than appears on paper.

Ex. 58 Wagner, "Die Meistersinger" Overture.

(Moderato molto)

Here the *tutti* derives its power and grandeur principally from the entry of the double-bass and tuba.

63. The effect of the bass, when given to the violas, as in—

Ex. 59 Beethoven, 8th Symphony.

may be defined as "shadowy." The gloomy fourth string of the viola is of uniquely characteristic tone-quality, but it lacks the roundness of the violoncello. Just for this reason, however, an occasional viola bass is a delightful relief to the ear.

That the viola may take over the bass of high-pitched string harmony goes without saying.

64. It should be mentioned here that the viola often doubles the violoncello in the higher octave, both when the violoncello is playing the lowest part in company with the double-bass, and when it is playing solo. In such cases, we generally find that the viola is ancillary to the violoncello, and is treated as though it were doubling the latter, not in the octave, but in unison. In other words, the violoncello has the authentic harmonic or melodic part, and the viola part ranks merely as colouring or as reinforcement. (V. §6; also the example from Mendelssohn in the next paragraph.)

65. *The Treatment of the Middle Parts.*

The admonitions contained in text-books as to the necessity for ample sonority in the middle region of the harmony have done much to falsify the student's conceptions of orchestration. Just as in the study of harmony, the traditional instructions apply in full force only to block harmony—in this case to large ensembles and the full orchestral *tutti*. There, the laws of spacing demand that the middle parts should be sonorously instrumented, but the truth is that this comes about almost of its own accord, for it must be remembered that we possess a relatively large number of powerful instruments whose proper sphere is precisely the middle of the harmony. In a small orchestra we have at

least two horns and two bassoons, a quartet capable of saturating the air with their sound. To these must be added: the viola, the clarinets, the trumpets, and—in larger ensembles—the trombones. The danger then is, not that the middle parts may be too thin, but that they may be too thick. Moreover, the following facts have to be considered:

A middle part, either of sustained or repeated notes, or—more particularly—of rapid figuration for one or more stringed instruments, is in itself sonorous. If, in addition, it happens to be thematically important, its reinforcement by means of holding-notes for other instruments would envelop it in a haze of sound and thus blur its outline. We may say, therefore, that more than a very gentle reinforcement of middle harmony figuration is inadmissible except in the very frequent case in which the middle voice is important merely as movement and not as melody, or when by itself it would be too lacking in volume, as, for example, in passages of this type:—

Ex. 60

Moderato

Here the string ensemble by itself would sound clear, dry, and precise, but would lack all warmth and geniality. The sustained harmonies for bassoon and horns rectify this by giving the necessary fullness to the middle region while allowing the quaver movement of the viola and 'cello to be distinctly heard.

The following passage from Mendelssohn's "Hebrides" Overture, in which the middle voice (vcl., fag., vla.) is thematic and must be heard as such, aims at sonority and achieves clarity as well:—

Ex 61

Observe that only two instruments (flute and clarinet in their softest register) overlap the melody. In other words, Mendelssohn leaves a wide gap between the bass and the upper parts in which the melody can disport itself freely and audibly. Any further reinforcement of the middle region would be a loss rather than a gain.

66. *The influence exercised by the conduct of the parts.*

Except in chords completely detached from their surroundings, and unaffected by the coercion of the laws of part-writing, the composer seldom or never enjoys entire freedom in the placing of the various parts, for the part-writing must be brought into conformity with what has gone before and comes after, and is therefore to a considerable extent instrumental in deciding the spacing. Moreover, we have to remember that the great orchestrators strive to give each performer a rational, and, if possible, singable part to play, and for this reason forbear to distort the voice-progressions by fussy or whimsical successions of intervals, merely in order to distribute the notes of a chord more evenly. To this principle—we might call it the “contrapuntal principle” in orchestration—the composer often willingly sacrifices perfection and consistency of spacing and sonority, in the certain knowledge that the ease and flow thus imparted to the individual parts will redound to the beauty of the entire work.

Not with impunity can the composer disregard the contrapuntal principle of orchestration in situations where wide spacing or dissimilarity of timbre lays bare the conduct of the middle parts. Here, for instance—

Wagner, Overture “The Flying Dutchman.”

Ex 62

the beginning of the beautiful solo for cor anglais is marred by the palpably univocal conduct of the alto part entrusted to the horn. With all respect for the genius of Wagner, the conjecture may be hazarded that it would have been better to allow the horn to follow its vocal bent and step up from the leading-note to the tonic, and to assign the note C to another instrument. Thus:—

Ex. 63

To sum up: The spacing of the orchestral ensemble is determined by two separate forces, which react upon each other—(1.) The conditions of sonority and tone-colour; (2.) The principles of part-writing and melodic flow.

67. Wide Separation of the Bass.

The wide separation of the bass from the higher parts produces a grand effect. Here is a fine example :—

Brahms, First Symphony.

Ex. 64

Allegro con brio

The long continuance of this spacing would sound dull, heavy, and vague. Skilfully employed, however, it produces splendid results.

68. Wide Separation of the Melody.

The melody may lie at any height above (or below) the accompaniment. When two or three melodic parts rise to a great height, they should make correct (though not necessarily complete) harmony by themselves. The following thrilling passage from the *Adagio* of the first Symphony of Brahms illustrates this :—

Ex. 65

Here the upper parts stand out with icy clearness ; indeed, they seem to be farther away from the middle parts than is actually the case. The part-writing is of the simplest kind.

The above was more or less a special effect of timbre and spacing. Remember, then, that spacing of this kind—

Ex. 66

is in no way abnormal.

69. *Spacing and Movement.*

The more animated the parts, the more elbow-room do they require. Movement—more especially of stringed instruments—is in itself a species of sonority. When, therefore, one or more parts sweep up and down in wide intervals, a thinner orchestral texture is permissible than in staid, deliberate ensembles.

Ex. 67 *Largo* Berlioz, "Fantastic" Symphony, Introduction.

VI.
con sordino
pp
cresc.
f
pp
Vla.
con sordino
pizz.
arco
arco

This is beautiful quartet writing. The sweeping movement of the middle parts and the exquisite figuration for the violoncello forestall any thinness. A similar ensemble for wind instruments would call for closer spacing of the upper parts, and closer texture in general.

Ex. 68 Bruckner, Ninth Symphony, slow movement.

Clar.
P
VI. I
VI. II
p dolce
Vla.
Vcl.
pizz.
Hrn. pp

Here the alto part, moving in wide intervals, requires no reinforcement. Lest the tenor and bass (vla. and vcl. pizz.) should sound too dry and material, Bruckner envelopes them in a haze of the softest wind tone (clarinets in their mildest register).

70. *Variety of Spacing.*

In all great orchestral works the spacing varies incessantly. Orchestration is good, not when it conforms to a standard type of spacing, but when it does exactly the opposite. If we analyse an orchestral masterpiece of the first rank, we shall find that every new emotional phase reflects itself in the spacing—assisted, of course, by all the marvellous resources of tone-colour and register.

CHAPTER XI.

ORCHESTRAL DYNAMICS

71. A feature which leaps to the eye of the score-reader is the tendency of the solo or outstanding instruments to enlist the services of other instruments or groups in the performance of their functions. This spirit of mutual helpfulness makes itself perhaps more strongly felt in orchestral accentuation than anywhere else. To the pianist, accentuation is a question of touch and artistic insight ; in orchestral writing, on the other hand, it is systematised in such a way as to leave nothing to chance. The entry of a theme, a cadence, a *sforzando* or *tenuto*, is very frequently emphasised by a drum note or roll, or by a momentary note, chord, or ornament contributed by an instrument or group which has hitherto lain idle. Orchestral music literally swarms with situations like the following :—

Mozart, *Symphony in G minor*.

Ex. 69

Andante

The musical score for Ex. 69, Mozart's *Symphony in G minor*, Andante, shows the concluding bars of the slow movement. The score is arranged in two systems. The first system includes staves for Flute (Fl.), Wind (p), and Strings (p). The second system includes staves for Oboe (Ob.), Bassoon (Fag.), and Horn (Hrn.). The Flute and Wind parts have a melodic line, while the Strings and other wind instruments provide harmonic support and reinforcement in the final cadence.

These are the concluding bars of the slow movement, and the entire wind band joins in the final cadence. The object of this is not to prevent the latter from sounding, as it were, feeble and despondent, but to recall—in echo, so to speak—the impression of the full-toned sonority of the previous *tutti*.

Beethoven, Ninth Symphony, Scherzo.

Ex. 70

Molto vivace

Ob. I
pp
Vl. II
Clar. I
Vla.

In this passage, the detached notes of the wood-wind instruments steady the rhythm and help to mark the successive entries of the stringed instruments. They are joined later by the horns, then by the trumpets, and the movement pursues its course in this way, *sempre pp*, with magical effect, for thirty-six bars.

Brahms, Second Symphony, beginning of Finale.

Ex. 71

Allegro con spirito

Hrn. III, IV
p
Trp.
Hrn. I, II
Vl.
p sotto voce
Vla.
Bassi

This quotation illustrates a simple but important feature of orchestral procedure. A vague chord for brass in soft register helps to set the theme going, and then vanishes.

Compare the beginning of Beethoven's fourth Symphony, where a *pizzicato* note "lets loose" a long holding-note for winds.

Wagner, "Die Meistersinger."

Ex. 72

Fl., Clar.
Fl., Clar.
Ob., Hrn. I
f
Fag.
Vl. II
pizz.
Vcl. I
arco
f
Vcl. 3
dim.
Vcl. 3
p
C. B. pizz.

Here we have a typical example of the passage which looks so complex in the full score, but when reduced to pianoforte score (the only way to obtain the gist of it) is found to contain fewer vital harmonic and melodic parts than at first sight appears. The theme lies uppermost, and is harmonized as a series of chords of the sixth for a sextet of wind instruments, to which the violoncello supplies the bass; these parts accordingly are vital. The bassoons supply necessary middle parts at the commencement, but their rôle is percussive as well as harmonic. The first violins paraphrase the wind parts in quick chord figuration that contributes movement and string timbre to the ensemble. The *pizzicato* of the second violin and double-bass, and the onset of the viola, are mainly percussive, for the viola does not affect the status of the violoncello and indeed has no influence whatever on the harmony.

Berlioz, "Fantastic" Symphony, Introduction.

Ex. 73

The musical score is arranged in four systems. The first system includes staves for Flute (Fl.), Oboe (Ob.), Clarinet (Clar.), Horn I (Hrn. I), and Bassoon I (Fag. I). The second system includes Horn II (Hrn. II), Horn III (Hrn. III), and Bassoon II (Fag. II). The third system includes Violin I (Vl. I), Violin II (Vl. II), and Viola (Vla.). The fourth system includes Violoncello (Vcl.) and Double Bass (C. B.). The score features complex chordal textures with various dynamic markings such as *sf* (sforzando), *p* (piano), *pp* (pianissimo), *mf* (mezzo-forte), and *f* (forte). There are also articulation markings like *pizz.* (pizzicato) and *mf* (mezzo-forte) for the double bass. The key signature has two flats (B-flat and E-flat), and the time signature is common time (C).

In this noble passage, the violins reinforce the *sforzato* of the not very powerful { E flat of the flute and clarinet. The effect of this, in timbre, balance, and expression, is perfect. As usual, the double-bass discreetly assists with a *pizzicato* note.

72. Accentuation and reinforcement, as described in the foregoing, calls for the nicest discretion on the part of the composer. It would be a mistake to infer from the above situations that every phase of an orchestral theme required to be minutely pointed or underlined. In general, we may say that systematised accentuation of the above types is called for in rhythmically animated music, in passages in which the timbre of the instruments employed in the design of the figuration would tend to favour laxity of rhythm, at points where a momentary increase in the volume of the harmony is required, and lastly, at the beginnings and ends of the sections of a composition. Elsewhere, accentuation is a subjective matter, and is left to the discretion of the conductor and the performer.

The principal lesson to be learned from this situation is that *instruments can be employed not merely melodically and harmonically, but rhythmically or percussively as well ; or, in other words, that the presence of an instrument in an ensemble is often of greater importance than the actual notes which it plays.* The recognition of these facts will enable the student to account for many a proceeding on the composer's part which otherwise would appear to be devoid of motive.

73. Reinforcement for Tone-Colouring or Atmospheric Purposes.

It has already been pointed out (§44) that to a homogeneous ensemble a harmonic part may be added by an instrument of a different type, as for instance when a wind instrument contributes the fifth part to a harmonic progression of which four parts are assigned to the strings. It goes without saying that the extraneous instrument invariably imparts a measure of its own timbre to the resulting combination, but the composer here aims rather at securing completeness or volume of harmony than at distinctive colouring, for he allots the part in question to an instrument which, by virtue of its timbre or register, melts into its surroundings and does not attract notice. Quite a different situation arises, however, when the extraneous instrument augments the volume or resonance of the ensemble by doubling, condensing, paraphrasing, or elaborating vital harmonic parts, and thus modifies the timbre in a particular way desired by the composer. Here is a superb example from the slow movement of Haydn's "Oxford" Symphony, in G —

Ex. 74

The musical score for Ex. 74 is a slow movement (Adagio) in G major, 3/4 time. It features a double bassoon part doubling the viola. The dynamics are marked as *p*, *p cresc.*, *f*, *rf*, *dim.*, *pp*, and *(Tutti)*. The score includes parts for Violin I, Violin II, Viola, Bassoon (B.), and Cello/Double Bass (C. B.). The Viola part is doubled by two Bassoons. The score is in G major and 3/4 time.

Why has Haydn doubled the viola part by two bassoons? The answer is: for the richness of the effect. The melody was inaccessible to the bassoons, the bass would have been clogged and impeded by them, and so, if they were to be employed at all, there was nothing left for them to play but the middle part. In point of fact, the effect is a particularly fine one, and the rather tense high notes of the bassoons greatly enhance the resonance not merely of the viola part but of the entire ensemble. Note the logical design of their part; if not important enough to deserve the title of counter-melody, it is at all events a rational sequence of notes, descending step by step from a point of climax.

This is genuine orchestral writing.

74. Crescendo and Decrescendo.

There are several ways of producing a *crescendo* :—

1. The "full swell," in which all the instruments louden simultaneously. The effect is one of grandeur and power.

2. The gradual addition of instruments, severally or in groups, unaccompanied by any loudening. An example of this is the opening of the *Scherzo* of Beethoven's ninth Symphony, the mesmeric power of which proves this species of *crescendo* to be one of the most dramatic effects of orchestration.
3. The cumulative *crescendo*, in which the instruments enter successively and unobtrusively at greater or lesser intervals of time, and then gradually louden. The effect of this, the commonest procedure, is exciting and awe-inspiring, and a classical example of it may again be seen in the ninth Symphony, at the commencement of the first movement.

For the effect of the timpani in *crescendo*, v. §92.

The entry of a group of instruments may hasten the climax of a short *crescendo* :—

Wagner, "Die Meistersinger," Prelude to Act III.

Ex. 75 Etwas gedehnt. Sehr feierlich

The musical score for Example 75 is for Wagner's "Die Meistersinger" Prelude to Act III. It is marked "Etwas gedehnt. Sehr feierlich" (Somewhat stretched. Very solemn). The score shows a crescendo from piano (p) to fortissimo (f) and then a decrescendo to piano (p) with a "dolce" marking. The instrumentation includes Horns I, II, III, IV, Bassoon II, Trumpet I, Trombone, and Tuba. The score is in 3/4 time and G major.

The sultry glow of the heavy brass is of superb effect here, and the passage illustrates an additional point, namely the influence of timbre on the *crescendo*. As the bassoon descends lower and lower towards its final D, the increasing roughness and resonance of its deep notes greatly add to the excitement of the situation. This point deserves special attention.

75. The Decrescendo.

In *decrescendo*, the converse principles generally hold good. One thing, however, calls for special mention : in a *decrescendo* for the whole orchestra the winds (collectively speaking) cannot descend to a level of *pianissimo* easily attainable by the strings, with the result that as the aggregate volume of sound wanes, the tone-colour of the wind band looms more and more powerfully, and may finally destroy the balance (§45). In such a case, it would be necessary to silence the wood-winds progressively, beginning with the harder timbres or registers, and leaving only a few, if any, of the softer instruments for the concluding stage.

In this connection the student may be reminded that the horn and all the members of the clarinet family (including the bass clarinet) have a superb command of *decrescendo* and *smorzando*.

In the expiring phases of a *decrescendo*, the *pizzicato* is of supreme dramatic effect ; it is the merest shadow of a sound. The following example is typical, and far more striking than appears on paper :—

Berlioz, "Fantastic" Symphony, Introduction.

Ex. 76 **Largo**

VI. I, II *p* pizz. *pp* *sf*

Vla. *p* pizz. *pp* *sf*

Vcl. C. B. *p* pizz. *pp* *sf*

CHAPTER XII.

SOME GENERAL CHARACTERISTICS OF THE MAIN ORCHESTRAL GROUPS

76. *The Strings.*

The part allotted to the strings forms the groundwork of orchestral writing. The strings are versatile and untiring, their dynamic range is enormous, and long-continued rapid movement is easy to them. Moreover, their tone is of a more neutral and uniform character than that of the wind instruments, and lends itself to the eloquent expression of every variety and shade of feeling.

String tone, either *col arco* or *pizzicato*, is capable of great percussive force, especially when triple or quadruple stops are employed.

In general, we may say that activity and emotional energy are the special features of the string family.

77. *The Wood-Winds.*

If the tone of the strings represents, to a large extent, the foreground of the orchestra, it is none the less true that when not occupying this position it supplies the background against which the more vivid orchestral tone-colours stand out in relief. String tone permeates every orchestral movement of any length in this sense that it is never absent for more than a short time. A lengthy absence would be felt to be an abnormality.

The wood-wind band is inferior to the strings in versatility and mobility. Not only do the wood-winds differ from one another markedly in technique and timbre, but even the various registers of one and the same instrument are far from equivalent in power, expressive quality, or tone-colour. It follows that we must perforce study their peculiarities at every note we write for them, in order to take full advantage of their unique individual powers of expression and beauty of timbre. The wind band lacks the universality of the strings. On the other hand, it possesses certain characteristics of so significant a nature that a theory of orchestration which passed them over in silence would be incomplete.

78. In the first place, note that the sustained tone of the wood-winds is so fresh, pure, and steady that sustained chordal harmony may be said to be a special function of the wind band. Just as chord figuration on the pianoforte is generally warmed and enriched by the action of the pedal, even when the composer has given no indication to this effect, so is rapid figuration, chord repetition, or passage work for the strings very frequently saturated with sustained harmony for the wood-winds, with or without the admixture of the brass. In *tutti* passages, this is the rule rather than the exception, and even in smaller ensembles it is very frequent indeed. A thousand examples prove that the smooth, uniform outpouring of sound from the wind instruments helps to give volume to the harmony, to touch in the outstanding notes of the melody, and to steady and solidify the nervous, fluttering, frictional tone of the strings. Wind tone, in fact, glazes string tone.

Ex. 77 Andante Mozart, *Symphony in E flat*.

Here we see the wood-wind instruments (without oboes, *i.e.*, all of the softer kind) pouring their liquid tone into the crevices of the string parts, and rounding off the entire ensemble.

79. Another characteristic of the wind band is that which might be described as the personal or solistic, as opposed to the choral element in orchestration. The suggestiveness of one instrument delivering a melody is of a different character from that of eight to a dozen violins playing in unison. We might say that the voice of a solo instrument—a wind instrument notably—is that of an individual uttering his own thoughts naïvely and without any fear of contradiction, whereas the melody of the violins is broad, spacious, and diffused. Or, differently: the voice of the wind instrument is that of the open-hearted speaker, whereas that of the strings is rather “the reverberation of innermost feeling, and suggests rather introspection, divination, or contemplation.”*

The lesson we learn from this is that in orchestrating a musical idea we must invariably ask ourselves whether it is better fitted for choral than for solistic treatment, and vice-versâ; further, when a melody is repeated with different instrumentation—whether the solistic version should follow the choral, or whether such a disposition would lead to an anti-climax.

80. *The Brass.*

All brass instruments have certain features in common:—

1. Their tone-emission is relatively slow; it calls for the nicest adjustment of “embouchure” (*i.e.*, the setting of the lips), and is therefore insecure in rapid successions of notes. This applies very particularly to the horn; horn-players must not be flustered or hurried. (That rapid solos for the horn almost invariably miscarry

* Riemann, “Catechism of Orchestration.”

is a matter of painful experience ; witness the very difficult solo near the beginning of Strauss's " Till Eulenspiegel," which one seldom or never hears clearly or correctly performed, inasmuch as the slightest nervousness or embarrassment on the player's part is sufficient to ruin it.)

2. The more easily singable their part, the more congenial is it to the instrument and its player. Rapid, unvocal parts convert a horn or a trumpet into a hybrid instrument possessing neither the volubility of the wood-winds and strings nor the typical characteristics of the brass family. Chord figuration, save in a fragmentary or sporadic form, *e.g.* :—

is not very effective, even when playable, as the deliberate enunciation of a brass instrument tends to give melodic importance to every sound that it utters.

3. The rapid iteration of a note by means of " double-" and " triple-tonguing " is easy if pitched neither too high nor too low. The brass are perfectly at home in abrupt, jagged rhythms of every kind, *e.g.* :—

4. Grand, massive harmony is especially congenial to the brass.

5. In accentuation, percussion, reinforcement, and the underlining of the prevailing rhythms, the brass are, of course, unsurpassed.

In order to arrive at a clear understanding of the rôle played by the brass in the orchestra, we must now turn our attention to the features which are not shared in common by the various members of the brass family.

81. *The Horn.*

Amongst the brass instruments the horn occupies an intermediate position, in that its exquisite limpidity of tone qualifies it exceptionally for partnership with the wood-winds and strings, and to some extent disqualifies it for co-operation with the trumpet and trombone, with whose unbending nature its noble and rather melancholy disposition has only a distant affinity. Subject to the conditions indicated above, the horn has a very wide range of expression, and can do equal justice to the dreamy and the passionate in melody. Its *portamento*, as in the obligato in " Die Meistersinger," Act III., at Pogner's words: " As God hath made me passing rich " :—

is of enchanting effect.

The sturdy metallic *non legato* of the horn renders it a particularly valuable instrument for the delivery or reinforcement of middle-region melodies in *forte*. When performing the latter function, it is often entirely dissociated from the heavy brass and treated essentially as the replica of the instrument which it is doubling (§10).

The *staccato* is effective and mobile in all degrees of loudness and softness.

One of the commonest functions of the horn, and one which it performs to perfection is the sustaining of holding-notes, for which the timbre of the other brass instruments would be too sombre and sinister. These holding-notes give a certain impalpable density to the atmosphere of the orchestra without impairing its lucidity (*cf.* §16).

82. The Heavy Brass.

Melodically speaking, these instruments are very much more restricted than the horn. Almost any flexible lyric melody sounds over-sentimental when issuing from the bell of a trumpet or cornet.* On the other hand, the heavy brass can lend overwhelmingly powerful expression to very simple phrases of choral, martial, jubilant, or proclamatory character (*cf.* Brahms's "Academic Festival" Overture), or to utterances of a sinister, threatening kind. When, exceptionally, a flowing melody is confided to the trumpet, the latter instrument can be tempered by unison (or octave) doubling by the softer instruments without foregoing its ascendancy. The effect of the great unison in bars 67-71 of the "Die Meistersinger" Overture is intensely moving:—

Ex. 81 Moderato

f cantabile

* * * *

Let us now review some of the more important situations in which the brass are employed either individually or as a corporate body, or in conjunction with the rest of the orchestra.

83. Melody.

The melodic aspect of brass-writing has been dealt with in the above. It stands to reason that melodies or phrases of the types indicated can be confided to one, two, or all of the brass instruments in unison or octave, according to circumstances, the number and nature of the instruments being decided by the prevailing situation. The horns, be it remembered, mitigate the hardness of the trumpets and trombones, wherefore composers often exclude them from octave or unison co-operation with the latter when pure trumpet tone is called for. The "Tannhäuser" Overture supplies familiar instances of this.

84. Melody and Harmony.

When both melody and harmonic accompaniment are assigned to the brass, various arrangements are possible. Here are some of the commonest:—

1. Quartet or quintet of trumpets and trombones, the first trumpet executing the melody. This is pure trumpet tone, and only the simplest and most dignified types of melody are suitable to it.

2. Horn solo with trombone accompaniment—best in *p* and *pp*. In *f*, the doubling or trebling of the horn part would generally be called for. (In *forte*, two horns are the equivalent of one trumpet or trombone.)

* Trumpeters occasionally effect the *vibrato* of the human voice. The effect is perhaps the most detestable of which an orchestral instrument is capable.

3. Three-part writing for trombones, or four-part writing for trombones and tuba : impressive, awe-inspiring.

4. Three- and four-part writing for horns alone : common and beautiful. When the bass progressions are low in pitch, and call for distinct articulation, it is better to give the lowest part to an instrument of more precise utterance (bassoon or bass-clarinet), or to double it by such. Very deliberate, simple basses can, however, be assigned with excellent effect to the fourth horn.

The deep notes of the horn have a most beautifully grave and dark sonority ; they slightly resemble the corresponding notes of the bassoon, but are smoother and more refined.

5. Massed harmony for brass, assisted or unassisted by other instruments. Here it is a very common procedure to make the progressions of the heavy brass satisfying in themselves, relegating to the horns the task of supplying such supplementary parts as may be necessary on grounds of fullness, tone-colour, or absolute completeness of harmony. The profoundly dramatic theme for brass and bassoons in the introduction to the *Finale* of Brahms's first Symphony (letter C) illustrates this very well :—

Ex. 82
Piu Andante

The musical score for Ex. 82, titled 'Piu Andante', consists of four staves. The top staff is for Flute (Fag.), the second for Contrabassoon (C. Fag., sounding an octave lower), the third for Horn (Hrn.), and the fourth for Trombone (Trb.). The key signature has one sharp (F#), and the time signature is 2/4. The tempo is marked 'Piu Andante'. The score shows a descending melodic line in the Fag. and Trb. staves, with the C. Fag. and Hrn. staves providing harmonic support. The Fag. staff starts with a 'p dol.' marking. The Trb. staff has a '2' marking above the first measure.

In this magnificent piece of writing, the trombones* make correct three-part harmony by themselves. The horns supply the least indispensable notes (E and C, the fifths of their respective triads, and the note G, which is merely a doubling). The second bassoon, in the main, doubles the melody softly in the lower octave ; the first bassoon doubles important harmonic notes that are already present elsewhere, but which, in view of the powerful melody and bass, call for discreet reinforcement. The first and third trombones are nowhere doubled in unison, with the result that pure trombone tone predominates throughout, the "soft" instruments providing merely a shadowy background which redeems the principal figures from any semblance of gauntness.

The abyssmal notes of the double-bassoon enhance the solemnity of the effect.

* The third part is written for a "tenor-bass trombone," a most useful instrument descending several notes lower than our G bass trombone, whose chromatic compass comes to an end on the low C sharp, thus obliging the player to transpose the low C an octave higher, with detriment to the effect.

85. The Brass in the Tutti.

The employment of the brass in the *tutti* may be dictated by one or more of the following motives :—

1. Tone-volume ; power.
2. Clear delineation of the melody.
3. Tone-colour.
4. Rhythm.
5. Accentuation.

It therefore can no more be reduced to a formula than that of the other instrumental groups. Every case must be considered on its own merits.

86. To illustrate the nature and solution of the problems that arise in the full orchestral *tutti*, let us orchestrate a passage of two four-bar phrases from the second movement of Schumann's *Fantasia*, Op. 17, for pianoforte :—

Ex. 83 Moderato

The musical score for Ex. 83 is a piano arrangement of a passage from Schumann's Fantasia, Op. 17. It is marked 'Moderato' and consists of two systems of four bars each. The first system begins with a fortissimo (ff) dynamic and a ritardando (ritard.) instruction. The right hand features sustained chords, while the left hand plays broken chords. The second system starts with a sforzando (sf) dynamic and ends with a fortissimo (f) dynamic. The right hand continues with sustained chords, and the left hand has more active, moving lines. The key signature has two flats (B-flat major), and the time signature is 4/4.

General Situation.

This is the third and culminating appearance of Schumann's magnificent theme. The broken chords in the left hand are Schumann's pianistic device to counterfeit widely spaced harmony :—

Ex. 84

The musical score for Ex. 84 shows a short phrase in B-flat major, 4/4 time. The right hand has a sustained chord, while the left hand plays a broken chord, illustrating the pianistic device of counterfeiting widely spaced harmony.

Harmony.

The part-writing is that of the pianoforte. That is, the arrangement of the middle parts is free, inasmuch as it is in places dictated rather by the compass of the hand and the exigencies of sonority than by literal observance of the laws of part-writing. The harmonic nucleus consists of the prevailing four-part progression :—

Ex. 85

Orchestration.

The orchestral treatment resolves itself into a series of octave and unison doublings.

The disposition of the brass harmony is of paramount importance. For grandeur of effect, we shall pitch the trombones reasonably high and space them rather widely. Bars 3-4 of the melody are assigned to the second trumpet and horn in unison; this enables us to set free the first trumpet for a harmonic part which belongs rather to the upper region of the harmony than to that of the brass. Regarding this arrangement, it should be remembered that, in a *tutti*, the doublings need not always be assigned to the higher of a pair of instruments. The lower often takes over the melodic doubling, thus leaving the higher free to take part in the harmony of the next higher octave. (The opening *tutti* of Tchaikowski's Pianoforte Concerto in B flat minor supplies excellent examples of this) :—

Ex. 86

Now that the part-writing is fixed, the remaining instruments present no special difficulty. I give the scoring in full :—

Ex. 87

The musical score for Ex. 87 is a full orchestral arrangement. It features the following instruments and parts:

- Fl. Ob.**: Flute and Oboe, playing in unison (marked *unis*).
- Clar. in Bb**: Clarinet in B-flat.
- Fag.**: Bassoon.
- Hrn. in F**: Horn in F.
- Trp in Bb**: Trumpet in B-flat.
- Trb.**: Trombone.
- Timp in F, Bb, Eb**: Timpani in F, B-flat, and E-flat.
- Vi. I**: First Violin.
- Vi. II**: Second Violin.
- Vla.**: Viola.
- Bassi**: Basses.

The score is written in 2/4 time and includes dynamic markings such as *fff* (fortissimo) and *tr* (trill). The key signature has two flats (B-flat and E-flat).

Observations.

1. It will generally be found that in a massive *tutti*, the first violin is doubled by the second violin or viola—either in octaves, when the melody lies high, or in unison; the remaining instrument (viola or second violin, as the case may be) completes the string harmony, either in double stops, *divisi*, or in figuration. The reason for this is that the middle harmonic parts naturally fall to the brass and bassoons, and thus call for no very powerful reinforcement. In such cases, therefore, the relatively weak middle harmony of the strings serves to diffuse string tone throughout the ensemble, and thus to unify it, rather than to reinforce the middle parts.

In a *ff tutti* it would simply be a waste of string tone to thin out the violins and violas in this way—

Ex. 88

however excellent the effect might be under other circumstances.

2. The “slashing” effect of the triple stops is essential to the accentuation of the chords (§75).

3. The *ff* entry and roll of the drums is likewise essential to the dramatic effect.

87. I come now to the second phase. And here I would draw attention to the importance of a phenomenon recognised in *piano* and *pianissimo*, but rarely in *fortissimo*—the necessity for gradation. Scarcely any *ff tutti* maintains the same level of loudness throughout its course; as a rule, it falls and rises from climax to climax. In the present instance, the composer has indicated a *crescendo* for bar 5, so that bar 6 and the concluding chords at the juncture of bars 7-8 are the high levels of the *fortissimo*, while the intervening passages lie on a lower dynamic plane. These phases must reproduce themselves in the orchestration, either by the withdrawal and addition of instruments or by the alternation of *staccato* with *tenuto*.

The melody in bars 6-7 presents an opportunity of suggesting the effect of “distribution” (v. §118). As this is a welcome means of avoiding squareness and monotony, we avail ourselves of it by subdividing the melody between the horn and the trumpet; this moreover helps us to graduate our *fortissimo* so as to develop the full power of the orchestra in the final cadence. I would suggest the following arrangement of the brass (cf. §3):—

Ex. 89

Observe how the function of the instruments varies from bar to bar:—

Bar 5. The horns are harmonic, the trombones percussive.

Bar 6. The G of the horns is harmonic, but to some extent melodic as well; moreover, the horns warm and soften the “hard” tone of the heavy brass.

The trumpets are harmonic and percussive.

The horns deliver an instalment of the melody.

Bar 7. The second trumpet follows up the horn with a second instalment of the melody, in a different octave. The alteration of pitch is due to considerations of compass and spacing, and does not affect the status of the melody, for the latter is defined, once for all, by the predominant violin part (§38). The effect will be merely a welcome variation of colour and emphasis.

Bars 7-8. The horns are percussive and harmonic.

The scoring of the entire passage is as follows:—

Ex. 90

Ex. 90 is a musical score for an orchestral passage, spanning bars 5, 6, 7, and 8. The score is written for the following instruments:

- Fl.** (Flute): Bar 5 has a *sf* (sforzando) marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Ob.** (Oboe): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Clar. in Bb** (Clarinet in B-flat): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Fag.** (Bassoon): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Hrn. in F** (Horn in F): Bar 5 has a *ben tenuto* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Trp. in Bb** (Trumpet in B-flat): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Trb.** (Trombone): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Timp.** (Timpani): Bar 5 has a *tr* (trill) marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Vl. I** (Violin I): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Vl. II** (Violin II): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Vla.** (Viola): Bar 5 has a *div* (divisi) marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.
- Bassi** (Basses): Bar 5 has a *sf* marking. Bar 6 has a *sf* marking. Bar 7 has a *sf* marking. Bar 8 has a *sf* marking.

The score is written in 2/4 time and features a variety of dynamic markings, including *sf* (sforzando) and *ben tenuto* (well sustained). The instruments are arranged in a standard orchestral layout, with the woodwinds and brasses in the upper staves and the strings in the lower staves.

Ex. 92

The musical score for Ex. 92 is divided into two systems. The first system includes staves for 1 Fl., 1 Ob., 1 Fag., Trp., Vl. I arco, Vl. II pizz., Vla. arco, and Bassi pizz. The second system continues the orchestration with additional staves for the same instruments. The score is written in G major (one sharp) and 4/4 time. The first system shows the initial entry of the woodwinds and strings, with the flute and oboe playing a melodic line, the bassoon providing harmonic support, and the strings playing a rhythmic pattern. The second system shows the continuation of these parts, with the woodwinds and strings maintaining their respective roles.

1 Fl.
1 Ob.
1 Fag.
p
s

Trp.
p

Vl. I arco
Vl. II pizz.
p

Vla. arco
Bassi pizz.
p

CHAPTER XIII.

THE KETTLEDRUMS

89. The most obvious function of the drums is that of accentuation. A stroke or quick little roll of the drums sharpens the "attack" of the orchestra, or helps to set an ensemble going. Every score illustrates this over and over again:—

Ex 93

90. Strokes of the drum, either singly or intermingled with rolls, outline the rhythm of the ensemble. Or the drum enlivens, or as it were enlarges on, the said rhythm by executing rhythmical figures of its own. This is a very interesting and important point, for which the student should keep a sharp look out:—

Ex.94

Moderato Allegro vivace

Melody

f *ff*

Drum

A study of the scores of the great masters shows that they took care not to allow the zeal of the drum to outrun its discretion. There are relatively few notes, but every note tells. The overloading of a part on the lines indicated would be confusing and wearisome.

91. The drum roll augments the sonority of the orchestra, but tends to blur the part-writing. Wind harmony, when accompanied by a drum roll, obscures the outline of string figuration much more than when the drums are silent. This is a matter which concerns conductor, composer, and drummer alike.

92. One of the most important functions of the drum, and one which it performs splendidly, is to assist in the *crescendo* and *decrescendo* of the full orchestra. (For an example, see the quotation from the "Hebrides" Overture of Mendelssohn, §65.) In a *forte tutti*, a *crescendo* begun *piano* and swelling rapidly to *fortissimo* creates the illusion as though the whole orchestra had played *crescendo*. For a superb example, note carefully the effect of bars 175-176 of the "Die Meistersinger" Overture.

The psychological effect of a long *crescendo* roll on the drum is one that calls for special mention. Now minatory, now awe-inspiring, now exciting, it invariably creates an atmosphere of suspense from which the listener is liberated only by the grand explosion of sound from the full orchestra in which it culminates.

93. The drum can appear as a solo instrument. It does so often in rhythmical figures or fragments which have a bearing on the thematic content of the piece. Such solos are always highly dramatic, and often grimly suggestive of something to come.

94. The real bass is sometimes allotted to the drums alone. (An excellent example in Prout, "The Orchestra," I., §487.)

95. The rôle performed by the drum is one of those straightforward things that can be learned by unaided study and imitation. The student should follow with his eye and inner ear the drum part, concentrating his attention on: (1) effects of sonority; (2) the relation of the drum rhythm to the rhythm of the melody. This will give him in no long time an adequate conception of the part played by the leading instrument of percussion.

CHAPTER XIV.

MOVEMENT

96. By "movement" we understand the relative speed with which the notes of the more quickly moving parts follow one another, and the stir and excitement resulting therefrom. It is common parlance, for instance, to refer the lively effect of a phrase to the "semiquaver movement" of such and such a part. Now, although movement is one of the special problems of musical composition proper, there are certain purely orchestral aspects of it which call for discussion here. To begin with, we must remember that even an isolated note can produce very divergent effects of movement according to the manner in which it is enlivened by reiteration, *tremolo*, or shading, as thus :—

Ex. 95

97. Even timbre is not without its influence. A low note for bassoon or double-bassoon, for example, is, in consequence of the rougher timbre of these instruments, rather more suggestive of movement than when assigned to the horn or bass clarinet.

98. For the great diversity of movement afforded by the different application of the bow of the stringed instruments, the student should read the remarks of Berlioz in Chapter II. of his "Instrumentation." The gist of the matter is that the composer, in writing a string passage—either melody, middle part, or bass—must invariably ask himself which of the many possible bowings of it is the most appropriate to the situation, *e.g.* :—

Ex. 96

99. Again, we have already seen that wind tone steadies string tone (§28). This renders possible all manner of subtle effects in which a *tenuto* part more or less neutralises the fluttering agitation of the moving one, e.g. :—

Ex. 97

and many more.

This accounts for the delightfully brisk, wide-awake effect of accompaniments of detached notes without any *tenuto* chords, as in the "Ball scene" of the "Fantastic" Symphony of Berlioz.

Ex. 98

We see then that in instrumenting any passage or melody the composer is confronted by a large number of possible settings, each one of which will produce its own special effect, not merely of timbre, but of movement as well.

100. Ornaments—the shake, turn, slide, transient shake, mordent, *appoggiatura*, &c.—are so genuinely musical a means of enlivening notes and harmonies that one cannot but wonder at their comparative rarity in the scores of the great masters, Wagner alone excepted. The following passage is a delightful surprise to anyone who has never heard it before :—

Wagner, "Die Meistersinger," Act III.

Ex. 99

Tranquillo
più cresc.

ff

Tuba

The *legato tremolo* of wind instruments—e.g.,

can be employed in the same way with delicious effect. Wagner's "Siegfried Idyll" (the section in C major) contains several examples of it that live in the memory of all orchestral enthusiasts. The composer must be careful, however, not to write any of the numerous *tremolos* that are unplayable on wood-wind instruments. To invite a clarinettist or oboist to perform the following :—

Ex. 100

is to demand the impossible.* It would, however, be a lengthy and tedious task to catalogue all the difficult or impossible *tremolos* and shakes, and the compilation when completed would not even be authoritative, for wood-wind instruments have no recognised standard system, and passages easy on one type of instrument are difficult on another. In cases of doubt, therefore, the composer should consult a skilled performer, who will be able to advise him in regard to the general practicability of his writing.

* In the case of the clarinet, it is equivalent to requiring a pianist to play a shake or *tremolo* with one finger.

CHAPTER XV.

LUCIDITY

101. I now pass to the greatest problem of orchestration : How does the composer enable the listener to follow the melodic thread of his music intelligently from the first note to the last ? Or, differently expressed : How does he adjust the balance of his parts in such a way that accessory details, middle voices, atmospheric effects, and the like are not mistaken for integral parts of the melody ?

It should be said at once that it is idle to attempt to formulate a system of weights and measures whereby the relative power of each component instrument or part of an orchestral ensemble can be *exactly* assessed, for such a system would hold good, if anywhere, only of chordal harmony, homogeneously orchestrated. On closer examination, we discover that the lucid exposition of orchestral thought depends on a number of different circumstances, partly technical, partly psychological. These are :—

1. Good Conducting.—It should be said at once that there are passages in all orchestral works which, if played exactly as indicated—*i.e.*, without judicious management of light and shade through the medium of the conductor—sound dull, noisy, or obscure, and it is not too much to say that lucidity in orchestral reproduction is as much a matter for the conductor and his band as for the composer.

2. The actual weight of the scoring. In other words, the application of the broad facts of instrumental balance, timbre, and sonority.

3. The natural tendency of the topmost part to predominate over all the others.

4. The expression and distinctiveness which the intelligent player involuntarily communicates to parts of melodic or thematic importance.

5. The avoidance of overlapping. Close contiguity of the parts may lead to confusion. In other words, the more clearly one part is segregated from the remaining ones the more distinctly will it be heard. We saw, for instance (§65), that a melody in the centre of the harmony should normally not be encroached upon by purely harmonic parts, more especially if assigned to instruments of a similar type.

6. The contrasting timbres of the melodic and the accompanimental instruments.

7. The natural tendency of the intelligent listener to fasten on the most characteristic and interesting part, and to follow it throughout its course.

8. Recollection. The recognition, amidst new surroundings or in a new garb, of a theme which had played a prominent part in the preceding context.

* * * * *

102. I commence with the simplest situation of all—homogeneously orchestrated chordal harmony. This presents little difficulty, for the known facts of timbre, register, and spacing enable us to give to the highest part of a mass of composite sound sufficient weight to secure its predominance as melody over the accompanying parts and bass.

Here is a short example from a noble movement, the ninth of Elgar's "Enigma" Variations:—

Ex. 101

Orchestration:—

Ex. 102

Fl. *legatissimo*

Ob. *f*

Clar. *f*

2 Fag. *legatissimo*
C Fag. *f*

4 Hrn. *f*
I
II
III
IV

3 Tpt. *p* *mf*

Trb-Tuba *f*

VI *legatissimo*
I *f*
II div.

VIa *unis.* *f*

Timp. *f*
Vcl.
C. B.

If we attempt to assess the relative power of the parts on the basis of the facts already known to us, we obtain for the first chord the following result :—

Ex. 103

1 very strong
2 weak
3 very strong
4 strong
5 strong
6 weak
7 very strong
8 moderately strong
9 very strong

The melody note G (1 and 3) is more powerfully instrumented than the harmony notes adjoining it (2, 4), and therefore predominates. The spacing of the chord is noteworthy by reason of its relatively strong baritone region (8), which gives additional resonance to the lowest region of the harmony. The bassoon, with its unobtrusive sonority, is often employed in this way, both harmonically and melodically (Beethoven, fifth Symphony, opening of *Finale*). The first oboe clarifies the part-writing and slightly thickens the soprano region.

The first chord of bar 2 is as follows :—

Ex. 104

1 very strong
2 weak
3 very strong
4 moderately strong
5 moderately strong
6
7 very strong
8

Strongest of all is note 1, and the soprano region contains only one weak supplementary part (2) ; this isolates the melody and secures its predominance. The bass (7, 8) is doubled nowhere in the upper parts. As in the previous case, Elgar refrains from doubling the melody note too strongly in the middle parts, and the strength of part 5 is consequently reduced to about one half of that of the melody. The root of the triad is doubled powerfully by parts 4 and 6. All these phenomena are thoroughly normal, and a similar analysis of the remaining chords elicits the following good and orthodox scheme of spacing and doubling for the entire passage. (The weaker notes are indicated by crotchets.)

Ex. 105

Several additional details should be noted. The suspension E flat (second to third crotchet of bar 2) is resolved normally (*i.e.*, by downward step to D) in the upper parts only (ob. 1, horn 3, trb. 1 ; clar. 1 and vl. 1 add D on the last quaver of the bar). Horn 4 resolves it upwards on F, while trp. 2 leaps to A flat. Here we have a case of "vicarious resolution," in accordance with the principle that if one or more parts resolve a suspension normally, their doublings may leap or step to other notes of the harmony. The inner parts move inconspicuously in small intervals, and as far as possible by step. The principle that simple harmonic parts may share the excitement of the leading part at critical moments in the life of the theme, but should not disconcert it by progressions of bold outline such as would vie with it in importance, is a safe one to follow (§3).

The employment of the trumpets to swell the *crescendo* and outline the melody is very fine. They are marked *piano*, in order to prevent their octave of the melody from sounding too powerful.

The above passage, in which the relative weight of the parts, and the absence of any by-play, guarantee perfect melodic clarity, exemplifies the very simplest type of ensemble, and the only one which presents little difficulty to listener, player, and conductor.

103. Turn now to the following passage from the "Cathedral scene" in the "Eroica" Symphony of Beethoven—one of the sublimest moments in all music:—

Ex. 106

Adagio assai

Subject. 2 Fl. 2 Ob. 2 Clar. 2 Bsn. 2 Tpt. *ff* *sf*

Supple-
mentary
parts. Hrn. I, II, III, IV. Timp. *sf*

First
Counter-
subject. Vl. I, II. Vla. *ff* *sf*

Second
Counter-
subject. Basses *ff*

Here the theme of the *fugato* is assigned to the "soft" instruments, the first counter-subject to the violins in octaves, the second counter-subject to the basses; the brass

sustain the underlying harmonies. Beethoven's conduct of the harmony (doubling of notes, purity of part-writing, &c.) is masterly, but the brass, more particularly the high-pitched trumpets, tend rather to overpower the wood-winds. It is accordingly the duty of the conductor, while insisting on an adequate *tenuto* or continuity of sound on the part of the horns and trumpets, to mitigate the *fortissimo* of these instruments and of the drums to the point at which the very important wood-wind theme can be clearly distinguished. This is, as it were, the standard for the correct rendering of the passage, and the conductor must subordinate all other considerations to this.

The above extract was chosen to demonstrate the importance of intelligent conductorship, but—as was pointed out before—the student must not imagine that other composers' works do not contain similar and even more drastic situations. Compare the following :—

Ex. 107

Allegro con brio

Even if the trombones and tuba were silent here, the violin theme would be none too distinct ; as it is, the theme vanishes completely. This could easily be remedied by shading the drums and the entire wind band as follows :—

Ex. 108

104. The following excerpt is from the second thematic group of the first movement of the third Symphony, Op. 90, of Brahms :—

Ex. 109

Allegro con brio

The musical score for Ex. 109 is for a full orchestra. It begins with the tempo marking "Allegro con brio". The key signature is D major (two sharps) and the time signature is 4/4. The score is divided into two systems. The first system includes parts for 2 Flutes (ff), 2 Oboes, 2 Clarinets, 2 Bassoons, Horns (I, II, III, IV), Violins (I, II), Viola, and Basses. The woodwinds play a complex, rhythmic theme in their most penetrating register, while the horns outline the theme precisely and strongly. The strings provide a rhythmic foundation. Dynamics include *ff*, *f*, *sf*, *mf*, and *p*. The second system continues the theme, with the woodwinds playing in their most penetrating register and the horns assisting. Dynamics include *sf*, *p*, and *sf*.

A splendid theme is here allotted to the wood-winds, playing in their most penetrating register and assisted by the horns, which outline the theme precisely and strongly in

slower notes. Notwithstanding these advantages, the supremacy of the wind instruments is at once endangered if the violins play their counter-melody only a little too loudly. The conductor must therefore insist that all the string players conscientiously observe the direction *mf*, which holds good for the entire passage, inasmuch as the *f* and *sf* marks denote merely momentary accents, followed by an instantaneous *diminuendo*.

The parallel passage in the recapitulation (six bars after letter K) favours the wood-winds rather more, in that the first violin part is pitched lower and the upper wood-winds higher than in the preceding example, while the high notes of the trumpets help additionally in outlining the theme. (Note that the wood-winds are *ff*, and the brass merely *f*.)

Ex. 110

2 Fl.
2 Ob. Clar. I
Clar. II

2 Fag.

2 Trp.
Hrn. III, IV
Hrn.

Vl. I
Vl. II
Vla.

Bassi

ff
ff
f
f
sf
sf
sf

Yet even here the conductor must moderate the vehemence of the violins, or the listener will carry away with him a wrong conception of the passage.

In the foregoing cases we were confronted once more with the outstanding facts of orchestral balance, viz.: (1.) The relative weakness of the wood-winds and of the strings in their middle register; (2.) The great power of the heavy brass and drums, and of the first string of the violin in *f* and *ff*.

* * * * *

105. Let us now turn to the more subtle situations in which the psychology of the listener comes into play.

We do not often ask ourselves why it is that we so easily single out the thematically important part from a motley-coloured mass of orchestral sound; why, for example, in

the following passage we at once disregard the strings and fasten on the oboe and bassoon as the melodic instruments :—

Mozart, "Jupiter" Symphony, Finale.

Ex. III

From the purely technical point of view, the composer has here provided for clearness and transparency by means of the rests in bars 1-2, and the wide spacing in bar 3, but the reason why our ear fastens on the oboe solo and ignores the strings (save as a harmonic background) is that in the former it recognises one of the principal themes of the movement which has already been heard in various simple, straightforward settings.

106. *Recollection*, then, is one of the safeguards of clarity from the listener's point of view, and the composer in his turn derives from it a scope for the progressive variation and enrichment of his orchestration which he otherwise would not possess. Reckoning with it as a definite compositional asset, he may orchestrate his themes on their first appearance simply and plainly, and thus impress them on the memory of the listener. He is then entitled to clothe their subsequent appearances in a more intricate or recondite setting without fear of becoming obscure. True, he may for dramatic purposes employ the converse procedure, but to advance from the simple to the progressively more and more involved is the normal process in an art which relies for its enjoyment so largely on the faculty of remembrance, and all music abounds in applications of it. If further instances be desired, the student has only to compare the first setting of the principal theme with its subsequent recapitulations in the following movements :—

Mozart.—Symphony in E flat, *Andante*.

Beethoven.—Fourth and sixth Symphonies, *Finale*.

Brahms.—Third Symphony, *Andante*.

It will further be instructive to compare the above with the many other cases in which the composer, for artistic reasons, foregoes all elaboration and reproduces his theme in its old familiar guise.

107. In addition to the element of recollection, we have to reflect that an intelligent player will instinctively impart greater expression and, with it, greater prominence to a thematically important part. To good conductorship we may therefore add good executantship as a safeguard of clarity upon which the composer is entitled to rely.

108. We have now to consider a further aspect of orchestration which incidentally reveals a discrepancy of opinion on the part of two of the great masters. Here I cannot do better than reproduce the trend of Heinrich Schenker's discussion of the subject in his monograph "Beethoven's Ninth Symphony" (Universal Edition, No. 3499). The question at issue is the orchestration of bars 5-8 of the first movement of Beethoven's eighth Symphony :—

Ex. 112

Wagner's criticism of these bars is quoted by Schenker ; it runs thus :—

"I never remember having heard the beginning of the eighth Symphony without being disturbed in my grasp of the theme in bars 6, 7, and 8 by the unthematical entry of the oboe and the flute above the *cantilena* of the clarinet ; whereas the previous co-operation of the flute in the first four bars, although likewise not precisely thematic, did not interfere with my comprehension of the melody, because the latter was brought out with penetrating distinctness by the violins."

Schenker comments on this statement as follows :—

"Wagner thus avers openly that the oboe and flute in the bars mentioned disturbed him in his grasp of the thematic contents, whence it follows that he would have preferred to place the melody uppermost for the sake of easier comprehension.

"As against this, Beethoven's principle must now be elucidated. Inasmuch as the clarinet enters as the leading melodic instrument at the fifth bar with the continuation of the foregoing thematic context, the ear of the listener fastens on it and prepares to follow it until further notice. In the ensuing sixth bar, the situation is equally favourable, although the oboe now enters—to employ Wagner's expression —'unthematically.' No doubt, the notes of the oboe must be regarded primarily as a supplementary part, but just as it is impossible for us without effort to connect

the E of the oboe with the last quaver of bar 5, the B of the clarinet, so does all danger vanish of the clarinet losing its supremacy even in the following bars, in consequence of the entry of the oboe and flute. True, it would have been a very different thing if Beethoven had drowned the clarinet in bar 5 with supplementary parts, but his sure instincts preserved him from such a mistake, and so it comes about quite naturally that we follow the clarinet into the midst of bars 6 and 7, knowing that we have to look to it alone for the track of the melody.

"Applied in this way, Beethoven's technical device of leaving the clarinet entirely exposed in the fifth bar constitutes the very safeguarding of the melody on which Wagner had set his heart. [The harmonic oboe part, by the way, is transformed in bar 7 into a reinforcement (doubling) which nips in the bud any further possibility of misunderstanding.] But it was precisely Beethoven's method of safeguarding the melody which Wagner deemed inadequate; he demanded more drastic securities. In other words, Beethoven and Wagner are obviously bent on the same goal, namely, the preservation of the burden of the melody from misconception, but they differ in their choice of the means to that end, and in the degree of their insight into the psychology of the hearer. Beethoven's wiser and stronger instincts took the necessary technical precautions, and then confidently left everything to be regulated by the laws which operate so infallibly in the soul of the listener. To Wagner, the theatrical composer, the receptivity of the hearer was a matter of perpetual anxiety, which compelled him to bring all possible forces into play in order positively to compel the latter to follow him. In Beethoven: certainty of resource, a self-reliant technique, and unconcern as to the personal attitude of the hearer. In Wagner: the under-estimation of thoroughly reliable resources, and, as a consequence, violence in the extortion of superfluous degrees of distinctness."

It should here be explained that Schenker's words are not intended as an endorsement of the charge of "noisiness" so often levelled at Wagner by the ignorant layman. His meaning rather is that Wagner under-estimated and consequently disdained those very refinements of orchestral treatment which contribute towards making Beethoven's instrumental style the supreme artistic achievement that it is.

109. A listener whose notions of composition were derived from the straightforward processes of simple vocal or pianoforte writing might well be excused for asking the question: "What is the object of all those subtleties? Why, in the passage above-quoted, could not Beethoven have allowed the clarinets and bassoons to perform their instalment of the melody without interference from the higher wind instruments?"

The answer to these questions falls under several heads. We have firstly to recall to mind the principle of mutual helpfulness that pervades the symphonic orchestra (§71). Secondly—and this is more important—the works of the great orchestrators reveal them as anxiously and painstakingly bent on the avoidance of that hard symmetry of outline that suggests the measuring tape and the carpenter's square. No doubt there are many pages in classical scores in which one block of instruments gives place to another, without any overlapping, any masking or disguising of the points of juncture. On the other hand, it is very instructive to observe how often the change of pitch or colouring necessitated by a new theme or a new phase of the melody is discreetly prepared by one or more of the instruments destined to take part in it. Take, for example, the following wonderful passage from the third "*Leonora*" Overture of Beethoven. The last bar (where the semiquaver triplets appear for the first time) is the commencement of a new phase of the

movement, in which a very delicate accompaniment is assigned to the flute and the violin alternately. The entry of the flute in bar 4 is designed not merely to reinforce the melody of the second violins in the higher octave, but also to prepare the ear for the change of pitch and colour which takes place four bars later. If the flute entered abruptly in bar 7 with its figuration, it would make a poorer appearance or might even escape notice.

Ex. 113

Adagio

Fl. I

Hrn.

Strings

pp

pp sempre

pp stacc.

pp e stacc.

Vi. I

110. A survey of the phenomena just described brings us face to face with the great melodic principle of orchestration, which may be stated in the following terms :—

A melody in mid-career may be suddenly reinforced in the octave without causing us to lose sight of the part in which it originated. And conversely, an octave reinforcement may be abandoned in the middle of a phrase.

Modifications of this kind may be prompted by one or more of the following motives :—

1. The preparation of an impending change of pitch.
2. The brightening or darkening of the prevailing colouring, or the infusion of a fresh colouring.
3. The avoidance of squareness and monotony, or of blustering and explosive suddenness, as, for instance, on the entry of a *tutti*.
4. The necessity of preserving continuity with the pitch of the context.
5. The avoidance of an unsuitable register.
6. *Crescendo* or *decrescendo*.

111. Very often, several of the above considerations operate conjointly, so that it is very difficult to say which one influenced the composer most.

Ex. 114 *Mozart, Symphony in E flat, Minuet.*

Allegretto

The musical score for Ex. 114 is a Minuet from Mozart's Symphony in E-flat. It is in 3/4 time and E-flat major. The tempo is marked 'Allegretto'. The score shows the woodwind section (Clarinet, Flute, Horn) and the string section (Violins I & II, Viola, Basses). The woodwinds enter in the fourth bar with a soft (p) dynamic. The strings provide a rhythmic accompaniment throughout. The tempo is marked 'Allegretto'.

The fore-phrase (not quoted) is a vigorous *tutti* in which the violins lead, and are accompanied by the other strings together with the wind in high register. The after-phrase is the passage I have quoted. And now, what is the object of the successive entries of the wood-winds? Clearly, they warm and amplify the string harmony, but the vital fact is that the flute, entering in its brightest register, recalls the high pitch of the fore-phrase. We have only to omit the flute part imaginarily to realise how idle would be the co-operation of the other instruments. Motives 4 and (in a lesser degree) 2 accordingly prompted the setting of the last four bars.

The horns are here "percussive"; their rôle is rhythmical rather than harmonic.

112. At the end of the first section of the *Scherzo* of his fourth Symphony, Beethoven conducts the melody as follows (only the leading parts are quoted) :—

Ex. 115

Fl. I Allegro vivace
Fag. I
Vl. I
p cresc. sf f ff
cresc. f ff
TUTTI

The sudden entry of the flute was suggested by motives 2, 3, and 6. And here it should be stated that a composer will in every case have to decide whether the entry of a *tutti* should impress the listener orchestrally as (1) *Logical*, i.e., as the cumulative result of the foregoing context, or (2) *Dramatic*, like the sudden joining in of a big chorus; also, that—as in the above instance—a slight hint of the impending outburst is often sufficient to prevent a *tutti* from sounding violent and abrupt.

113. The following example is taken from the *Adagio* of the same Symphony :—

Ex. 116

Ob. fp f
Clar.
Hrn.
Vl. I fp f
Vl. II
Vla.
Fag. fp f

Here, motives 2 and 5 decided the conduct of the first oboe part. If Beethoven had organized the oboe parts thus :—

Ex. 117

Ob.

the first oboe would merely have added a quite uncalled-for intensity to the violin melody, and for all artistic purposes had better have remained silent. As Beethoven has set the passage, however, the oboe brightens the tone-colouring without usurping the rôle of the violins, for—just as in the famous passage from the eighth Symphony—the ear fastens on the melody of the leading instrument and follows it downwards to its final note E flat.

114. In the next example, from the concluding section of the *Marcia Funèbre* of the "Eroica" Symphony, I quote merely the leading parts:—

Ex. 118

In bar 1, the flute continues the ascending passage commenced in the preceding bar by the oboe. The latter then resumes the recapitulation of the theme; this is carried on in bars 4-5 by the flute as leading instrument. On the *second* quaver of bar 5, it is once more handed over to the oboe, which concludes it on the note C in bar 7. The flute part of bars 6-7 is thus merely a doubling and not a vital part as it was in bars 4-5, and the object of the doubling is not to abandon prematurely the high pitch of the context. We may say then that motives 4 and—to some extent—3 inspired the conduct of the flute part in bars 6-7.

115. The converse case—the withdrawal of the octave doubling in the course of a phrase—is well illustrated by the following:—

Beethoven, "Eroica" Symphony, first movement.

Ex. 119

Allegro con brio

The flute here breaks off before the end of the phrase in order to avoid an ascent to an unsuitably high region of tone (motive 5). The clarinet and horn, however, following in its wake, rise to their own high register and so compensate for the loss of the flute.

To sum up: *The addition or withdrawal of an octave or unison doubling alters the colouring, the power, and, to some extent, the expression of the melody, but does not impair its sense.*

CHAPTER XVI.

OTHER IMPORTANT SITUATIONS

116. *Antiphony.*

Antiphony arises when one section of the orchestra retorts on the other, either argumentatively as here :—

Ex. 120

Beethoven, Fifth Symphony, first movement.

Allegro con brio

The score for Ex. 120 is in B-flat major and 4/4 time, marked 'Allegro con brio'. It illustrates antiphony between the woodwinds and strings. The first system shows the woodwinds (Flutes, Oboes, Clarinets, Bassoons) playing a rhythmic figure in the right hand, while the strings (Violins, Violas, Horns, Trombones, Timpani) play a similar figure in the left hand. The second system continues this antiphony with different instrument groupings. Dynamics include 'ff' (fortissimo).

or soothingly, in the form of an echo, refrain, or prolongation of a phrase, as in the following very beautiful example :—

Ex. 121

Brahms, Third Symphony.

Andante
espress. semplice

The score for Ex. 121 is in D major and 4/4 time, marked 'Andante espress. semplice'. It illustrates a refrain that is repeated. The first system shows the woodwinds (Clarinets, Bassoons) playing a melodic line, while the strings (Violins, Violas, Horns, Trombones, Timpani) play a similar line. The second system continues this with different instrument groupings. Dynamics include 'espress. semplice'. The refrain is marked 'as before'.

117. *Melody and Counter-Melody.*

The contrasting timbres of instruments are an invaluable aid to clearness in polyphonic music. The principle here is that unless the context calls for homogeneity of tone, the subject and the counter-subject should be allotted to contrasting instruments or groups (*cf.* the passage quoted in §103). It is true that in the *tutti*, with more than two

subjects, it is not always possible to adhere to this principle, but the following passage illustrates the normal procedure:—

Ex. 122

Mendelssohn, "Italian" Symphony.

Saltarello. Presto

This passage is refreshingly clear. The classical example of orchestral counterpoint, however, is to be found in Brahms's "Variations on a Theme by Haydn," Op. 56A, much of which might be said to consist of beautiful subjects for strings combined with equally beautiful ones for winds, with a slight substratum or interior of harmony. The part-writing and the grouping of the instruments is exceptionally clear and easy to follow, and the noble effects of colouring are logically varied from phrase to phrase.

118. *Distribution.**

"Distribution" is one of the most important processes of classical orchestration. It arises when the successive motives, phrases, or components of a closely-welded musical idea are handed on from one instrument or group to another, in the style of a dialogue or conversation. It has some analogy with antiphony, but differs from the latter in being less symmetrical and square. A simple but typical example is seen here:—

Ex. 123

Wagner, "Die Meistersinger," Act I.

Moderato

* The *Durchbrochene Arbeit* of the German theorists.

Here the melody is allotted to the first violins and one clarinet in alternation. We might account for this and all similar situations in general terms by saying that they arise out of the scope afforded by the presence of the full orchestra for the presentation of a musical thought in such a guise that it does not suggest the attempt of one instrument to test the effect of a motif at a number of different pitches. It would, however, be a great mistake to imagine that the process of distribution were applicable to every type of theme, and I venture to think that Riemann, in Chapter 2 of his in many respects valuable and instructive "Catechism of Orchestration,"* goes too far when he orchestrates a piece of simple, rapid figuration from the *Finale* of Haydn's Pianoforte Sonata in E flat with all manner of dove-tailings and a profusion of supplementary parts. One has only to recall a similar situation in the *Finale* of Mozart's Symphony in E flat to recognize that a plain version like the following would be far clearer and more effective as well:—

Ex. 124

Ex. 124 is a musical score for an orchestra, marked *Presto*. The key signature is two flats (B-flat major or E-flat minor). The time signature is 2/2. The score is arranged in a standard orchestral layout with staves for Flute (Fl.), Oboe (Ob.), Clarinet B-flat (Clar. in Bb.), Bassoon (Fag.), Cor in E-flat (Cor. in Eb.), Trumpet in E-flat (Trp. in Eb.), Timpani in B-flat and E-flat (Timp. in Bb, Eb.), Violin I (Vl. I), Violin II (Vl. II), Viola (Vla.), Violoncello (Vcl.), and Double Bass (C. B.). The first violin and B-flat clarinet parts feature a rapid, alternating melody. The rest of the orchestra provides harmonic support with sustained chords and rhythmic patterns.

In short, to justify the employment of distribution a theme must contain some suggestion of the antiphonal, argumentative, or colloquial.

* Published in English translation by Messrs. Augener.

119. A discussion of the orchestral treatment of melody, as described in the foregoing ten paragraphs, would be incomplete without an illustration of the phenomena of timbre stated in §§31-32. These may now be re-stated briefly thus: Instruments of different compass evoke the impression of congruity of pitch, even when playing in different octaves, *provided that they are playing in corresponding registers*. Thus, a melody which, on the pianoforte, would probably appear as follows:—

Ex. 125

might, in its orchestral setting, be distributed with perfectly good effect as follows:—

Ex. 126

Both of these versions would impress the ear rather as a contrast of timbre than as an alteration of pitch, for in both cases the instruments are playing in corresponding registers. But if we set the passage in this way:—

Ex. 127

the answering phrase, which is now delivered by the clarinet and the flute respectively in their medium or relaxed register, would strike the ear merely as a subdued echo of the fore-phrase, and would, in fact, bring about an anti-climax, supposing that the writer had intended a veritable effect of distribution or antiphony.

These facts account for many an orchestral situation that might well seem paradoxical to a student habituated to thinking in terms of the pianoforte. We now understand, for example, why it is that the flute so often appears to be pitched an octave too high for its surroundings. The reason, of course, is that the third octave of the flute (that which lies above the *tessitura* of the soprano voice) answers to the tenor octave of the bassoon, and the soprano or upper middle register of the oboe and clarinet—the region in which solo passages most commonly lie. The solo appearance of the flute in its lower compass:—

Ex. 127^a

constitutes to some extent an exceptional effect of instrumentation, albeit a very beautiful one.

120. *Variety.*

As in many other situations, the presence of the fully-manned orchestra here suggests to us possibilities from whose realisation we are elsewhere debarred. That which naturally occurs to our mind is the opportunity of differentiating the repetitions of a musical idea by variety of tone-colour. Out of this arises the sound principle: Never orchestrate a passage twice running in identically the same way, unless when mere iteration is intended. Or, in other words, when the repetition of an idea denotes a new phase in the course of the work—a lull, a climax, or a reinforcement—the tone-colour, volume, or power of the orchestration should be modified in keeping with the situation.

CHAPTER XVII.

AN ILLUSTRATION

In order to exemplify the principles adumbrated in the foregoing chapters, I subjoin an orchestral version of the exposition of the first movement of Mozart's Pianoforte Sonata in D (No. 284 of the Köchel Catalogue), beginning :—

Ex. 128

GENERAL REMARKS.

1. The movement is brilliant and animated in character. It is suggestive of a decorous pianoforte transcription of a symphonic movement for large orchestra (without trombones).

2. In accordance with present-day practice, the horns and trumpets are in F and A respectively. This, however, is only a formal question of notation. In all essential respects the treatment of these instruments must conform to Mozart's practice. This is not to say that we need forego the advantages conferred on us by the valve mechanism of the horn and trumpet—such self-denial would be pedantic and absurd—but we should at least refrain from writing exposed passages for the instruments in question which bring into prominence such notes as are not contained in the natural scale appertaining to the key of the passage they happen to be. In bars 5-6, for example, where the key is D major, the horns play :—

Ex. 129

This progression is normal horn writing, because it involves some of the easiest and best notes of the natural scale of D. There would doubtless be no harmonic objection to an exact doubling of the oboes in the lower octave :—

Ex. 130

but if the student will consult the opening bars of the Overture to " Figaro " (just before the *tutti*), he will learn that this is not what we expect to hear from the horn in such a context, and that, as a matter of style, it must be rejected. In bars 16-17, again, the horns have :—

Ex. 131

In the older notation this would be :—

Ex. 132

Some purists might object to the F sharp here, but it could be produced as a possible " stopped " note on the natural horn, and the temptation to introduce it here, for reasons of musical logic, is all but irresistible. The main point, however, is that, although contrapuntally more logical, it would be altogether un-Mozartian to write :—

Ex. 133

inasmuch as the commanding sound of the dominant *in octave* was, in such contexts, preferred to the weaker effect of a sixth or a third. Countless illustrations of this will be found in the works of the classics, including those of Brahms.

3. We must read between the lines and bring the dynamic grading of every passage into correct relation to the whole movement. Vagueness of thought is fatal here. Some of Mozart's loud passages are so modestly set as to suggest a small ensemble, but a survey of the context reveals that nothing less than a *fortissimo* of the full orchestra is called for (*cf.* bars 19-21).

4. Typically pianistic passages are mostly ineffective or difficult for other instruments, and call for adaptation. The instances in the present work will explain themselves. (Carse's " Practical Hints on Orchestration " is valuable here.)

* * * * *

The orchestral version now follows. The bars are numbered consecutively at the foot of the score ; the Roman numerals above denote the " phases " of the orchestration. In the commentary which follows, the bracketed numbers refer to the paragraphs in the body of the book.

This musical score is for the song "The Rose Tree" from the opera "The Mikado". It is a vocal score for a soprano and a piano accompaniment. The score is written in 2/4 time and features a key signature of one sharp (F#). The tempo is marked "Moderato". The score is divided into three systems, each containing five staves. The first system includes a vocal line and four piano staves. The second system includes a vocal line and four piano staves. The third system includes a vocal line and four piano staves. The score is marked with various dynamics, including "p" (piano), "f" (forte), and "ff" (fortissimo). The score is marked with various articulations, including accents, slurs, and staccato. The score is marked with various performance instructions, including "The Rose Tree" and "The Mikado".

IV

V

fp *pp* *p* *fp* *f* *pp* *f* *marc.*

fp leggiero ma distinto *fp pizz.*

9 10 11 12 13 14

VI

ff *a2.* *ff* *a2.* *ff* *ff* *ff* *ff*

15 16 17 18

19 ff

20

21

22

The image shows a page from a musical score for the song "The Rose Tree". The score is written for a vocal line and a piano accompaniment. The vocal line is in the upper staff, and the piano accompaniment is in the lower staves. The key signature is one sharp (F#), and the time signature is 4/4. The score is divided into measures, with measure numbers 23, 24, 25, and 26 visible at the bottom. The vocal line begins with the lyrics "The Rose Tree" in measure 23. The piano accompaniment features a melody in the right hand and a bass line in the left hand. The score is written in a standard musical notation style, with notes, rests, and bar lines clearly visible.

27 28 29 30 *f* X a2.

31 32 33 *ff* XI 34

35 36 37

p *decresc.*

pizz. *arco*

XII XIII

38 39 40 41

f *mf* *p* *f* *mf*

f marc. *f marc.*

XIV

XV

Musical score for measures 42-46. The score consists of ten staves. Measures 42-43 show a transition from measure 41. Measure 44 features a forte (**f**) dynamic with a crescendo leading to fortissimo (**ff**). Measure 45 continues with fortissimo (**ff**) and includes a first ending bracket labeled "I". Measure 46 concludes the section with a fortissimo (**ff**) dynamic. The notation includes various rhythmic values, accidentals, and phrasing slurs.

XVI

Musical score for measures 47-51. The score consists of ten staves. Measure 47 begins with a first ending bracket labeled "I" and a piano (**p**) dynamic. Measure 48 features a fortissimo (**ff**) dynamic and a crescendo marking. Measure 49 continues with fortissimo (**ff**) and includes a first ending bracket labeled "I". Measure 50 features a fortissimo (**ff**) dynamic and a first ending bracket labeled "I". Measure 51 concludes the section with a fortissimo (**ff**) dynamic. The notation includes various rhythmic values, accidentals, and phrasing slurs.

COMMENTARY

I. *A forte unison of strings, ushered in by a tutti chord.*

The melody is shown in the violin parts. It would be a mistake to regard the top note of Mozart's first chord as the vital note of the melody, for the right-hand part is merely the pianoforte version of an orchestral flourish, *cf.* the beginning of the Symphony in E flat). The violins, to which the burden of the melody is allotted, must therefore concentrate on the lower D, while the other instruments combine in close spacing to make the chord sound bright and festive.

The 'cellos are reinforced by the bassoons ; these are not really essential to the effect, but the unison of bassoon and 'cello is a specially rich and beautiful one in *forte* and *piano*.

II. *Melody to oboes, reinforced by horns, then by clarinets. Crescendo. Preparation for Phase III.*

The bassoons are percussive.

The string basses repeat A in octaves, in place of the broken octaves of the pianoforte version, which would sound too self-conscious if reproduced by the basses or even by the 'cellos alone.

III. *A string unison, set in motion by a forte chord.*

The flute reinforces the third (C sharp) in the higher octave. Remember that in all similar situations the flute makes its presence felt harmonically, but in no way affects the status of the melody lying below it (119 ; also 108, generally). The remaining wind instruments pursue their part to its logical conclusion, and the spacing of the wind-band is thus largely determined by melodic principles (66).

The triple-stop for the second violins is harmonic and percussive (76).

IV. *A small ensemble. Soft colouring.*

Here we enjoy a welcome opportunity of hearing the violins in their sympathetic middle register. For lightness and variety, the bass is now given to the 'cellos alone (62), and its upper octave is sustained by the horn (16 ; 81). In bars 11-12, the second horn is added, in order to deepen and darken the tone-colour, while the flutes double the violins an octave higher in a more or less corresponding register (110, (1)-(3)).

The viola, then viola and bassoon, supply a harmonic part which Mozart, for reasons of technical convenience, forbore to include in the pianoforte version.

The middle parts do not clash with the horn note (6).

The *staccato* note for double-bass and drum on the first beat of bar 11 is absolutely essential (71), and would require to be added to the score even if Mozart had given us no hint to this effect.

V. *Forte tutti*.

Its four constituents are allotted thus :—

1. The stationary note D to first violins (*tremolo*), flutes, and second horn.
2. The middle parts to second violin, viola, oboes, clarinets, and first horn.
3. Bass to 'cello and double-bass, reinforced—for the sake of clearness and power—by the bassoons in octaves. The strings bow each note, while the bassoons slur their notes bar for bar, this being productive of greater sonority than if they detached each note.
4. An independent rhythm for the trumpets and drums on the important note D. This is a not uncommon feature in orchestration (88 ; 90), and its effect here is particularly good, as the rhythm occupies only the centre of the bar, leaving gaps at the beginning and end through which the essential things can be heard with perfect distinctness (46 (4)).

Note that as the bass lies very high and possesses melodic importance, we must beware of drowning it by a profusion of overlapping middle-region harmony (65). It would, for example, be a great mistake to give sustained notes to the trumpets and bassoons in addition to those of the horns. The only sustained note that overlaps the bass is that of the second horn, advisable on grounds of fullness ; the first horn keeps out of the way, and is, of course, associated by the ear with the oboes, clarinets, &c. All these precautions guarantee lucidity of effect.

Other arrangements of the oboes and clarinets are conceivable, but as they would all merely tend to weaken the particular region of the harmony in which these instruments do good service, they need not be discussed.

VI. *A large ensemble, fortissimo, foreshadowing Phase VII.*

In progressing to the chord on the first beat of bar 17, all the instruments follow their natural bent (brass and drums), or obey the laws of part-writing (strings and wood-winds).

The oboes sharpen the first violins. We are now launched on the high tide of *tutti* orchestration, so that a return to pure string tone at this point would sound tame. The power of the bass centres in its upper octave (vla., fag.).

The horns assist the second violins in giving due prominence to the sustained note A, the dominant of the scale, which, during the following five bars, plays a leading part.

VII. *Tutti, fortissimo.*

The double-bass now enters in its sonorous register, and brings with it a great accession of power (62).

The melody is powerful (both violins, two clarinets, one horn (81)).

The flutes brighten the A of the other wind instruments. Trumpets, if employed at all, must be pitched high, for reasons of climax ; they are marked *forte*, but it is for the conductor to determine their exact grading. The oboes generalise the tone of the trumpets, and secure a better amalgamation of string and brass tune (36). Compare the quotation in §46 (3).

The arrangements of the notes of the chords in bar 21 is dictated primarily by contrapuntal principles ; the part-writing is made interesting to the player. Provided that essentials are heard distinctly, it is unnecessary to calculate to a nicety the relative power of each note.

VIII. This phase marks the beginning of the second group of themes. The beautiful melody which now commences is so thoroughly violinistic as to leave no doubt regarding its appropriate instrumentation.

IX. *Repetition of VIII. in the form of a variation.*

Contrast of colour and pitch is called for here (120). The second violin accordingly doubles the first in the lower octave, and this obliges us to pitch the accompaniment an octave lower. Elementary as these procedures are, they are a welcome means of obtaining variety. For atmospheric effect, the bassoons double the viola and 'cello in unison.

In bars 26, 27 the flute doubles the first violin in unison. This additionally emphasises the beginning of the new phase, and is in itself a beautiful effect of colour. (The tone of the flute becomes progressively brighter and more crystalline from about upwards, so that the little *crescendo* indicated bar in 26 comes about almost of its own accord.)

X. *Tutti, forte, then fortissimo.*

The string version of Mozart's pianoforte writing explains itself; the viola contributes a missing part which could not be included in the original. The flutes are doubled for the sake of clearness. The second flute might have doubled the second oboe, but of the two settings :—

Ex. 135

the former is preferable as being more pointed. The horns and clarinets emphasise the important note A, and steady the ensemble with their *tenuto*.

The allotment of the notes in the chord in bar 33 follows Mozart's practice: the tonic to the brass, and the remaining notes to the other instruments. The gap thus arising between the oboes and flutes is advantageously filled by the first violin.

The bass instruments descend to their more sonorous region, and thereby greatly enhance the power of the *tutti*.

XI. *Distribution. A phrase of two bars, repeated in a more florid shape.*

The first phrase suits the oboe perfectly, and the minute collisions between the melody and the part adjoining it (second oboe) are of delicious effect. The remainder of the harmony is given to second violin and viola, *staccato*, and without any "atmospheric" adjuncts (holding-notes), which would merely nullify the piquancy afforded by the contrast of the *staccato* of the strings with the *legato* of the second oboe and the neat little angular motives of the first oboe.

The instrumentation of the second phrase is to some extent a matter of taste. The melody might be assigned to the flute, but if we were to suppose the whole movement orchestrated, it would be preferable to ear-mark the later version, which lies a fourth higher, for that instrument. Moreover, the clarinet has not yet had an opportunity of making itself heard solistically. We therefore allot the phrase to the latter more emotional instrument, and its harmonic accompaniments (amplified suitably) to the flute, bassoons, and horns in soft register, a drastic but welcome change of tone-colouring. To prevent the wind-harmony from sounding stagnant, the lower strings enliven the passage with an imitative rhythmical figure.

XII. *Large ensemble, forte.*

A repeated note for violins, plus loud harmony for winds, is an adequate reproduction of Mozart's pianoforte writing, more especially as the bass is the really essential item in the ensemble.

The trumpets help with the accent on the highest note of the bass, and thereby add a touch of distinctive colour to the last beat of the bar.

XIII. *The same.*

A few slight alterations are all that is necessary or even possible here. In bar 43 the bassoon, in middle register (7), warms and darkens the tone-colour. The string basses now supply the lowest part and generalise the tone of the ensemble.

XIV. *A string unison, followed by a bar of antiphony.*

Note the following: In bar 40 the authentic pitch of the melody was fixed by the clarinets. In bar 43 the flutes are felt to be merely a brightening of the clarinet tone, and the latter instrument consequently remains authoritative for the pitch of the melody. The violins, entering abruptly at bar 44, pick up the melodic thread on the note thrown to them by the clarinets, for it would be a great mistake to allow them to enter an octave higher and thus take their cue from the flutes. The pitch of the pianoforte original is therefore the correct one for the passage.

The descent of the strings to their rough and resonant low register is a very welcome effect of tone-colour after so much soprano melody.

XV. *A small ensemble, of delicate tone-colour.*

No apology is needed, in bar 47, for the conduct of the wind instruments in thirds; the passage would sound tame otherwise. Observe as a matter of technique that it is the instrument which enters second (the flute) that must perform the lower part.

The soft viola bass produces the effect of a lull in the orchestration.

XVI. *Tutti, forte, and fortissimo.*

The wind instruments must lie as high as is conveniently possible, otherwise the effect of bar 49, where the strings descend to middle and low register, will be solemn rather than forcible. The high register of the horn is invaluable here.

APPENDIX

§14. The reason for the rule here stated is that a progression of fourths, if allotted to two instruments of identical timbre, would tend to detach itself from the accompanying sixths, and thus acquire a prominence which would be disagreeably noticeable if, for example, the fourths were assigned to the oboes, and the sixths to a less reedy instrument. This explains Beethoven's procedure in the wood-wind ensemble at the beginning of the Violin Concerto :—

Ex. 136

Allegro ma non troppo

The musical score for Ex. 136, titled "Allegro ma non troppo", features four staves. The top staff is for Oboe (Ob.), the second for Clarinet in A (Clar. in A), the third for Bassoon (Fag.), and the bottom for Timpani (Timp.). The Oboe, Clarinet, and Bassoon parts are marked *p dolce* and play a melodic line with a progression of fourths. The Timpani part is marked *p* and plays a rhythmic accompaniment of eighth notes.

In bar 4 Beethoven conducts the oboes in fourths, it is true, but observe that the clarinet doubles the second oboe in unison. The latter is thereby neutralised and absorbed into the harmonic accompaniment, and the first oboe stands out by itself as the solo instrument.

Compare the analogous treatment of the wind instruments in the passage quoted in §71 from "Die Meistersinger."

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