

Notes

The Technique of Orchestration

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3	When used within range of Bb or C Trumpet the lower notes have a greater strength and security	299
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3 Tempo shown at top of page <i>and</i> just above Violins.....	322
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2 Each part <i>must</i> include tempo, dynamics, expressions, phrasing, slurring, bowing, rehearsal letter, and meter.....	324

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1 Provides help to the player	324
2 Often included just before entrance after a lengthy sequence of rests	324
3 As 'landmarks' in middle of long rests	324
4 Choose a prominent part for cue so it is easily heard	324
5 Preferable to write a transposed part for transposing instruments	324

1 INTRODUCTION

I CONSIDERATIONS

A. INFORMATION NEEDED

1 Factual

- Can be acquired from reading, explanations, and score study
- Includes
 - : Names of instruments
 - : Order of instruments on score page
 - : Range of instruments
 - : Correct notation
 - : Characteristics of instruments
 - : Principles of combining and balancing instruments
 - : 'Schools' of scoring

2 Aural information

- Can be learned only by careful and frequent listening (w/score reading) over time
- Includes
 - : Characteristic tone quality of each instrument
 - : Sound of various instruments in combination
 - : Sound of special effects
- Tone color *cannot* be adequately described in words and information must be applied in exercises

B. CAUTIONS

- 1 Principles of good voice-leading, spacing, and doubling are an absolute necessity
 - 2 Great importance to think in terms of *lines* rather than isolated notes
 - 3 Accurate workmanship, attention to detail, and a practical approach are all parts of a successful orchestration
- To achieve maximum effect with the simplest means

C. ORCHESTRATION VS INSTRUMENTATION

1 Definition

- Orchestration is the actual process of scoring for the orchestra
 - Instrumentation
 - : Study of individual instruments
 - : List of instruments required for a particular piece of music
- 2 Certain amount of overlap between the two terms and instrumentation must be considered within orchestration

II THE ORCHESTRA AS A WHOLE

A. CONSIDERATIONS

1 Orchestra *means* the orchestra as a whole

- Lacks precision as a term
- Symphonic groups vary considerably in size and makeup

2 Each section may play by itself or combined with one or more of the other sections

- Same or different musical material for each section
- One instrument of a section with all or part of another
- All are combined and playing (in 'tutti')

3 Percussion section

- Most often used for rhythmic support (most common)
- Can perform on its own to good effect

4 Score listing for orchestra is standard

- Woodwinds → Brass → Percussion → Harp → Strings
- If an instrument is not used in the score it will not be listed
 - : Those included will still follow standard order
 - : All instruments to be used are listed on the first page (whether playing or not)
 - : In following pages instruments not playing *may* be omitted
- When a solo instrument is involved (concerto) it is placed normally directly above the strings
- Piano, celeste, and choral parts are placed above the string section

Orchestra Size Chart

		Small	Medium	Large
Woodwind Section	Piccolo		(1)	1
	Flute	1	2	2 or 3
	Oboe	1	2	2 or 3
	English Hrn			1
	Clarinet	1	2	2 or 3
	Bass Clarinet			1
	Bassoon	1	2	2 or 3
	Contra Bass			1
Brass Section	French Hrn	1 or 2	4	4 to 6
	Trumpet	(1)	2 or 3	3
	Trombone	(1)	3	3
	Tuba		1	1
Percussion	Percussion *	2	3	4 or more
	Harp	(1)	(1)	(1) or (2)
String Section	1 st Violins	4 to 8	8 to 12	12 to 16
	2 nd Violins	3 to 6	6 to 10	10 to 14
	Violas	2 to 4	4 to 8	8 to 12
	Cellos	2 or 3	3 to 6	6 to 10
	Double Basses	1 to 3	3 to 6	6 to 10

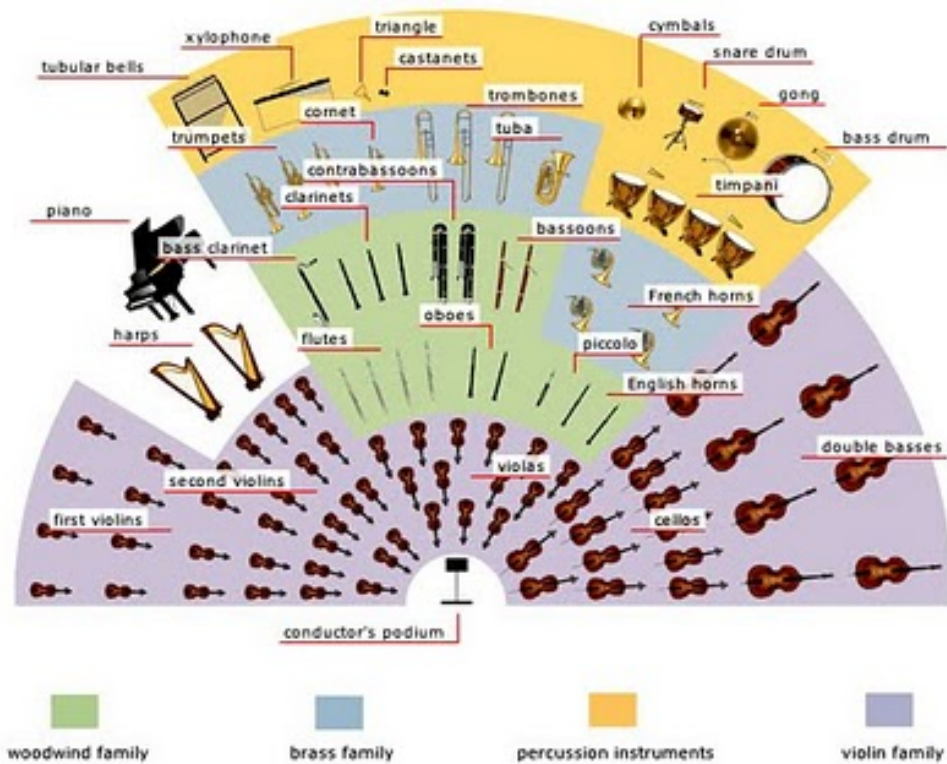
* Numbers with
timpanist

Expanded Woodwind Section

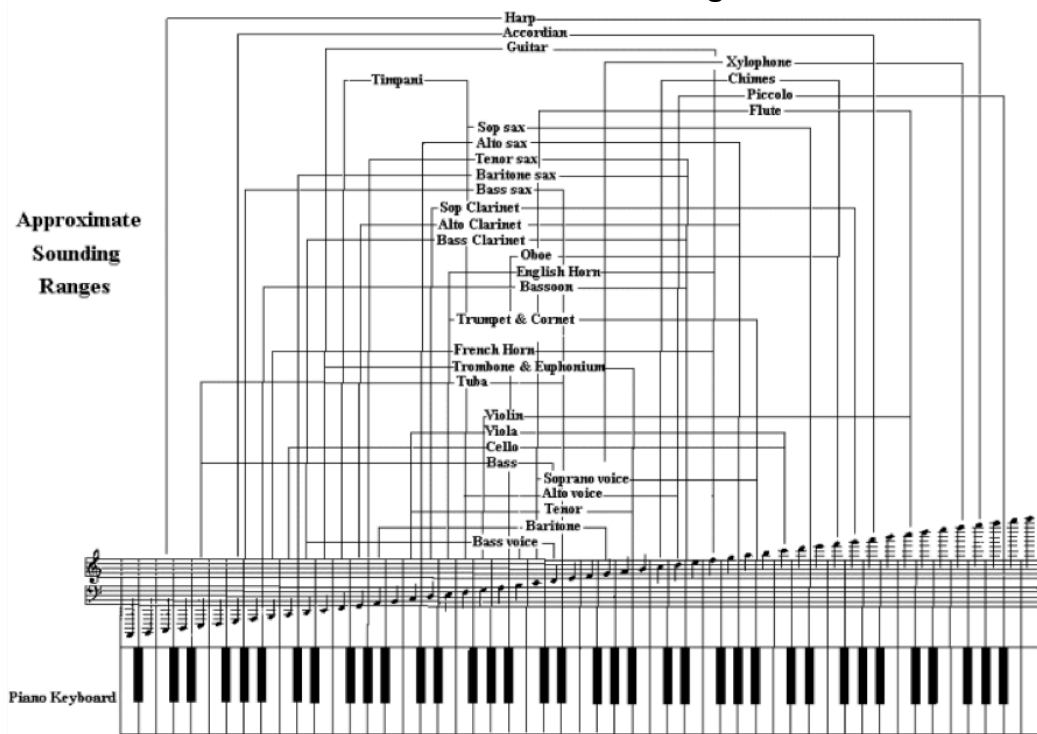
(i.e. Stravinsky, Strauss, and Mahler)

- Requires woodwinds in groups of 'four' •
- Piccolo & 3 Flutes
- 3 Oboe & English Horn
- Eb Clarinet, 2 Bb Clarinet, & Bass Clarinet
- 3 Bassoon & Contra Bassoon

Orchestral Setting Arrangement



Orchestral Instrument Ranges



Orchestral Score Layout

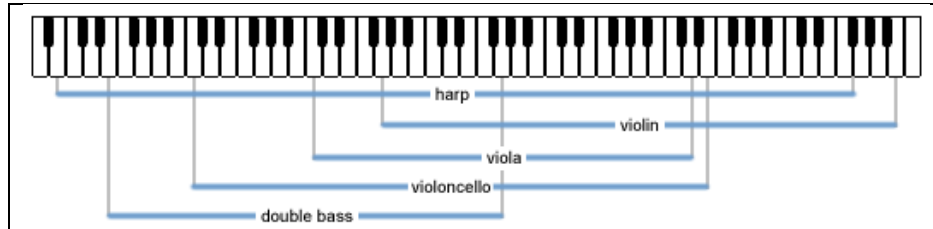
The image displays a comprehensive orchestral score layout with 11 systems of staves. Each system contains multiple staves for different instruments, all featuring a single measure with a whole rest. The instruments are listed on the left of each staff:

- System 1:** Piccolo, Flute 1.2, Oboe 1.2, Cor Anglais, Clarinet in E \flat , Clarinet in B \flat 1.2, Bassoon 1.2, Contrabassoon.
- System 2:** Horn in F 1-6 (two staves), Trumpet in C 1.2.3.4 (two staves), Trombone 1.2.3, Tuba.
- System 3:** Timpani.
- System 4:** Percussion 1, Percussion 2, Percussion 3, Percussion 4.
- System 5:** Harp.
- System 6:** Piano.
- System 7:** Violin I, Violin II, Viola.
- System 8:** Violoncello, Double Bass.

B. HISTORY

- 1 Before 17th Century composers for instrumental music did not specify particular instruments for respective parts
- 2 By Bach's time it was usual to specify the instruments involved but with no distinction apart from range or between parts for instruments or voices
- 3 Standardized instrumentation was not fully in evidence till the Classical Period
- 4 By early 19th Century the orchestra had evolved into a (more or less) standardized group

2 THE STRINGS



I VIOLIN

Italian Violino *French* Violon *German* Violine
(Plural) Violini Violons Violinen



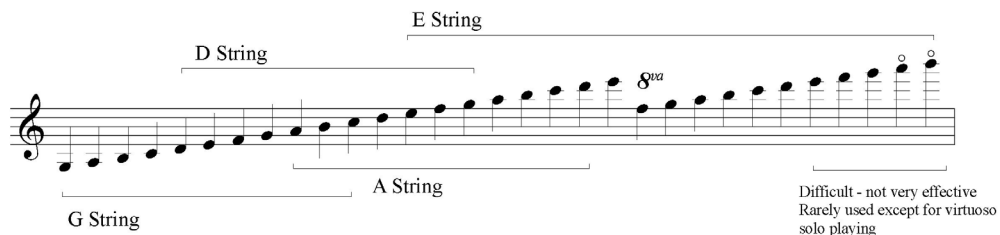
The Violin



Violin Bow



Violin Mute

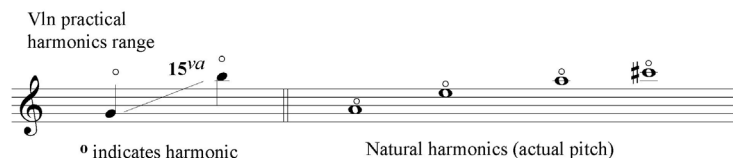


Difficult - not very effective
Rarely used except for virtuoso
solo playing

Violin Range



Violin Open Strings



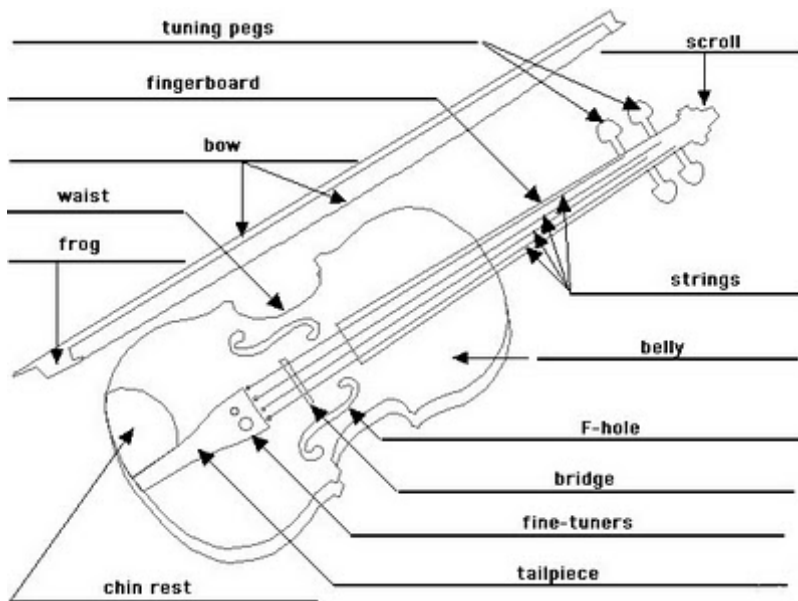
Violin Harmonics

A. CHARACTERISTICS

- 1 Chromatic scale upwards is obtainable on each
 - Notes normally fingered on nearest string position
 - : On occasion particular note position might be chosen to maintain a particular color
 - : Choice of string for a particular note usually left to player
 - : Only designated where choice is other than normal one
 - Strings often designated by roman numerals (High E string is I)
 - : String indications where given is roman numeral with dotted line to indicate how far the particular string indication is to be used
 - : 'Sul' is used in Italian and 'Saite' in German
- 2 Colors
 - IV G String
 - : Characteristically full rich and dark
 - : From D (above middle C) and upward tone becomes curiously intense
 - III D String
 - : Less dark and less full
 - II A String
 - : Considerably brighter
 - I E String
 - : Especially brilliant and penetrating

B. TECHNIQUE & EFFECTS

- 1 Stringed instruments can be either bowed (arco) or plucked (pizzicato)
 - Bow is normal method of tone production
 - Pizzicato indicated by 'pizz' placed above staff and requires an indication to return to bow
 - : Directions are important and must be included by orchestrator
 - : Not necessary to include dots above note in a pizz. Passage
 - : If a extremely short & dry pizzicato is desired follow 'pizz' with 'secco' (pizz secco)
 - : In pizz passages involving longer note values where notes are to be allowed to ring utilize half or whole notes
 - : Follow longer held pizzicato notes with 'vib' (vibrato) if that is desired
 - : As a rule best not to write pizz. Passage for violin above D above high C (D6) as pizz is thin and lacks resonance in this range
 - : There is a limit to speed with which pizzicato note can be played
 - Also very rapid changes from arco to pizzicato (or vice versa) are awkward
 - Rapid change from arco to pizz easier if change occurs on up bow in arco passage
 - Left handed pizz are rare in orchestral literature (do appear in solo violin) and indicated with '+' above note
- 2 Names for parts of the stringed instruments come up frequently in orchestral work
 - Finger board, bridge, frog, point are referenced in special efx for the instruments

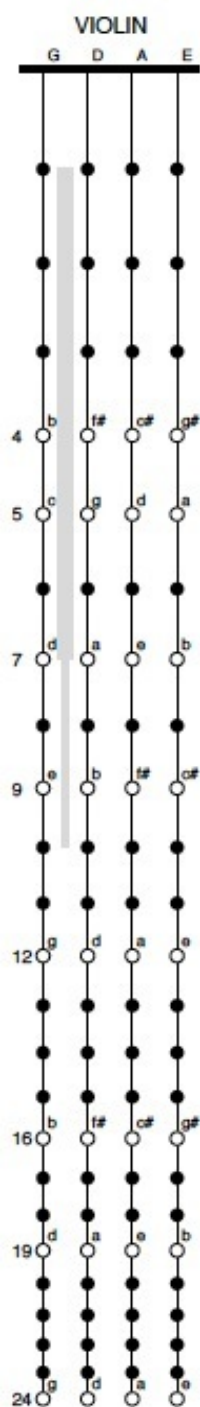


3 Vibrato

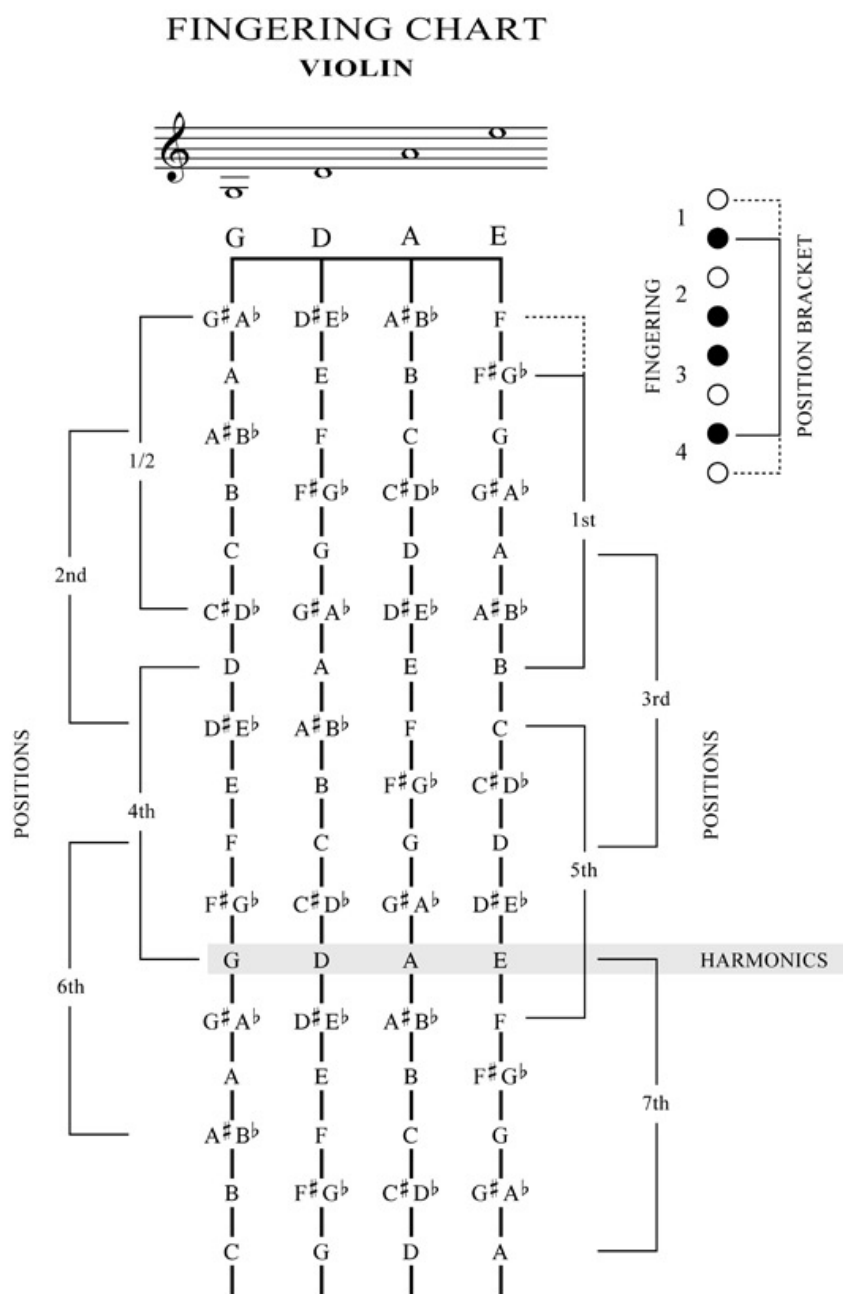
- Normal to string instrument technique
- Produced by an oscillating motion of the hand on the finger board
 - : Tone is 'white' and lacks expression without vibrato
 - : Vibrato cannot be applied to open strings
 - Avoid open strings in slow and expressive passages as difference in tone quality would be too apparent
 - Open strings tend to ring and be louder than stopped tones
 - + Alternative is to play stopped tone on a lower string
 - + Not possible with lowest open string
 - Symbol for open string is 'O' placed above the note

4 Fingerboard

- Differentiated by 'position' (1st position, 2nd position, etc.)
 - : Determined by 1st finger position above open string
 - Open D string with E fingered in 1st position
 - Sudden or repeated jumps 'across' strings will produce awkward string writing
 - Sudden or repeated position shifts will also produce awkward string writing
- Higher position on the strings the closer the notes lie on the fingerboard
 - : Not a problem for professional players
 - : Better to not go beyond 3rd position for school groups



Fingerboard Chart



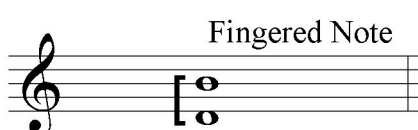
Position Chart

Copyright 2007 © SunMusic Strings

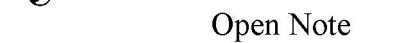
5 Double, Triple, Quadruple Stops

- Violin is capable of playing 2, 3, or 4 notes at a time
 - : Provided each note can be taken on a *separate* string
 - : Provided that *all* pitches can be fingered at once
 - : Notes of double stop *must* be played on adjacent strings
 - : Involving open strings can make the fingering problem much easier

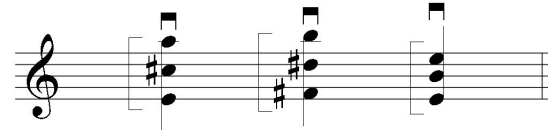
Fingered Note



Open Note




With indicated down bow




Double Stop w/open string

Written




Played




Triple Stop

Quadruple Stop


Impossible: Same String



A on G String F# on D String



D: Open String B on A String



THREE-NOTE CHORDS FOR THE VIOLIN (PARTIAL LIST)*

Ex. 7

(Chords containing two open notes)

G and D strings open

D and A strings open

A and E strings open

G and A strings open

D and E strings open

(Chords containing one open note)

G string open

D string open

A string open

E string open

(Chords containing no open note)

to

to

to

to

to

to

to

to

Note: Accidentals are written separately for each chord.

* This list has been limited to major and minor triads and dominant-type seventh chords (or incomplete forms of these chords).

FOUR-NOTE CHORDS FOR THE VIOLIN (PARTIAL LIST)

Ex. 8

(Chords containing three open notes)

G, D and E strings open  G, A and E strings open  D, A and E strings open 

(Chords containing two open notes)

G and D strings open 
 A and E strings open 
 G and E strings open 

(Chords containing one open note)

G string open 
 E string open 

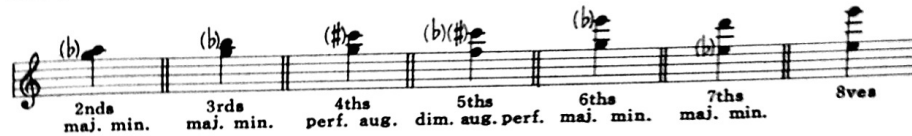
(Chords containing no open note)




Note: Accidentals are written separately for each chord.

- Practical upward limits for double stops

Ex. 4



- Problems
 - : 6^{ths} most successful as double stops
 - : 5th & 4th present intonation problems as slight deviation from correct pitch is more apparent (5^{ths} are played with one finger unless open string is involved)
 - : Unisons are rare and only introduced for added resonance and volume
 - Almost always involve an open string
 - D, A, E are most generally used open strings



- Notated as



- : Double stops larger than octave are possible utilizing an open string
- : For orchestral writing quick succession of double stops are generally impractical
 - Short succession of 6^{ths} or 3^{rds} are ok
 - Usually better arranged as divisi (string group divided)

- Triple & Quadruple Stops

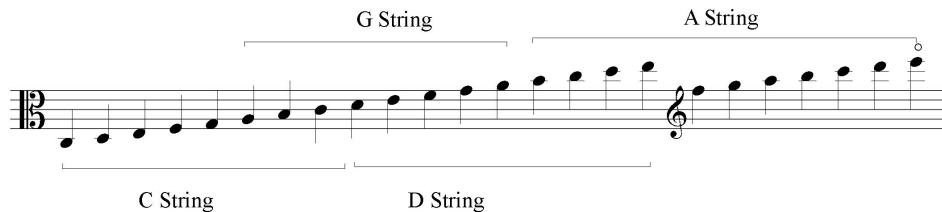
- : Those that include at least one open string are most resonant
- : Certain other chord arrangements that contain one open note are also possible
- : Because of the curvature of the bridge, four notes cannot be played exactly at the same time
- : Quadruple stops can be played with the bow moving so quickly over the strings that the effect is of a slightly arpeggiated or broken chord



- : Little point in writing triple & quadruple stops except in fairly loud passages
- : Use of triple & Quadruple stops is usually to add resonance
 - Those with open strings are most effective
 - Those with open strings are most comfortable to play
- Sustaining notes
 - : Double stops may be used effectively in sustained chords at a low dynamic level
 - : Possible to sustain the top note or two notes of 3 & 4 note chords
 - : Inner notes may be sustained though not of much practical use

II VIOLA

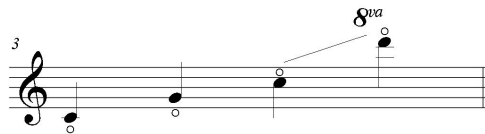
Italian Viola *French* Alto *German* Bratsche
(Plural) Viole Altos Bratschen



Viola Range



Viola Open Strings



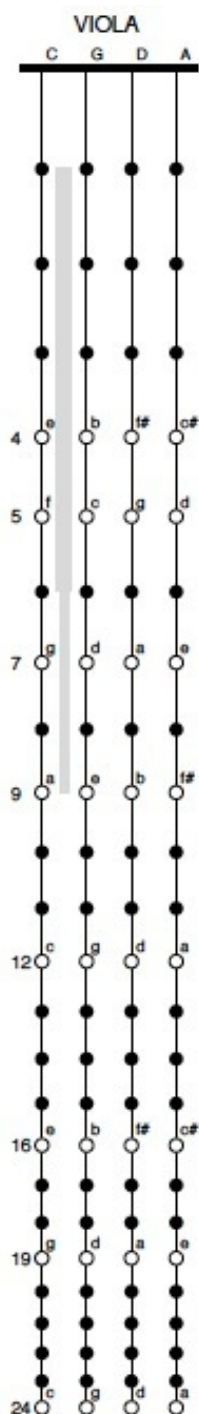
Viola Harmonics

A. CHARACTERISTICS

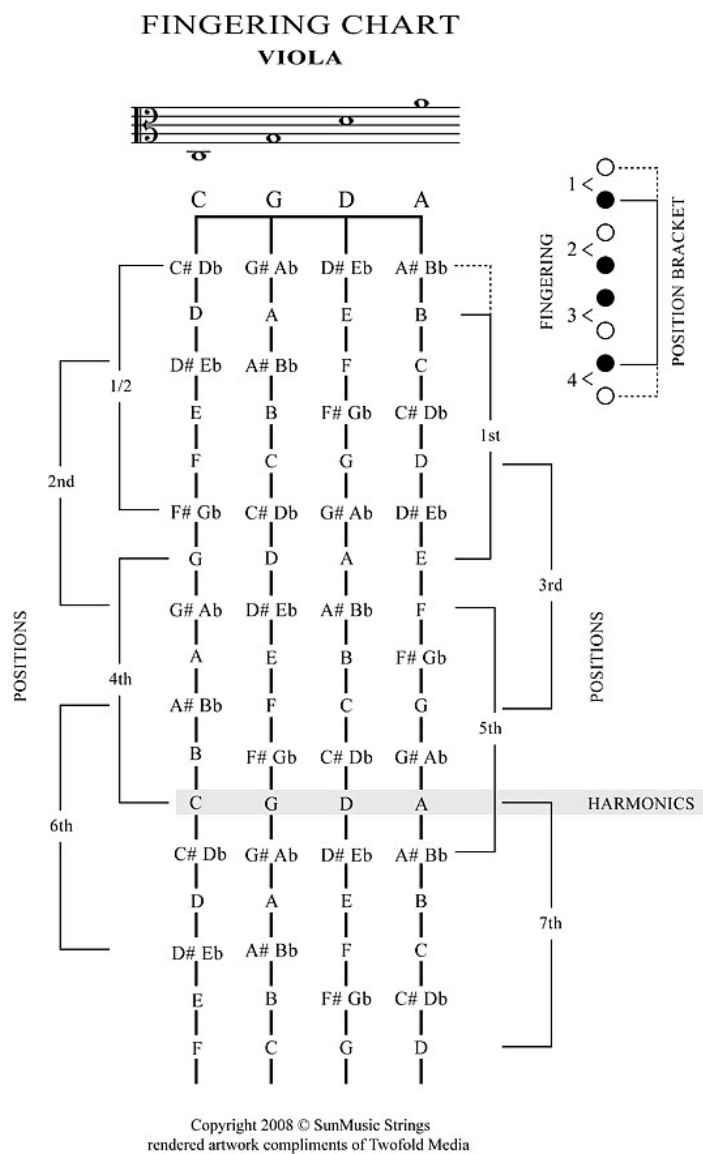
- 1 Greater size compared to violin
- 2 A characteristic tone color
 - Unique tone color often 'masked' to 'make sound' like a violin
 - : A certain 'gameness' of tone
 - : No reason the viola should not assert its unique tone color
- 3 Utilizes the Alto clef
 - Used as range of viola is too high and too low for treble or bass clef and limits amount of ledger lines above and below staff
 - If part goes too high and stays there for some time a treble clef can be used
 - : Do not change clef for just a few notes
 - : Player would rather deal with a few ledger lines rather than shift thinking to new clef
 - For school groups should not go above G5

B. QUALITY OF STRINGS RELATIVE TO THE VIOLIN

- 1 Capable of doing everything violin can do (discounting range difference)
- 2 Valuable as a bridge between violin and cello
- 3 Same patterns available as multiple stops as violin but a 5th lower
- 4 Quadruple stops in the higher positions are a bit more difficult and best avoided



Viola Fingerboard



Viola Position Chart

THREE-NOTE CHORDS FOR THE VIOLA (PARTIAL LIST)*

Ex. 13

(Chords containing two open notes)

C and G strings open

G and D strings open

D and A strings open

C and D strings open

G and A strings open

(Chords containing one open note)

C string open

G string open

D string open

A string open

(Chords containing no open note)

to

to

to

to

to

to

Note: Accidentals are written separately for each chord.

* This list has been limited to major and minor triads and dominant-type seventh chords (or incomplete forms of these chords).

FOUR-NOTE CHORDS FOR THE VIOLA (PARTIAL LIST)

Ex. 14

(Chords containing three open notes)

G, C and A strings open

C, D and A strings open

G, D and A strings open

(Chords containing two open notes)

Chords containing two open notes:

G and C strings open

D and A strings open

C and A strings open

(Chords containing one open note)

C
 string open

A
 string open

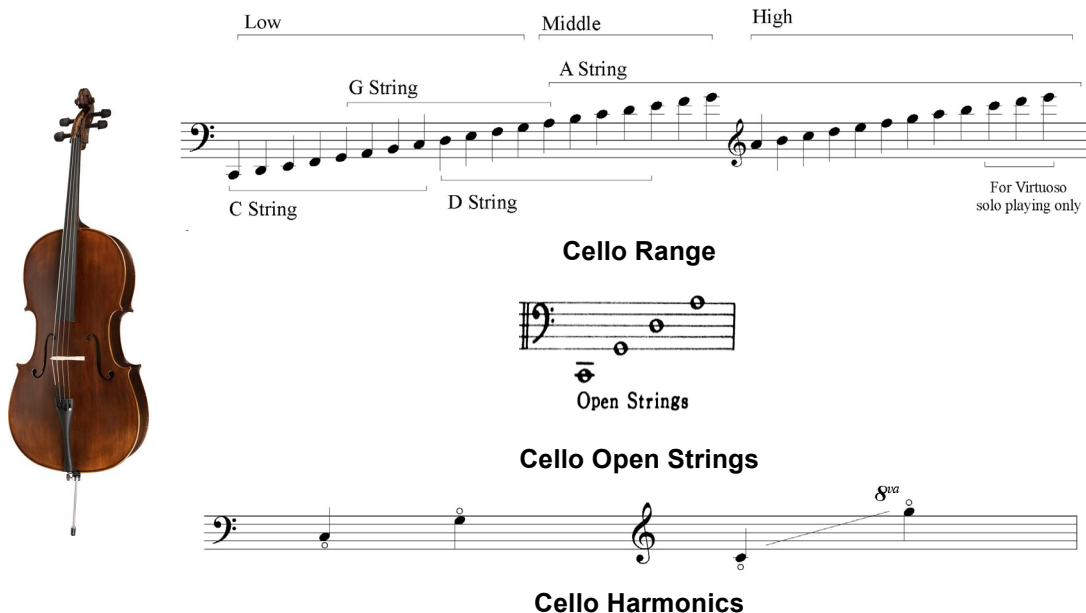
(Chords containing no open note)

[illegible]

Note: Accidentals are written separately for each chord.

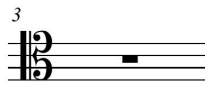
III CELLO (VIOLONCELLO)

<i>Italian</i>	Violoncello	<i>French</i>	Violoncelle	<i>German</i>	Violoncell
(Plural)	Violoncelli		Violoncelles		Violoncelle



A. CHARACTERISTICS

- 1 Operates basically on same principle as smaller violin and viola
 - Notes are further apart on the finger board
 - Open strings have same letter names as open strings on viola but an octave lower
 - Bass clef is normal for cello but sometimes tenor clef is used with extended phrase in upper part of compass



Tenor Clef

2 Tone

- Mellow and warm
- 2 bottom strings are (in particular) 'rich and full bodied'
- D string is 'brighter, warm, and ingratiating'
- A string has a 'vibrant singing tone with a strong expressivo'

3 Placement

- Upper range limit is hard to fix best not write above C5 for orchestral work and F4 for school orchestra
- Much of time cello constitute the bass voice of a string group (Quartet)
 - : Often doubled with basses an octave lower
 - : Can also be used as a tenor or baritone voice or even as melody (if not too high)

B. DOUBLE STOPS

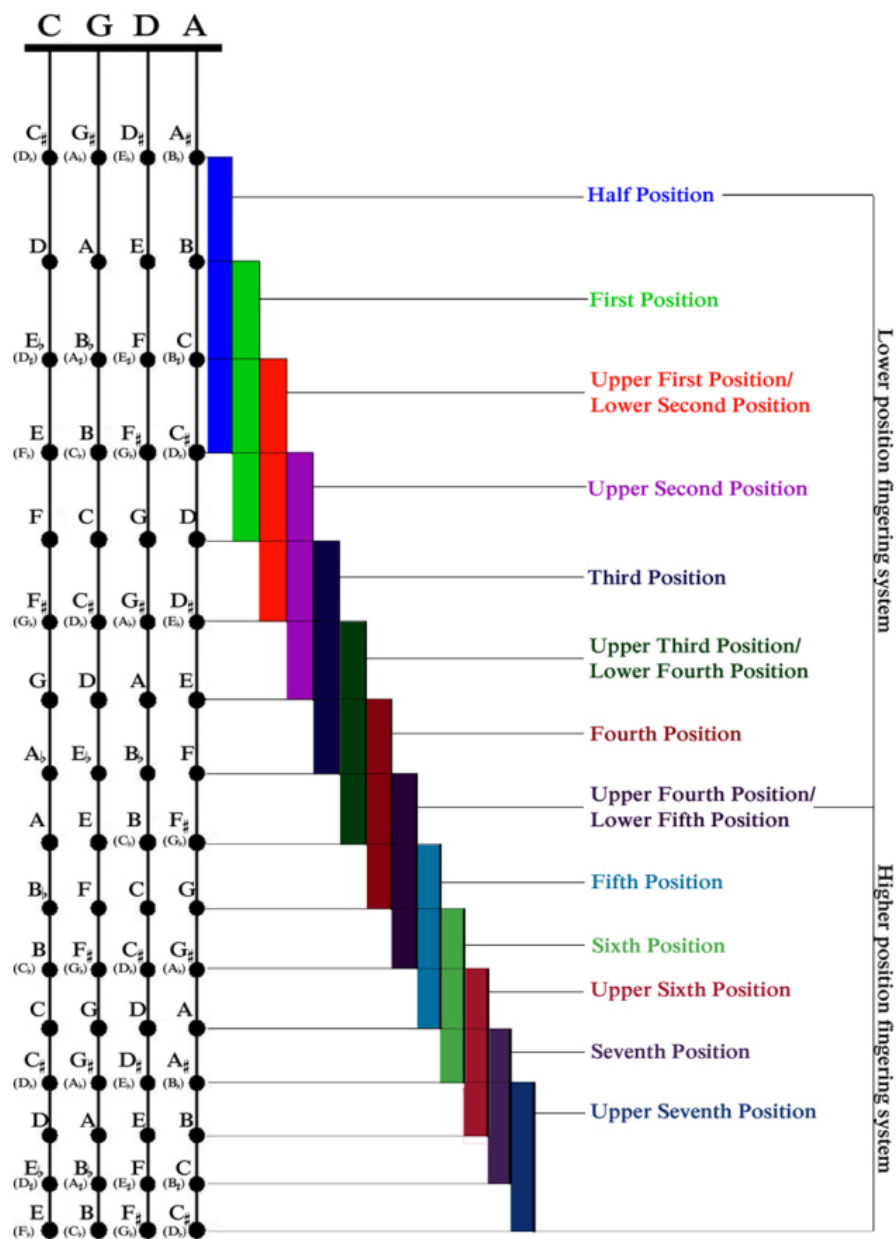
1 Cautions

- Avoid 2^{nds} & octaves unless one of notes is an open string
- Triple and quadruple stops are possible as long as no higher than E4

- 2 Cello section is frequently called upon to play broken-chord patterns which are simply multiple stops in which notes are sounded consecutively instead of at same time

Ex. 17





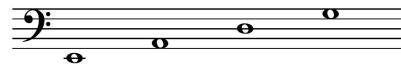
Cello Fingerboard & Position Chart

IV DOUBLE BASS

<i>Italian</i>	Contrabasso	<i>French</i>	Contre basse	<i>German</i>	Kontrabass
(Plural)	Contrabassi		Contre basses		Kontrabässe



Bass Bow



Sounds 8ve Lower

Open Strings



Range by String

A. RANGE

- 1 Does not sound as written, sounding an octave lower than written
- 2 Part written an octave higher
- 3 Due to lower range and done to limit number of ledger lines

B. CHARACTERISTICS

- 1 Four strings tuned in 4^{ths}
 - 5 string bass is still much used in Europe
 - : Tuned to C2 (below the low E)
 - : US commonly uses an extension mechanism to lower the E String
 - Most US orchestras have at least 2 or 3 with this if not all in the Bass Section
 - School orchestras seldom have this equipped bass
 - Lower notes than E seldom occur and can be played as octave higher without serious damage to the effect

-
- This 'extended' low register is valuable for dark color effects and finishing phrases that dip below the low E
 - The Double Bass sounds much better when *not* kept too low
 - : More incisiveness
 - : Sense of definite pitch (in upper & middle registers)
 - : Tenor clef may be used in very high passages
 - Due to instrument physical size and the ponderousness of its technique it has limitations in performance compared to other strings
 - : Much less agile and while rapid passages are possible best kept neither too long or too frequent
 - Strenuous for the player
 - Can sound 'fuzzy' and unsatisfactory
 - Often given a simplified form of what the cellos and possibly lower woodwinds are playing
 - : Not necessary (or advisable) that basses play constantly
 - : Effectiveness seems to be an inverse ratio to the amount
 - : If a passage is unsuitable for instrument simply give the bass a rest

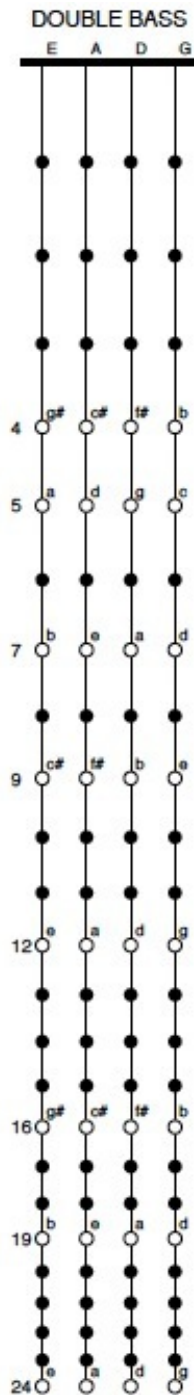
2 Multiple stops

- Triple & Quadruple stops are *completely* out of the question
- A few double stops are possible with one or two open strings (better to split the section)
- Most other effects common to string section are possible
 - : Pizzicato passages are frequent and especially effective
 - : Provide support without heaviness
 - : Can provide a relief from the bowed sound

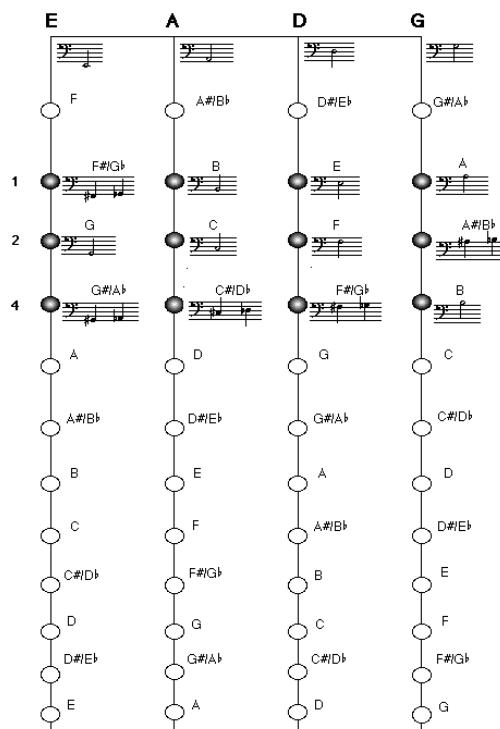
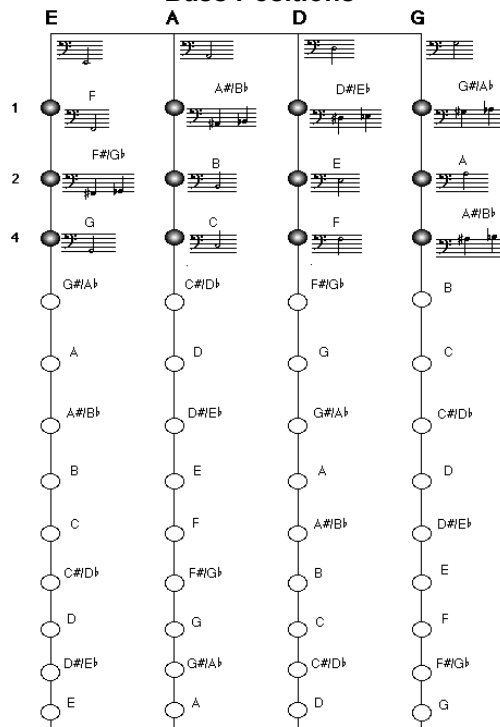
3 Rarely called upon to play alone

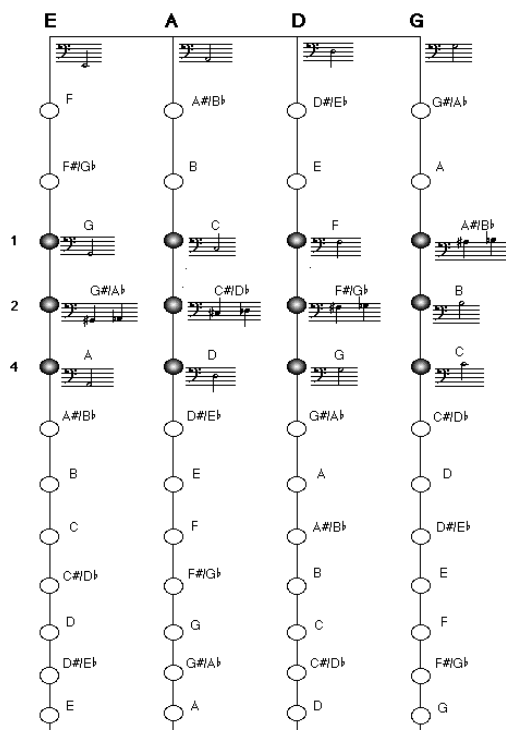
- Tone apt to be a bit dry
- Lacking in focus
- Do not have the expressive possibilities of the cellos
 - : Through frequently take melodic passages an octave below the cellos
 - : Lower register is dark almost ominous in quality
 - : Upper two strings are somewhat clearer and brighter in color

Bass Fingerboard

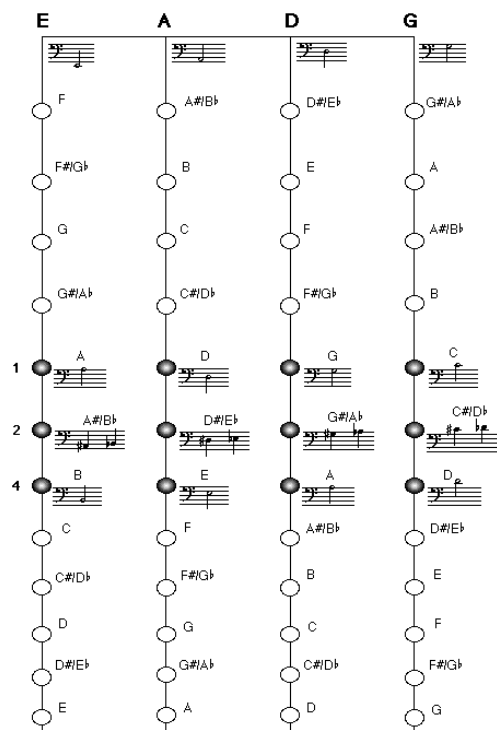


Bass Positions

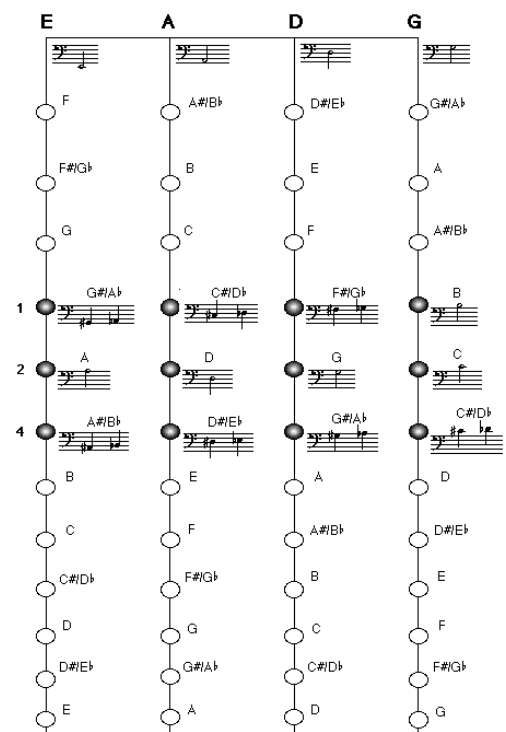




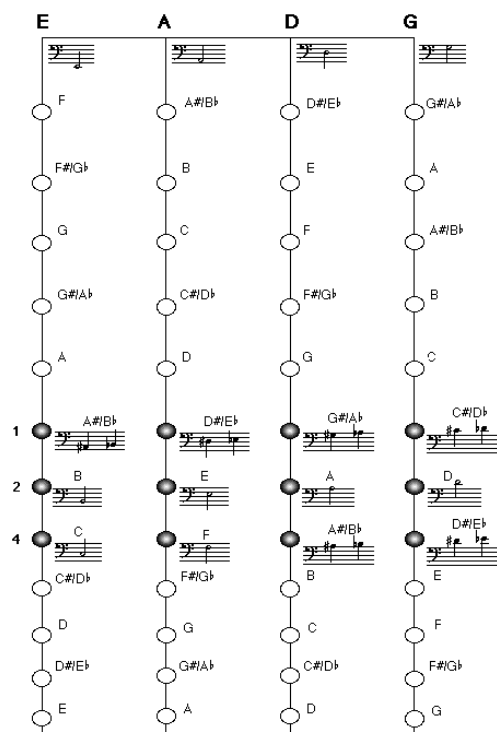
Between 1st & 2nd POSITION



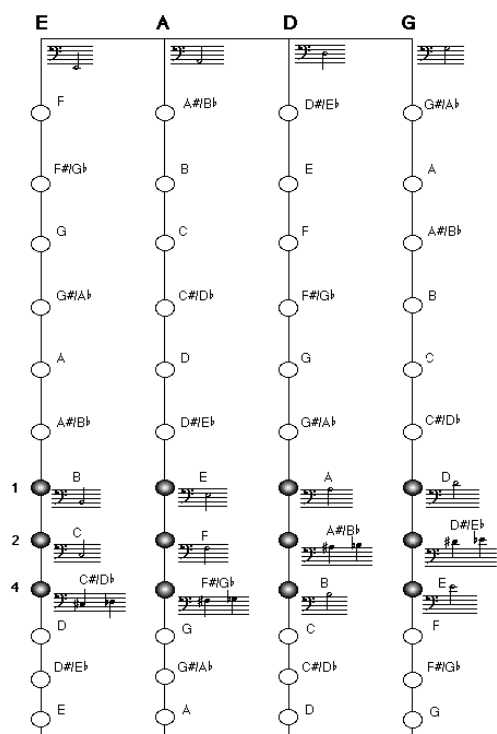
3rd POSITION



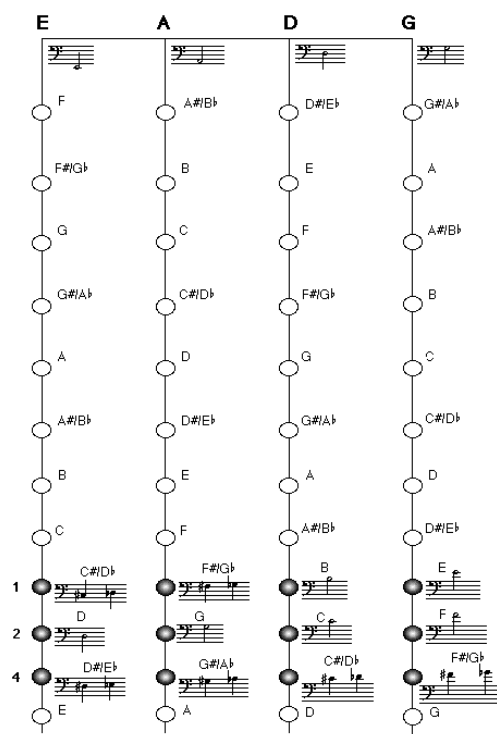
2nd POSITION



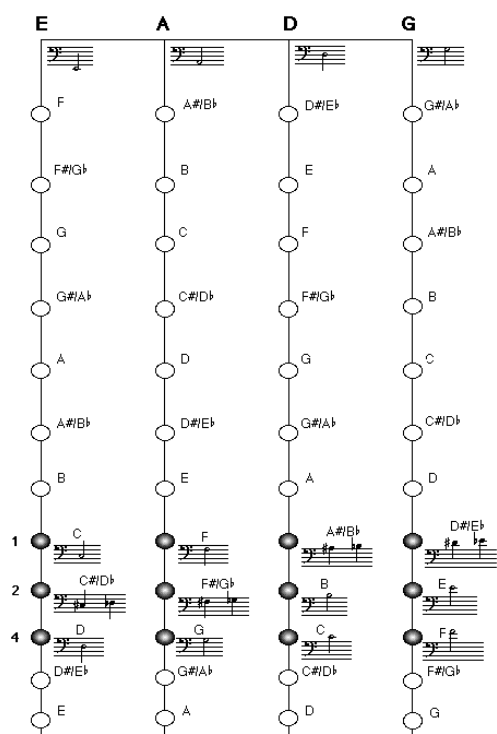
Between 3rd & 4th POSITION



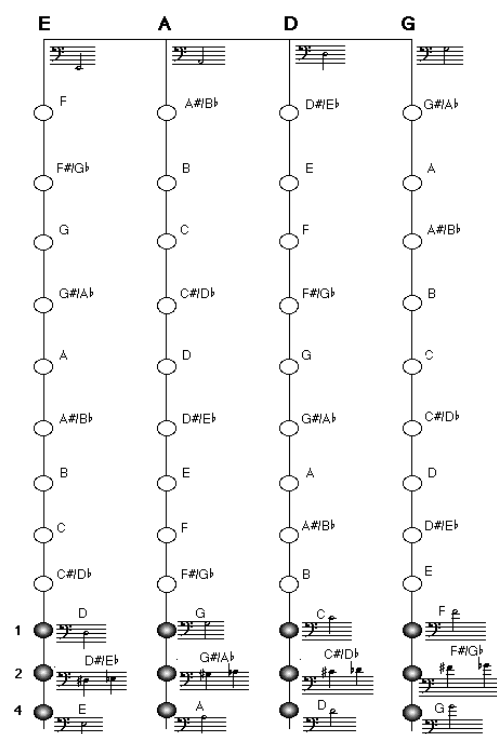
4th POSITION



Between 5th & 6th POSITION



5th POSITION



6th POSITION

N.B.

Writing for strings is a special technique. There is a good deal to be learned not only about combining string instruments to make up a string orchestra but also about matters of bowing and special effects

3 THE STRING ORCHESTRA

I CONSIDERATIONS

A. MAY WELL BE THE MOST IMPORTANT SECTION OF THE ORCHESTRA

- 1 Posses an enormous pitch range
- 2 Very versatile technically
- 3 Vibrating and warmth of the string tone make especially useful
 - Particularly expressive quality not obtainable from other choirs of the orchestra
 - Tone does not pall easily
- 4 Fewer problems of blend in string section than other sections of the orchestra
- 5 Dynamic range of the string section is unusually wide
- 6 Can play continuously for long periods if necessary without breath and embouchure limitations of Brass and Woodwinds

Often spoken of
as the 'backbone'
of the orchestra

B. BACKGROUND

- 1 Since early days of orchestra the strings have been called upon to carry out the greatest burden of playing
- 2 Number of players in each string group is not specified in score (unless an extra-large section is called for)
 - Standard is 16 1st Violins, 14 2nd Violins, 12 Viola, 10 Cello, 8 – 10 Bass
 - : In actual practice, many orchestras do *not* include this many strings
 - : When scores are written for 'small orchestra' the size of the section is reduced
 - The orchestra of Mozart & Haydn included fewer strings than the modern orchestra and many conductors prefer to use only a portion of each string group in performances of Classical period

II IMPLEMENTATION

A. PARTS

- 1 Normally each section will play a single line
 - Possible to divide each group into two or more parts
 - : Indicated by 'divisi' (div.) next to passage above staff
 - : If more than two part divisi indicate number of divisions as 'div. a3, div. a4, etc.
 - : Two part passages are frequent, use of more than four is risky for anything less than a full size string section (or players of limited ability)

-
- Divisi writing can be notated on the same staff
 - : If involving the same time value, can be notated with one stem
 - : *Must* include divisi marking is not to be confused with double stops
 - ‘Non divisi’ (non div.) is commonly written above passages that could be played divisi but are meant as double stops
 - If not the same value must use stems up for one part and stems down for second
 - Divisi for in this instance is sometimes put at edge of page
 - If 3 or more can indicate 2 (or more) on one staff with option to split to a separate staff for one
- 2 All string sections can be divided
 - Basses are less often divided than the other groups
 - After a divisi passage when group returns to unison use ‘unisono’ (unis.)
 - 3 Dynamics *must* be indicated below each staff
 - Since the string player is ‘seeing’ only his own part cannot tell whether part should be emphasized for importance or subordinate and kept in the background
 - Must be told exactly how loud to play at all times
 - Crescendos, diminuendos, espressivo, marcato, etc., *must* be written beneath each applicable part
 - 4 Tempo
 - Tempo normally applies to all instruments
 - Place tempo marking at top of page (above woodwinds) *and* one lower just above strings
 - Tempo indications including ritardando, accelerando, etc., are copied to each individual part

B. GENERAL NOTATION

- 1 Staff is divided at the center line for stems up – stems down
 - Center line of staff is a choice
 - Determined by majority of notes in a grouping
- 2 Orchestral notation is used *not* vocal so groups of eights, sixteenths, etc. are barred
- 3 Bar line is drawn through all parts of a section
 - Notes should all line correctly in reference to beat placement
 - Rests are placed in middle of measure
 - Modern notation uses whole rest for entire measure regardless of time signature

String Score Order		Small	Medium	Large
String Section	1st Violins	4 to 8	8 to 12	12 to 16
	2nd Violins	3 to 6	6 to 10	10 to 14
	Violas	2 to 4	4 to 8	8 to 12
	Cellos	2 or 3	3 to 6	6 to 10
	Double Basses	1 to 3	3 to 6	6 to 10

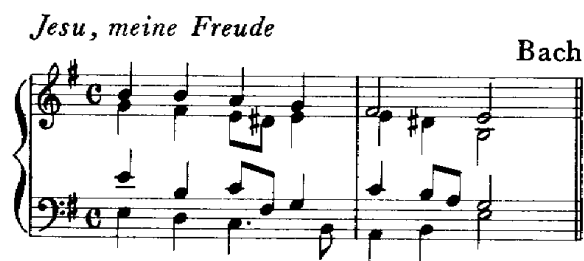
III SCORING

A. CONSIDERATIONS

- 1 Range of any particular voice will be a determining factor for instrument assignment
- 2 Use dynamic markings to bring out a part or double
- 3 Use 'divisi' in other sections to provide full harmonic score
 - If divisi for cello use upper range characteristic (vibrant and will come through prominently)
 - Balance sections by having a section rest or double with second group (i.e. Violin I & Viola on melody)
 - : This double will put greater weight on melody
 - : Also provides mixed color of Vln I & Viola
- 4 Stylistic appropriateness *is a consideration*
- 5 Dividing the Bass (in octaves) is almost never done in orchestral scoring

Considerable divergence of opinion on what is stylistically appropriate in scoring for a given Period

B. EXAMPLES (FROM BACH CHORAL)



**Original Choral
SATB**

Adagio

VL I
VL II
Vla.
Vc.
D. B.

VL I → Melody (Soprano Part)
VL II → Alto Part
Vla → Tenor Part
Cello → Bass
D. Bass → Same written part
as cellos (will sound 8va lower)
or given rest

Adagio

VL I
VL II
Vla
Vc.
D. B.

Vln I & Vln II → Melody
Vla → Alto & Tenor Parts
(divisi)
Cello → Bass Part
D. Bass → Bass Part

Effect is to emphasize the
Melody Part
(1st Solution)

Adagio

VL I
VL II
Vla.
Vc.
D. B.

Vln I & Vln II → Melody
Vla → Alto Part
Cello → Tenor & Bass Parts
(divisi)
D. Bass → Bass Part

Effect is to emphasize the
Melody Part
(Alternate Solution)

Adagio

VI. I
VI. II
Vla.
Vc. div.
D. B.

Alternate solution with Cello
divisi split between Bass &
Tenor Clef

Vln I → Melody
Vln II → Alto Part
Vla → Melody
Cello → Tenor & Bass Part
(divisi)
D. Bass → Bass

Adagio

VI. I
VI. II
Vla.
Vc. div.
D. B.

Vln I → Melody
Vln II → Alto Part
Vla → Tenor Part
Cello → Melody & Bass Part
(divisi)
D. Bass → Bass Part

With cellos doubling melody
adds poignancy & intensity to
tone. May not be appropriate
stylistically but rather an
exploratory example

C. VERSIONS USING OCTAVE DOUBLING OF THE THREE UPPER VOICES

1 Considerations

- Octave doubling in bass an octave lower creates a slightly amplified version
- Doubling the top voice when the melody an octave higher is somewhat more brilliant
- Can fill in octave at top by doubling the alto and tenor voices an octave higher
 - : As a rule effect of doubling *only* alto or *only* tenor is *not* good
 - Creates gaps of open 4^{ths} & open 5^{ths} as a result
 - Normally best to double both alto & tenor
 - : Doubling the inner voices an octave lower is usually out of the question

- Creates a low chord
 - Results in muddiness
- :
- In some music the same objection would stand in doubling the melody and octave lower
 - Can be used effectively when such melody doubling improves spacing
 - Fills in wide gaps between the tenor & bass lines

2 Examples

Ex. 8

Ex. 9

Ex. 8: Musical score for Ex. 8, marked 'Adagio'. It shows a bass part (D.B.) sounding an octave lower than written, with a soprano part (VI. I) doubling an octave higher. The score includes staves for VI. I, VI. II, Vla., Vc., and D.B. with dynamic markings like 'f' and 'ff'.

Ex. 9: Musical score for Ex. 9, showing doubled alto and tenor voices an octave higher, filling in the octave at the top. The score includes staves for VI. I, VI. II, Vla., Vc., and D.B. with dynamic markings like 'f' and 'ff'.

Ex. 8: Bass Part → Sounds an octave lower than written
 Melody (soprano part) is double an octave higher
 With melody doubled will sound 'somewhat more brilliant'

Ex. 9: Doubled Alto & Tenor voices an octave higher fills in octave at the top

Ex. 10

Ex. 11

Ex. 10: Musical score for Ex. 10, marked 'Adagio'. It shows a doubled melody octave lower (Cello voice) filling in a large gap between tenor and bass voice. The score includes staves for VI. I, VI. II, Vla., Vc., and D.B. with dynamic markings like 'f' and 'ff'.

Ex. 11: Musical score for Ex. 11, showing doubled melody octave lower (Cello voice) and upper octave doubling in Soprano, Alto, & Tenor, creating a full sound. The score includes staves for VI. I, VI. II, Vla., Vc., and D.B. with dynamic markings like 'f' and 'ff'.

Ex. 10: Doubled melody octave lower (Cello voice) is acceptable here as fills in large gap between tenor and bass voice

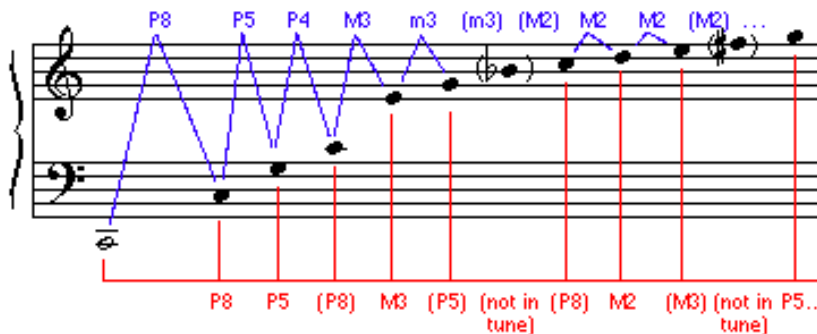
Ex. 11: Doubled melody octave lower (Cello voice)
 Upper octave doubling in Soprano, Alto, & Tenor
 A full sound

D. SPACING, DOUBLING, AND VARIOUS TEXTURES

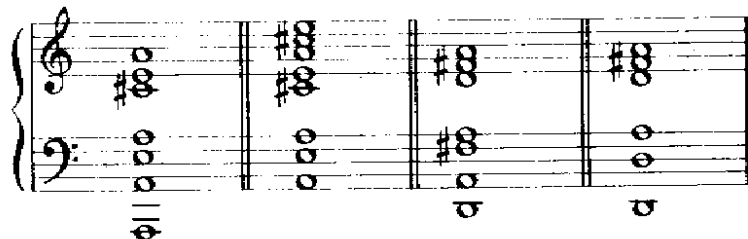
- 1 Harmony is modeled (in a general way) on the harmonic series
 - Wide intervals are put on the bottom & smaller intervals in the upper part of the chord
 - : Best to leave a clear octave at the bottom
 - : If chord is not too low possible to begin with 5th at the bottom
 - If notes put too close together in the lower portion of the chord
 - : A thick muddy effect results
 - : Avoid putting the 3rd too low
 - : Generally best to stay above A#1



Fundamental C with Overtones



Overtone Interval Breakdown



Chords following Overtone Spacing

2 Scoring music written originally in open voicing

- Wise to fill in gaps between upper parts by means of octave doubling

: Effectively converts the open structure to closed



Octave doubling 'converting' open to close voicing

- : Open spacing is frequently used for strings and a possibility for other instruments
- : Close spacing as a general rule is more effective in the orchestra
- Even music written in close structure it is sometimes necessary to add a 'filler' part
 - : An extra voice introduced to fill in gap between voices
 - : Most often between tenor & bass
 - : May double other voices part of the time then branch off to fill gaps when necessary
 - May also take independent line of its own
 - Doubling chord tones at times but not actually playing the same lines as any other voice
- Students best to avoid 'fillers' unless absolutely necessary
 - : Such parts are not very strong or interesting from a linear standpoint
 - : If used indiscriminately they tend to distract from clarity of other voices and muddy the texture
- Doubled top voice an octave higher of a closely spaced chord produce a good effect regardless of the octave gap at the top
- As a general rule when a primary triad (I, IV, V) is in 1st inversion bass should not be doubled in upper parts
- Bass doubling for 7th chords in *any* inversion should be avoided

-
- When active tone in 4 note chord (7th) is taken by a particular instrument the resolution of the active tone *must* occur in the same instrument

E. SUMMARY

- 1 Material on spacing and doubling *does not always apply* to 20th Century (Modern Era) which pursues fresh and intriguing effects by deliberate use of unusual spacing and doubling
 - 2 Material does apply chiefly to harmonic (Chordal) music
 - 3 Homophonic & Polyphonic (especially) textures will involve different approaches
- Homophonic music it is normally desirable that melody stands out from background
 - : Use of contrasting color, extra weight, louder, octave doubling
 - : Homophonic music for piano often involves idiomatic accompaniment figures (i.e. wide arpeggios)
 - Patterns may have to be changed to suite new instrumentation
 - Certain notes may have to be sustained in orchestral version to approximate effects of piano sustain pedal
 - Wide gaps between two hands may have to be filled in
 - Polyphonic Music the chief objective is a balance between voices
 - : Calculated emphasis on one voice when appropriate
 - : Linear clarity
 - : Most effective to provide differentiation between voices to give them different timbres
 - : Upper voice can generally be doubled at octave higher
 - : Bottom voice can generally be doubled at octave lower
 - : Middle voice doubling octave lower creates problems with thickness and overlap with the bass
 - : Even upper octave doubling of middle voices may produce linear confusion

4 BOWING AND SPECIAL EFFECTS

I OVERVIEW

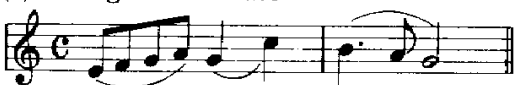
A. WHAT

- 1 Slurs over each group of notes to be taken *on the same bow*
- 2 Down/Up marks if use of one or the other is preferred (▮ down / ▽ Up)
- 3 Suggested type of bowing appropriate (dots & accent marks over the note)
- 4 Words such as 'pizzicato', 'spiccato', etc.

B. WHY


- 1 Specify interpretation depending on how passage is bowed
 - Bowing is an integral part of music and should *not* be left to chance
 - Slurs for bowing are included in any orchestral score as standard practice
 - Gives an idea of the basic conception of the music
 - Provides a uniformity of effect both important and hard to achieve without specifying bowing
- 2 Slur
 - In string music the slur does *not* normally indicate broad phrase outlines (as in piano music)
 - : Used to show which notes are to be taken *on the same bow*

(a) Allegro moderato



1st 2nd 3rd Bowing

(b) (c) (d)



(d) has no bowing indicated each note taken on separate bow

- : No break in sound need occur when bow changes direction
- : A separation can occur *if* desired

- Some scores do have phrasing indicated rather than indicated bowing
 - : Usually in long sustained melodic lines
 - : Here bowing desired is determined by the player or conductor
 - : Occasionally phrase marks are included *in addition* to bow markings
 - Ensures an even and connected effort
 - Vast majority of scores rely solely upon bowing slurs to project the musical structure of string parts

C. FACTORS THAT INFLUENCE BOWING

1 Dynamics

- Amount of up-bow (V) varies in a general way with the volume of tone produced
- Player can take more notes per bow in a soft passage than a loud one
 - : Does not mean all soft passages should be slurred in long groups
 - : Does not mean all loud passages should be played with separate bowing
 - : Possible to change bow frequently in soft passages and rapidly moving parts with separate bowing
- Maintain reasonable number of notes on one bow even in a fortissimo passage


2 Tempo

- Faster the tempo the more notes the player can take on one bow
- Again, maintain a reasonable number of notes on one bow

3 Characteristics of slurred/separate bowing

- Slurred is smoothly flowing
- Separately bowed gives greater sense of articulation to each note
- Fast passages w/separate bow are particularly vigorous and sparkling
- A passage need not be all slurred or all separately bowed

(a) First Symphony
Allegro molto Beethoven

Vl. I 

(b) C major Symphony (*Jupiter*)
Allegretto Mozart



Mixed slured/separate bowing

D. PLOTTING BOWING

- 1 Often necessary to bring player out on a down bow or up bow at a particular point in phrase
- 2 Down bows are in order for heavily accented notes and even preferable for strong beats in the measure
- 3 Anacrusis (up beat) is best given to an up bow so next note on a strong beat can be given a down bow
- 4 Crescendos are somewhat easier on an up bow
- 5 If a jump from one string to a non-adjacent string is involved the notes in question cannot be taken legato

II TYPES OF BOWING

A. CONSIDERATIONS

- 1 Chance for controversy in labeling various types of bowing
 - Disagreements among orchestration books and among players
 - Terminology is a 'hodge-podge' of languages with two or three different names in each language for a particular bowing type
- 2 Period and style of the music will influence the interpretations of bow markings
- 3 Types of bowing broken down into two main categories
 - Bow remains on the string
 - Bow leaves the string

B. ON THE STRING BOWING

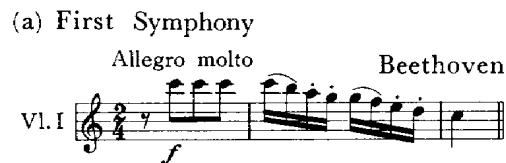
- 1 Legato
 - Groups notes slurred together
 - Effect is as smooth as possible

Don Juan



2 Détaché

- Each note is bowed separately
- Suggests a break between notes
 - : Successive notes taken détaché may be joined smoothly
 - : Becomes less smooth by emphasizing the articulation that goes with a change in bow
- An accented détaché is possible and effective
- Can be executed at practically any speed and dynamic level
- At slower tempos (especially at forte) full bow may be used
- At medium or faster speeds middle and upper portion of the bow is used
 - : Point for a delicate effect
 - : Frog for a heavy one
- As a rule there is no special indication for use of détaché other than absence of slur markings
- In older music (especially alternating passages of slurred and détaché groups) dots are used to signify the détaché



3 Martelé

- The bow does not strike the string from above but begins and remains on it
 - : Move quickly
 - : Stops abruptly at end of each stroke
 - : Produces a clean-cut separation between notes
- Most often done with the upper part of the bow
- When done at frog produces a more robust effect
- Score indication may be dots, arrowheads, accents, or a combination
 - : Sometimes Martelé is written in with direction for specific use of frog or point
 - : More often the player will choose the martelé bowing appropriate to the music

- Cannot be used when notes move too swiftly as beyond a certain speed the stopping of the bow between strokes becomes impossible

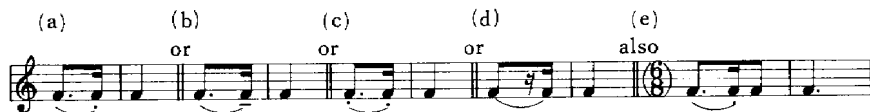


4 Staccato

- In generic sense can be applied to any bowing (on or off string) in which notes are separated
- Slurred staccato refers specifically to an on the string bowing
 - : Series of notes taken generally on up-bow with a separate 'push' for each note
 - : If many notes are involved the stroke is so difficult as to be impractical for orchestral playing
- Group staccato does figure constantly in limited form in orchestra string parts and is of two types
 - : First is primarily an up-bow stroke of 3 or 4 notes (or more) which are made to sound separately under the same bow stroke



- : Second can be performed either up-bow or down-bow and consists of two *repeated* notes
 - Separation is produced by a momentary stopping of the bow
 - Notation is a dot above or below the *second* of the two notes though the *first* note is the one shortened



(a) through (d) will all sound approximately alike

5 Louré

- Used chiefly in music of a slow and expressive character
- Two or more notes (seldom more than four) are taken on one bow
 - : Has separate pressure on each note
 - : Slight swelling of sound on each note
- Applied in some music may produce an 'almost' imperceptible break between notes



C. OFF THE STRING BOWING

1 Spiccato

- Light, middle-bow stroke in which the bow bounces off the string with one note to each bow
- Used very frequently in orchestral playing
- Not generally practical if the dynamic level is to be louder than *mf*
 - : In passages that are not too rapid a heavier type of spiccato can be done at or near the frog
 - : Used in case more sound is wanted
- Indication is simply dots or work 'spiccato' may be written in

(a) Second Symphony



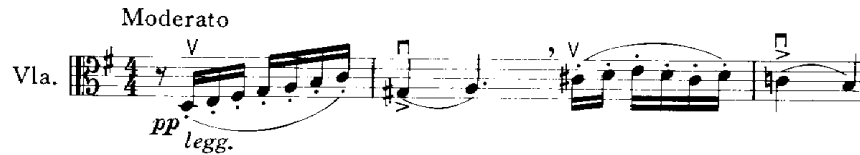
(b) First Symphony



- Sautillé while often used interchangeably with spiccato
 - : It is better reserved for a fast, light, and delicate spiccato
 - : Here, the jumping of the bow results chiefly from resilience of the stick rather than from an individual 'drop & lift' motion for each note

- Group Spiccato

- : Sometimes referred to as 'staccato volanté
- : Similar to the group staccato but 'off the string'
- : Instead of reversing direction for each note (as in ordinary staccato) bow picks up a series of short notes usually on the up bow



2 Jeté

- The upper half of the bow is made to bounce on the string very rapidly with a down stroke
- Sounds a group of 2 to 6 notes (most often repeated notes)
- Consists of dots plus a slur

(a) *Capriccio Espagnol*



(b) *Fire Bird Suite*



3 Successive Down-bows

- Sometimes used when a very strong and decided break between notes is required
- The separation of the notes happen automatically as the bow must be lifted between successive down strokes
- Seldom employed for more than a few notes as a time
- Not too practical when notes move quickly
- Effect of successive down-bows is vigorous (almost 'savage' on the lowest string of each instrument)

(a) *Petrouchka*



(b) Fifth Symphony



4 Successive Up-bows

- Also produce a clear separation between notes
- Useful chiefly for a more delicate effect at *softer* dynamic levels

(a) Fifth Symphony



(b) Classical Symphony



III SPECIAL EFFECTS

A. TREMOLOS

1 Considerations

- Often included under heading of bowing types
- Actually not type as separate category
 - : Bowed tremolos are simply accelerated form of détachè
 - : Fingered tremolo uses ordinary slurred bowing with fingers producing the effect
- Function is essentially a coloristic one so considerable reason for grouping with special effects

2 Bowed Tremolo

- Un-measured with bow moved back and forth over string as rapidly as possible

Unmeasured



- sign is 3 bars through the note stem
 - : 4 bars sometimes used at slow tempo (so notes are *not* played as measured 32nd notes)
 - : Best to write 'tremolo' in doubtful cases

(a) *Tristan und Isolde*



- Measured
 - : Calls for a *finite* number of repeated notes with the number being shown by notation
 - One line through a quarter note or half note stem means eight notes; two lines is sixteenth notes
 - One line through eighth note stem means sixteenth notes; two lines is 32nd notes
 - Triplets are indicated by '3' above each note (sometimes three dots next to notehead)
 - Safest way is to write out trill for one measure and then use a model for subsequent tremolo

Measured



EXAMPLES OF BOWED TREMOLO (MEASURED)

Ex. 19

(a) Sixth Symphony



(b) Fantastic Symphony



(c) Symphony in D minor



- : Tremolo has been 'overused' in romantic music so best used sparingly now

3 Fingered tremolo (slurred tremolo)

- Usually un-measured involving two notes on the same string
 - : Possible on two different strings but best avoided as not very satisfactory
 - : One finger is fixed on lower note with 2nd finger playing and releasing upper note very rapidly (results in a 'kind' of trill)
 - Bow moves over string in normal fashion rather than quickly back and forth
 - Each note is given *twice* the value it should have
 - : Notes involved are usually a 3rd apart though intervals up to diminished 5th are possible for Violin
 - P4th for Viola
 - M3rd for Cello

Fingered tremolo (slurred tremolo) :

Ex. 20



- Gives a delicate rustling effect both 'elusive & attractive
- Most often used as background for solo passages played by Woodwinds or Horns

B. OTHER SPECIAL EFFECTS 1

1 Muted (consordino, sourdine, mit Dämp)

- A small clamp of wood (metal, rubber, leather, or plastic) is fitted to the bridge reducing the volume giving a veiled quality
 - : At least 2 bars of moderate 4/4 time (preferably more) should be allowed to place the mute
 - : At least 1 bar for removal
- Best to write out 'put on mutes' and 'remove mute'
- Little used effect has mutes placed one 'desk' at a time ('desk' is a group of 2 players to each music stand)
- Double Bass uses a mute less than other strings
 - : Un-muted bass can reduce volume un-muted
 - : Can blend fairly well un-muted with rest of strings muted

2 Bow Near Bridge (sul ponticello, sur le chevalet, am Steg)

- Resulting sound is 'glassy' and 'eerie' in quality
- Intensity of effect varies with proximity of the bow to the bridge
- Most effective when used with a bowed tremolo

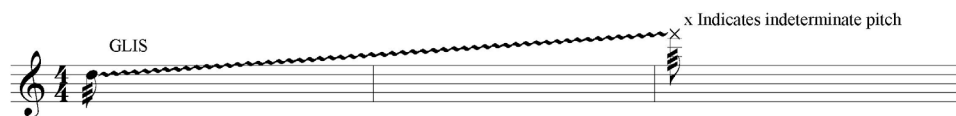
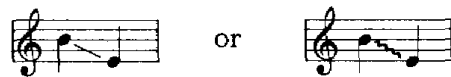
3 Bowing Over the Fingerboard (sul tastò/sulla tastiera, sur la touche, am Griffbrett)

- Appears frequently in French Impressionist scores
- 'flautando' is a very slight bow stroke over the fingerboard

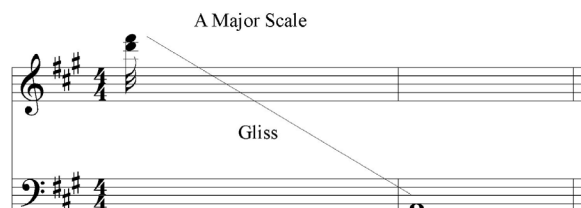
- 4 Playing with Wood (col legno, avec le bois, mit Holz)
 - Rarely used
 - Confined to repeated figures though there are instances of use with legato tremolo bowing
 - Sound is 'brittle and dry' with little volume possible
- 5 Direction for *cancelling* any of these effects is 'modo ordinario' ('ord.') meaning 'in the ordinary way'

C. OTHER SPECIAL EFFECT 2

- 1 Abnormal Tuning (scordatura)
 - Player is directed to tune one or more strings higher or lower than usual
 - Most common purpose is to extend the range of the instrument downwards
 - Also used to allow a particular pitch to be played as an open note (i.e. to include as an open string in a multi-stop)
 - Also used (rarely) for color reasons
- 2 Glissando
 - Finger slides between two notes on same string rather than stopping for each
 - Can be very pronounced or reduced to barely perceptible



Bowed Tremelo with Glissando



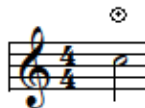
- Know as 'portamento' in more modern form
 - : Often introduced by player where no direction is present
 - : Give an extremely legato effect
- 3 Half of a String Group (la metà, le moitié, die Hälfte)
 - Used when sound of a smaller-than-normal string group is desired for a section of a score
 - Score will specify '1/2 Vlns (etc)
- 4 First Desk (1st two desks, etc) (leggio, pupitre, Pult)
 - Reduces sound further
 - Approaches the 'solo' quality (especially 1st desk only)
- 5 Solo Strings
 - When a more intimate and personal quality is desired
 - Direction specify 1 solo violin, 2 solo violin, etc.
 - Usually written on a separate staff (or staves) just above the string group to which solo instrument belongs (not necessary if rest of string group is not playing)

D. SPECIAL PIZZICATO EFFECTS

- 1 Snap Pizzicato (Bartok Pizzicato)
 - String plucked with such force it rebounds against the fingerboard
 - Notation sign is ♯



- Sign is required over each note
- 2 Nail Pizzicato
 - Uses the fingernail rather than fleshy part of finger to pluck string
 - Notation sign is ⊗



- Sign is required over each note
- Produces a sharply metallic tone

3 Multiple stop pizzicato

- Back & forth motion of the hand
- Notation indication is **▣** **V** or $\uparrow \downarrow$ with 'quasi guitar' written in as direction
- Arpeggiation in pizzicato can be accentuated or reduced to a minimum
 - : Use 'non arpeggiato' or vertical bracket in front of chord
 - : Can use both indications simultaneously

E. NATURAL HARMONICS

NATURAL HARMONICS

Ex. 23

Sound of harmonics (Open strings shown in black notes)

1.

Notation

2.

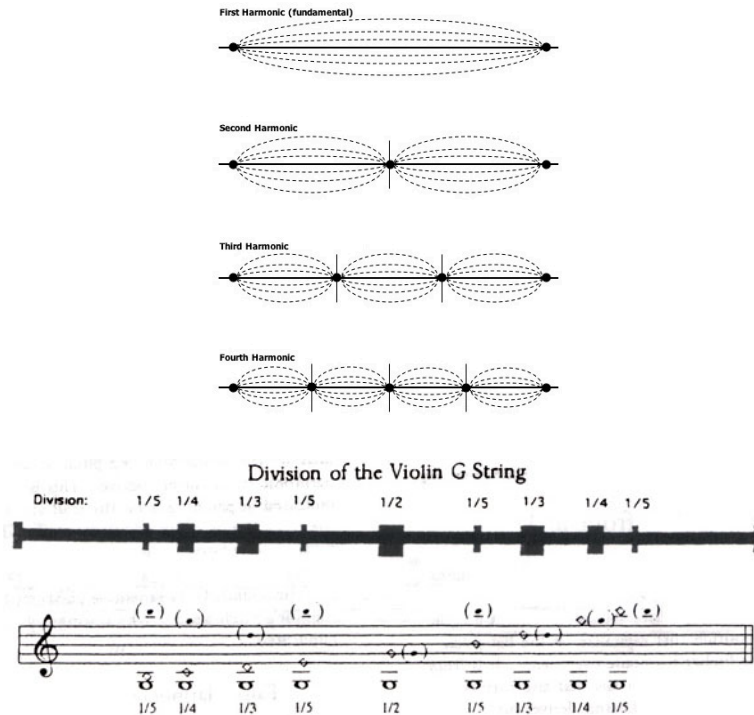
(Sul G) (Sul D) (Sul A) (Sul E)

Natural harmonics

1 Characteristics

- Harmonics are simply isolated overtones of the vibrating string
 - : Have a flute like quality
 - : Highly effective as a special effect
- Used for isolated notes or for short melodic lines at a moderate tempo (rapid passages are difficult and should be avoided)

- These are overtones of the open string and called 'natural harmonics'

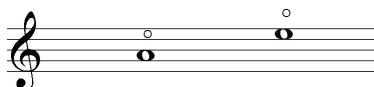


2 Execution

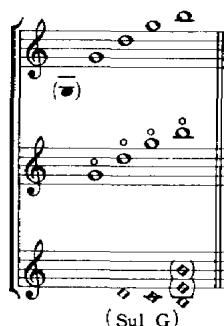
- The sections of a vibrating string are isolated by touching the open string lightly at certain points
- Producing the Harmonic
 - : P5, P4, M3 above open string pitch at point where the note would ordinarily be played
 - : In general
 - Middle of string produces an octave higher than the open string
 - 1/3 from either end produces an octave + 5th higher than the open string
 - 1/4 from either end produces 2 octaves + M3rd higher than the open string
- Other harmonics are possible but seldom seen in orchestral writing

3 Notation for Natural Harmonics

- First natural harmonic on each string (1 octave above the open note) is notated in actual pitch but with a circle above the note



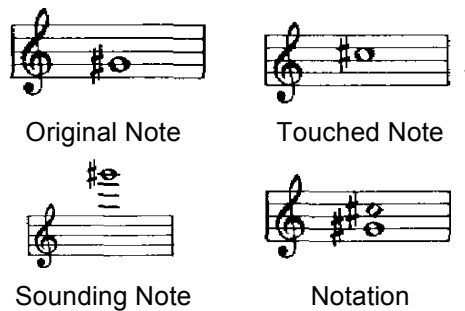
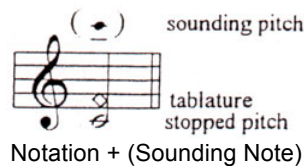
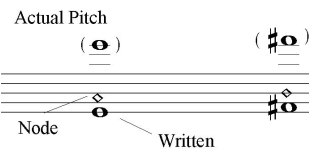
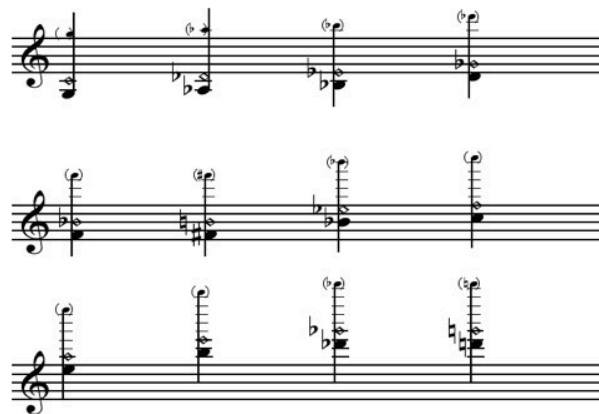
- Other is a diamond shaped note which shows another point on string which will produce the same harmonic
 - : Actual pitch does not appear with this (some composers will include it)
 - : String to be used in producing the harmonic is indicated 'sul' + open string name or number



F. ARTIFICIAL HARMONICS

- 1 Produces harmonics that are *not* overtones of the open string
- 2 Execution
 - String is pressed down (firmly) by 1st finger at a point 2 octaves below the pitch of the desired harmonic
 - 4th finger touches (lightly) the same string a P4th higher
 - Results in a harmonic 2 octaves above the 'firmly' fingered note
 - As a rule the actual sound is usually not shown
 - : When included notation shows three written notes for the one harmonic
 - : 'Lightly' touched note is diamond shaped

Artificial Harmonics



G. SUMMARY FOR HARMONICS

- 1 See if note is playable as a natural harmonic
 - Preferable
 - Usually easier as a natural harmonic
- 2 If artificial
 - Measure down two octaves from actual pitch desired
 - Notate that 2 octave below desired pitch
 - : Notate this note with proper time value
 - : Then write a diamond shaped note a P4th higher



we would write:



Include substitution of natural harmonic for last measure of
of (a) as substitution has become accepted

3 Considerations

- Artificial harmonics other than those of P4th are possible but seldom used
- While two simultaneous harmonics are possible it is generally too difficult for orchestral use
 - : Exception is artificial harmonics a P5th apart
 - : Here two adjacent strings can be pressed down with 1st finger + touching both strings a P4th higher
 - : Double stop artificial harmonics occasionally occur in solo violin literature
- What has been said about Violin harmonics can be said of Viola
- Artificial harmonics on Cello are extremely difficult and out of the question for Double Bass (except in higher positions)
 - : Natural harmonics are practical for both
 - : Stravinsky made extensive use of natural harmonics for Double Bass

EXAMPLES OF NATURAL HARMONICS

Ex. 25

(a) *Capriccio Espagnol*

Rimsky-Korsakoff

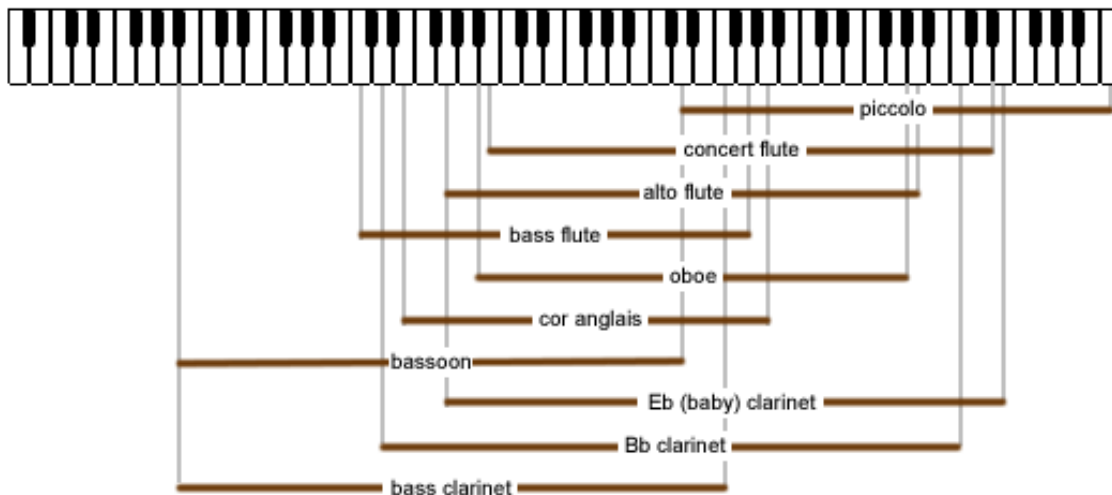


5 THE WOODWINDS

Woodwind registers vary in power and quality with no general principle that applies to all woodwinds: some are thick & heavy on top others reverse the relationship

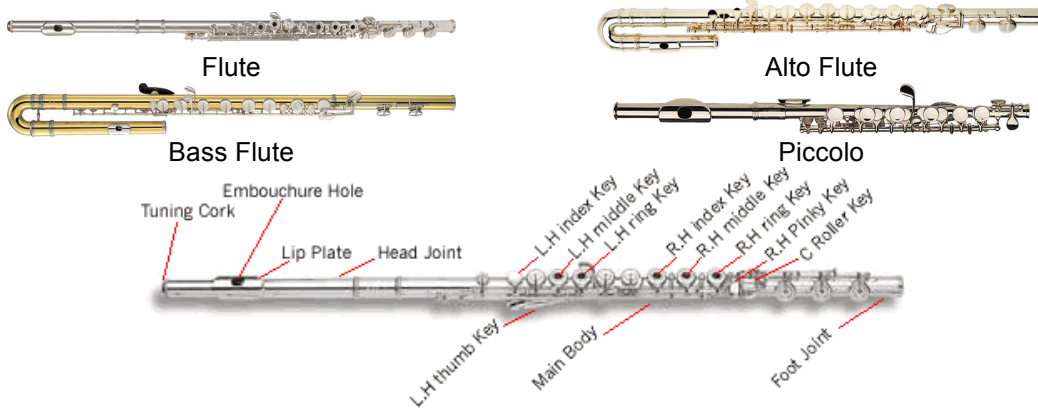


Top: Piccolo / Flute; Left to Right: Bass Clarinet, Tenor Saxophone, Clarinet, Oboe, English Horn, Bassoon, Contra Bassoon

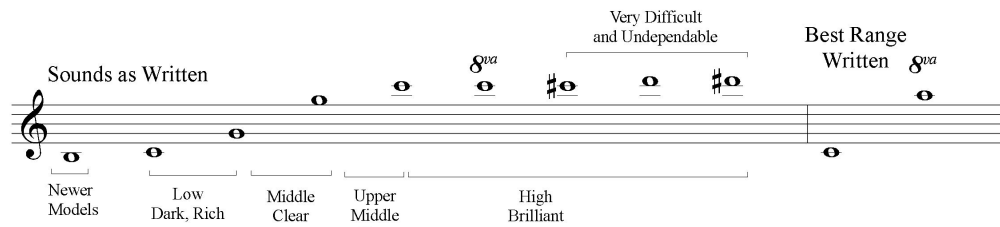


I FLUTE

Italian Flauto *French* Flûte *German* Flöte
Flauti Flûtes Flöten



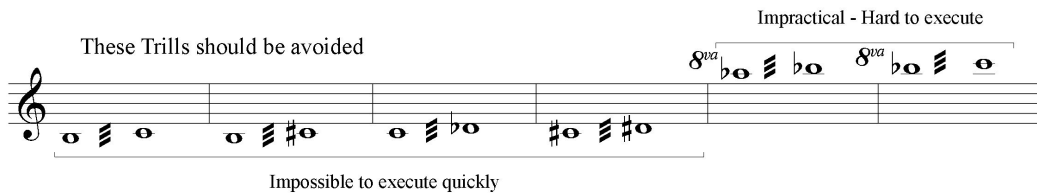
Flute Parts



Flute Range and Register Quality



Flute Register



Flute Trills to be Avoided



Possible Harmonics

(Written pitch)

Fingered note: Available harmonics (notes shown in brackets are unreliable):

The image displays ten staves of musical notation, each representing a different harmonic or fingering technique. The notation is written on a single-line staff with a treble clef. The notes are represented by vertical stems with flags, indicating specific pitches. Some notes are enclosed in parentheses, likely indicating unreliable harmonics. The staves are arranged vertically, showing a progression of different harmonic series or fingering patterns. The notation includes various accidentals (sharps, flats, naturals) and rests, indicating the specific pitches and timing of the notes.

Harmonics with Fundamental

Flute Fingering Chart

Low B foot joint only.

B	C	C# Db	D	D# Eb	E	
F	F# Gb	G	G# Ab	A	A# Bb	
B	C	C# Db	D	D# Eb	E	F
F# Gb	G	G# Ab	A	A# Bb	B	C
C# Db	D	D# Eb	E	F	F# Gb	G
G# Ab	A	A# Bb	B	C	C# Db	D

(lowers pitch)

(add "gizmo" on low B foot joint only)

Flute Trill Fingerings Chart

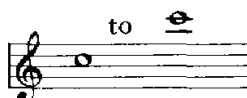
C to D	C \sharp to D	D to E \flat	D to E	D \sharp to E	E \flat to F
E to F	E to F \sharp	F to G \flat	F to G	F \sharp to G	F \sharp to G \sharp
G to A \flat	G to A	G \sharp to A	A \flat to B \flat	A to B \flat	A to B
A \sharp to B	B \flat to C	B to C	B to C \sharp	C to D \flat	C to D
C \sharp to D	D \flat to E \flat	D to E \flat	D to E	D \sharp to E	E \flat to F
E to F	E to F \sharp	F to G \flat	F to G	F \sharp to G	F \sharp to G \sharp

(When more than one fingering is shown, the first is the most common.)

G to A \flat	G to A	G \sharp to A	A \flat to B \flat	A to B \flat	A to B
A \sharp to B	B \flat to C	B to C	B to C \sharp	C to D \flat	C to D
C \sharp to D	D \flat to E \flat	D to E \flat	D to E	D \sharp to E	E \flat to F
E to F	E to F \sharp	F to G \flat	F to G	F \sharp to G	
F \sharp to G \sharp	G to A \flat	G to A	G \sharp to A	A \flat to B \flat	
A to B \flat	A to B	A \sharp to B	B \flat to C	B to C	

A. REGISTERS

- 1 Bottom is weak and somewhat breathy
 - Has a 'velvety & sensuous charm'
 - Shown to good advantage in 'Afternoon of the Faun' by Debussy
 - Little volume is possible in this low register
 - Accompaniment *must* be kept light
- 2 Middle register tone becomes progressively brighter and stronger



- 3 Notes above this middle register have considerable strength and a 'haunting silvery brilliance'
- 4 Extreme upper register the tone tends to be shrill
 - Notes less easy to produce
 - Should not be used at softer dynamic levels



Notes above tend to be shrill

B. RANGE

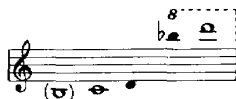
THE FLUTE

Italian: Flauto
Flauti

French: Flûte
Flûtes

German: Flöte
Flöten

Ex. 1



- 1 'C5' as top note is the usual listing with 'C3' as bottom note
 - C# & D 'possible' but quality and intonation are inferior
 - : Not suitable for sustained notes
 - : Useful for finishing phrases that extend 'momentarily' above C5
- 2 Some flutes are equipped with a low 'B' extension

- Is occasionally called upon in scores
- Has effect of making the low 'C' stronger and more easily playable

C. TECHNIQUE

- 1 Equally at home in sustained melodies or florid passages
- 2 Because of lightness and 'grace' especially good at 'airy' scherzo-like parts or filigree work
- 3 Rapid repeated notes, double-tonguing, triple-tonguing, flutter tonguing, rapid scales & arpeggios, are all practice and effective
- 4 All trills are possible except those above G5 and C1 and Db1



Upper Limit for Trills



Not possible after these pitches

- 5 Little that the flute cannot do
 - Piccolo is most agile
 - Flute is a very close second

D. CONSIDERATIONS

- 1 Requires a great deal of breath in playing
- 2 Need to include rests for both breath and to relax the lips
- 3 Normal fingering for notes above C#5 on the flute involves the use of harmonics
 - Term 'harmonics' on the flute refers only to those not normally used
 - Notation for flute harmonics is small circle above the note
 - Have an 'odd white' quality useful for effect and tend to be flat in pitch
 - Player sometimes plays one or two notes as harmonics where 'normal' fingering would be awkward

'snap' breath is possible but tiring if done too much

(a) Third Symphony



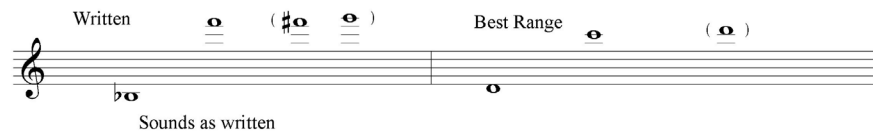
Score Sample

II OBOE

<i>Italian</i>	Oboe	<i>French</i>	Hautbois	<i>German</i>	Oboe
	Oboi		Hautbois		Oboen



Oboe Parts



Oboe Range



Oboe Register Chart

Oboe is part of double-reed woodwinds along with English Horn, Bassoon, and Contra-Bassoon



Bassoon – Contra-Bassoon – Oboe – English Horn

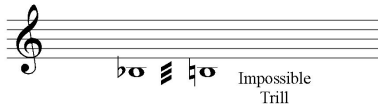
Oboe Fingering Chart

The chart displays fingering patterns for the following notes across five rows:

- Row 1: A#, Bb, B, C, C#, Db, D, D#, Eb, E
- Row 2: F, F#, Gb, G, G#, Ab, A, A#, Bb, B
- Row 3: C, C#, Db, D, D#, Eb, E, F
- Row 4: F#, Gb, G, G#, Ab, A, A#, Bb, B, C
- Row 5: C#, Db, D, D#, Eb, E, F

Each box contains a fingering diagram for a specific note. The diagrams show finger positions on the keys and the use of the resonance key (marked 'h. h.') and the no-resonance key (marked 'use if no resonance key').

W32F (When more than one fingering is shown, the first is the most common.)



Impossible Trill Oboe Trill Fingering Chart

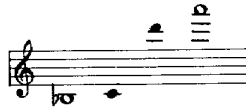
B \flat to C	B to C	B to C \sharp	C to D \flat	C to D	C \sharp to D
D \flat to E \flat	D to E \flat	D to E	D \sharp to E	E \flat to F	E to F
E to F \sharp	F to G \flat	F to G	F \sharp to G	G \flat to A \flat	G to A \flat
G to A	G \sharp to A	A \flat to B \flat	A to B \flat	A to B	A \sharp to B
B \flat to C	B to C	B to C \sharp	C to D \flat	C to D	C \sharp to D

<p>$D\flat$ to $E\flat$</p>	<p>D to $E\flat$</p>	<p>D to E</p>	<p>$D\sharp$ to E</p>	<p>$E\flat$ to F</p>	<p>E to F</p>
<p>E to $F\sharp$</p>	<p>F to $G\flat$</p>	<p>F to G</p>	<p>$F\sharp$ to G</p>	<p>$G\flat$ to $A\flat$</p>	<p>G to $A\flat$</p>
<p>G to A</p>	<p>$G\sharp$ to A</p>	<p>$A\flat$ to $B\flat$</p>	<p>A to $B\flat$</p>	<p>A to B</p>	<p>$A\sharp$ to B</p>
<p>$B\flat$ to C</p>	<p>B to C</p>	<p>B to $C\sharp$</p>	<p>C to $D\flat$</p>	<p>C to D</p>	<p>$C\sharp$ to D</p>
<p>$D\flat$ to $E\flat$</p>	<p>D to $E\flat$</p>	<p>D to E</p>	<p>$D\sharp$ to E</p>	<p>$E\flat$ to F</p>	<p>E to F</p>

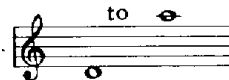
A. CHARACTERISTICS

- 1 One of the most distinctive orchestral colors with a 'spicy' somewhat nasal tone
 - Can cut through other colors and stand out against any background
 - An ideal solo instrument because of ability to stand out
- 2 Not as agile as Flute or Clarinet but can perform with speed and agility either legato or staccato
 - Ideally suited to pastoral melodies
 - Can be poignant or light-hearted
- 3 Useful in combination with other instruments not only as a solo role
 - Need care in giving it a subordinate voice in a lightly scored passage
 - Can come through too prominently with its incisive tone
- 4 Highly colored timbre becomes 'tiresome' to ear if used too long

B. REGISTER



- Below D3 tends to sound thick and coarse ('honky')
 - Better to avoid bottom notes (particularly low Bb2) in any passage where the Oboe is heard prominently
 - Part dipping below but moving quickly away are not objectionable
 - Best not to stress the low notes in solo passages
 - Occasionally these low notes are used intentionally for special effect
 - : Stravinsky's 'Symphony of Psalms'
 - : Provides an ultra-reedy primitive flavor
- From D3 to A4 is Oboe's most useful and characteristic register



- Above A4 the tone becomes thinner and less 'pungent'
 - : Usable to Eb5
 - : Notes above Eb5 are generally impractical for orchestral use with high A5 (in particular) extremely difficult

C. TECHNIQUE

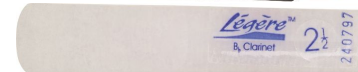
- 1 Trills are available (except 1/2 trill on bottom Bb) with trills involving the top F5 and G5 best avoided
- 2 Double & triple tonguing is very difficult on instrument
 - Rarely used
 - But is capable of fairly rapid repeated notes (even with) single tonguing
- 3 Should not be asked to play extremely fast or intricate passages
- 4 Breath consideration is opposite that of the Flute
 - Requires very little expenditure of breath
 - Problem is 'holding in air' till next breathing point as only a little breath is used in playing
 - Sufficient rests are as essential in Oboe parts as in Flute parts
- 5 Instrument is a sensitive and somewhat unpredictable one
 - Notes must be 'humored and cajoled'
 - Reed is delicate
 - : Must be 'just so'
 - : Temperature and atmospheric conditions can produce unexpected and disastrous results

III CLARINET

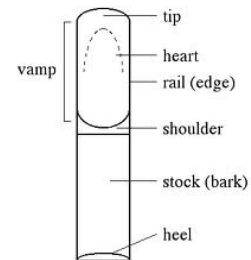
Italian Clarinetto *French* Clarinette *German* Klarinette
Clarineti Clarinettes Klarinetten



Bb Clarinet, Clarinet mouthpiece, Clarinet reed



Clarinet Parts



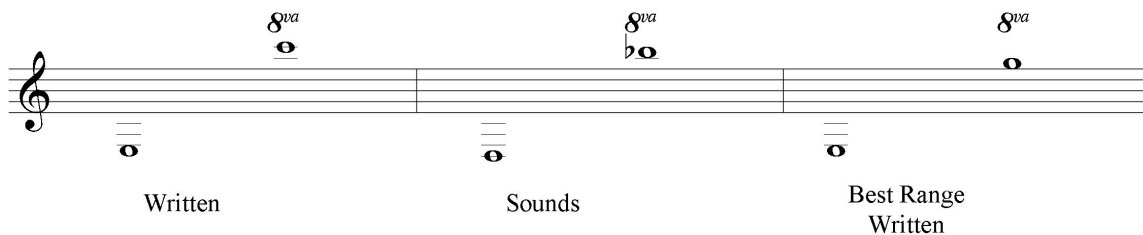
Reed Parts



Clarinet Ligature

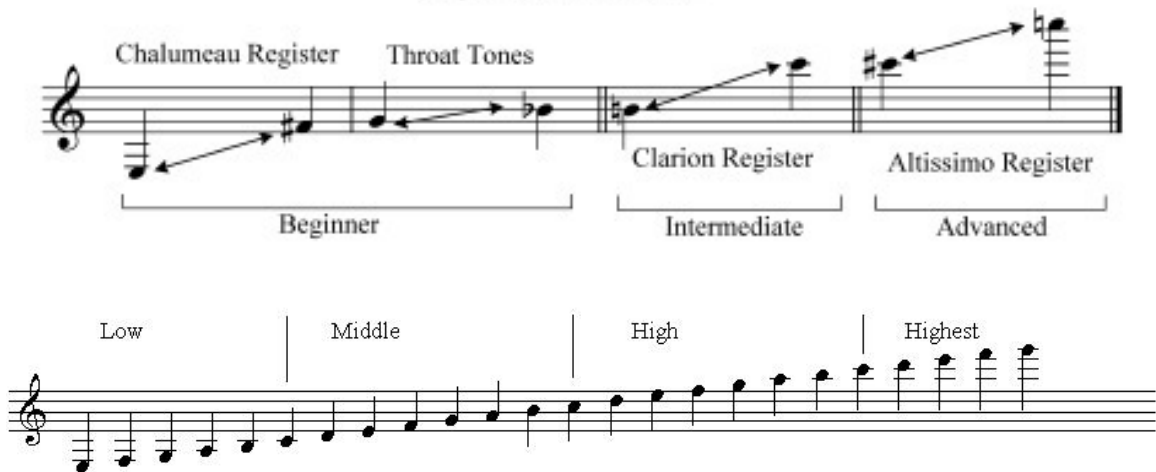


Clarinet Family

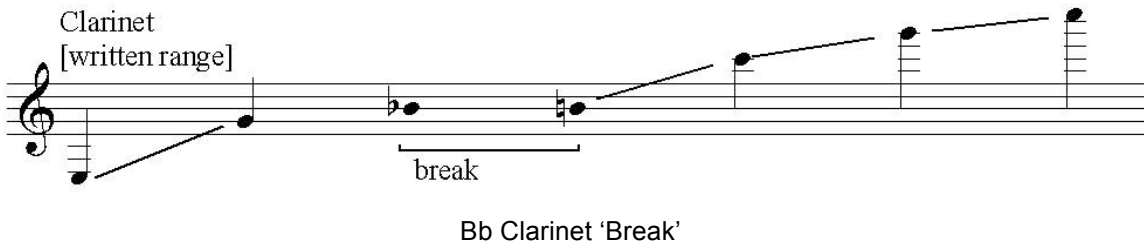
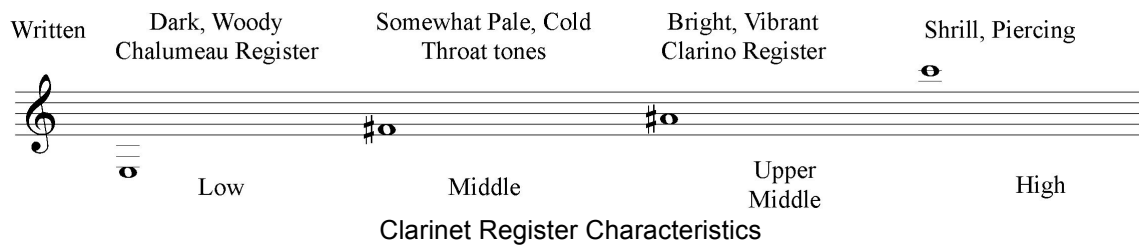


Clarinet Range

Registers of the Clarinet



Clarinet Register



B \flat Clarinet Fingering Chart

E	F	F \sharp G \flat	G	G \sharp A \flat	A	A \sharp B \flat
B	C	C \sharp D \flat	D	D \sharp E \flat	E	F
F \sharp G \flat	G	G \sharp A \flat	A	A \sharp B \flat	B	C
C \sharp D \flat	D	D \sharp E \flat	E	F	F \sharp G \flat	G
A \sharp B \flat	B	C	C \sharp D \flat	D	D \sharp E \flat	E
F \sharp G \flat	G	G \sharp A \flat	A	A \sharp B \flat	B	C

W22E (When more than one fingering is shown, the first is the most common.)

Clarinet Trill Fingering Chart

E to F	E to F#	F to Gb	F to G	F# to G	Gb to Ab	G to Ab
G to A	G# to A	Ab to Bb	A to Bb	A to B	A# to B	Bb to C
B to C	C to Db	C to D	C# to D	Db to Eb	D to Eb	D to E
Eb to F	E to F	E to F#	F to Gb	F to G	F# to G	Gb to Ab
G to A	G# to A	Ab to Bb	A to Bb	A to B	A# to B	Bb to C

Diagram illustrating musical notation and fingerings for various intervals, organized into four rows of seven boxes each. Each box contains a musical staff with a treble clef and a key signature, and a corresponding diagram showing fingerings and articulation (arrows) for the interval.

Row 1:

- B to C#
- C to Db
- C to D
- C# to D
- Db to Eb
- D to Eb
- D to E

Row 2:

- D# to E
- Eb to F
- E to F
- E to F#
- F to Gb
- F to G
- F# to G
- Gb to Ab
- G to Ab

Row 3:

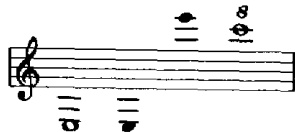
- G to A
- G# to A
- Ab to Bb
- A to Bb
- A to B
- A# to B
- Bb to C

Row 4:

- B to C
- B to C#
- C to Db
- C to D
- C# to D
- Db to Eb
- D to Eb
- D to E

Row 5:

- D# to E
- Eb to F
- E to F
- E to F#
- F to Gb
- F to G
- F# to G

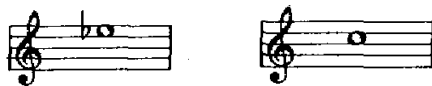


A. CHARACTERISTICS

- 1 In past clarinets pitched to various keys were used with Bb & A clarinets surviving to today (Bb is the more common)
- 2 These are transposing instruments not written in actual pitch

- Bb a M2nd higher
 - : Labeled Bb because Bb is pitch *sounded* when a *notated* C is played
 - : To sound a C must notate a D
- A m3rd higher
 - : Labeled A because A is pitch sounded when a notated C is played
 - : A clarinet sounds C with a notated Eb

Transposing instruments are named by sounding note when playing a notated C



Written A Clarinet Sounding A Clarinet

- Music is scored in a key a whole step up from C for Bb instruments and m3rd for A instruments



Written Bb Clarinet Sounding Bb Clarinet



Actual → Bb & A Transposition

Ex. 7

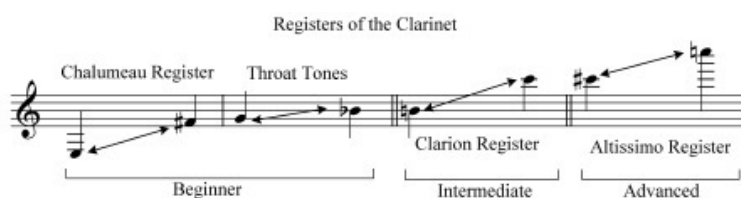
The image displays two systems of musical notation. The first system shows three staves: 'Concert Key' (treble clef), 'Bb Clar.' (treble clef), and 'A Clar.' (treble clef). Above the staves are notes: C, G, D, A, E, B, and F#. The 'Concert Key' staff has a key signature of one sharp (F#). The 'Bb Clar.' staff has a key signature of two flats (Bb, Eb). The 'A Clar.' staff has a key signature of three flats (Bb, Eb, Ab). The second system shows the same three staves with notes: Gb, Db, Ab, Eb, Bb, and F. The 'Concert Key' staff has a key signature of two flats (Bb, Eb). The 'Bb Clar.' staff has a key signature of three flats (Bb, Eb, Ab). The 'A Clar.' staff has a key signature of four flats (Bb, Eb, Ab, Db). Below the staves is the text 'Actual → Bb & A Key Transposition'.

- Now requires use of 'Concert' in describing key and pitch
 - : Concert key is *actual* sounding key
 - : Concert pitch is *actual* sounding pitch
- Now two types of transposition
 - : Reading type where in reading a score we must convert transposed pitches to concert pitches
 - : Writing type where we must convert actual pitches to transposed pitch
- Why
 - : Started as transposing instruments so distant historically it would make it just about impossible to change
 - : Allows for *common fingering* to clarinets of different sizes
 - Fingering for Alto & Bass Clarinets are the same
 - It is the *notation* that changes
 - If part would be awkward with one Clarinet it can be assigned to another
 - Part will also be written enharmonically to simplify reading difficulty (Key of Db rather than C#) rather than the strict transposition for the instrument

School Bands
use Bb Clarinet
exclusively

- : Best not to split a part with Bb and Ab clarinets for a single player
 - The instrument needs to be warmed up or will play flat initially
 - Also the instrument is sluggish till warmed up properly
 - + The fingering system is common
 - + The notation would changed and some keys are ‘easier’ on different pitched Clarinets
 - + If in concert key of Eb the Bb clarinet would be notated in the key of F this is an easy key for this instrument while the A Clarinet would be notated in Gb a more difficult key
 - + Here the Bb Clarinet would be the better choice to play the part

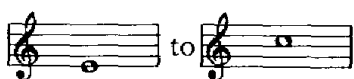
B. REGISTER



1 Bottom Register

- Bottom octave is called chalumeau register
- Has a dark strangely ‘hollow’ quality
- A Clarinet can go 1/2 step lower than Bb Clarinet

2 Middle Register



- Neutral in quality and not too strong
- Considered as ‘Throat Tones’

3 Octave above middle register

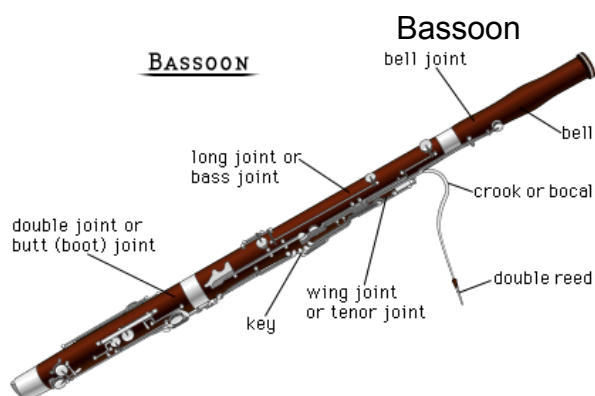
- Called Clarion register
- Clear and Bright

4 High Register

- Called the Altissimo Register
- Notes above E5 tone is apt to be shrill with doubtful intonation
- Very high notes are not usable for practical purposes with G5 the practical upward limit

IV BASSOON

Italian Fagotto *French* Basson *German* Fagott
Fagotti Bassons Fagotte



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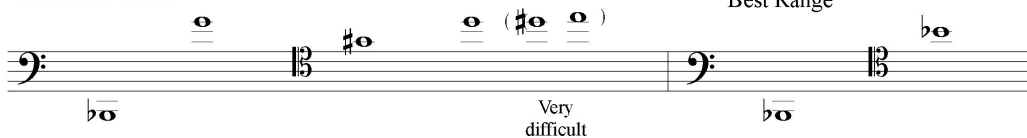


Bassoon Parts

Bassoon Reed

Sounds as written

Best Range

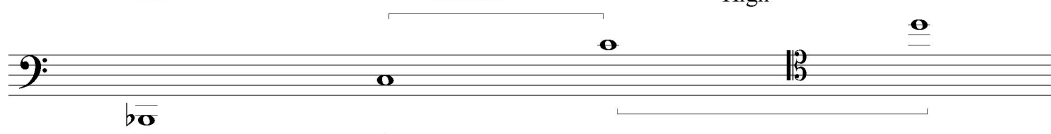


Bassoon Range Chart

Low

Middle

High



Low

Middle

High

Highest



Bassoon Register Chart



Trills to Avoid

Bassoon Fingering Chart

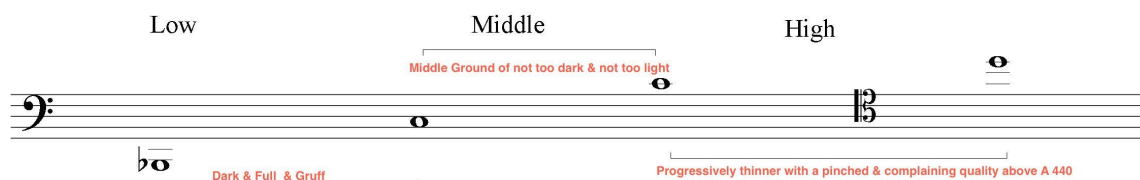
A \flat B \flat	B	C	C \sharp D \flat	D	D \sharp E \flat	E	F



A. CHARACTERISTICS

- 1 Double reed instrument like Oboe
- 2 Tone is much less nasal and less highly colored
 - Characteristic quality is a neutral one
 - Apt to be absorbed by any other orchestral color it is doubled with
 - Will add more body and focus to the doubling

B. REGISTER

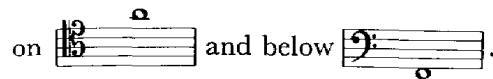


- 1 Bottom Octave
 - Dark and Full
 - A little 'Gruff'
 - Bottom most notes difficult to produce pianissimo
- 2 Middle Octave
 - A middle ground of not 'too dark and not too light'
 - Most used register of the instrument
- 3 High Octave
 - Becomes progressively thinner
 - Above A 440 takes on a 'pinched & complaining' quality
 - A or Bb are practical upper limit
 - : Extremely difficult to play passages approaching the upper limit
 - : Tenor clef can be used once notes go too high to be comfortably notated in Bass Clef

C. TECHNIQUE

- 1 Sometimes spoken of as 'clown of the orchestra'
 - Certain passages (especially staccato) can sound 'comical'
 - But can produce sustained melodies of serious nature

-
- 2 Agile and capable of wide & sudden leaps
- Because of neutral nature instruments color is absorbed by other instruments and easily covered by rest of orchestra
 - Should not be placed with too heavy a background in solo passages
 - Most frequent function is that of reinforcing other instruments in tenor and bass ranges (frequently cellos)
- 3 Trills on Db, Eb, & Gb in all octaves and on A3 and F1



V PICCOLO

Italian Flauto Piccolo or Ottavino *French* Petite Flûte *German* Kleine Flöte



Piccolo



Piccolo – Flute Comparison



Written Range



Sounding Range



Sounding an
8ve higher

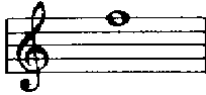
A. CHARACTERISTICS

- 1 Sounds an octave higher than written to keep ledger lines reasonable
- 2 There is a Db piccolo used in bands but the C piccolo is the only one featured in orchestral scores
- 3 Most agile instrument of the orchestra
 - Can perform incredibly fast runs, skips, arpeggios, and elaborate figurations of all kinds
 - Not often used for slow 'cantabile' passages
 - Some contemporary scores do contain solos of a quiet and sustained nature that are effective

B. REGISTER

1 Bottom Octave

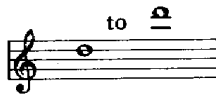
- Is weak and breathy and nearly useless in heavy scored passages
- Not much point in playing in tutti passages unless above F4



- Not enough strength or brilliance to make any difference
- Notes below F4 are usable when background is not too heavy

2 Second Octave (D4 – D5)

- Is clear and bright
- Notes above this are more piercing
- Notes from A4 and upwards tend to be shrill
 - : B4 & C5 are extremely difficult to produce
 - : Better to avoid unless as a momentary extension of a phrase



C. USE

- 1 Most valuable ability is to add a brilliant edge to a melodic line
- 2 Frequently doubles other woodwinds (or even strings) at an octave higher
- 3 Sometimes *sounds* in unison with flute to reinforce the flute top tones
- 4 Like most brightly colored instruments it cannot be used continuously
 - Loses its effectiveness
 - Over use may give an unintentional 'military band' feel

D. TECHNIQUE

- 1 Fingering is the same as for the flute
 - 3rd Flute Player of orchestra often doubles on piccolo
 - Plays flute or piccolo part as required
 - Need 2 or 3 measures of rest to make switch
- 2 Piccolo like flute will play flat and sluggish till warmed up

E. SCORING

- 1 Arrangement often described at beginning of score as 'Flute III interchangeable with piccolo'
- 2 Piccolo part is occasionally listed below Flutes when Flute III has doubling responsibility
- 3 Most often listed at top of page in many scores having assigned piccolo player

VI ENGLISH HORN

Italian Corno Inglese *French* Cor Anglais *German* Englisch Horn



English Horn



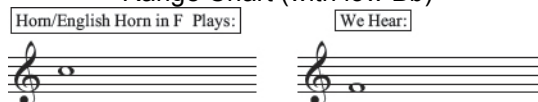
English Horn Bocal



English Horn Reed



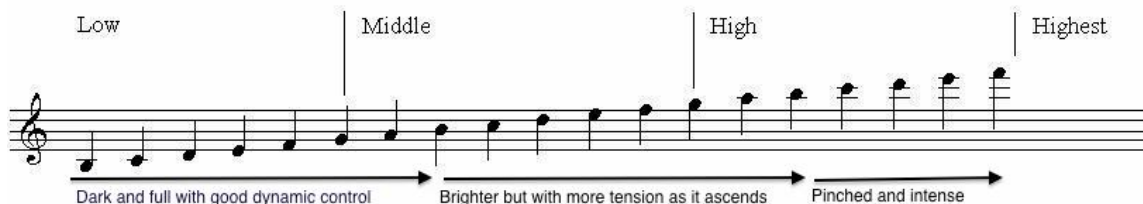
Range Chart (with low Bb)



Transposition Chart

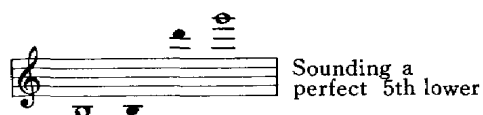


Register Chart (Written Range)



Register Qualities (Written Range)

Trills and fingering same as oboe with a few exceptions



1 History

- Unclear how instrument was named 'English Horn' as neither English or a horn
 - : Some speculation that the original name 'cor angé' in French with 'angé' becoming 'anglais' (historic instrument had an angle near end of instrument)
 - : Horn is still unexplained or why not just called 'alto oboe'
- Modern instrument is straight and differs from Oboe in being longer and with a bulb like distension at the end of the bell

2 Characteristics / Scoring / Register

- Tone is 'akin' to Oboe but more sonorous and melancholy
 - : Not a particularly agile instrument
 - : Seldom called upon to play fast, technically complicated passages
- Part is written P5th higher than sounding
- B2 is the lowest note
 - : Some instruments do have a low Bb2 key
 - : Not common enough to write as a general practice
- Bottom notes are highly effective without the coarseness of the low notes of the Oboe
- Seldom need to write above C5 though notes a 5th higher are possible
 - : Instrument loses its characteristic color in topmost register
 - : Consequently less effective in this part of register

VII BASS CLARINET

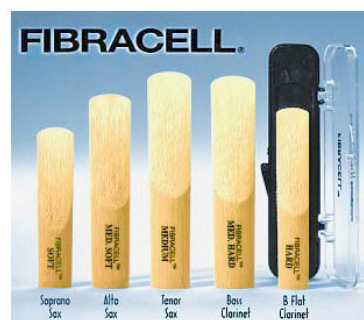
Italian Clarinetto Basso *French* Clarinette Basse *German* Bassklarínette



Bass Clarinet



Bass Clarinet Mouthpiece



Comparison Single Reed Sizes

Written Sounds Best Range Written

Newest model range D or Db concert bottom depending on model

Bass Clarinet Range Chart

Low Middle High Highest

Bass Clarinet Register Chart

Low Chalumeau Middle Throat High Clarinet Highest Altissimo

Bright, powerful, full-sounding, and brilliant

Dark, mellow, sonorous, and insistent Lacks overtones sounds weak & dull Narrow, incisive, and penetrating

Bass Clarinet Register Qualities

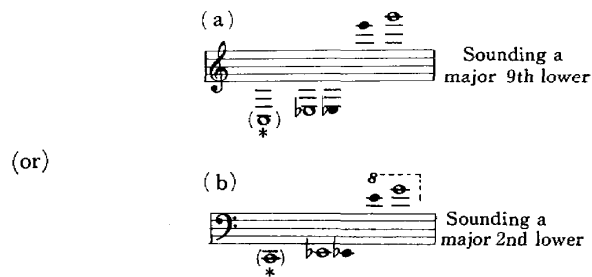
Trills & Fingerings are same as Bb Clarinet (with some alternate fingerings)

Bb Bass Clarinet Fingering Chart

The chart displays fingerings for the following notes (from top-left to bottom-right):

- Row 1: D \sharp , E \flat , E, F, F \sharp , G \flat , G
- Row 2: G \sharp , A \flat , A, A \sharp , B \flat , B, C
- Row 3: C \sharp , D \flat , D, D \sharp , E \flat , E, F
- Row 4: F \sharp , G \flat , G, G \sharp , A \flat , A, A \sharp
- Row 5: B \flat , B, C, C \sharp , D \flat , D, D \sharp
- Row 6: E \flat , E, F, F \sharp , G \flat , G, G \sharp

Notes: The last four boxes in the bottom row (E \flat , E, F, F \sharp) are specifically labeled "harmonic fingering".



* Pitches down to the low written C (concert B \flat) are possible on some bass clarinets.

1 Characteristics

- Larger than Clarinet with curve near mouthpiece and an upturned bell
- Historically there was an A Bass Clarinet but it is now extinct
 - : A Bass Clarinet parts must now be played on B \flat Bass Clarinet
 - : Player must be able to transpose between parts

2 Use

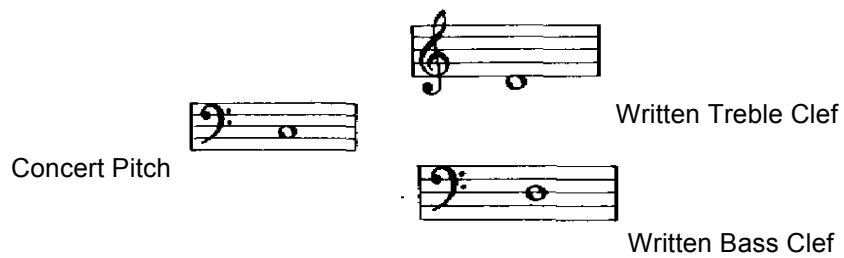
- Not as agile as the B \flat Clarinet
- Can move with considerable speed
- Shares B \flat Clarinets phenomenal control of volume and dynamic nuance

3 Register

- Bottom octave is extremely 'dark, almost sinister' in quality
- Color becomes less somber above this bottom octave
- Top octave is a 'bit strained' and little point in writing in this top register as other instruments can be used with better effect
- Middle & Lower registers are a valuable asset
 - : Doubling bass & tenor parts
 - : In a solo capacity

4 Scoring

- Written in treble or bass clef
 - : In treble clef the instrument sounds a M9th lower than written (French System)
 - : In bass clef sounds a M2nd lower than written (German System)



- Treble scoring is preferred today
 - : But player must be able to read parts written for either clef
 - : Occasionally both systems are used
- Interchangeable with 2nd or 3rd Clarinet
 - : Parts can be played by same Bass Clarinet player
 - : Sensible arrangement where both instruments are not needed at same time
- Bas Clarinets built to include D1, Db1, & C1 are available but not widely used (built with capability or with use of a permanent or removable extension)

VIII CONTRA BASSOON (DOUBLE BASSOON)

Italian Contrafagotto *French* Contre-basson *German* Kontrafagott



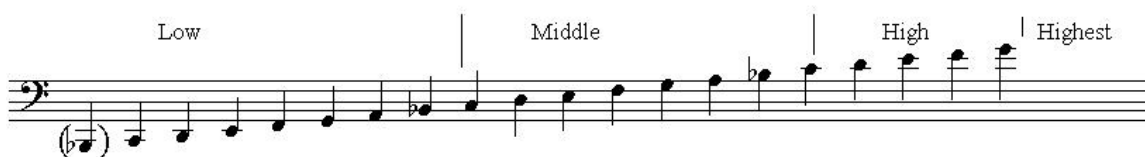
Contra Bassoon



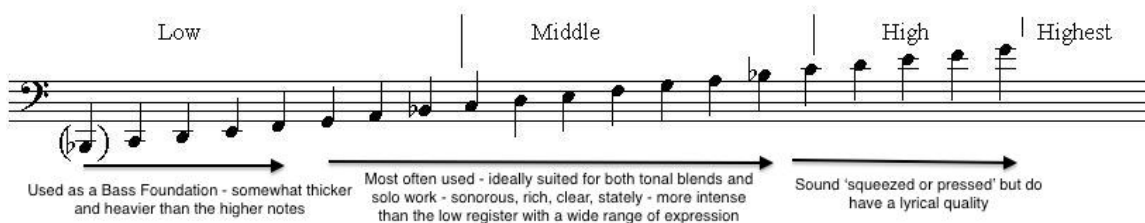
Written Range



Sounding Range

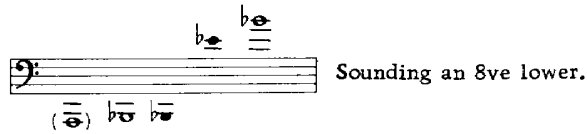


Range Chart by Register



Register Chart by Quality

Bassoon & Contra Bassoon share basic fingerings



1 Characteristics

- One of the more ponderous instruments of the orchestra
 - : Because of size needs to rest on floor in performance
 - : Tone is rough and thick
 - Very soft effects are difficult to achieve especially in the low register
 - Instrument is valuable chiefly for adding bass parts is loud and heavily scored passages
 - Able to add a somber tinge to low melodic lines
 - Also as a solo instrument to produce a rather grotesque effect
- Seldom reason to use it in upper register as bass clarinet and bassoon are better equipped to play these notes

2 Scoring

- Written an octave higher than sounding
- Both instrument and competent players are a rare making it a gamble to score it unless for a major orchestra
- Rapid and intricate parts are not well suited to the technique of the instrument
 - : Part should be simple
 - : Contain plenty of rests

6 THE WOODWIND SECTION

WOODWIND REGISTERS

(Written notes)

Ex. 19

The diagram illustrates the registers and timbral qualities for various woodwind instruments. Each instrument is represented by a staff with a treble or bass clef. Notes are placed on the staff to indicate the range of the instrument, and labels above or below the notes describe the sound quality in that register. Brackets are used to group notes that share a similar quality.

- Picc.** (Piccolo): Notes range from middle C to two ledger lines above. Qualities: Weak, breathy (middle C); Brighter, stronger (middle C to G); Brilliant, powerful (G to B); Piercing (B and above).
- Fl.** (Flute): Notes range from middle C to two ledger lines above. Qualities: Weak, breathy (middle C); Brighter, stronger (middle C to G); Brilliant, powerful (G to B); Piercing (B and above).
- Ob.** (Oboe): Notes range from middle C to two ledger lines above. Qualities: Thick (middle C); Reedy, sweet (middle C to G); Thinner, less characteristic (G to B); Apt to be pinched (B and above).
- Eng. Hrn.** (English Horn): Notes range from middle C to two ledger lines above. Qualities: Reedy, intense (middle C); Reedy, mellow (middle C to G); Thinner, less characteristic (G to B); Thinner, less characteristic (B and above).
- Clar.** (Clarinet): Notes range from middle C to two ledger lines above. Qualities: Dark (middle C); Neutral (middle C to G); Bright, clear (G to B); Shrill (B and above); Too difficult (B and above).
- Bass Clar.** (Bass Clarinet): Notes range from middle C to two ledger lines below. Qualities: Dark, rich (middle C); Full, reedy (middle C to G); Brighter, less characteristic (G to B); Strained, "white" (B and above).
- Bsn.** (Bassoon): Notes range from middle C to two ledger lines below. Qualities: Dark, full (middle C); Neutral (middle C to G); Thin, but intense (G to B); Pinched (B and above).
- Contra Bsn.** (Contrabassoon): Notes range from middle C to two ledger lines below. Qualities: Thick, dark (middle C); Neutral (middle C to G); Seldom used (G to B).

I INTRODUCTION

A. SIZE

- 1 Average woodwind section is 2 flutes, 2 oboes, 2 clarinets, 2 bassoons, plus piccolo if desired
 - Most major orchestras include English Horn, Bass Clarinet, and Contra-Bassoon
 - Most school orchestras and non-professional groups don not include these additional horns
- 2 Called 'woodwind in pairs'
 - Best to limit section size to the 'pairing' unless sure of orchestral size
 - Other option is possibility of the 2nd flute/piccolo double and oboe/english horn double

B. HISTORICAL PERSPECTIVE

- 1 Orchestra of Classical Period did not regularly include clarinets
- 2 By Beethoven's time woodwinds in pairs had become the accepted arrangement

II THE SCORE

A. CONVENTIONS

- 1 Score Order

		<i>Small Orchestra</i>	<i>Medium-sized Orchestra</i>	<i>Large Orchestra</i>	
Woodwind Section	Piccolo		(1)	1	
	Flute	1	2	2	3
	Oboe	1	2	2	3
	English Horn			1	
	Clarinet	1	2	2	or 3
	Bass Clarinet			1	
	Bassoon	1	2	2	3
	Contra Bassoon			1	

2 Each pair of woodwinds is written on the same staff

- Only variation to score order is placing piccolo part below Flute I & II if piccolo part is interchangeable with Flute III
- When each of a pair is playing different parts the upper notes are normally taken by Instrument I and the lower by Instrument II
 - : Single stem for both notes may be used if time values are the same
 - : Best to use separate stems if voices cross or separate staves if so independent as to awkward on one staff
 - : If written on same staff where single melodic line is involved
 - Indicate which of pair is to play line
 - Instrument I / Instrument II / or both
 - If solo, that must be indicated with 'solo'



If time values are both the same with only brief crossing – if awkward, use two staves



Flute I only



Flute I only



Flute II only



Flute II only



Flute I & II Melodic Passage in unison 'a2' is 'to two' in Italian and the usual scoring

Flute I & II double stem indication usually reserved for only brief unison passage



Common double stem indication with brief unison passage

- Solos are usually (but not always) given to the 1st of a pair
 - : Solo indication is sometimes use even when passage is not chief melodic idea but still to be played with 'prominent' and 'important' quality
 - : If melodic line is to be played in unison and of 'solo quality' indicate with 'soli'
- Divisi & unison is used for *Band* music with a clarinet section not for winds in orchestral passages (is used for orchestral strings)
- When one instrument of a pair is already playing with a delayed second instrument entrance customary to label entering voice as I or II with a dynamic indication

B. TONGUING AND SLURRING

- 1 Articulation of each note separately (tongued) or slurred with preceding and following notes (slurred)

- Where no slur marking is present note is to be tongued

Third Symphony
Allegro con brio
Ob
Brahms
p grazioso

1st two slurred, 2nd two slurred, 3rd four slurred, next tongued separately

- : Legato with no breaks between slurred groups (or entire passage)
- : Marcato with no slurs
- : Repeated notes must be tongued

(a) 2. 2. Clar. in B \flat

not: 2. 2. Clar. in B \flat

Repeated note must be tongued (not as sharp as a fresh attack)

- Slurs with dots or with line sometimes used to indicate 'soft tonguing'

(a) a2 2. Clar. in B \flat

(b) 2. Clar. in B \flat

- : Can be used with repeated notes
- : With a line indicates more of a soft pressure

-
- 2 Some scores utilize both phrase markings and slur markings
 - Use solid line for slurs and dotted line for phrasing to avoid confusion
 - Not universally accepted best to indicate slurring for woodwind parts
 - Use ‘,’ for breathing points (same indication as in vocal writing)
 - 3 Relationship between bowing in strings and slurring in woodwinds on same melodic line
 - No hard & fast rule
 - Some composers will have slurring correspond between the two sections to give unity of effect
 - But in some cases actual slurring between the sections will not necessarily be the same (strings may have to change bow direction over length of passage)
 - 4 Tonguing Patterns
 - Triple and double tonguing are used for articulating passages where tempo would make single tonguing impractical
 - : Easy on flute, only very skilled oboist
 - : Impractical for clarinet and bassoon
 - Flutter Tonguing
 - : A special effect executed with a rapid roll with the tongue
 - : Results in a kind of ‘eerie’ whir applied to sustained or melodic lines
 - : Indication is same as unmeasured tremolo in the strings (three lines through note stem) plus indication ‘flutter tongue’
 - : Will suited to the flute and piccolo, possible (and rarely used) on the clarinet, extremely difficult on oboe
 - Attack and Release
 - : fp or sf or p dynamic
 - Tone is started with strong attack and then reduced in volume *immediately*
 - After that it is either sustained at a constant dynamic or allowed to diminish ever more
 - An effect rather than a dynamic marking
 - : May be used at any dynamic level
 - : Used also in Brass, Strings, and Percussion Sections

C. SCORING

1 Sustained note followed by rest



Usual for Piano notation with note cut-off left to performer and genre interpretation



Normal notation for Orchestra with note cut-off specified

- Rest used to clarify the exact cut off of the note
 - : If piano style is used the cut off point on the note is indistinct and could result in a ragged effect
 - : Tying notes to next beat provides an easier and definite cut off point resulting in a clearer and more unified release
- This is preferred for woodwinds, brass, strings

2 Muting

- Seldom used for woodwinds
- Not possible on flute (due to construction)
- Clarinet can reduce tone to whisper so has no need for mute
- Oboe it is possible by inserting chamois cloth into bell
 - : Used chiefly on note C4 to G4
 - : Will throw certain notes out of tune
- Bassoon can also be muted with same technique as oboe or with an actual mute
 - : Effect is seldom called for
 - : Some bassoonists will use mute in very soft passages to reduce volume in the lower register
 - Especially between C1 and A1
 - Bottom Bb is unplayable with this technique

III SCORING FOR WOODWINDS IN PAIRS

Jesu, meine Freude

Bach



Choral model for scoring

A. FOR 2 FLUTES, 2 OBOES, 2 CLARINETS, & 2 BASSOONS

Range considerations

Soprano

Flute , oboe, or clarinet (relatively weak on flute)

Alto

Clarinet is better choice as too low for most flutes, oboe is within range but low B on oboe is 'coarse' in quality

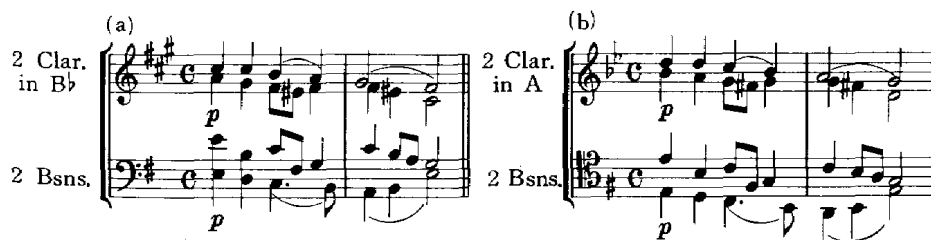
Tenor

Bassoon or clarinet

Bass

Only bassoon as the bass line goes too low for other instruments

B. EXAMPLES



- Note Clarinet in A on example B
- Versions A & B would sound alike

(c) (d)

2 Ob.
2 Clar.
in B \flat
2 Bsns.

p *mf*

- Versions C & D differ in sound from A & B (oboe in top voice will stand out sharply)

(e) (f) (Bad)

2 Fl.
2 Clar.
in B \flat
2 Bsns.

mf *f*

- Version E uses two flutes on Soprano part to give more body in weak lower register of instrument (brings about a better balance)
- Version F WHAT not to do. Oboe would outweigh flute in this register, Oboe too prominent in character for an inner voice, doubtful quality of low B

If NO compelling reason to retain original key, transposition would provide new possibilities with following

(a) (b)

2 Ob.
2 Bsns.

pp *f*

- Undesirable feature of Ex12 A & B is the oboes play interval of 4th in a sustained chord – not a good plan – the incisive oboe color accentuates the ‘bareness’ of the 4th – 6ths & 3rds sound much better – no way of avoiding this in this example without changing voice-leading of the cadence

(c) (d)

2 Fl. *f* *p*

2 Ob. *mf* *p*

2 Clar. in B \flat *mf* *p*

2 Bsns. *mf* *p*

- Ex12 C – objections of Ex 11 F do not apply as the oboe is in a sweeter, thinner register – Flute is also more assertive in the higher register – note flute is also marked louder than other pairs (*f* vs. *mf* dynamic)
- Ex12 D – uses mixed colors with flute & oboe on Soprano & Alto lines – 2 Clarinet on Tenor – 2 Bassoon on Bass – would have been possible to mix clarinet and bassoon here too

(a) (b)

2 Fl. *f* *ff*

2 Ob. *f* *ff*

2 Clar. in B \flat *f* *ff*

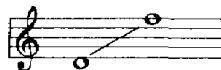
2 Bsns. *f* *ff*

- Octave doubling – doubling soprano or all three upper voices an octave higher would place flutes and clarinets in a much brighter more ‘telling’ register
- Ex13A – Melody doubled an octave higher in the flutes – Oboe I doubles the melody with Clarinet I
- Ex13B – Alto & tenor are both doubled octave higher in the clarinets – melody doubled octave higher in flutes

(c)

- Ex13C – Melody, alto, tenor are all doubled octave higher – melody is doubled octave lower in bassoon – not all pieces lend themselves to a doubled melody and octave lower as result could be too thick – note that the clarinets frequently play beneath the oboes
- when brilliance and power are called for it is often better to place clarinets higher than the oboes

Oboe – strongest register



Clarinet – brightest & solid register



IV SCORING FOR A LARGE WOODWIND SECTION

A. 2 FLUTES, 2 OBOES, 2 CLARINETS, 2 BASSOON, PLUS PICCOLO, ENGLISH HORN, BASS CLARINET, AND CONTRA BASSOON

Jesu, meine Freude

Bach

Same choral for scoring

B. EXAMPLES (WITH KEY TRANSPOSTIONS TO ENABLE EFFECTS)

(a) (Brilliant) (b) (Medium)

Picc.

2 Fl.

2 Ob.

Eng. Hrn.

2 Clar. in Bb

Bass Clar.

2 Bsns.

Contra Bsn.

ff *mf*

Medium – A clarinets used to avoid awkward key signatures – Bass clarinet is placed in enharmonic key more appropriate for Bb instruments

(c) (Dark)

Picc.

2 Fl.

2 Ob.

Eng. Hrn.

2 Clar. in Bb

Bass Clar.

2 Bsns.

Contra Bsn.

f *mf*

Piccolo given rests as brilliant upper register not needed and lower register so weak and breathy no point in including – Note parallel 5ths in 2nd & 3rd beats of the clarinet parts – not really parallel 5ths as brought about by inversion of parallel 4ths in original choral – result of doubling melody an octave below original pitch – as not part of the basic 4 part choral harmonization there is no objection to them

7 THE HORN

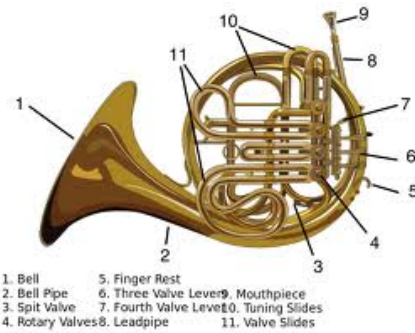
Italian: Corno/Corni French: Cor/Cors German: Horn/Hörner



Single French Horn



Double French Horn



French Horn Parts



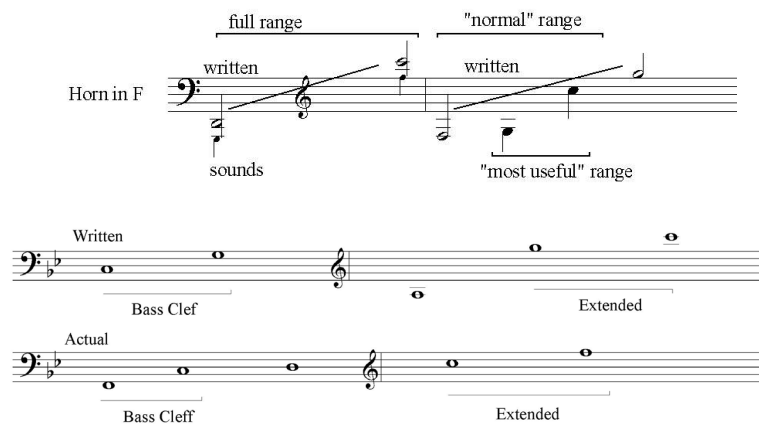
French Horn Mute



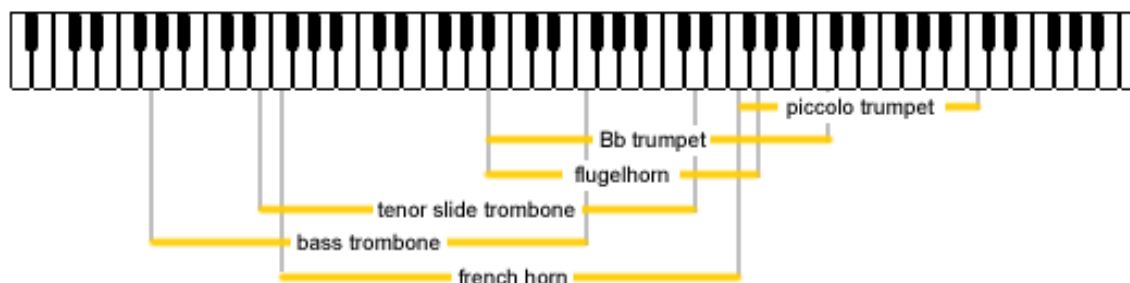
French Horn Non-transposing Mute



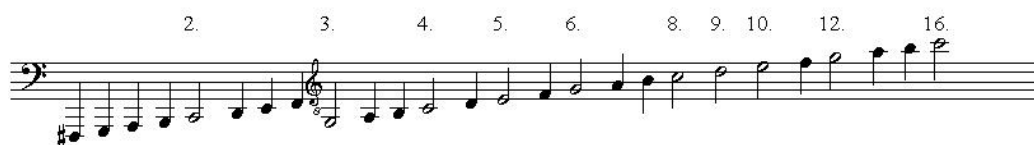
French Horn Mouthpiece



French Horn Range

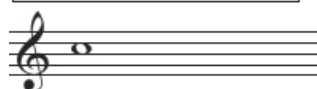


Brass Ranges

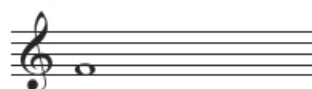


French Horn Range by Natural Tone

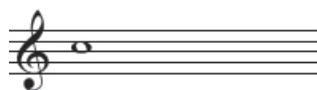
Horn/English Horn in F Plays:



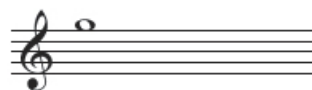
We Hear:



You Want To Hear:



You Need To Write:

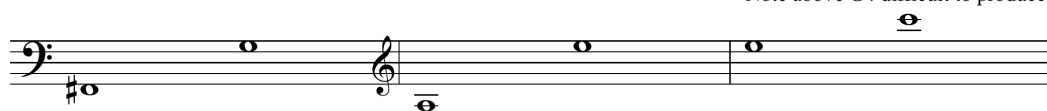


French Horn Transposition (Horn in F)

Unsolid in quality
Lacks focus
Doubtful Intonation

Most characteristic register
Tone considerably brighter

Progressively more brilliant
Impression of being extremely high
Note above G4 difficult to produce



Low


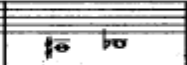

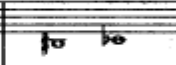


Middle



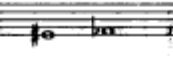



High

French Horn Registers





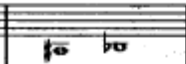

French Horn Fingering Chart





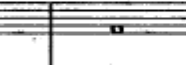
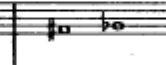

Many players prefer to use the B \flat Horn (trigger) when they reach second line G \sharp and continue to use it throughout the upper register.


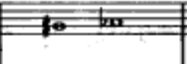

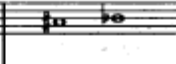


C	C \sharp D \flat	D	D \sharp E \flat	E	F
					
Open	T 2 3	T 1 2	T 1	T 2	T open






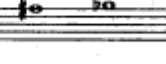
F \sharp G \flat	G	G \sharp A \flat	A	A \sharp B \flat	B
					
1 2 3	1 3	2 3	1 2	1	2

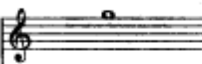
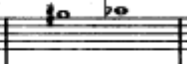

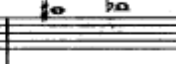


C	C \sharp D \flat	D	D \sharp E \flat	E	F
					
Open	T 2 3 or 1 2 3	T 1 2 or 1 3	T 1 or 2 3	T 2 or 1 2	T open or 1

F \sharp G \flat	G	G \sharp A \flat	A	A \sharp B \flat	B
					
2	Open	2 3	1 2	1	2

C	C \sharp D \flat	D	D \sharp E \flat	E	F	F \sharp G \flat
						
Open	1 2	1	2	Open	1	2

G	G \sharp A \flat	A	A \sharp B \flat	B	C
					
Open	T 2 3 or 2 3	T 1 2 or 1 2	T 1 or 1	T 2 or 2	T open or Open

C \sharp D \flat	D	D \sharp E \flat	E	F	F \sharp G \flat
					
T 2 3 or 1 2 or 2	T 1 2 or 1 or Open	T 1 or 2	T 2 or Open	T open or 1	T 2 or T 1 2 or 2

G	G \sharp A \flat	A	A \sharp B \flat	B	C
					
T open or T 1 or Open	T 2 3 or T 2 or 2 3	T 1 2 or T open or 1 2	T 1 or 1	T 2 or 2	T open or Open

I GENERAL CONSIDERATIONS

A. TERMINOLOGY

- 1 Term 'French Horn' is seldom used by musicians
- 2 Referred to simply as 'the Horn'
- 3 Difficult to understand why termed 'French Horn' as development of modern horn centers around Germany

B. CONSTRUCTION

- 1 Involves a combination of a mouthpiece and air column vibrating sympathetically with players lips
 - Fractional vibrations of the air column produce overtones
 - Fundamental or generating tone itself is either very difficult or unobtainable on most brass instruments
 - If length of tubing is altered by valves or slide a new set of overtones results
- 2 Each Brass instrument is equipped with a 'tuning slide' enabling tuning by altering the basic tube length

C. USE

- 1 Tone is capable of blending almost equally well with either woodwinds or brass
- 2 Very often used 'as if' a member of the woodwinds
- 3 Bore is predominately conical in shape resulting in a less sharp edged and incisive sound than trumpet or trombone

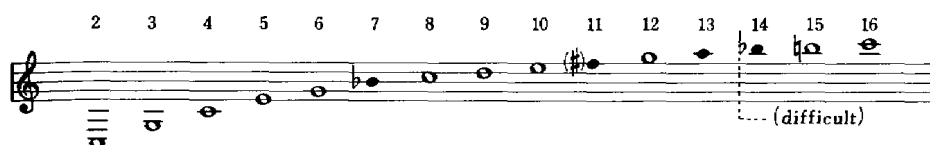
II HISTORY

A. THE NATURAL HORN

- 1 The Horn of Hayden's and Mozart's day were essentially hunting horns
 - Valveless and capable of playing notes of *one* harmonic series
 - As a result parts for instruments at this time were extremely limited melodically
 - : Stepwise passages could be written only within a relatively small pitch area in the upper portion of the harmonic series
 - : Some intermediary tones were possible by inserting a hand into the bell or 'lipping'
 - : Chromatic passages were out of the question altogether

- To cope with different keys a system of ‘crooks’ was used
 - : A tubing extension inserted into the Horn to alter the pitch of the fundamental
 - : Creates a new harmonic series based upon the new fundamental
 - : Directions for which crook to use was indicated at the beginning of the score, movement, etc.
 - Indicated by ‘Horn in Eb’, ‘Horn in A’, etc.
 - Part was invariably written in key of C

Ex. 1



- Fundamental (1st Partial) was normally unplayable
- Out of tune notes (with *our* system of tuning) are in black
- 11th partial between F & F# would be ‘humored’ either way

<i>Horn in</i>	<i>Sounding</i>
B \flat -alto	a major 2nd lower than written
A	a minor 3rd lower than written
A \flat	a major 3rd lower than written
G	a perfect 4th lower than written
F	a perfect 5th lower than written
E	a minor 6th lower than written
E \flat	a major 6th lower than written
D	a minor 7th lower than written
C	an octave lower than written
B \flat -basso	a major 9th lower than written

(“Alto” and “basso” are used here to mean “high” and “low” respectively.)

- Horns in other keys (B alto, F#, Db, B basso, & A basso) were called for only rarely

2 Parts for the natural Horn were written in the treble clef

- Rare cases where bass clef was employed
- Illogically pitches were noted an octave lower than how they would have been notated in treble clef
- Results in pitch lower than concert pitch by the inversion of the normal treble-clef transposition



- D notated a Major 2nd lower than sounding in bass clef rather than minor 7th higher

Sixth Symphony



which will sound:



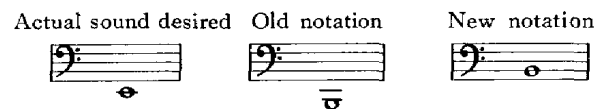
3 In Classical period usual practice was to employ one pair of Horns pitched in the 'home key'

- If in minor key a second pair of natural horns pitched in relative major was included
 - : Supplied certain important notes available to harmonic series in home key
 - : Later two pairs of horns pitched in different keys was employed
 - Allowed richer possibilities for horn writing
 - Allowed for modulations
- Introduction of valves revolutionized the technique and type of part that could be written for horn
 - : Invention of valve occurred in 1813
 - Did not come into general use till about middle of 19th Century
 - Natural horn was used in addition to the valved horn for many years
 - : Valves increased fundamental from one to seven
 - : Also complete chromatic scale was achievable
 - : Resulted in horn achieving real melodic standing

B. MODERN VALVE HORN IN F



- 1 Of many horns employed the valved horn in F has proven most satisfactory
- 2 Most players use the 'double horn'
 - Has two sets of tubing one in F and one in high Bb
 - Enables the player to switch instantaneously from one to the other
 - : Bb because of shorter tubing allows for greater facility
 - : Choice is up to player
 - Using Bb requires transposition as responsibility of player
 - Part is always written for F horn
- 3 Traditionally horn parts were written without key signature but now included
 - Old custom of writing horn parts 4th lower instead of 5th higher in bass clef persisted until recently
 - Current practice is to write part a 5th higher in bass as well as in treble clef



- Best to include a note in horn parts that notated pitches sound a 5th lower (as old system was so prevalent)
 - : Bass clef is little used except for extremely low tones
 - : Horn parts should utilize treble clef whenever possible

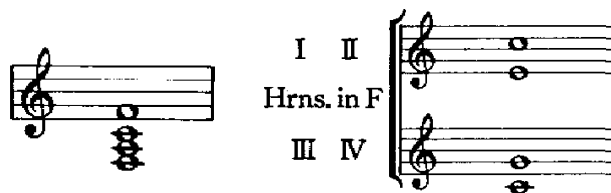
III CHARACTERISTICS

A. REGISTER

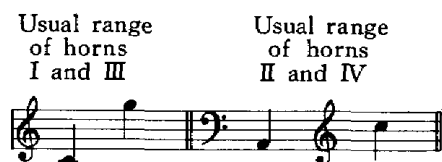
- 1 In bottom register up to written G2 the horn is 'unsolid' in quality, lacks focus somewhat, and is doubtful in intonation
 - This register is used chiefly for sustained notes
 - Melodic passages are awkward and ineffective
- 2 From written A3 to E4 the tone is considerably brighter
 - This middle register is the most characteristic register of the horn
 - Most playing is done here
- 3 From E4 to C5 the notes become progressively more brilliant
 - Due to strain of producing these top notes the 'sound' gives impression of being much higher than actual
 - Notes above G4 are difficult to produce
 - : Should be 'led up to' to give player preparation
 - : Impossible to play softly so us only if meant to be heard prominently

B. USE

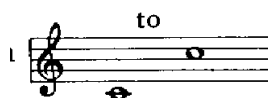
- 1 Division of labor among four horns commonly used in today's orchestra
 - Traditional arrangement of horns is I & II on one staff III & IV on second staff below
 - Tradition however dictates that the horns 'interlock'
 - : I & III on high notes
 - : II & IV on low notes
 - : If only three horns are sounding III is placed between I & II



- Result is horns I & III become specialists in upper register with II & IV specializing in low notes
 - : Can divide horn section into two ranges I & III and II & IV



- : Advantage of specialization is due to the embouchure required for high parts vs. low parts
 - There is a common ground



- Horns do exceed 'specialized' range with all four horns moving up or down in unison passages
- 2 Horn is not a particularly agile instrument
 - Very fast running passages and quick leaps not in province except in virtuoso solo work (with limitations)
 - Each player must 'hear' note internally before playing it
 - : the melodic line should be as smooth as possible
 - : avoid awkward leaps
 - Should provide sufficient rests
 - : Horn is one of the most difficult of all orchestral instruments
 - : Approach scoring with special care and understanding

C. ORCHESTRAL CONTEXT

- 1 Harmony Parts (middle register)
 - Ideal for background
 - : Can be made unobtrusive
 - : Does not lose warmth or body

- Usually harmony parts are sustained
 - : Sometimes repeated notes or repeated short figure
 - : Repeated notes on the horn do not sound as sharply articulated as repeated notes on other instruments
 - : Effect is more of a pulsation on the repeated notes

Symphony in D minor

Allegretto Franck

I II
Hrns.
in F
III IV
VI. I

f *dim.* *pp*

- Temptation to over use in this register due to horns success with these parts and can result in a monotony of color and effect
- Constant use of horns on middle harmony parts gives Romantic Period orchestral scores the characteristic 'plushy richness'

2 In solo capacity

- Excellent as a solo instrument
- Can be tender or heroic and possesses a 'wonderful' nobility and breath of tone

(b) Fifth Symphony

Andante cantabile Tch

1. Solo

Hrns.
in F

dolce con molto espress.

(c) *Siegfried*

Allegro moderato

1st Hrn.
in F

f

- Two or more horns in unison on a melodic line
 - : Doubling for volume or balance
 - : Occasionally to give greater degree of security in difficult passages
 - : All four horns at 'f' or 'ff' dynamic give an especially robust and heroic sound

(a) Symphony in E minor (*New World*)



(b) *Don Juan*



- : Where I & III play one melodic line and II & IV another for a considerable length of time
 - Easier to write I & III on upper staff and II & IV on lower
 - Use '2' on each staff to indicate doubling

3 Scoring

- Chamber orchestra usually employs one horn
- Small orchestra usually one or two
- Full orchestra four is standard (can be less if music doesn't demand full 4 Horn section)
- Sometimes 5 Horns will be employed
 - : Actually the extra horn is an 'assistant' First Horn
 - : Will double Horn I part for added severity or volume
 - : Will also play part to allow Horn I player to rest
 - : Some scores require more than standard 4 Horn section
 - Stravinsky's Rite of Spring
 - Wagner's Ring Cycle

IV SPECIAL EFFECTS

A. MUTING AND STOPPING

- 1 Change in hand position in bell usually controls tone quality
 - Hand is part way into bell and cupped
 - This is the 'normal' position
- 2 Inserting hand further into the bell will provide muting (consordino)

- Actual mute can also be employed
- Players preference determine method
 - : Hand for short passages
 - : Mute for longer passages
- A measure or two in moderate time should be allowed to insert the mute (hand mute does not require this allowance)
- Quality of muting will depend upon both player and instrument
- Basic muted tone quality is veiled with a reduction in volume
- Below C3 muted note are difficult but a skilled player can mute notes down to G2
- 'O' is used for a return to open notes (*ouvert* *Fr* *offen* *Ger*)

Capriccio Espagnol

♩ = 112 Rimsky-Korsakoff

Hrns. in F Solo *mf* (*ouverts*) *p* (*bouchés*)



'Normal' Hand



'Stopped' Hand



Non-transposing Mute

3 Stopped notes

- Produced by inserting the hand (or mute) so far into the bell that notes must be 'forced out'
- Resulting notes are 'curiously' nasal and metallic with a sharp edged
- Especially effective for single note played 'fp'
- Notated the same as open notes

In both muting and stopping the volume is reduced and pitch altered (unless a non-transposing mute is employed) to such an extent that different fingerings are employed

-
- 4 Stopped notes are notated the same as open notes
 - Use French word 'bouche', 'stopped' in English, 'gestopft' in German, or 'chiuso' in Italian
 - Alternate is just a '+' placed above the stopped notes
 - 5 Stopped sound coupled with 'fp' dynamic has a biting, almost 'snarling' quality which is both dramatic and arresting

B. CUIVRÈ (BRASSY)

- 1 Attained chiefly by increased tension of the players lips and possible with open, muted, or stopped notes
- 2 Bouchè-cuivrè is a composite term often encountered which calls for both stopped and brassy execution
- 3 Cuivrè-légerement indicates only a 'suggestion' of brassiness

C. PAVILLONS ENL'AIR (BELLS IN THE AIR)

- 1 A rarely used effect for which the horn is turned with the bell pointing upward
- 2 Sound is projected outward toward the audience more directly than in normal playing position
- 3 Hand cannot be used in the bell so tone is completely opened – lacks any subtlety
- 4 Appropriate only for loud and 'hearty' passages where refinement of tone is not called for

D. LONTANO (DISTANT)

- The 'uncanny' ability of the horn to sound as if played a great distance away
- Part should be marked 'pp' or even 'ppp' in dynamic level and the word 'lontano' added
- Effect is achieved either with partly muted tone, completely muted, or open but extremely softly

8 THE TRUMPET, TROMBONE, AND TUBA

I THE TRUMPET

Italian Tromba
Trombe

French Trompette
Trompettes

German Trompete
Trompeten



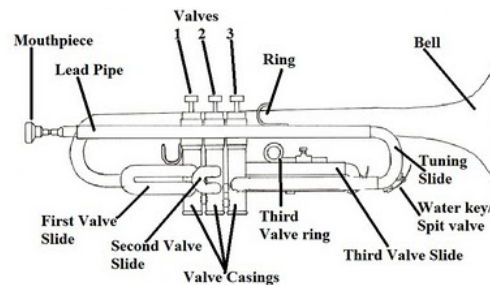
Bb Trumpet



Piccolo Trumpet



Trumpet Mouthpiece



Trumpet Parts



Bubble Mute



Bucket Mute



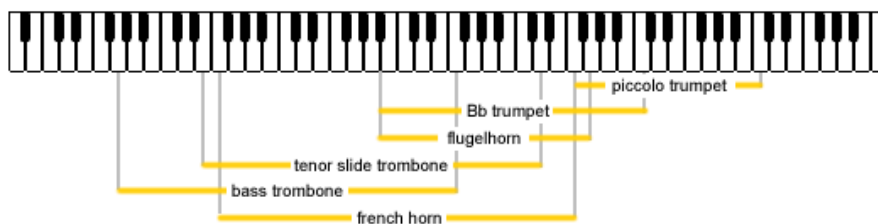
Plunger Mute



Straight Mute



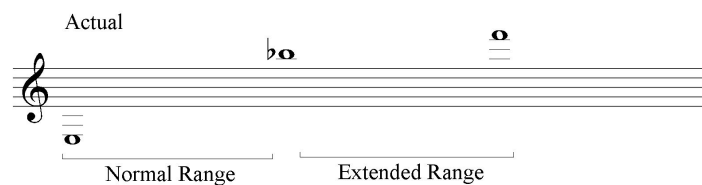
TriTone Mute



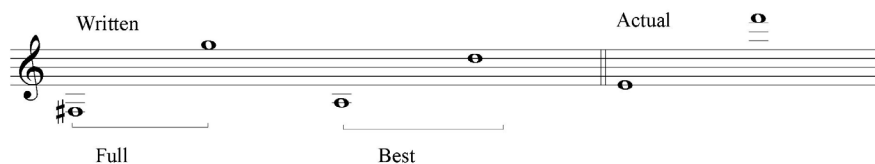
Brass Ranges



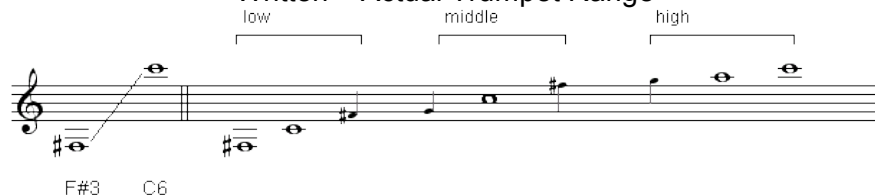
Trumpet Range by Natural Tone



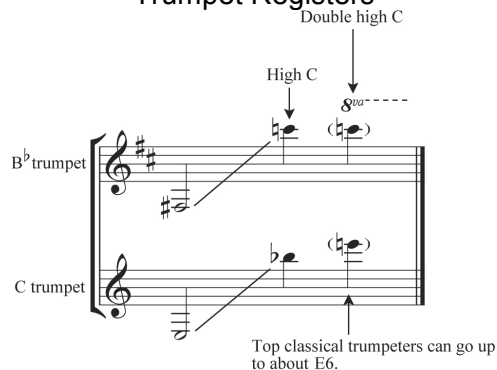
Trumpet Range



Written – Actual Trumpet Range



Trumpet Registers



Note: Very few trumpeters can hit double high C's.
Those who can, specialize in high note playing.

Bb – C Trumpet Range Comparison

B♭ Trumpet Fingering Chart

(Notes on gray background are pedal tones -- younger players should use 1 2 3 for all pedal tones.)

C	C# D♭	D	D# E♭	E	F
Open	1 2 3	1 3	2 3	1 2	1

F# G♭	G	G# A♭	A	A# B♭	B
1 2 3	1 3	2 3	1 2 or 3	1	2

C	C# D♭	D	D# E♭	E	F
Open	1 2 3	1 3	2 3	1 2 or 3	1

F# G♭	G	G# A♭	A	A# B♭	B
2 or 1 2 3	Open or 1 3	2 3	1 2 or 3	1 or 1 2 3	2 or 1 3

C	C# D♭	D	D# E♭	E	F
Open or 2 3	1 2 or 3	1 or 1 3	2 or 2 3	Open or 1 2	1

F# G♭	G	G# A♭	A	A# B♭	B
2	Open or 1 3	2 3	1 2 or 3	1	2

C	C# D♭	D	D# E♭	E	F
Open	2 or 1 2	Open or 1	2	Open	1

A. HISTORY

1 Trumpet in the 18th Century

- In time of Bach and his contemporaries there existed the art of 'clarino playing'
 - : Involved producing the very high partials of the instrument
 - : Trumpet used was a large trumpet in D
 - : The clarino technique fell into disuse in the second half of the 18th Century and eventually disappeared entirely
- Today such high clarino parts are produced by a smaller instrument than the C & Bb trumpets now standard
 - : Trumpet in D, Eb, or F are most frequent choices
 - : Notes are 'relatively' lower in the harmonic series
 - : Easier to produce

2 The Natural Trumpet

- Much of the same considerations as that of the natural Horn
 - : Notes limited to certain members of the harmonic series (on C)
 - : Crooks used to produce the desired pitches in various keys
- Fundamental was unplayable on most trumpets
 - : 2nd partial was too doubtful in intonation to be usable
 - : notes above the 12th partial were seldom called for
 - : resulted in limited note choice



Written notes normally available during the classical period numbered on basis of partials

- Could not 'fill' in certain intermediate tones by use of 'hand in bell' as with natural horn
 - : Could not adjust intonation of 7th & 11th partials
 - : When 7th & 11th partials were called for they were 'lipped' to correct intonation
 - : Resulted in the natural trumpet being even more limited than natural horn

- In the 18th Century crooks were used with trumpets of various sizes
 - : By 19th Century trumpet in F was (more or less) standard for use with crooks
 - : Resulted in an expanded trumpet tone set

	<i>Trumpet in</i>	<i>Sounding</i>
Sounding higher than written	F	a perfect 4th higher than written
	E	a major 3rd higher than written
	E \flat	a minor 3rd higher than written
	D	a major 2nd higher than written
	C	as written
Sounding lower than written	B	a minor 2nd lower than written
	B \flat	a major 2nd lower than written
	A	a minor 3rd lower than written

Notes available with crooks

- Since there were not crooks available for all keys sometimes needed to use a trumpet in other than the key of music
 - : If composition was in G most often trumpet in C was used
 - : Sometimes trumpets omitted if key presented too many problems
 - : Sometimes another trumpet in a different key was used to avoid combined crooks
- Because of the limited notes available trumpet parts tended to be repetitious and uninteresting

Symphony No.101 in D major

Haydn

Vivace

Tpts.
in D

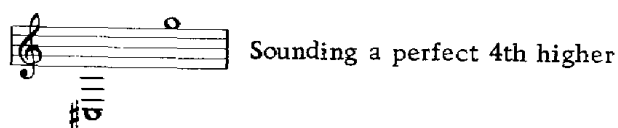
- Occasionally natural trumpet was able to take portions of themes that happened to fit the harmonic series

Third Symphony



- : There were still limitations with the natural trumpet and the parts were adjusted to accommodate those limitations
- : Sometimes the trumpet part in these cases was dropped for a beat or two in trouble spots
- : The dropping of trumpet part was likely to lead to a fragmentary and unsatisfying part

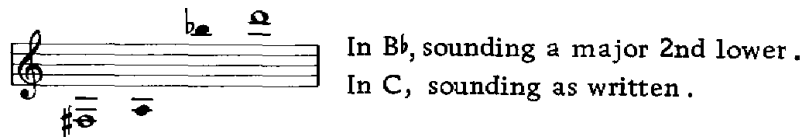
B. THE EARLY VALVE TRUMPET IN F



Early Valve F Trumpet Range

- 1 Commonly used trumpet in F of Beethoven's day was the initial instrument to which valves were added
- 2 Apparently this trumpet in F was the only 'old family' large trumpet to survive in valve form
 - Many late 19th Century scores contain parts for it (d'Indy, Bruckner, Mahler, Strauss)
 - At same time parts for crooked trumpets still appeared in scores and presumably were transposed and played by trumpet in F
 - The smaller Bb & C trumpets succeeded the F trumpet and are standard today

C. THE MODERN VALVE TRUMPET



Modern Valve Trumpet Range

1 Far more flexible than its 'ancestor'

- Tone is brighter
- Not merely an instrument that has become chromatic but actually all but in name a different instrument
 - : In open form has a written harmonic series an octave higher than that of the natural trumpet
 - Other series available by valve combination have the six semitones below middle C available
 - In each series the 7th partial is flat and normally avoided



Note available on valve combinations (7th partial is not shown)

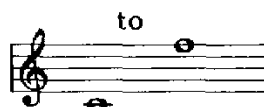
- : Early valve trumpets came with a small slide which could adjust the instrument to pitch in A
- : Slide is not included in modern Bb trumpets due to intonation problems

2 The Modern C Trumpet

- Seems to have found favor with contemporary composers
- A bit more brilliant than Bb trumpet
- Generally not as rich as the Bb trumpet

3 Trumpet Characteristics

- From C3 to F4 is the most used register



-
- Notes below C3 tend to be a little less penetrating
 - Those above F4 are difficult to produce softly and best led up to
 - While Db5 is given as top note occasional orchestral parts do to Eb5 or Eb6 on rare occasions
 - : Never stays this high for long
 - : Bit uncomfortable for 'everyone' in such passages
 - : Band & popular music have a higher top note acceptance but shrillness would be inappropriate in orchestral setting
 - Trumpet is much more agile and 'quick speaking' instrument than the horn
 - : Can manage runs, arpeggios, and skips (as long as not too fast)
 - : Such passages should not be too extended or too frequent
 - : Double, triple tonguing, and repeated notes are particularly well suited to the character of the instrument
 - : Flutter tonguing is also possible
 - : Capable of tremendous volume and has extraordinary power of crescendo

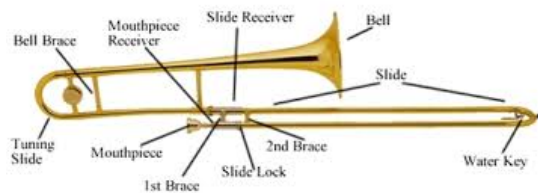
Cornet is seldom used in symphonic music today. Sounds a bit mellower with a more romantic color.

Same range as trumpet with everything possible on trumpet possible on cornet.
 - Lacks the 'noble' warmth of the horn but instead has a bright incisive quality
 - : Especially effective in 'crispy' assertive passages
 - : Can sound overly sentimental in more lyrical passages
 - Muting is a frequent & effective choice in orchestral writing
 - : Muting means straight mute for the symphonic player
 - : Other types of mutes are employed (in addition to straight) in band music
 - : Mute greatly reduces volume
 - : 'hat' / 'stand' refers to playing directly into the music stand to reduce volume

German: Posaune
Posaunen



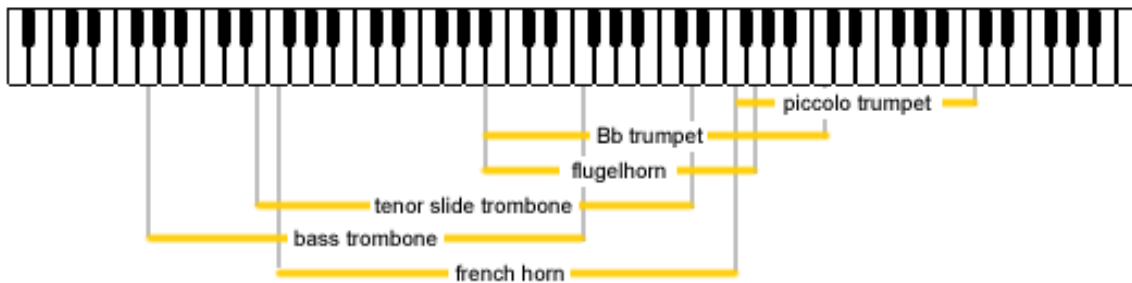
Valve Trombone



Trombone Parts



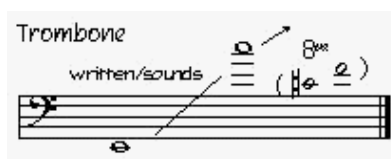
Straight Mute



Brass Ranges



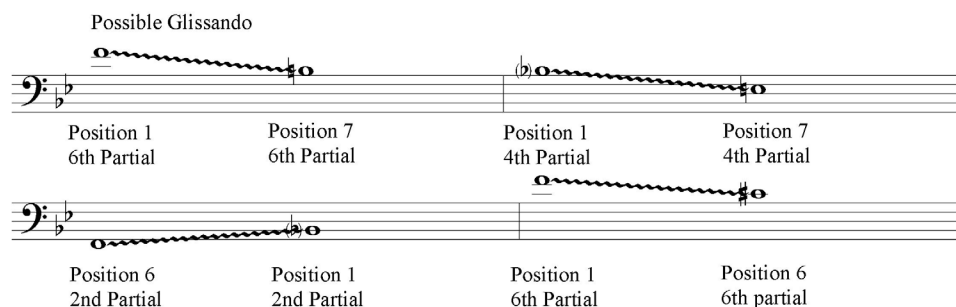
Trombone Register



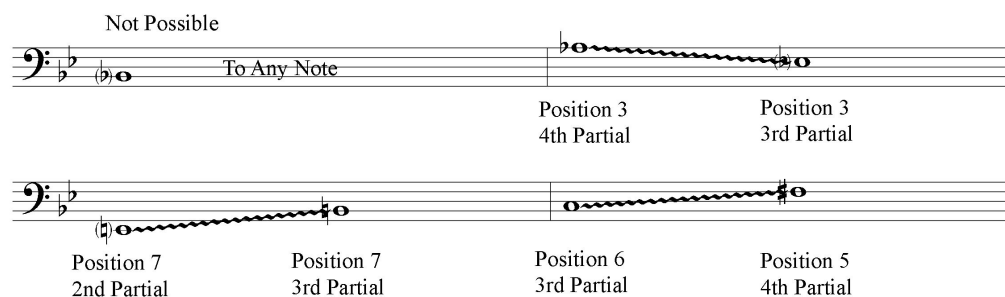
Tenor Trombone Range



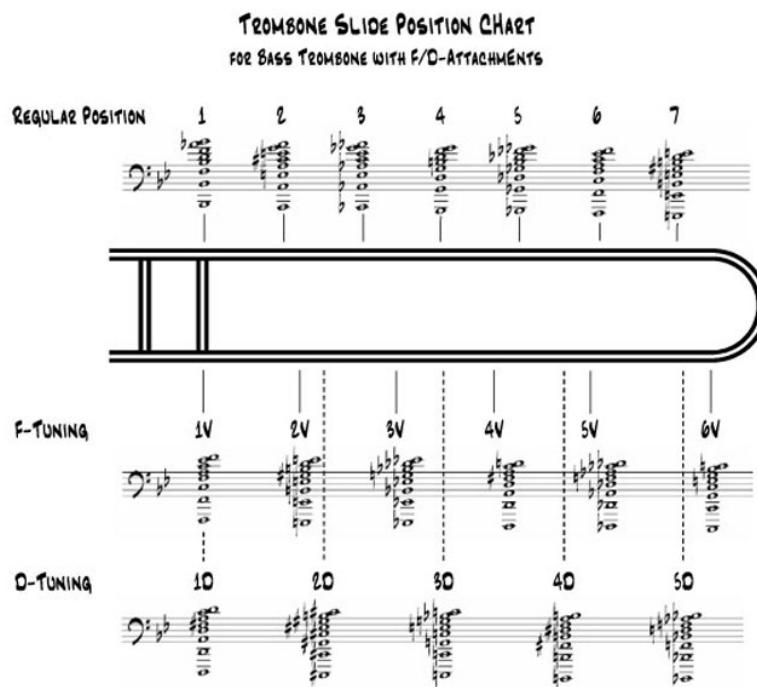
Trombone Range by Natural Tone



Possible Glissando

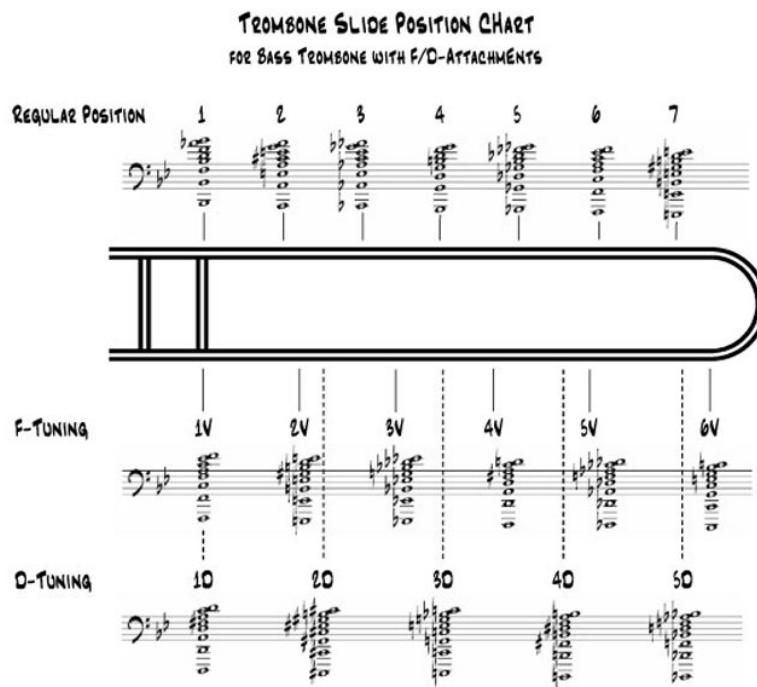


Glissando Not Possible



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Trombone Slide Position



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Bass Trombone Slide Position



Trombone Range
Pitched to Low C with F attachment

A. NOTATION

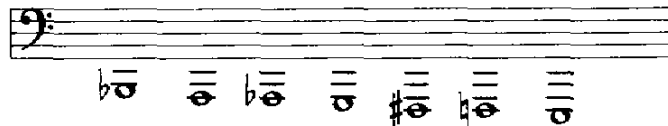
- 1 Notated in either Bass or Tenor Clef
 - Tenor clef rarely used in school orchestras
 - Utilized to avoid ledger lines
- 2 Alto clef used in older scores is almost never employed as just a hangover from earlier period when Alto Trombone was in common use
- 3 Bb Instrument but sounds as written

Used as early as 1600 by Gabrieli, employed by Mozart, Gluck, & others in opera.

First appeared in symphonic orchestra with Beethoven's 5th Symphony

B. CHARACTERISTICS

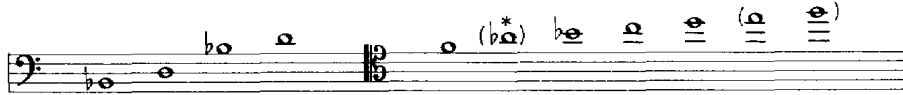
- 1 Utilizes a slide rather than valves
 - Length of tubing is varied by the slide
 - 7 different positions are possible



Fundamentals (pedal tones)

- The valve trombone has not received wide acceptance in symphony orchestras
- 2 Range and Register Characteristics
 - First Bb pedal tone
 - : Easily playable
 - : Seen frequently in commercial scoring but less so in symphonic music
 - The 7th partial (6th overtone) in each position is slightly flat and brought into pitch with the slide (*NOT* possible in the 1st position)
 - Top range in 1st position can be stretched with additional overtones

- A complete chromatic scale is available by adding B & C# at the top of 2nd position up to F4



- Notes above Bb3 are difficult to produce and rarely used in orchestral parts
- Many tenor trombones today are equipped with an F attachment
 - : When triggered this extends the range downward a M3 to C1
 - : It also simplifies the technical problem by eliminating certain awkward changes of position
- Low register is dark and full with notes becoming progressively more brilliant toward the top

C. CONSIDERATIONS

- 1 Technical difficulty of a trombone part is the distance between *positions* for consecutive notes

- Certain notes can be taken in two or more positions
 - : Player can choose which position is easiest to play in context
 - : Certain notes however can be played in only *one* position



- Excessive slide movement (1st → 7th position) will make rapid or repeated changes awkward and are best avoided



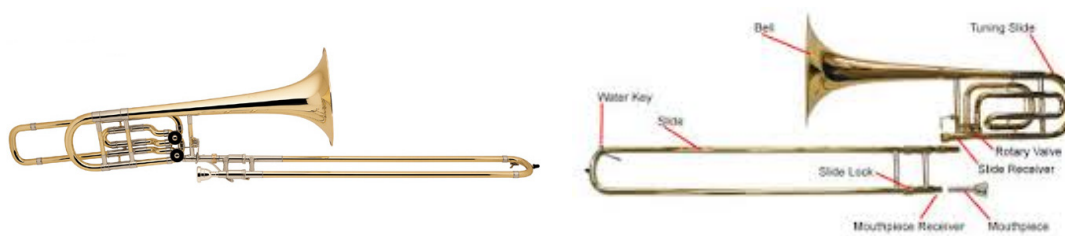
Awkward slide movement (somewhat easier with F attachment)
Numbers are slide positions

- : Problem is less acute in upper register
- : Here pitches of the harmonic series are closer together

-
- 2 Problem with achieving a completely legato effect when change of slide is involved
 - If air column is sustained when moving the slide it produces a glissando effect
 - Notes between slide positions must have air column stopped momentarily to avoid this
 - : Notes in some harmonic series require no change in slide position
 - Notes can be played *legatissimo* (lip slur)
 - With experience the player can keep gap between notes scarcely apparent to the ear
 - : The glissando effect is normally avoided but at times used for comic or bizarre passages
 - 3 Instrument excels at loud and heroic passages
 - Can also play softly either on main musical idea or as background
 - Rapid running passages and light & fanciful skipping passages are not well suited
 - Can play rapid separated notes including double and triple stops and *short* quickly moving figures
 - 4 Muting work with same effect as trumpet
 - Volume is lessened and quality of sound is altered
 - Can still 'hold its own' in tutti passages

III THE BASS TROMBONE

Italian Trombone Basso *French* Trombone Basse *German* Bassposaune



Bass Trombone

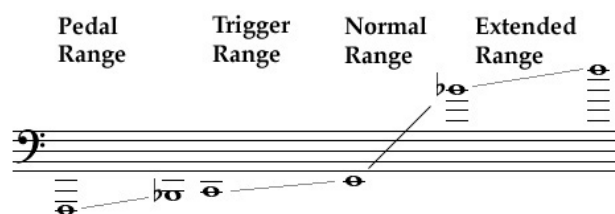
Bass Trombone Parts



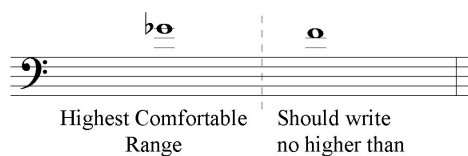
Single Trigger



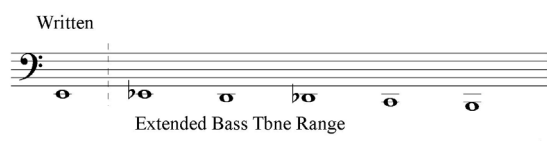
Double Trigger



Bass Trombone Range



Bass Trombone Comfort Range



Bass Trombone Extended Range



* Possible with an E attachment.

Bass Trombone Range

Chromatic Slide Position Chart for Bb-F-Gb-D Bass Trombone

Micah Everett, University of Louisiana at Monroe

Explanation:

1 = 1st position, no valves.

V1 = 1st position, F-valve engaged.

VV1 = 1st position, both valves engaged.

Gb1 = 1st position, independent Gb-valve engaged.

Preferred positions listed first.

A-Sharp or B-Flat		B or C-Flat		C	C-Sharp or D-Flat	
VV5		VV4		VV3 or V6	VV2 or V5 or Gb6	
D		D-Sharp or E-Flat		E	F	
VV1 or V4 or Gb5		V3 or Gb4		7 or V2 or Gb3	6 or V1 or Gb2	
F-Sharp or G-Flat		G	G-Sharp or A-Flat		A	
5 or Gb1		4	3		2	
A-Sharp or B-Flat		B or C-Flat		C	C-Sharp or D-Flat	
1 or VV5		VV4		VV3 or V6	VV2 or V5 or Gb6	

D	D-Sharp or E-Flat	E	F	F-Sharp or G-Flat
VV1 or V4 or Gb5	V3 or Gb4	7 or V2 or Gb3	6 or V1 or Gb2	5 or Gb1

G	G-Sharp or A-Flat	A	A-Sharp or B-Flat	B or C-Flat
4 or V6	3 or V5 or Gb6	2 or V4 or Gb5	1 or V3 or Gb4	7 or V2 or Gb3

C	C-Sharp or D-Flat	D	D-Sharp or E-Flat	E
6 or V1 or Gb2	5 or Gb1	4	3	2 or 7

F	F-Sharp or G-Flat	G	G-Sharp or A-Flat	A
1 or 6	5	4	3 or 7	2 or 6

A-Sharp or B-Flat	B or C-Flat	C	C-Sharp or D-Flat	D
1 or 5	4 or 7	3 or 6	2 or 5	1 or 4 or 7

D-Sharp or E-Flat	E	F	F-Sharp or G-Flat	G
3 or 6	2 or 5 or 7	1 or 4 or 6	3 or 5 or 7	2 or 4 or 6

G-Sharp or A-Flat	A	A-Sharp or B-Flat	B or C-Flat	C
3 or 5 or 7	2 or 4 or 6	1 or 3 or 5 or 7	2 or 4 or 6 or 7	1 or 3 or 5 or 6

A. HISTORY

- 1 In past complete family of trombones was produced



Alto, Tenor, F Bass Trombones



Double Bass Trombone

- Alto and Double Bass trombones have long since fallen into disuse
 - The F Bass Trombone (or G Bass Tbne) also have followed into disuse at least in the United States
- 2 For 3rd Trombone (Bass Trombone Parts)
 - Most in US use a Bb trombone with an F attachment (trigger)
 - : Often employ an E attachment as well
 - : Enables low B to be played

B. CHARACTERISTICS

- 1 The instrument is usually made with a large bore and bell
 - This is form of instrument named Bass Trombone
 - Sometimes plays bass in unison or octave with tuba
 - Other times plays tenor voice
- 2 While having same upper range as tenor trombone it has a lower tessitura
 - Parts almost never go above F3
 - Pedal tones are possible as on tenor tbne and more often called to play them

Scoring Examples

(c) *Petrouchka*

♩ = 112 Stravinsky

2 Bsns.
Clar. *8va*)

ff sub. meno *f* e canto

3 Trb.
and
Tuba

ff *f* *p* *f*

(b) Overture to *Tannhäuser*

Andante maestoso Wagner

3 Trb.

ff *3* *3*

IV THE TUBA

Italian Tuba French Tuba German Basstuba



BBb Tuba (Rotary Valves)



F Tuba (Rotary Valves)



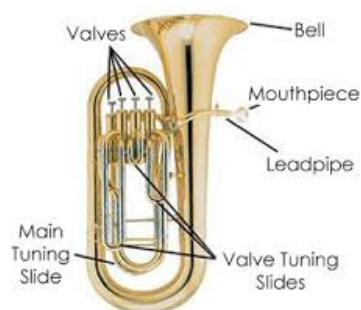
Eb Tuba (Piston Valves)



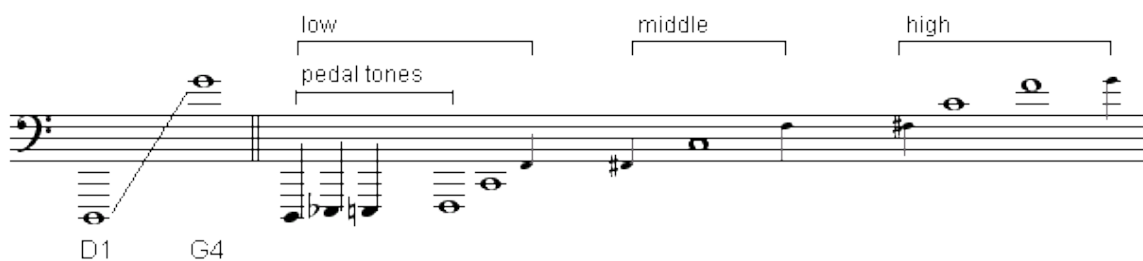
Tuba Mouthpiece



Tuba Mute



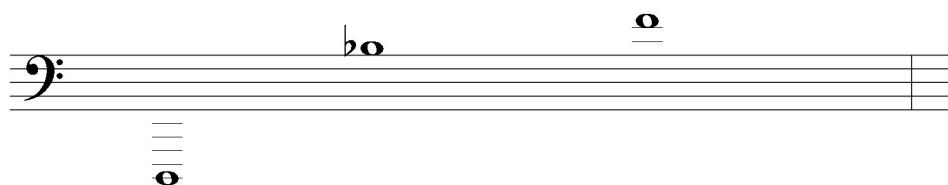
Tuba Parts



Bass Tuba Register

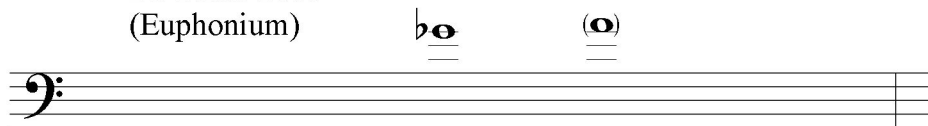
BBb Tuba
(ContraBass Tuba)

Difficult not recommended



Bass Tuba Range

Bb Tenor Tuba
(Euphonium)

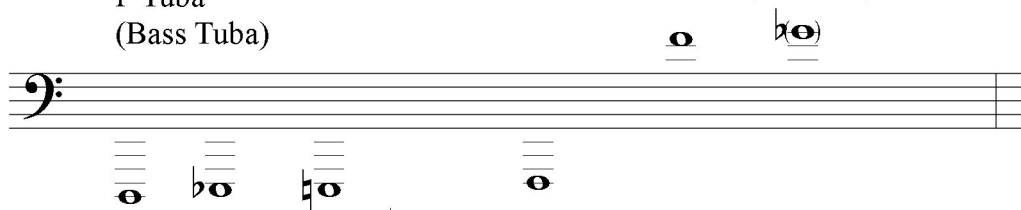


*Pedal Tones are not recommended

Bb Tuba Range

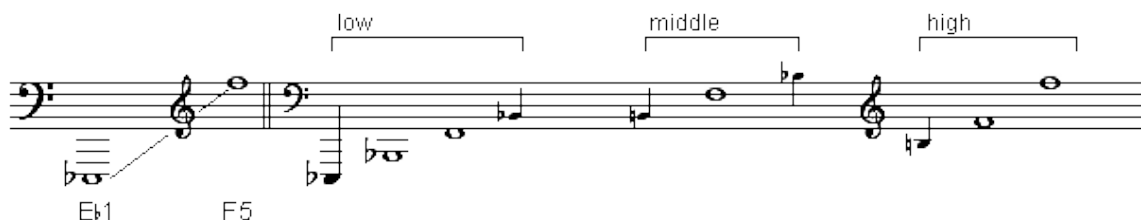
F Tuba
(Bass Tuba)

(Difficult)



Pedal Tones
(Difficult & Impractical)

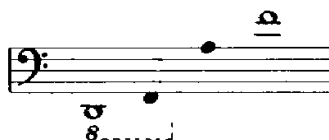
F Tuba Range



Wagner Tuba Bb Tenor Range



Tuba Range By Natural Tone



Tuba Range

Tuba Fingering Chart

Notes on gray background are pedal tones.

	A \sharp	B \flat	B	C	C \sharp	D \flat	D	D \sharp	E \flat	E	F
BB \flat Tuba											
C Tuba	1	2	Open	1 2 3 4 or 2 3 (lip down)	1 2 3 4	1 3 4	2 3 4	1 2 4	2 4 or 1 2 3	4 or 1 3	1 2 4

	F \sharp	G \flat	G	G \sharp	A \flat	A	A \sharp	B \flat	B	C	C \sharp	D \flat
BB \flat Tuba												
C Tuba	2 3	1 2	1	2	Open	2 4 or 1 2 3	4 or 1 3	2 3	2 4	4	2 3	1 2

	D	D \sharp	E \flat	E	F	F \sharp	G \flat	G	G \sharp	A \flat	A
BB \flat Tuba											
C Tuba	1 2	1	2	Open	2 3	1 2	1	2	Open	2 3	1 2

	A \sharp	B \flat	B	C	C \sharp	D \flat	D	D \sharp	E \flat	E	F
BB \flat Tuba											
C Tuba	Open	1 2	1	2	Open	1	2	Open	1	2	Open

	F \sharp	G \flat	G	G \sharp	A \flat	A	A \sharp	B \flat	B	C	C \sharp	D \flat
BB \flat Tuba												
C Tuba	2 3	1 2	1	2	Open	1 2	1	2	Open	1 2	2	1 2

	D	D \sharp	E \flat	E	F	F \sharp	G \flat	G	G \sharp	A \flat	A	A \sharp	B \flat
BB \flat Tuba													
C Tuba	Open	1	2	Open	2 3	1 2	1	2	Open	2 3	1 2	1	Open

A. CONSIDERATIONS

- 1 Tubas of *various keys* are utilized
 - C & BBb are the most favored today
 - Choice of instrument determined by the player, range of part, fingering problems, and personal preference
 - The ranges do differ but all are capable of playing within the practical range
- 2 All tuba are non-transposing sounding as written and are 4 valve instruments

B. CHARACTERISTICS

- 1 Seldom has occasion to go very high
 - Higher parts are best served by trombone and horn
 - : Extreme low notes below F0 tend to be weaker and less solid in quality and are best avoided
 - : Most effective in the middle register
 - More agile than expected
 - : Still limits as to speed and complexity of parts
 - : Large amount of breath is required by the instrument
 - Part should include sufficient rest points
 - Part should not be too continuous
- 2 Tone quality
 - Usually 'velvety' and pleasant in soft passages
 - Robust and exciting in forte or fortissimo
 - Sound is rounder and less 'cutting' than trumpet or trombone
 - Muting is used only rarely

C. Use

- 1 Most often used as bass for the brass section
- 2 Also to strengthen double bass parts or lower woodwinds
- 3 On rare occasions may take the bass alone or play solo part

Scoring Examples

(a) Prelude to *Die Meistersinger*

Wagner

Sehr mässig bewegt

Tuba

f

mf aber sehr markiert (*molto marc.*)

(d) *Petrouchka*

Stravinsky

$\text{♩} = 69$ Solo

Tuba

ff

(c) *Don Juan*

Strauss

Tuba

f espress.

ffp

9 THE BRASS SECTION

I SCORING

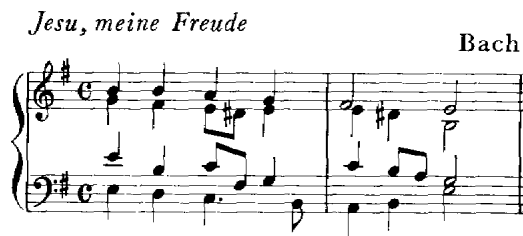
A. SIZE

- 1 Average Brass section is 4 horns, 2 or 3 trumpets, 3 trombone, 1 tuba
- 2 Balance
 - At mf or louder two horns are needed to balance one trumpet or one trombone
 - Lower than mf dynamic one horn will suffice for balance
 - Before scoring for brass *must* know the dynamics of any particular passage

B. SCORING POSSIBILITIES

Examples

Jesu, meine Freude Bach



This musical score is for a piano arrangement of 'Jesu, meine Freude' by Johann Sebastian Bach. It features a brass quartet consisting of two horns (I & III in F) and two trombones (I & II in Bb). The music is in C major, 4/4 time, and begins with a piano (p) dynamic. The brass parts are written in a way that they can be played by a single player on each instrument, or by two players on each instrument for a fuller sound.

Choral for Scoring Examples

(b)

Hrns. I & III in F

Trb. I & II



This musical score is for a piano arrangement of 'Jesu, meine Freude' by Johann Sebastian Bach. It features a brass quartet consisting of two horns (I & III in F) and two trombones (I & II in Bb). The music is in C major, 4/4 time, and begins with a piano (p) dynamic. The brass parts are written in a way that they can be played by a single player on each instrument, or by two players on each instrument for a fuller sound.

(a)

2 Tpts. in Bb

Trb. I & II



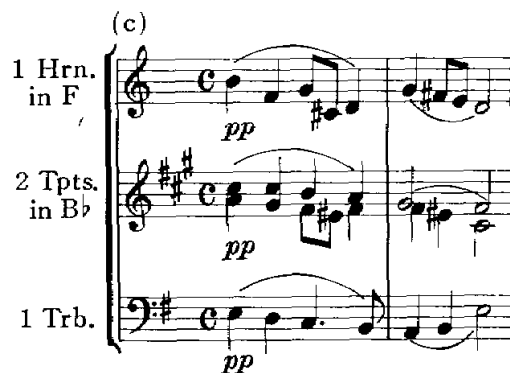
This musical score is for a piano arrangement of 'Jesu, meine Freude' by Johann Sebastian Bach. It features a brass quartet consisting of two horns (I & III in F) and two trombones (I & II in Bb). The music is in C major, 4/4 time, and begins with a piano (p) dynamic. The brass parts are written in a way that they can be played by a single player on each instrument, or by two players on each instrument for a fuller sound.

(c)

1 Hrn. in F

2 Tpts. in Bb

1 Trb.



This musical score is for a piano arrangement of 'Jesu, meine Freude' by Johann Sebastian Bach. It features a brass quartet consisting of two horns (I & III in F) and two trombones (I & II in Bb). The music is in C major, 4/4 time, and begins with a piano (p) dynamic. The brass parts are written in a way that they can be played by a single player on each instrument, or by two players on each instrument for a fuller sound.

Normal arrangement for scoring a brass quartet

(d)

Hrns.
I & II
in F

2 Tpts.
in C

Trb.
I & II

(e)

I & II
Hrns.
in F

III & IV

2 Tpts.
in B \flat

Trb.
I & II

(f)

(f) Appears natural and workable arrangement in the horns - *but* actually in 4 voice music the top voice can take 1st horn too high and 4th horn too low

With Octave Doubling (and alternate keys)

(a)

Trb.
I & II

III
Tuba

(b)

2 Tpts.
in B \flat

I & II
Trb.
III

Tuba

(c)

4 Hrms.
in F

2 Tpts.
in B \flat

I & II
Trb.

III

Tuba

Upper octave of melody given to two trumpets to bring out more strongly than other voices

(d)

4 Hrms.

I & II
Tpts.
in C

III

I & II
Trb.

III
Tuba

Bottom octave of the melody has been weighted more heavily than normal balance would require – 4 horns is unison + trombone

3 trumpets rather than two – third trumpet part would be less penetrating wise to reinforce with trombone or horn – trombone used here

If 3rd trumpet part is fairly high reinforcement would not be necessary

(e)

4 Hrms.

I & II
Tpts.
in B \flat

III

I & II
Trb.

III
Tuba

3 trumpets rather than two – third trumpet part would be less penetrating wise to reinforce with trombone or horn – horn used here

If 3rd trumpet part is fairly high reinforcement would not be necessary

II CONSIDERATIONS

A. SPACING

- 1 Trumpets and horns sound better in close spacing rather than open
- 2 Trombones may be arranged in close spacing in middle and upper register
 - Gives impression of great brilliance if placed quite high
 - Use open spacing when playing lower notes
 - : Trombones play lower notes most often
 - : Would produce muddiness in close spacing

B. CONSIDERATIONS

- 1 Extremely high note entrances are risky
 - Even when successful are apt to sound unpleasant, strained, and tense
 - Higher pitches are practicable when the player has a chance to lead up to pitch

Horn

Trumpet

Trombone

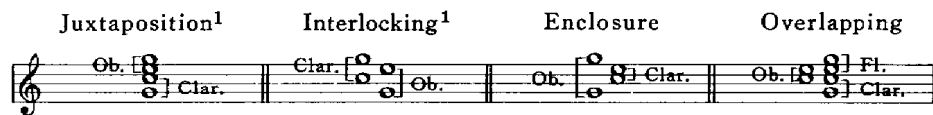
Safe upper limits for brass entrances

10 SCORING OF CHORDS FOR EACH SECTION AND FOR THE ORCHESTRA

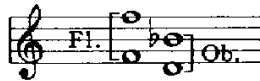
I WOODWIND CHORDS

A. TYPES

- 1 Four ways in which instruments of different kinds may be combined in a chord



- Juxtaposition
 - : Used very frequently
 - : Pairs of instruments are simply put side by side
 - : In normal order of register
- Interlocking
 - : Slight advantage of mixing colors in such a way that a more homogeneous blend results
 - : Are cases where it does *not* work well where low or high note in a weak register is placed



- Enclosure

- : Less successful than Juxtaposition or Interlocking for arranging woodwinds
- : One pair of notes *encloses* another from a different instrument
- : When two instruments of a kind are spread an octave or more apart they will be most likely in *different* registers
 - The register difference will cause them to *differ* considerably in strength and color
 - Results in balance and blend suffering



- : Different instruments enclosing the effect may be perfectly good

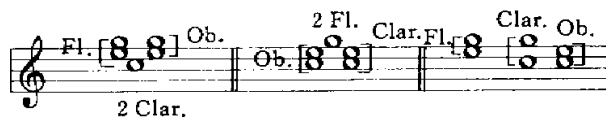


- Overlapping

- : Much in vogue during the classical period but seen less often today
- : Weakness is that outer notes (especially bottom) are not as strong as others
- : Involves only a partial duplication of notes
- : A second type is a more complete and balanced form of duplication and is *much* used

Original Overlapping More Complete

FL				FL	OB
FL	OB			FL	Ob
	OB	Clar			2 Clar
		Clar			
				Weak	
				voice doubled	



2 Deciding on the best method

- No general answer can be given
 - : Range and voice leading of involved instruments a factor
 - : Desired color also comes into play
- Juxtaposition and interlocking are chosen more frequently
- Two or more methods are often used in same chord if it consists of more than four notes
- Importance is to plan for proper balance and blend

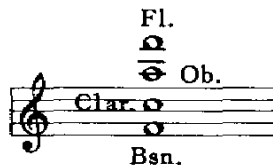
B. CONSIDERATIONS

- 1 With the exception of small orchestras (which only include one of each woodwind) chords are rarely arranged with a different color on each part

Examples are isolated chords only for convenience – techniques apply to part writing of harmonic progressions as well



- Because of the many timbres involved a good blend is difficult to achieve
 - : If chord were widely spaced in a higher register the result would be somewhat better



- : This spacing is almost never used in writing for woodwinds in current orchestral scoring

- : Current practice is to write the upper woodwinds in close spacing
 - Here the *occasional* gaps due to special voice leading or doubling are not objectionable
 - The octave gap caused by doubling of the top voice is also not objectionable

(a) Voice Leading (b) Doubling (c) Octave Gap

- When a progression involves both stationary and moving voices it is better to give stationary voices one color and moving another

(a) 1 Ob. not (b) Ob.

Clar. Clar.

2 Review of Spacing and Doubling from Chapter 3

- Best to have a clear octave at the bottom
- With music originally in open voicing
 - : Wise to fill in gaps between upper parts with octave doubling
 - : Open spacing is *frequent* for strings and a *possibility* for other instruments
 - : Close spacing is more effective in the orchestra
 - : Sometimes necessary to fill in gap between voices
 - Most often between tenor and bass
 - May double other voices and then branch off to fill gaps
 - Use with caution as such parts are not strong or interesting from a linear standpoint
 - Indiscriminate use distracts from clarity and muddies the texture
- Doubled top voice an octave higher of a closely spaced chord produces a good effect regardless of the gap

- As a general rule a primary triad (I, IV, V) in 1st inversion do *not* double the bass note in upper parts
- Bass doubling for 7th chords in *any* inversion should be avoided
- When active tone in a 4 note chord (7th) is taken by a particular instrument its resolution *must* occur in the same instrument

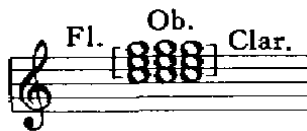
C. TECHNIQUES

1 About the examples

- In the following examples chords are scored for woodwinds in pairs plus 2 horns (often combined with woodwinds)
- Another section makes use of large woodwind section (piccolo, 2 flutes, 2 oboes, english horn, 2 clarinets, bass clarinet, 2 bassoon, and contra bassoon)
- A few examples of woodwinds in 3's (less used combination)
 - : With both large woodwind section and woodwind in 3's juxtaposition works better than any of the other systems
 - : Interlocking is especially unsuccessful in case of woodwinds in 3's as technique pushes instruments too far apart



- Complete duplication with 3 of each woodwind allows for a uniformly mixed color in 3 note chords



-
- In large woodwind section
 - : Piccolo
 - May double the flute an octave higher
 - May take the top chord tone immediately above the flutes
 - : English Horn
 - May be placed just below the oboes to form 3 note chord in close spacing
 - May play lower down with other instruments between it and oboes
 - : Bass Clarinet
 - Less often placed immediately below the clarinets to form a 3 note chord
 - More apt to take the bass as more effective in lower and middle ranges
 - Better than bassoon for the bass part of a woodwind chord as would take 2 bassoons to deliver equivalent solidity
 - : Contra Bassoon
 - Normally doubles the bass an octave lower

2 The Examples

- Most chords in the following are scored to be fairly brilliant in coloring
- Example G & M instruments are placed relatively low in their respective register to produce a darker coloring
 - : Clarinets in bottom octave are particularly good in adding a somber tinge
 - : With darker color and lower respective registers no need to include piccolo and flutes
- Any instrument may be omitted at any time
 - : For the sake of *color*
 - : For the sake of *volume*
 - : Or to provide a freshness for an *entrance* to follow
- Same dynamic markings can be given to all instruments
 - : Horns are a possible exception as capable of a more 'robust' forte than any of the woodwinds
 - : Safe to mark the horns mf when the woodwinds are f and f when the woodwinds are marked ff

For woodwinds in pairs

(a)

Juxtaposition
Hrn / Bsns / Obs / Clars / Fls

(b)

Interlocking
Hrns – Bsns / Obs – Clars / Fls on top

(c)

Enclosing
[Hrns – Bsns] / [Clars – Obs] / Fls on top

(d)

Overlapping (partial duplication)
Hrn – Bsn / Bsn – Clar / Clar – Ob / Ob – Fl

(e)

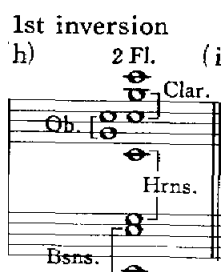
Overlapping (complete & balanced)
Bsn – Bsn / Hrns – Clars / Obs – Fls



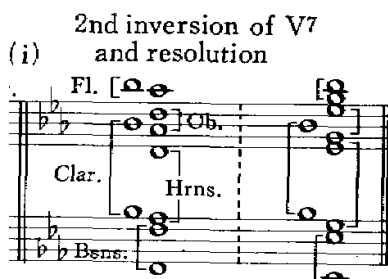
Interlocking (with octave spacing)
 Bsn2 – Hrn1 – Bsn1 / Hrn1 – Bsn2 – Clar1 / Clar1 –
 Hrn2 – Ob1 – Clar2 / Ob1 – Clar2 – Ob2 / Fls on top



Mixed
 Bsn – juxtaposition / Clar – Hrn Interlocking / Ob – Fl
 overlapping with partial duplication



Mixed (1st Inversion)
 Bsn – Hrns in juxtaposition / Ob – Clar partial duplication
 / Fls on top
 * Bass note *not* doubled in upper parts



Mixed (2nd inversion 4 note 7th chord – V7 → I)
 Bsn – juxtaposition / Hn2 – Clar2 – Interlocking / Clar2 –
 Hrn1 – Ob2 – Clar1 – Interlocking / Ob2 – Clar1 – Ob1 –
 interlocking / Ob1 – Clar2 – Ob2 – interlocking / Fl –
 juxtaposition
 * Bass not doubled in upper parts
 * Bb – Eb with Ab (7th in B7) note resolving to G (3rd in
 Eb on each instrument it appears in (Fl2 / Ob2 / Hrn1

For Large woodwind section

(j) Picc. (k) Picc. (l) (Picc. 8va ad lib.) (m) (Dark)

Fl. [8] Clar. Ob. E.H. B. Clar. Bsns. C. Bsn.

Fl. [8] Ob. Clar. E.H. B. Clar. Bsns. C. Bsn.

Fl. [8] Ob. Clar. E.H. B. Clar. Bsns. C. Bsn.

Fl. [8] Ob. Clar. E.H. B. Clar. Bsns. C. Bsn.

For woodwinds in threes

(n) Fl. [8] Ob. Clar. Bsns. C. Bsn.

(o) 2 Fl. 1 Fl. Ob. Clar. Bsns. C. Bsn.

(p) Fl. [8] Ob. Clar. Bsns. C. Bsn.

(q) Fl. [8] Ob. Clar. Bsns. C. Bsn.

II BRASS CHORDS

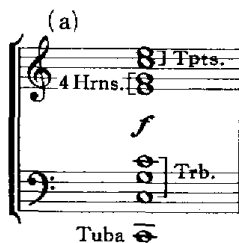
A. CONSIDERATIONS

- 1 Juxtaposition, interlocking, and enclosure are used frequently in scoring brass
 - Overlapping is rarely seen
 - Low trumpet note sometimes is overlapped by top trombone or horn for better balance
- 2 Section of 4 Horns, 2 Trumpets, 3 Trombone, 1 Tuba
 - If dynamic marking is softer than mf these instruments can play 10 notes
 - In mezzo-forte (or louder) the horns will normally be used 2 to a note and section can then cover 8 notes at most
 - When chords of more than 8 notes are scored forte or louder
 - : 2 horns to a note must be abandoned
 - : Horns are given 4 different pitches and where possible marked one dynamic level louder than the rest of the brass

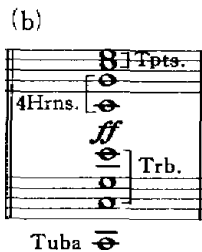
B. EXAMPLES

- 1 Some scored for two trumpets and some for three
 - Brass sections vary in this respect
 - Three trumpets is a more satisfactory number
 - 3 trumpets allows complete 3 note harmony in the trumpet color
- 2 Chords sketched on two staves at concert pitch
- 3 Only shows some of the more usual arrangements

For Two Trumpets



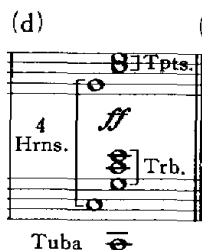
Juxtaposition, Horns 2 to a note



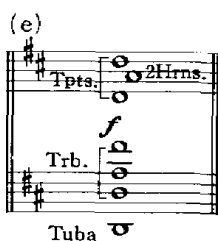
Interlocking between Trb I and Hrns II & IV



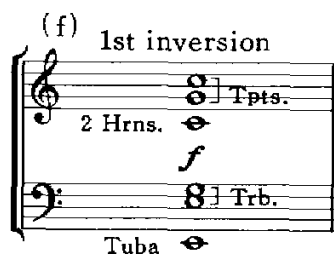
Interlocking between Hrns II & IV and Tbn I & II



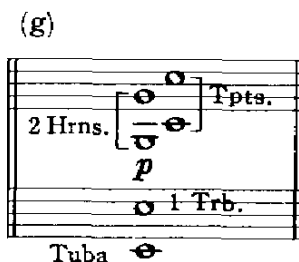
Enclosure between Hrns I & III and Hrns II & IV



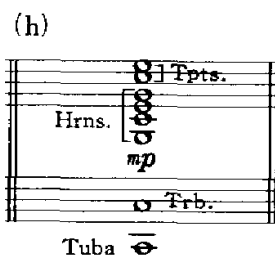
Enclosure between Tpts I, Hrns I & III, Tbn I / Tpt II,
Hrns II & IV omitted



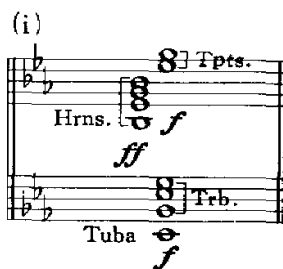
Juxtaposition with Hrns II & IV / Tbn II omitted



Interlocking with Hrns II & IV, Tpt II with 2 Hrns & 2
Trbs omitted



Juxtaposition with 4 Hrns on different notes



Juxtaposition with 4 Hrns on different notes and
different dynamic for balance

For Three Trumpets

(j)

4 Hrns. [8]
Tuba **f**

Juxtaposition with Hrns 2 to a note

(k)

4 Hrns. [8]
Tuba **f**

Overlapping Hrns II & IV, Trb I

(l)

Trb. [8]
Tuba **f**

Interlocking Hrns II & IV, Trb II / Hrns I & III, Trb I

(m) V7 and resolution

Tpts. [8]
Hrns. [8]
Trb. [8]
Tuba **f**

Interlocking Hrns I & III (on 7th), Tpt III / Trbs I & II, Hrns II & IV with Hrns resolving to 3rd of D Chord

(n) V7 and resolution

2 Hrns. [8]
Tpts. [8]
Trb. [8]
Tuba **f**

Interlocking with Hrns I & III, Tpts II & III / Tbn I, Hrns II & IV, Tpt II with Trb II resolving 7th to 3rd of D Chord

(o) (Dark) (I)

2 Hrns. [8]
Tpts. [8]
Trb. [8]
Tuba **f**

Overlapping Hrn I, Tpt III / Hrn II, Trb I Interlocking Hrn II & IV, Trb I, II, III

(p) 2nd inversion

Hrns. *mp*

Tpts.

Trb.

Tuba

Overlapping Hrns I, Tpt III / Hrns III, Trb I / Hrns IV, Trb III Have Bass note C doubled in top voice in 2nd inversion

(q) 1st inversion

Hrns. *mf*

2 Tpts.

1 Tpt.

Trb.

Tuba

Overlapping Hrns I, Tpt 3 / Hrns II, III, IV, Trb I, II, III with Bass note not doubled in root position

III STRING CHORDS

A. CONSIDERATIONS

- 1 A bit less involved than Brass or woodwinds
 - Difference in color between string groups not as great as between woodwinds
 - Presents fewer problems of blend
 - : Don't vary in strength from register to register as do woodwinds
 - : Balance is more easily calculated
- 2 Unique problems to strings
 - Double, triple, and quadruple stops
 - : Double stops can be used even in sustained chords
 - : Triple and quadruple stops valuable principally for short punctuated chords
 - Objective of maximum resonance, fullness, and volume
 - Not necessary to worry about exact balance and correct voice leading as chord is short and these are not apparent to the listener's ear

-
- Divisi writing with section divided into parts a problem with less professional orchestra
 - : The fewer the players the riskier it is to divide a section
 - : Particularly true of more than two parts
 - : With college orchestra the number of players in any section can be limited
 - A small group of divided (i.e. 3 viola section will sound as solo players rather than a section
 - Takes a minimum of 3 violins or violas on a *part* to give effect of a group of strings

IV CHORDS FOR ORCHESTRA

A. CONSIDERATIONS

1 Weight

- 'Vast' difference in weight of the 3 orchestral sections (Brass, Woodwinds, & Strings)
 - : Given equal dynamic of ff the brass will be louder than the woodwinds or strings
 - : Difference diminishes as the dynamic level softens
 - : At higher dynamic levels the brass *must* be balanced as a unit
- If each section has chords arranged to sound complete and balanced the composite sections will be good
 - : Watch for placement of upper woodwinds in same register as the trumpet
 - They will add little in the configuration
 - Better to place above the trumpets (especially flutes & clarinets)
 - Puts the woodwinds in a more brilliant and powerful higher register and are not overpowered by the trumpets in the same octave
 - : Here there is often a gap in middle of woodwind chord
 - Woodwind section might not sound satisfactory if played by itself
 - But will be effective when combined with the brass and strings
- Same principle with the strings
 - : May play complete chord or reinforce only certain notes
 - : Frequently arranged in open spacing with gaps of octave or more between certain notes
 - : Other times arranged in 4-part fashion with close spacing

2 Dynamics

- To adjust for weight
- Varied between sections to produce the particular sound wanted
- Provide a background color (trb & hrns providing quiet but rich background for other instruments)
- To bring out a certain timbre or register by making one section louder than another
 - : Seldom a point in making brass louder than strings or woodwinds since with equal dynamics the brass will overshadow anyway
 - : Pre-20th Century scores particularly use block dynamics (all the same) with the expectation the conductor would make adjustments as necessary

Examples with dynamics below each chord applying to all instruments

(a) *f* w/w's in pairs, brilliant color

(b) *ff* w/w's in pairs, medium color

(c) *mf* w/w's in pairs

(d) *p* w/w's in pairs, dark color

(e) *ff* large w/w section, brilliant color, G chord

(f) *mp* large w/w section, medium color, G chord

3 Dissonance

- Prominent and acute when given to same kind of instrument (Tpt & Tpt)
- Milder when allotted to different instruments (Vln & Tpt)

4 Doubling

- Doubling woodwinds in unison with brass makes the brass tone somewhat less transparent and brilliant in timbre
- Clarinets and flutes soften the edge of the trumpet tone while oboe tends to accentuate the nasal quality
- Clarinets in the Chalumeau register add a rich and dark touch to brass
- Bassoons doubled in unison with horns or trombones make these a little 'grayer' and more opaque with the bassoon color largely absorbed by the brass
- Certain resemblance between the stopped horn or muted trumpet and the tone of the oboe or english horn
 - : These can be combined with good results
 - : Even oboe and unmuted trumpet provide a unified sound when placed side by side
 - The trumpet tone is close enough to the oboe tone
 - One hears chiefly the trumpet tone giving the illusion the sound is played entirely by trumpets
 - Similar in effect is the tone quality of low note of flute and *soft* trumpet in the same (low) register

11 PROBLEMS IN TRANSCRIBING PIANO MUSIC

I SCORING FOR ORCHESTRA

A. BACKGROUND

- 1 You are dealing with certain features that are essentially pianistic rather than orchestral
 - Literal transcription is likely to be awkward (technically, ineffective, or both)
 - Need to *translate* the effects wanted into orchestral terms
- 2 Examples presented
 - Apply to string orchestra
 - But can be applied to scoring for other instruments

B. CONSIDERATIONS

- 1 Key
 - If original is in a remote key (more than 4 sharps or flats) better to choose a more comfortable and resonant key for the orchestra
 - : Work the more resonant orchestral key half step higher for a brilliant sound
 - : Half step lower for a darker sound
 - Altering the composers chosen key is questionable from an esthetic viewpoint
 - : Those with perfect pitch will be well aware of the change
 - : Can destroy the compositions characteristic color and flavor
 - : Advantages gained are often impressive enough to justify the change
 - Choosing the key
 - : Sharp keys are better than flat keys for the strings
 - Resonance is much better
 - Fingering is easier
 - : This is only a general principle

2 Damper pedal

- Raised and lowered at each new harmony to avoid a 'Blur'
- Indicated by a small 'Ped' beneath the staff with an asterisk indicating release
- No pedal is indicated with 'senza pedal' written in
- If no directions *arranger* must determine where pedal would be used
- When pedal is used the orchestral arrangement *must* utilize longer note values
 - : Not all notes sustained in the piano version need be sustained in the arrangement
 - : Also possible to divide the pedaled figure among various 'string' groups
 - : Possible to have some instruments taking the harmony in block chord fashion
 - : All cases *must* have the melody standout utilizing dynamics

Nocturne, Op. 9, No.1

Larghetto ($\text{♩} = 116$) Chopin

Piano

p espress.

Sounds

Ex. 2

Piano

p espress.

Ex. 3

Larghetto

VI. I

p espress.

VI. II

div. mp

Vla.

pp

Vc.

pp div.

D.B.

pp pizz.

pp

Divided among various string groups w/melody at greater

Ex. 4

Larghetto

With block chords and melody at greater dynamic level

- Need to understand harmonic structure
 - : Recognize a pedal point under changing harmony
 - : Need to understand the harmonic structure before going further

3 Pianistic figuration

- Sometimes required to change this figuration

Ex. 5

Sonata, Op. 27, No. 2

Presto agitato *espress.* Beethoven

i.e Alberti Bass

- Lift and Re-space
 - : The Alberti Bass not good for orchestral placement
 - Cello's could take the figure but would produce a thin effect
 - Part of chord is too low
 - Better to distribute among string groups

Ex. 6

Presto agitato

Distributed among string groups

Another piano figuration needing 'lift & respace'

: Arpeggio passages widely spread out

- So widely spaced can seldom be handled by anyone orchestral instrument (except Harp)
- Harp well suited to arpeggios and often best choice
 - + With sustained harmony elsewhere in the orchestra
 - + Might not be appropriate in all types of music
 - + Does not have enough volume to supply requisite sense of motion on its own in heavily scored passages
- Other solutions
 - + Reduce the spread of the arpeggios to a point where can be taken by one instrument (or group in case of strings)
 - + Actual rearrangement of the figures will also be necessary as a rule
 - + Sometimes best to divide figuration between two or more instruments (with achievable parts and sonority)

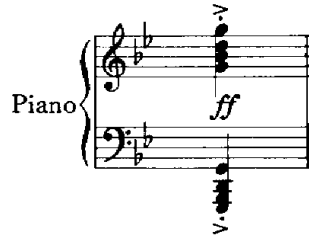
Showing possible transcriptions for strings assuming Vlns have upper parts
 Best to have each string group and end figure *on a beat* and *overlap the last note*
 played by each group (sustained harmony usually accompanies
 this sort of arrangement)

+ Can sometimes be carried over almost literally into orchestral
 version

- Piano often has melody and accompaniment assigned to same
 hand

Melody is 1, 3, & 5 eight notes in each measure In scoring
 break up line into component parts and assign to separate instruments

- Certain chord figures are dramatic and effective on piano but sound poor in orchestral setting



Chord scored for orchestra has bottom notes too thickly spaced for low register and gap in middle needs to be fitted in for effective orchestral scoring

Triple and Quadruple stops used for greater fullness and chord spaced better

(Notice use of open strings and interlocking principle)

- Piano with 3 note chord which must be divided between two violins and one viola
 - : Best to give one note to vlns and two notes to vlns
 - : Vln notes can be either divisi or as double stops
 - Avoid double stops with inexperienced players or quick succession of chords
 - Four note chords can be by divisi parts in vln & vla or as double stops

- Broken Octaves (characteristic of Beethoven period)

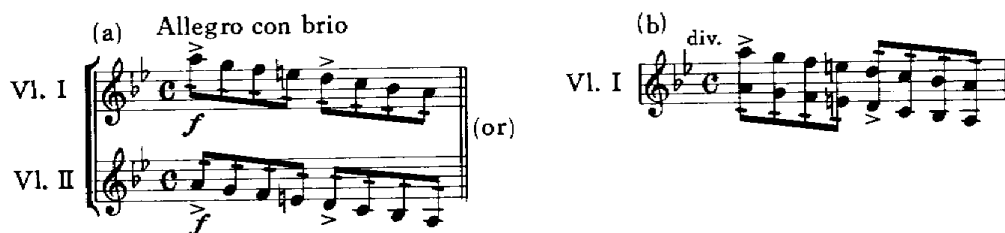
Sonata, Op. 22

Allegro con brio

Beethoven

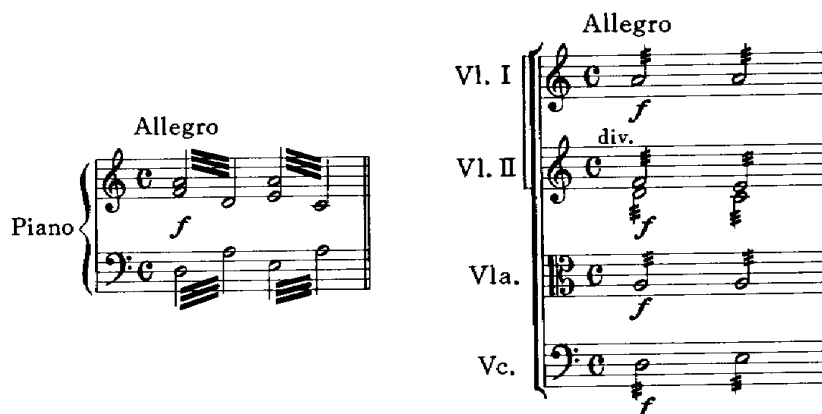


Ex. 16



With same principle for broken 6^{ths} and other intervals
(broken 3^{rds} are practical on most orchestral instruments)

- Romantic period tremolo (especially in song accompaniments)



- : String tremolo is obvious solution
- : Bowed tremolo is ordinarily preferred
- : Fingered tremolo employed if a softer more placid effect is desired

- Wavy line written at left of piano chord
 - : Indicates arpeggiated or broken slightly
 - : Often done out of pianistic necessity (i.e. finger stretch is too wide)
 - : These arpeggiated & broken effects are often omitted in transcribing for orchestra
 - If integral part of music may be given to harp (if appropriate)
 - Strings with bowed broken chords for vigorous passage or pizzicato chords in arpeggiated fashion

(b)

The image displays musical notation for piano chords with wavy lines. On the left, a single staff shows a piano chord with a wavy line and a dynamic marking of *p*. To the right, a system of three staves is labeled (b). The top two staves show piano chords with wavy lines and *pp* dynamics. The bottom staff of this system is empty. Below this, another system of three staves is shown. The top staff has a wavy line and *pp* dynamic. The middle staff is marked 'pizz.' and has a *pp* dynamic. The bottom staff is marked 'zz.' and has a *pp* dynamic. The label 'Original Piano' is centered below the first staff on the left.

Original Piano

- Staccato Piano
 - : May be given to strings playing pizzicato, spiccato, or group staccato depending on degree of shortness, dynamics, and tempo
 - : Note that pizzicato is *not* practical in very fast passages

- Una Corda

- : Standard direction for using the 'soft pedal' in piano literally is 'one string' in Italian
- : Muted strings are often an effective parallel or orchestra
- : If muted strings out of place use very soft dynamic markings

NB:

Not every piece of piano music can be successfully transcribed for orchestra. Those pieces purely pianistic in conception would be absurd to attempt

12 SCORING FOR WOODWINDS, HORNS, AND STRINGS

I CONSIDERATIONS FOR SCORING A PARTICULAR SIZE ORCHESTRA

A. CHOICES

- 1 Choose the instruments that seem appropriate to musical ideas
- 2 If a particular instrument is *not* needed give simply a rest
- 3 Whole sections may also require complete rest
- 4 Brass a good deal of the time
- 5 Woodwinds (individually and in section) normally more than strings

B. QUESTIONS OF CHARACTER

- 1 Does passage does passage suggest a light or heavy scoring
- 2 Does a simple texture or a fuller octave doubling be suggested by passage
- 3 What color is suggested (brilliant, somber, warm, cool, etc.)
- 4 What are the best instruments for respective parts considering range and technical abilities
- 5 Style of scoring for period and involved composer
- 6 Is music chordal, homophonic, polyphonic, or a combination

C. HOMOPHONIC MUSIC

- 1 Consists of a prominent melodic line against a subordinate harmonic background
- 2 Considerations (harmonic analysis)

Ex. 1

Intermezzo, Op. 119, No.2 (middle section)

Andantino grazioso

Piano

molto p

le dolce

teneramente

etc.

Brahms

Measure 1



- Emaj with non-harmonic C#
- C# must not be included as uncharacteristic for Brahms
- Note pedal indication sustaining notes in left hand (effectively sound throughout measure)

Measure 2



- Involves a V7 sound above a tonic pedal (sustained pedal E)

Last 3 measures



- Note repetition at octave in last part

Will use only measures 1 and 2 for analysis following

3 Planning for scoring

- Find some way of approximating the sustained pedal effect of the piano score for orchestra
 - : Add B & G# on first beat of measure 1 below the E in the *treble* staff
 - Hold through the measure
 - Continue on harmony notes in following measures
 - : This will also fill in large gap that occurs at the beginning of the measure
 - : Hold E in Bass and possibly the B above
 - : Eight note arpeggio could be given to cello or divided between cello and viola
 - Bassoon is also a possibility
 - If harp is included would also be assigned

-
- Melody
 - : Style of music has melody clearly standing from background
 - Best to give melody to *one* color
 - Background to another
 - : Simplicity and delicacy of melody suggests light scoring
 - Flute weak in this particular register but would work with a light background
 - Oboe is in most characteristic register and would be more penetrating
 - Clarinet also possible
 - + Providing a warm and romantic quality
 - + Clarinet in A would be better choice to avoid a 6 sharp/flat key signature
 - Violins in melody would be expressive and effective
 - + Horns would take background to keep melody as a sharp standout
 - + Strings another possibility but muted to allow string melody to stand out (would produce a slightly different color from melody strings)
 - Cello with melody down an octave or one solo cello (would require a rearrangement of harmony parts)
 - : Second eight measures seem to require a fresh color on melody plus some more weight
 - If solo woodwind used in 1st eight measures 2nd eight possible with strings in octaves or strings & woodwinds doubled in octaves
 - If strings took 1st eight doubled woodwind octaves would give greatest contrast
 - + Strings and woodwinds in octaves also effective
 - + Two octave doubling could also be used

Andantino grazioso

Piano

molto p

p dolce

Ex2a

Ex. 2

(a) Andantino grazioso
1.Solo

2 Ob.
(or Fl.)

p dolce

VI. I

VI. II

Vla.

Vc.

D.B.

pp

- Oboes have melody
- Vln I, Vln II, Vla on sustained E, B, G# for measure 1 sustained D# for measure 2
- Vc have arpeggiated figure
- DB holds sustained E
- Note different dynamic for parts

Ex2b

(b) Andantino grazioso
1.Solo

2 Clar.
in A

p dolce

VI. I

VI. II

Vla.

Vc.

D.B.

pizz.

arco

pp

- Clarinet in A has melody
- Vln I, Vln II have sustained E, B, G# in measure 1 with sustained D# in measure 2
- Vla & Vc split arpeggio pedal (note way pedal is sustained in both parts)
- DB holds sustained E with section split with pizzicato E to accent beginning of arpeggio figure
- Note different dynamic for parts

Ex2c

(c) Andantino grazioso

2 Hrns.
in F

VI. I

VI. II

Vla.

Vc.

D. B.

$\frac{1}{2}$ Basses

pp

p *dolce*

p *dolce*

div.

pp

- Horns hold sustained E & G# in measure 1 & sustained D# in measure 2
- Vln I & Vla on melody with Vln II at rest
- Divisi cello hold sustained B and arpeggio pedal figure
- DB on sustained E
- Note different dynamic for parts

Ex2d

(d) Andantino grazioso

VI. I

VI. II

Vla.

Solo Vc.

Vc.
(the others)

D. B.

con sord.

pp

con sord.

pp

con sord.

pp

p *dolce*

pizz.

pp

div.

pp

- Readjustment of harmony (delayed G# in Vln I & II & Vla)
- Solo Vc on melody
- Vc section plays arpeggio figure
- Divisi DB on E & B
- Note different dynamic for parts

Ex. 3

The musical score for Ex. 3 is arranged in four systems, each corresponding to a measure labeled (a), (b), (c), and (d). The instruments and their parts are as follows:

- 2 Fl.**: Measures (b) and (c) feature a melodic line starting on a2, marked *p* and *teneramente*. Measure (d) has a whole note on a2, marked *p*.
- 2 Ob.**: Similar to the Flutes, with a melodic line in measures (b) and (c) marked *p* and *teneramente*, and a whole note on a2 in measure (d) marked *p*.
- 2 Clar. in A**: Measures (b) and (c) have a melodic line marked *p* and *teneramente*. Measure (d) has a whole note on a2, marked *p*.
- 2 Bsns.**: Measures (b) and (c) have a melodic line marked *pp* and *teneramente*. Measure (d) has a melodic line marked *p*.
- 4 Hrns. (F)**: Measures (b) and (c) have a melodic line marked *pp* and *teneramente*. Measure (d) has a whole note on a2, marked *pp*.
- VI. I**: Measures (b) and (c) have a melodic line marked *p* and *teneramente*. Measure (d) has a whole note on a2, marked *p*.
- VI. II**: Measures (b) and (c) have a melodic line marked *p* and *teneramente*. Measure (d) has a whole note on a2, marked *p*.
- Vla.**: Measures (b) and (c) have a melodic line marked *pp* and *teneramente*. Measure (d) has a whole note on a2, marked *p*.
- Vc.**: Measures (b) and (c) have a melodic line marked *pp* and *teneramente*. Measure (d) has a whole note on a2, marked *p*.
- D. B.**: Measures (b) and (c) have a melodic line marked *pp* and *teneramente*. Measure (d) has a whole note on a2, marked *pp*.

Additional markings include *pizz.* (pizzicato) for the strings in measures (b) and (c), and *arco* (arco) for the strings in measure (d). The score is written in 3/4 time with a key signature of one sharp (F#).

* Horn in bass clef to sound a 5th lower.

Ex3a

(a)

2 Fl.

2 Ob.

2 Clar.
in A

2 Bsns.

Hrns.
(F)

Vln. I

Vln. II

Vla.

Vc.

D. B.

p

pp

teneramente

pizz.

- Fl & Ob at rest
- Clar A, Bsn, & Hrns on sustained G# & B with octave doubling
- Vln I & Vln II have melody with octave doubling
- Vla has E, B, G# as pizzicato 1st note of arpeggio
- DB has pizzicato E on 1st note of arpeggio
- Note different dynamics for parts

Ex3b

(b)

1.

4.

*

div.

div.

(arco)

- Fl, Ob, Clar A, Hrn I, Hrn III, Vla have melody with octave doubling
- Bsn, Hrn II, Hrn IV have held G# & B with octave doubling
- Vln I, Vln II, Vc, DB split arpeggio figure with octave doubling

3c

(c)
a2

p *teneramente*
p *teneramente*
p *teneramente*
p *teneramente*
pp

pp
pp

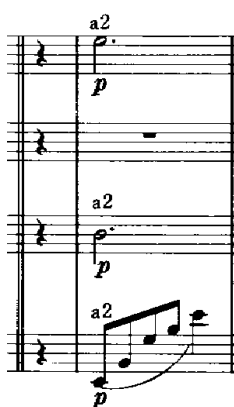
div.

p *div. teneramente*
pp
p *teneramente*
pizz. *pp*
pp

- Fl, Ob, Clar A, Bsn, Vln I, Vla have melody with octave doubling
- Hrns, DB hold B & G# with octave doubling
- Vln II, Vc hold arpeggio figure

3d

(d)



- Ob at rest
- Fl & Clar A hold E & G#
- Bsn hold arpeggio figure



II DOUBLING

A. DOUBLING IN THE WOODWINDS

- 1 Common to give a melodic line to two or more different woodwinds

Usual Combinations

Unison Doublings in the Woodwinds

Comments

Flute and Oboe	Oboe predominates but is “softened” (in quality) by flute
Flute and Clarinet	Warm, round tone; not strong in the octave above middle C
Oboe and Clarinet	Mixes oboe’s tang with clarinet’s mellowness
Clarinet and Bassoon	Rich; somber if clarinet is low
Flute, Oboe, Clarinet	Thoroughly mixed color

Octave Doublings in the Woodwinds

Comments

{ Flute (upper 8ve) Oboe (lower 8ve)	Good; frequent
{ Flute Clarinet	Good; frequent
{ Oboe Clarinet	Good; frequent
{ Clarinet Oboe (or English Horn)	Infrequent with oboe; English horn usually better because its range extends lower
{ Clarinet Bassoon	Very dark if instruments are in their lower register
{ Flute and Oboe Clarinet and Bassoon	May take bassoon uncomfortably high; English horn may substitute for bassoon
{ 2 Fl., 2 Ob., 1 Clar. 1 Clar., 2 Bns. (and/or Eng. Horn)	Strong; good composite color; better balance with English horn included

Two-Octave Doublings in the Woodwinds

Comments

{ Flute Oboe Clarinet	Effective
{ Flute Oboe Bassoon	Fairly frequent in scores of the Classical period (also with violins in the middle)
{ Flute Clarinet Bassoon	Effective
{ Flute (2 8ves Bassoon apart)	Good. Omission of the middle octave makes for a particular effect
{ Flute (2 8ves Clarinet apart)	Rare; unusual coloring; uses bright register of flute with dark register of clarinet

-
- 2 Three octave doubling possible with the addition of piccolo at top or bass clarinet or contra bassoon at bottom
 - 3 Four octave doubling is occasionally seen
 - 4 Rarely used doublings produce unusual and intriguing colors but require intimate knowledge of orchestra to be used successfully
 - Flute and Bassoon in unison
 - Flute octave below Oboe
 - Low Flutes with piccolo two octave higher
 - Clarinets two octaves apart

B. DOUBLING BETWEEN WOODWINDS AND STRINGS

- 1 Unison doubling of woodwinds & strings the woodwind tone tends to be overshadowed by the strings
 - Flute chiefly add body (not much)
 - Oboe give a bit more nasal quality or even a pinched quality if small string section
 - English Horn can be combined with violas to produce an unusually poignant and attractive tone
 - Clarinet lends a certain warmth and roundness to string timbre (a dark richness in the lower register)
 - Bsn is constantly associated with the cello & viola for added body
 - Unison horns and cello in tenor register gives an expressive and noble sound (well suited to slower cantabile melodies)
- 2 Certain octave doubling of woodwind (or pair) playing one octave and strings another are effective and allow the woodwinds to be heard more clearly than unison doubling
 - Flute above Violins is good
 - Clarinet or bassoon octave below Violins play to good effect
 - Clarinet and Oboe above is less effective
- 3 Combination of woodwinds in octaves plus strings is a powerful and useful doubling

NB:

As a warning – constant use of mixed or composite colors will be uninteresting tending to make the score sound opaque and non-descript. Occasionally pure colors are needed for sparkle and transparency

C. THE USE OF CONTRASTING SECTIONS

Ex. 4

Sonata, Op. 27, No. 2 (second movement)

Beethoven

Allegretto

Piano

(a)	Woodwinds	Strings	Woodwinds (same as before or different)	Strings
(b)	Strings	Woodwinds	Strings	Woodwinds (same or different)
(c)	Strings (arco)	Strings (pizz. or arco, short)	Woodwinds	Woodwinds
(d)	Strings & Woodwinds (doubled)	Strings	Strings & Woodwinds (doubled)	Strings

1 Analysis

- Note that this piece of music is extreme case. Few pieces of music would lend themselves to so many color contrasts within a few measures.
- Transposition to C or D might initially be considered *but* original key has been retained.
 - : Music in remote key poses no technical problems in this example
 - : Transposition from the remote key would completely destroy the striking parallel relationship between somber C# min of 1st movement with the bright Db maj of 2nd movement

2 Possibilities

- Can accentuate the strong antiphonal feeling between each phrase by using contrasting colors every two measures (layout a, b, d)
- Can use one color on 1st four measures and another color on 2nd four stressing the antiphonal feeling between the first two phrases (layout c)

3 Cautions

- Possible to over use the device of contrasted sections which results in a 'patchy' quality
- Avoid tendency to think in terms of separated sections as opposed to the possibilities of combining instruments of different sections

Ex. 5

Allegretto

2 Fl.

2 Ob.

2 Clar.
in B \flat

2 Bsns.

VI. I

VI. II

Vla.

Vc.

D. B.

A few possibilities

- Consider
 - : Period
 - : Style and stylistic characteristics
 - : Texture
 - : Doublings
 - : Balance
 - : Distribution of musical ideas
 - : Pure color vs. composite color

13 THE PERCUSSION: INSTRUMENTS OF DEFINITE PITCH

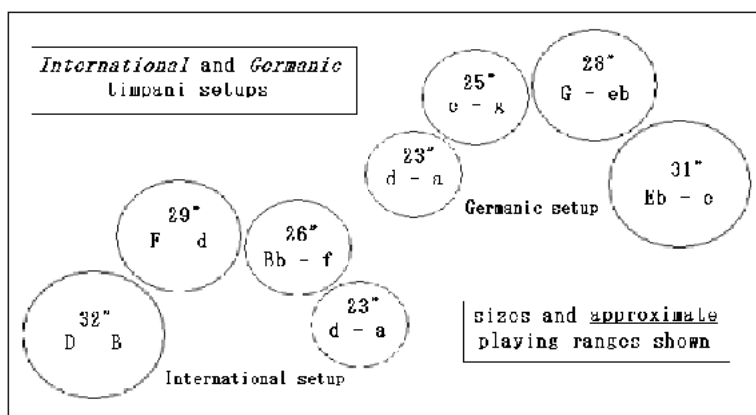


Tuned Percussion Ranges

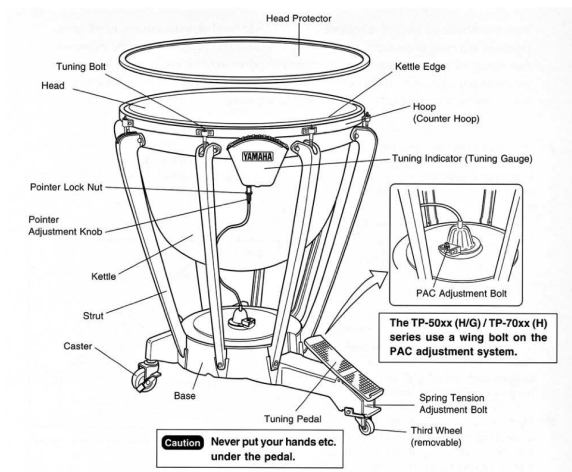
I TIMPANI (KETTLEDRUMS)



Set of 4 Timpani



Sizes



Timpani Parts



Pedal Mechanism



Pedal



Tuning Gauge



Timpani mallets

1. wooden
- 1a. Saul Goodman classic wood
2. ultra staccato
3. staccato
4. general
5. soft

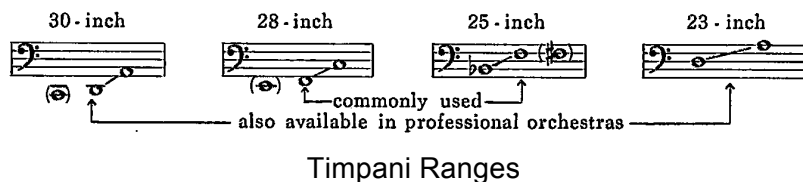
THE TIMPANI (OR KETTLEDRUMS)

Italian: Timpani

French: Timbales

German: Pauken

Ex. 1



A. HISTORY

1 Tuning

- Until recently timpani were hand-tuned
 - : Pitch changes were made by tightening or relaxing screws around the 'head'
 - Calf skin stretched across top of drum
 - Head is now most often made of plastic
 - : Considerable time was required for change (about 8 measures in 4/4 moderate time)
 - During Classical period two timpani were tuned in advance
 - Tuned to tonic & dominant notes of home key and not altered in course of composition or movement
 - Later composers demanded changes within the composition or movement and 3 timpani were employed
- Present day tuning is accomplished by means of a pedal to change pitch
 - : A foot pedal controls the degree of tension on the drum
 - : Change of pitch can be made rapidly (allow 4 measures in 4/4 moderate time to allow for testing the pitch)
 - : Tuning gauges are available giving player mechanical means to change pitch with high accuracy

(g) Concerto for Orchestra

$\text{♩} = 184$

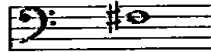
Bartók



Tuning gauge invaluable in making such a passage possible note that this type of part is rare and only for professional timpanist

2 Present Practice

- Professional orchestras utilize all four sizes of timpani (30", 28", 25", 23" with school orchestra normally utilizing two of 28" & 25")



Recommended school ranges
Keep playable on two timpani staying between above range

- Professional & semi-professional groups may have 23" or 30" in addition to provide 3 drums (a second 25" or 28" may be used to make up the 3 if pitch is appropriate)
- Normally there is one player for all timpani regardless of number
 - : Rarely do parts require more than one player
 - : Must be indicated at start of score (Berlioz – Fantastic Symphony or Stravinsky – The Rite of Spring)

B. SCORING

1 Notation

- Notated in the bas clef with tuning shown at beginning of composition

Ex. 2



Either way

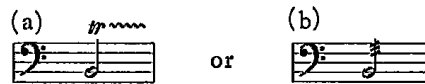
- Part is written without a key signature and accidentals added in part as required
 - : Older scores have accidentals omitted once tuning of drum has been indicated
 - : These also sometimes use C & G to indicate tonic & dominant in keys other than C with *actual* tuning of drum shown at the beginning of the part

2 Use

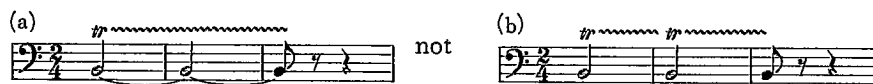
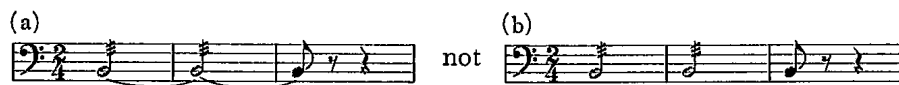
- As a general rule timpani should be used on notes that fit in with harmony
 - : Normally bass note is used
 - : Can take any other harmony note with good effect
 - : Choose drum tuned to provide the harmony note
- If harmony changes outside of available tuned drums will need to change timpani tuning to accommodate change
 - : Change *must* be indicated in part at first rest player could make the change
 - : Use following for indication (example is G to Gb)
 - Italian use 'G muta in Gb'
 - French use 'Changez Sol en Solb'
 - German use 'G nach Ges umstimmen'
- In writing for timpani *cannot* simply put desired notes down and let player worry about how to get them
 - : Need to score with a particular number of timpani in mind
 - : Problem of retuning must always be kept in mind
- Sometimes possible to 'get by' with timpani notes foreign to the harmony
 - : Usually involve a chord of such short duration the ear is scarcely aware of foreign timpani note
 - : In sustained harmony any deviation from chord would be apparent
 - : If not enough time to retune and the harmony is sustained
 - Bass drum is a possibility
 - Pitch is indeterminate *but* effect is not the same

C. TECHNIQUE

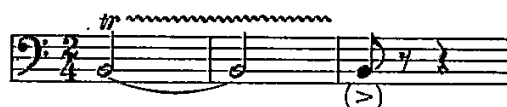
- 1 Single notes, rhythmic figures, and rolls are all effective
- 2 Rolls
 - May be written in either of two ways



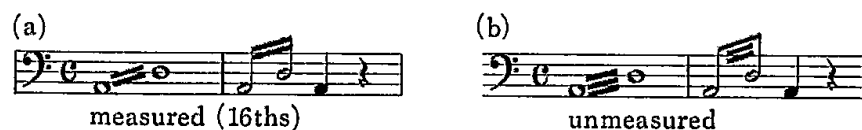
- 3 lines through a stem ordinarily signifies an unmeasured roll
 - : 2 lines measured 16^{ths}
 - : 1 line measured 8^{ths}
 - : The trill sign is preferable for unmeasured roll with connecting tie to avoid possible fresh attack on each note



- Note the roll is carried forward to *end on the beat*
- Possible for skilled player to end on fraction of a beat
- If separate articulated note is required at the end of a roll the tie to last note is omitted (wavy line of trill is stopped short of last note)



- Roll is possible on two different timpani (measured or unmeasured)

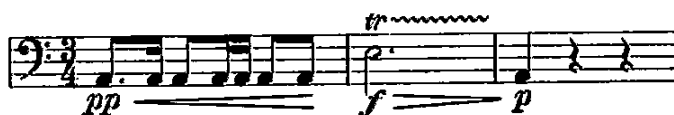


3 Dynamics

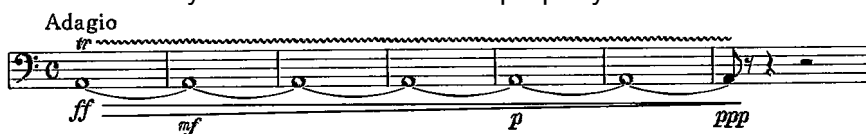
- The importance of detailed dynamic markings for percussion writing in general must be stressed



Height of Crescendo is questionable



Dynamic of Crescendo is properly indicated



Dynamic contour of long roll is properly indicated

D. FUNCTION

- 1 Most frequent (and obvious) use of timpani is backing the rest of the orchestra in rhythmic figures
 - In Classical Period convention was to give timpani and trumpets the same rhythmic figure
 - Other times they played separate rhythmic figure of their own
- 2 Excellent for reinforcing crescendos
 - Providing excitement
 - Supporting climaxes by means of rolls
- 3 Extended solos are seldom given

4 Isolated notes and groups of 2 or 3 notes played solo are frequent and highly effective

(a) Ninth Symphony

Molto vivace Beethoven

Vl. I

Timp.

(b) Symphony in E minor (*New World*)

Molto vivace Dvořák

Vl. I

Timp.

(c) *Don Juan*

Allegro molto con brio Strauss

Strings

Timp.

(d) First Symphony

♩ = 116 Barber

Tutti

Timp.

Other works containing notable timpani solos – Hanson, 3rd Symphony; Harris, 3rd Symphony; Strauss, Burleska; Shostakovitch, 1st Symphony

E. SPECIAL EFFECTS

- 1 Use of wooden sticks in place of soft felt headed sticks
 - Indicated by
 - : Bacchette di legno – Italian
 - : Baguettes en bois – French
 - : mit Holzschlägeln – German
 - Produces a harder, more sharply percussive quality
 - Soft effects with sticks also possible (soft roll with snare drum sticks)
 - Indication for soft sticks is not normally included unless previously hard sticks have been used
 - : Bacchette di spugna – Italian
 - : Baguettes d'éponge or baguettes molles – French
 - : mit Schwammschlägeln
- 2 Additional tone differences obtainable with Spanish felt headed sticks and larger or smaller soft headed sticks
- 3 Can use both sticks at once on a drum and indicated by double stems



- 4 Possible to play two different timpani simultaneously



Berlioz wrote 3 & 4 note chords for timpani
requiring 2 players

- 5 Drum head can also be struck in center or near edge producing a different tone
- 6 May be muted by placing a cloth (about 2" square) near edge of drum head (timpani coperti)

7 Pedal may be changed while drum is still sounding

- Produces a glissando
- Score indication is a line between staff notes
- *Both* must be in range of the one timpani

(f) *Music for String Instruments, Percussion and Celesta*



II THE ROTO TOM



Snare Sticks



Soft Marimba Mallets



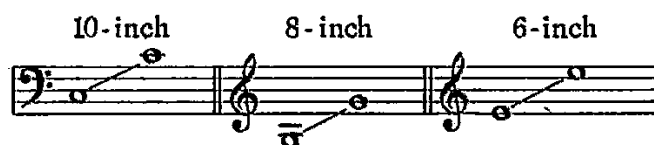
Yarn Xylophone Mallets



Felt Mallets



Snare Brush



Roto Tom Ranges

A. HISTORY

- 1 Introduced in 1968
- 2 Small tom-tom tunable to specific pitches by rotating drum on base and tightening or relaxing tension on drum head
- 3 Commonly sized at 10", 8", and 6"

B. CHARACTERISTICS

- 1 There is a 'stop' to contain range
 - The stop can be removed extending range upward an octave plus
 - Sound beyond the indicated ranges is of a different quality
 - : Extremely 'dry'
 - : Lacks resonance
- 2 Played with wooden snare drum sticks, soft marimba mallets, yarn xylophone mallets, felt mallets, the hands, or wire brushes

III THE XYLOPHONE



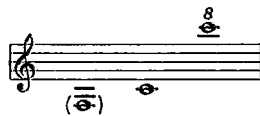
Xylophone Mallets

Italian: Silofono
(or Xilofono)

French: Xylophone

German: Xylophon
(Old name: Strohfiedel)

Ex. 15



Sounding an 8ve higher.

Xylophone Range

A. CHARACTERISTICS

- 1 Consists of a set of wooden bars of varying lengths arranged in same pattern as notes on a piano and with (sometimes) a tuned resonator beneath each bar
- 2 Played with hard mallets
 - Normally two
 - Sometimes 3 or 4 are used to play chords
- 3 Notes are short & crisp with no way of sustaining except to utilize a roll
 - Makes instrument unsuited for lyric and expressive passages
 - Can perform rapid scales, arpeggios, repeated notes, glissandos with surprising ease (passages entirely on 'white' keys are more difficult than those involving both 'black' & 'white' keys)

- 4 Built in various sizes with consequence of a changed range
- 5 Notation is on a single staff in treble clef one octave lower than sounds
 - Some recommendation to use actual pitch
 - : Belief that range only extends to C5(8va)



- : But actual range is an octave higher C6(8va)
 - Part should be written with a key signature
- 6 Normally played with hard mallets
 - Normally two
 - Sometimes 3 or 4 are used to play chords
 - Mallets of different hardness (medium hard rubber to hard rubber or plastic) will produce gradations of intensity of attack

(a) *Petrouchka*



Scoring Example

B. Use

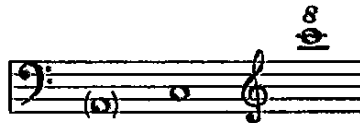
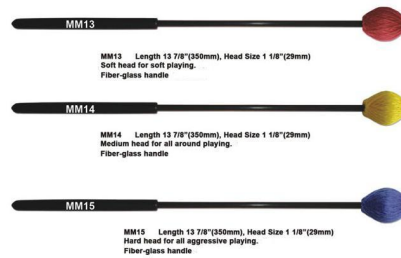
- 1 Gives a 'saucy', 'mocking' quality can
- 2 Can simply add a brittle edge to a melodic line (or point up certain notes)
- 3 Notes are short and crisp with no way of sustaining except to utilize a roll
 - Makes instrument unsuited for lyric and expressivo passages
 - Can perform rapid scales, arpeggios, repeated notes, glissandos with surprising ease

Passages entirely on white keys are more difficult than those involving white and black keys

IV THE MARIMBA



MARIMBA MALLETS



Marimba Range

A. CHARACTERISTICS

- 1 Resembles Xylophone in appearance
- 2 Tone is more mellow and lacks xylophones 'spicy' brittleness

B. Use

- 1 Rarely used in orchestra
- 2 Needs a somewhat exposed part to come through
 - Played with relatively soft sticks
 - Generally softer than employed by xylophone

V THE GLOCKENSPIEL OR ORCHESTRAL BELLS



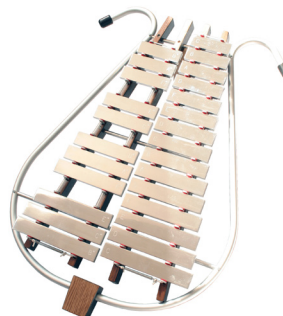
Glockenspiel



Keyed Glockenspiel



Glockenspiel Mallets



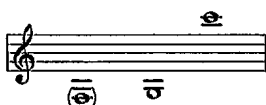
Bell Lyre

Italian: Campanelli

French: Jeu de Timbres
(or Carillon)

German: Glockenspiel

Ex. 18



Sounding two 8ves higher.

Glockenspiel Range (Do not confuse with tubular bells or chimes)

A. CHARACTERISTICS

- 1 Type generally used today is a set of metal bars attached to a portable case and paced on a table
- 2 Another type (rarely seen now) is supported on a metal frame with resonators
- 3 Bright, ringing tone is normally produced with use of hard mallets or metal 'hammers'
 - Somewhat more subdued quality can be achieved with soft mallets
 - Soft mallets need to be specifically called for in score
 - : Same as directions for timpani
 - : Bacchette di spugna, Italian
 - : Baguettes d'éponge or baguette molles, French
 - : mit Schwammschlägeln
- 4 Built in various sizes with corresponding alterations in range
- 5 Another instrument sometimes goes by the name of glockenspiel
 - Actually is the 'bell lyre'
 - A vertical and abbreviated version of the true glockenspiel
 - : Used in marching bands
 - : Tone is generally inferior in intonation, too loud, and too harsh for the concert hall

A keyed
glockenspiel
is commonly
used in
European
Orchestras

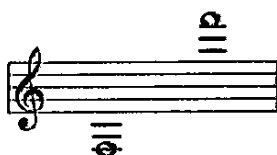
VI THE VIBRAPHONE



Vibraphone



Vibraphone Mallets



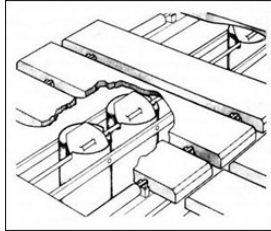
Vibraphone Range

A. CHARACTERISTICS

- 1 Relative newcomer to instrument scene
 - Associated chiefly with dance and commercial music
 - Has found great favor with many serious composers
 - Some composers have used instrument in combination with electronically produced sounds

2 Resembles Xylophone in general pattern

- Metal bars arranged in 'keyboard' fashion
- Bars are resonated by tuned tubes below the metal bars
- Discs at the top of each resonator revolve



- : Produces a 'quantitative' rather than pitch vibrato
 - Speed can be regulated with corresponding variation of spin motor speed
 - Can be shut off completely by turning off spin motor (directed as 'spin off' in score)
- Damper pedal is incorporated to sustain or 'dampen' sound (use 'damper off' for sustain in score)

B. Use

- 1 Parts can be either melodic or harmonic in character
 - Isolated chords (4 note) allowed to ring show a particular floating and undulating tone
 - To best advantage for orchestra
 - Either soft or hard mallets may be used (most often soft)
- 2 Part written on a single staff
 - In treble clef
 - At actual pitch

VII THE TUBULAR BELLS (OR CHIMES)



Tubular Bells



Bell Hammer and Playing Strike

Italian: Campana

French: Cloches

German: Glocken
(or Tiefe Glocken)

Ex. 22



Sounding an 8ve higher.

Tubular Bell Range

A. CHARACTERISTICS

- 1 Tubular Bells are only type of bells now in standard use
- 2 Hung from a rack with complete set arranged like white & black keys of piano
 - 'Black' key bells are hung behind the 'white' and slightly higher providing room for striking
 - Since bell parts often consist of only a few notes it is common practice to hang only those bell required for performance
 - Some sets include a damping pedal for damping or sustaining notes
- 3 Full set varies in size so given range can vary (range provided is considered standard in U.S.)

B. Use

- 1 Sometimes indication 'sounding octave higher' is given in score
- 2 Does not correspond to traditional octave displacement
- 3 Rather parts are written in *actual* pitch with 'sounding' phrase a reference to characteristic of bell giving *illusion* of sounding octave higher

VIII ANTIQUE CYMBALS



Crotali, Italian



Cymbales Antique
(or Crotales), French

Antiken Zimbeln, German



Sounding an 8ve higher.

Antique Cymbal Range

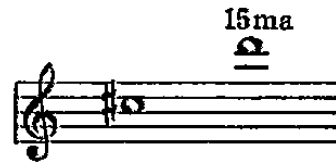
A. CHARACTERISTICS

- 1 Small cymbals modeled after ancient Greek instrument
- 2 Each pair sounds a definite pitch
 - Held with one in each hand and struck together lightly at the rim
 - The small bell-like sound being allowed to ring
- 3 Used in Romeo & Juliet, Berlioz; Prelude to the Afternoon of a Faun, Debussy; Les Noces & Rite of Spring, Stravinsky; Daphnis and Chloe, Ravel

B. Use

- 1 Written in both actual pitch or octave below
- 2 Score needs to specify use of actual or octave below pitch
- 3 Many orchestras do not own Antique Cymbals and part is played on some other instrument (usually glockenspiel)

IX FLEXATONE



Flextone Range

Flexatone, Italian

Flexatone, French

Flexaton, German

A. CHARACTERISTICS

- 1 Unusual and rarely used instrument
- 2 A band of bent metal in the shape of a 'U'
 - One side with two small pieces of metal which strike the metal band when instrument is shaken
 - Held by cylindrical handle at bottom
 - Uses thumb to control angle and thus change the pitch of the vibrating metal partition
- 3 Sounds similar to musical saw but more percussive

B. Use

- 1 Piano Concerto, Khachaturian
- 2 Variations for Orchestra, Schönberg

14 THE PERCUSSION: INSTRUMENTS OF INDEFINITE PITCH

I THE SNARE DRUM (OR SIDE DRUM)



Snare Drum



Mounted Snares



Gut Snares



Wire Snares



Sticks

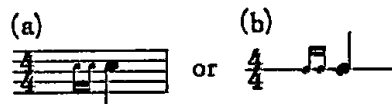


Brushes

Tamburo, Italian Tambour (Militaire) or Caisse Claire, French Kliene Trommel, German
* Caisse Claire is strictly a 'small drum' but often used in contemporary French scores for snare drum

A. NOTATION

- 1 May be notated in score either on a staff line or with a single line staff



- 2 Previously common to include treble clef
 - To distinguish from Bass Drum and Cymbal line using bass clef
 - No longer recommended for contemporary scores
 - Part may be written in 3rd space on staff
 - : Else where if convenient
 - : When two percussion instruments utilize the same staff separate with stem up on one and stems down on the other


B. CHARACTERISTICS

- 1 Best is crisp sharply rhythmic passages
- 2 Utilizes wooden sticks involving a technique somewhat different from other percussion
- 3 Common Strokes
 - Flam



- : Closed flam (usual form)
 - 1st note is played before the beat
 - Is unaccented
 - Quickly joined with second note
 - This stroke is used to strengthen or lengthen a note
- : Open flam
 - Rare in orchestral playing
 - 1st note is articulated separately
 - 1st note is with more of an accent

- Drag

drag, usually 

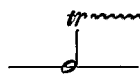

- : Two very rapid notes precede an accented note
- : Preceding notes have effect of merging with the accented note into a brief roll effect

- Four-stroke Ruff

four-stroke ruff 

- : Three notes precede an accented note
- : Stroke played 'open' with preparatory note articulated

- Roll

roll  or 

- : Trill sign is preferable for unmeasured roll
 - With several measures of roll safest to connect notes with a tie
 - Avoids possibility of player thinking fresh attack is wanted
- : Rolls are notated same as bowed tremolo in strings
 - Three lines through stem ordinarily signifies unmeasured roll
 - 2 lines is measured 16th notes, 1 line is measured 8th notes
- : Tie is carried over to 1st downbeat
 - Skilled players are able to cope with roll ending on fraction of beat
 - If articulated note is required at end of roll wavy line is stopped short of last note
- : One of the snare drum's most effective devices
 - Extended roll creates sense of tension and expectancy
 - Shorter rolls are used constantly in march rhythms and other orchestral parts

Comments on
roll in the timpani
apply with snare

-
- Rim shot
 - : A 'special effect' originating in dance band music
 - : In symphonic version one stick is placed horizontally with tip on drum head and butt end on rim and struck with the other stick
 - : Results in a sharp and dry sound
 - Brushes
 - : Orchestral use is rare
 - : Common with dance bands

C. Use

- 1 Rhythmic patterns of all kinds and complexities are possible
 - Should not be overused
 - Results can become ineffective or actually tiresome
 - : Like almost all other percussion instruments its principal effect is its entry (Forsyth)
 - : Instruments of highly individual color are generally effective in *inverse* proportion to the amount they are used
- 2 Desirable to specify whether wire snares or gut snares are wanted
 - Indict with score direction 'Concert snare with wire snares'
 - Snares may be loosened with sound losing its 'brittle' quality and sounding like a tom-tom ('Snares off')
- 3 Drumhead can be covered with a 'handkerchief'
 - Produces 'crispest' sound obtainable on snare drum
 - Use score direction 'cover head'
 - : 'muffled snare drum' has been used to describe both 'snares off' and 'cover head'
 - : Best to avoid 'muffled snare drum' score direction to avoid confusion
- 4 Specify if drum is to be played at edge or center of head
 - Produces a change in tone
 - Modern convention with Bartók as an example

II OTHER DRUMS

A. THE FIELD DRUM

There is a
good deal of
ambiguity on
Field Drum
name



Field Drum

Tamburo, It. Tambour, Fr. Rührtrommel, Gr.

- 1 Longer than the snare drum
 - Produces a tone slightly deeper and less brittle than snare drum
 - Usually equipped with gut snares
- 2 Usual in bands but parts in orchestral music are rare

B. THE TENOR DRUM



Tenor Drum



Tenor Drum Sticks

Tamburo Rullante, It

Caisse Roulante, Fr

Rührtrommel, Gr.

-
- 1 Longer and larger than snare drum but smaller than bass drum
 - 2 Used much less frequently than either bass or snare drums
 - 3 Tone is more somber than snare drum
 - No snares employed
 - Played with wooden sticks with various tip styles

C. THE TABOR



Tambour de Provence (or Tambourin), Fr. Tambourin, Gr.

- 1 Very long drum equipped with a single snare (in most cases)
- 2 Examples are in Aaron Copland, 'Appalachian Spring' & 'El Salon Mexico'

D. THE BASS DRUM



Bass Drum

Gran Cassa (or Cassa), It



Bass Drum with Cymbal Attachment

Grosse Caisse, Fr.



Bass Drum Beaters

Grosse Trommel, Gr.

1 Characteristics

- Great size and relatively slow response is not suited to involved rhythms
 - : Simple rhythmic patterns and isolated notes are more practical and effective
 - : Repeated notes should be no faster than eighth notes in a moderate time (except for rolls)
- Normally played with a soft beater
 - : Two may be used to produce rolls
 - : Special effect is use of wooden snare sticks (Benjamin Britten, 'Peter Grimes')

2 Use

- Well equipped to add volume or percussive accent (restraint required to avoid suggesting parade music)
- Effective in soft passages
 - : At lower dynamic levels it is 'felt' rather than heard
 - : Listener may even be unaware that instrument is playing
 - : Soft rolls give a faintly threatening sound not unlike distant thunder

3 Notation

- May be written on a single line or a staff
- Often written on same line as cymbals
 - : Two parts are sometimes played by the same player



- : Use stems up for cymbals and stem down for Bass Drum

E. CYMBALS



Cymbals

Piatti, It.



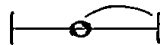
Suspended Cymbal

Cymbales, Fr

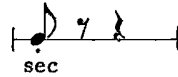
Becken, Gr.

1 Notation

- Same as that of snare drum (single line or a staff)
- Sometimes indicated with diamond or 'x' shaped note heads (however, standard format is always best solution)
 - : Often notated on same staff as Bass Drum
 - : Notated this way as same player sometimes plays both parts
 - Here one cymbal is attached to top of bass drum and other is struck against it
 - Player uses other hand to play bass drum
 - Tone quality of both instruments suffer in this arrangement
- Best to indicate the actual note value of a cymbal crash
 - : Indicates the length of 'ring' before being damped
 - : If ring is to be indefinite and easy indication is a tie ending is 'air'



- Short or 'choked' strike
 - : Choked is a very short cymbal strike
 - : 'sec' or 'secco' means dry and 'choke' or 'stop' may also be written in



2 Use

- Crash or 'two-plate stroke' is most frequent use
 - : Note not just a loud strike
 - : Can be performed at any dynamic level
 - : Debussy's 'Nocturne' as cymbals rubbed together very softly
- Loud crashes are much more frequent
 - : Used at moments of excitement
 - : Used at climax points

F. THE TRIANGLE



Triangle and metal striker

Triangolo, It. Triangle, Fr. Triangel, Gr.

1 Characteristics

- Instrument normally suspended from one hand and struck with a steel beater (striker) in the other
- More complex rhythms possible when suspended from a rack and utilizing two beaters
- Made in different sizes with tone varying accordingly
- Notation is either single line or staff

2 Use

- Single notes, tremolos (rolls), and not-to-complicated rhythms are all effective with flam and drag strokes possible
- Silvery and ringing tone is valuable for adding brilliance at forte or piano dynamics
- Roll at climax points provide an extra degree of excitement and intensity
- Shorter use is best as prolonged use over time palls the distinctive tone quickly

G. THE TAMBORINE



Tamborine

Tambourino (or Tamburo Basco), It.

Tambour de Basque, Fr.

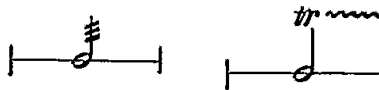
Schellentrommel (or Tambourin), Gr.

1 Characteristics

- Small wooden hoop with calf skin head across one side
- Pairs of metal plates (jingles) attached to openings in the hoop
- Can mix different strokes and playing styles
- Can add color, accent at certain points, and back up 'vivid' rhythms

2 Use

- Struck with fist
 - : Suitable for isolated notes and simple rhythms
 - : Produces a percussive sound of head strike with the jingles sounding
 - : Word 'fist' is sometimes placed in score
- Shaken
 - : Produces a roll with only the jingles sounding
 - : Adds excitement and color
 - : Especially good at forte (or louder)



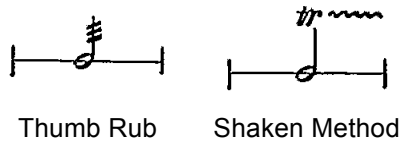
(Preferable)

Either is used

- Thumb Rub

- : Thumb is rubbed over head to produce a roll on the jingles
- : Especially appropriate for softer dynamic levels (can be played forte)
- : Each note must be of short duration (restricted to surface area of head)
- : Notation is the same as Shaken
 - Use trill mark of Thumb Rub
 - Crossed stem for Shaken method

As used by
Ravel



- Sticks

- : Played with sticks on flat surface with facing up or facing down as an effect
- : Produces sound of struck head in combination with jingles
- : Needs score direction 'played with snare drum sticks' (must be included)
- : For softer passages played head down on a cloth and played with fingers

H. THE GONG OR TAM-TAM



Tam-Tam, Fr. & Gr.

1 Characteristics

- Circular piece of hammered or spun metal struck with a soft-headed beater
- Made in various sizes with some composers specifying 'large' or 'small' in score

2 Use

- Tone most effective when allowed to vibrate
 - : With successive strokes they should be spaced to allow for ample vibration
 - : Rolls are possible
- Ordinarily the note is not damped though short (secco) notes are possible
- Effect used by Stravinsky in 'Rite of Spring' is running a metal triangle beater in arc across surface
- Does not need to have either oriental connotations or sinister and macabre character
 - : Sometimes it is used to simply add unexpected and exotic touch of color
 - : Also loud notes with same function as cymbal notes

I. THE CASTENETS



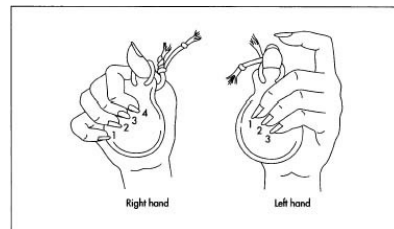
Castenets (Wooden Hand Held)



Mounted Castanet (Ebonite Orchestral Set)

Castagnette, It.

Castagnettes,
Fr.



Play Technique



Play Technique

Kastagnetten, Gr.

1 Characteristics

- Partially hollowed out small wooden or ebonite blocks
 - : Name implies 'chestnuts' derived from the wood used originally
 - : Most often made of ebonite
- Originally played with the hand
- Modern orchestral set uses a mechanically mounted set played with the fingers

2 Use

- Most often heard with Spanish flavored music
- Can be effectively included in non-Spanish music to provide a crisp rhythmic background

J. THE WOOD BLOCK



Cassa di Legno, It. Wood Bloc, Fr. Holztrommel, Gr.

1 Characteristics

- Small rectangular piece of wood (or plastic) with side slits to provide resonance
- Played with drum sticks or vibraphone mallets
- All possible rhythms are possible
- Tone is dry and brittle
- Single note strike has unexpected quality verging on the comic

2 Use

- Utilized in modern scores
- Ballets
- Other highly colored or strongly rhythmic music

K. CHINESE TEMPLE BLOCKS



1 Characteristics

- Hollow wooden blocks, roughly circular in shape (traditionally painted with dragon heads)
 - : Medium to hard rubber mallets are used in playing
 - : Come in graduated sizes in sets of 2 to 5 in number (5 is the standard)
- Tone is similar to the wood block but 'rounder' and 'hollower'
- Tuned to a pentatonic scale
 - : *Not* notated by pitch
 - : A note is assigned arbitrarily to each block
 - : Best to reserve one each 5 lines of staff to indicate each of 5 blocks

L. LATIN AMERICAN PERCUSSION INSTRUMENTS

1 Claves



Clave



Play Technique

- Two short sticks
- Struck together with hand cupped to provide resonance

2 Maracas



Maracas

- Two hollow gourds with attached handles filled with dried seeds or buckshot
- Shaken to provide characteristic rhythms for Latin music

3 Other Latin American Instruments

Güiro



Serrated gourd scrapped with a stick

Bongos



Single headed drums played with fingers

Timbale



Single headed drum larger than bongos

Played with small sticks

Can be muffled with one hand

Can use one stick on side of drum other on head

M. OTHER PERCUSSION INSTRUMENTS

- 1 These are rarely used
- 2 These appear in some symphonies to provide effects or a characteristic 'flavor'



Ratchet



Wind Machine



Slap Stick



Cowbell



Sleigh Bells



Anvil and Anvil Hammer

With additions:

Sandpaper Blocks, Switches,
Chains, Sirens, Steel Plates

III THE PERCUSSION SECTION AS A WHOLE

A. CATEGORIES

- 1 Those that point up the actual thematic or structural aspects of the music (timpani parts most often)
- 2 Those that are included chiefly for color purposes

B. Use

- 1 Cataloging possibilities is impossible as each category is inclusive of both and with infinite possibilities
- 2 Best to use imagination and let taste dictate
- 3 Note that dynamic range is greater at both soft and loud extremes than the rest of the orchestra

Notated Examples

(d) *Fire Bird Suite*

Stravinsky

♩ = 108

Bass D. $\frac{12}{8}$ arco *pp* con sord.

Vc., Basses $\frac{12}{8}$ 2 C. B. pizz. senza sord.

Bass D. $\frac{3}{4}$ *fff*

Bsns. doubling Hrns. *mf*

(f) *Capriccio Espagnol*

Rimsky-Korsakoff

Vivo e strepitoso

Tambourine $\frac{2}{4}$ *f*

VI. I *ff*

(g) *Carmen*

Bizet

♩ = 112

Cast. *mf*

Carmen, dancing with Cast. *mf*

La ——— la ——— la ——— la ———

Cast. *f*

La ———

(j) *Capriccio Espagnol*

Rimsky-Korsakoff

♩ = 66

Timp. $\frac{3}{4}$ *mf*

Tri. $\frac{3}{4}$ *f*

Cast. $\frac{3}{4}$ *f*

Snare D. $\frac{3}{4}$ *f*

Cym. $\frac{3}{4}$ *mf*

Bass D. $\frac{3}{4}$ *f*

VI., etc. $\frac{3}{4}$ *f*

C. THE ARRANGEMENT OF PERCUSSION PARTS

1 Listing

- Timpani 1st
- Instruments of indefinite pitch in any order next
- Glockenspiel, xylophone, celesta, and piano
 - : Few scores use all these instruments
 - : Celesta and piano are not usually played by members of the percussion section

2 Section

- Most professional orchestras have (at least) three percussion players
 - : Includes the timpanist
 - : Extra players are hired on an 'as needed' basis
- Because of economic reasons percussion parts have been known to go un-played (lack of budget for extra players)
 - : Possible to arrange percussion parts so that one player can play several *successive* instruments
 - : Possible to have certain pairs of percussion played *simultaneously* by one player (triangle and shaker)

3 Notation

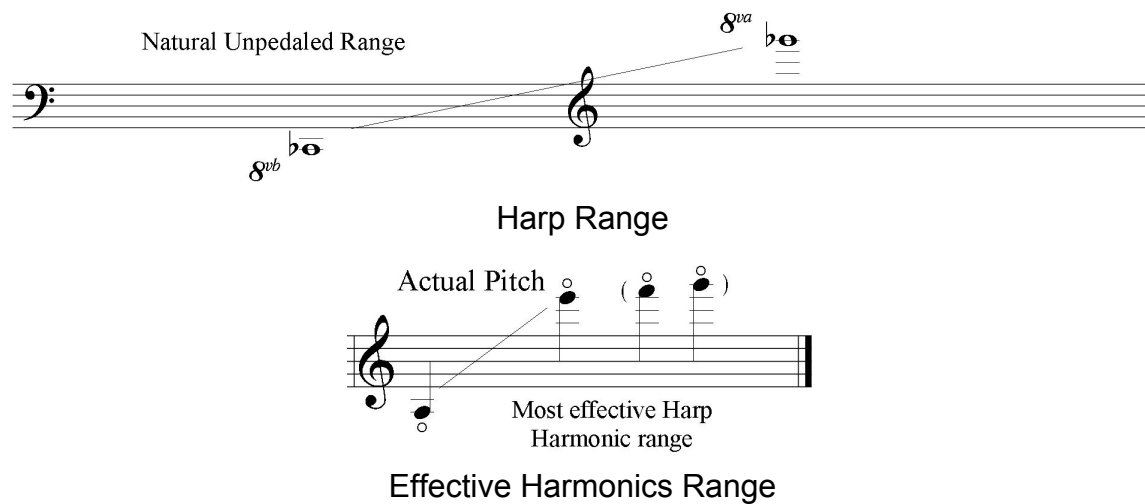
- No 'hard & fast' rule for grouping of percussion instruments
- Common staff pairings
 - : Snare Drum and Triangle with triangle usually on top space and snare on 3rd space
 - : Timpani on own staff
 - Impractical to write 2 percussion of *definite* pitch on same staff
 - Have staff reserved for timpani in score and provide a separate 'player' part

-
- Best plan (especially with many percussion parts) is to arrange with a specific number of percussion players
 - : Show each players part on a separate staff
 - : Show even in the score in some instances
 - : With this plan each percussionist may be called to play several different instruments in following of score
 - : Solves in advance the distribution of percussion parts among a given number of players
 - : Solves copying of several different percussion parts for each player
 - If all percussion parts are written on same sheet (or as many as needed for number of players) it enables each percussion player to see entire percussion score
 - Also simplifies submission for commercial reproduction
 - Total number of required percussion players should be indicated at beginning of score with list of required percussion instruments

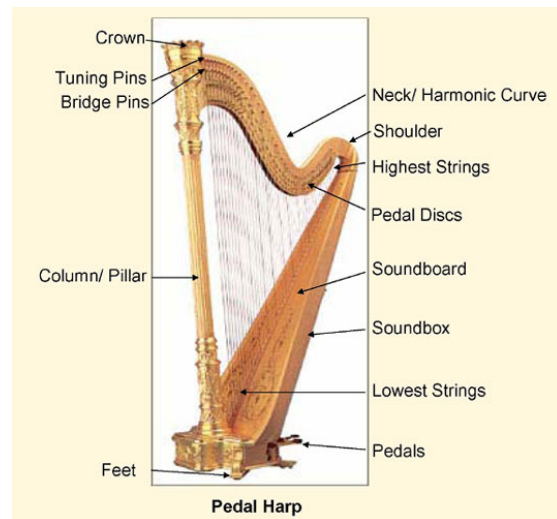
15 THE HARP, CELESTA, AND PIANO

**These instruments most often have a separate player for each

I THE HARP

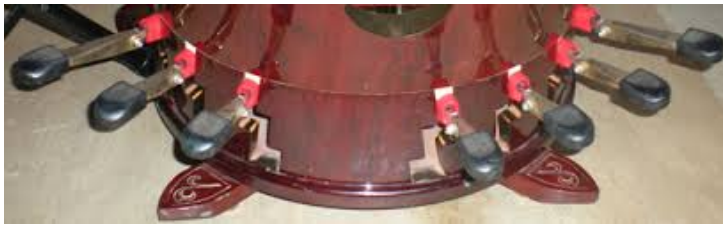


Arpa, It.

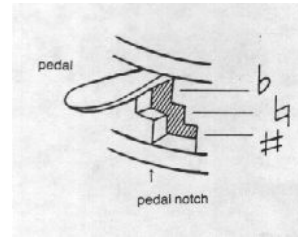


Harpe, Fr.

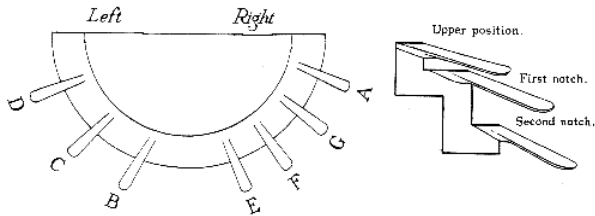
Harfe, Gr.



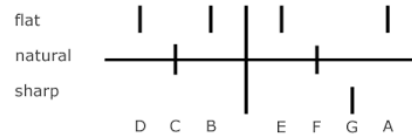
Pedals



Notch Set-up



Pedal Layout

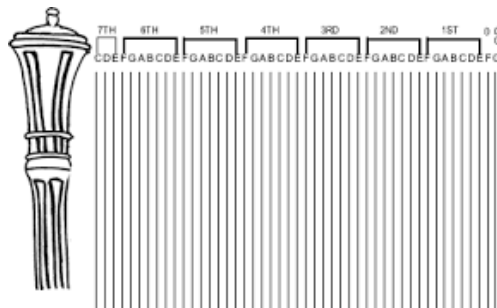


Pedal Notch Diagram

A. CHARACTERISTICS

1 Not built on a chromatic basis

- Has only octave sets of seven tuned strings
 - : When in 'home' key tuned to scale of Cb (Cb,Db,Eb,Fb,Gb,Ab,Bb)
 - : Chromatic instrument would have 12 strings for each semitone
 - : Use of Cb as home tuning provides ability to change pitch with pedals and avoid double #'s or b's



String Sequence



String Sequence by Octave

- Harp pedals provide a way to achieve chromatic tuning in various keys

2 Pedals

- There are 7 pedals each of which controls all the strings of a *particular letter-name* pitch across octave groupings
- Capable of raising either a half or whole step in pitch for all those same letter-name strings
- It is not possible to tune strings of same letter name to different pitches in different octaves
- Pedals are arranged 3 on left & 4 on right (for Lft foot & Rt foot) in sequence of DCB||EFGA
 - : Takes an 'instant' to change pedals
 - : Two may be depressed at same time
 - As long as on different sides
 - E pedal on Rt is sometimes used with Lft foot to make 2 pedal change on the Rt side

B. NOTATION

- 1 First pedal setting should be listed at beginning of harp part
- 2 Noted in any of 3 ways

D^b C[#] B^b E^b F^b G[#] A^b

1



2

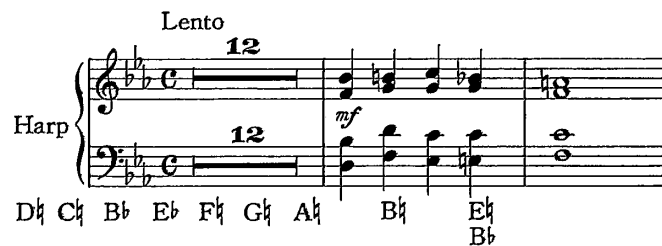
[E^b F^b G[#] A^b
B^b C[#] D^b

3

- 1-List order of pedal
 - 2-Diagrammatic 'picture' of pedals with horizontal line corresponding to middle notch on pedal – with horizontal line corresponding to middle notch on pedal; above line is top notch, On line in middle notch, below line is bottom notch
 - 3-Listed in Radial fashion
- 3 Written with *or* without key signature
 - If part is fairly diatonic use key signature
 - If part would require constant key modulation write without key signature
 - When key signature is present but no pedal setting the harpist will assume pedals are set to key signature

4 Each pedal change required in part should be shown

- Beneath bottom of staff at point where it occurs (letter with new accidental is sufficient)
 - : If two pedal change is required involving both Lft & Rt side the Rt should be shown above the Lft
 - : Advantage to have pedal changes indicated at rests in advance of change point
 - : The pedal diagram is *not* used for showing changes within a part unless most (or all) of pedals are to be changed
- Constant pedal change becomes over taxing for player
 - : In highly chromatic music best to omit harp
 - : Also can use simplified harp part in highly chromatic music
 - : Can write for two harps letting them take turns
 - Allows for alternate changes on rests
 - Added volume if played in unison



Pedal indications Though in Eb Major the pedal setting at start has an A natural as A first appearance is an A natural

- Enharmonic notes with harp tuning
 - : Many possibilities for enharmonic notes
 - : 'homophones' is sometimes used for these enharmonic tones
 - : Most useful for glissando

Harp Enharmonics

C \flat -B \natural	E \flat -D \sharp	G \flat -F \sharp
C \natural -B \sharp	E \natural -F \flat	G \sharp -A \flat
C \sharp -D \flat	E \sharp -F \natural	A \sharp -B \flat

B pedal set to middle notch and C pedal set to top notch will both produce same pitch – a B natural

5 Glissando

- The player draws hand quickly across strings within the notated compass of strings
 - : *Not possible to skip* over any of the string
 - : Notated tuning must be set to fit the musical scheme at the point of the glissando
- The glissando may consist of a scale or a chord
 - : If scale is used there is no problem as pedals can be set to produce major or minor scales (each string assigned to one note of scale)
 - : If chord is required pedal setting is more involved
- For chord
 - : The chord tones would be set on the respective strings
 - But unless use a 7 note chord must determine what to do with the extra strings
 - Use enharmonic equivalents to 'double' some chord tones to provide the 7 strings for the glissando
 - : Not all chords can be played in glissando
 - Some 'extra' strings cannot be raised/lowered to desired pitch
 - Solution is to add 'extra' notes to the chord
 - This will produce a more highly colored sound
 - Or can abandon chord glissando and replace with a scale glissando

For Notated Chord (not glissando)

Lento

D \sharp C \sharp B \flat E \flat F \sharp G \sharp A \sharp B \sharp E \sharp B \flat

Chords spread over sets of 7 strings

Chord 1 D B \flat F B \flat

Pedal Setting 1 D C B \flat E \flat F G A
Lft Rt

Pedals D C B E F G A
Lft Rt

Strings (pedal top notch) C \flat D \flat E \flat F \flat G \flat A \flat B \flat

Chord 3 C E \flat G

Chord 2 D B F G

Pedal Setting 2 D C B E \flat F G A
Lft Rt

Pedals D C B E F G A
Lft Rt

Strings (pedal top notch) C \flat D \flat E \flat F \flat G \flat A \flat B \flat

Chord 5 C F A

Chord 4 C B \flat E G

Pedal Setting 3 D C B \flat E F G A
Lft Rts

Pedals D C B E F G A
Lft Rt

Strings (pedal top notch) C \flat D \flat E \flat F \flat G \flat A \flat B \flat

Chords played over 2 sets of 7 strings with 3rd set on chord 3
Chord 1 C **D** Eb F G A **Bb** C D Eb **F** G A **Bb**

Chord 2 C D Eb **F** G A B C **D** Eb F **G** A **B**

Chord 3 C D **Eb** F G A B **C** D Eb F **G** A B **C**

Chord 4 C D **E** F G A Bb **C** D E F **G** A **Bb**

Chord 5 C D E **F** G A Bb **C** D E **F** G A Bb

| Set of 7 Strings | Set of 7 Strings | →

For Glissando Chords (with extra notes and utilizing enharmonic notes)



F#°7 D C C Eb *F#* *F#* A

Pedal Setting D#/Eb C B#/C Eb F#/Gb Gb A
 | Lft Rt |

Pedals D C B E F G A
 | Lft Rt |

Strings (pedal top notch) Cb Db Eb Fb Gb Ab Bb



C9 D Bb Fb Bb

Pedal Setting D C Bb E Fb/E G A#/Bb
 | Lft Rt |

Pedals D C B E F G A
 | Lft Rt |

Strings (pedal top notch) Cb Db Eb Fb Gb Ab Bb

C. Use

1 Sustained notes

- Normally harp tones are allowed to ring
- Have considerable sustaining power
- Use 'laissez vibrer' or 'l.v.' (let vibrate) for sustain

2 Damped notes

- If inappropriate for sustain player is directed to damp the sound with hand
- For a series of notes to be damped use 'sons étouffés' or 'étouffez' (damped sound) at end of passage to be damped

3 More harmonic than melodic in feeling

- Melodies in general sound thin and ineffective
- Occasionally doubles a slow melodic line for special color
- Arpeggios and chords are most frequent assignment

(c) *Requiem*



4 Because of hand angle the little finger of either hand is not used

- Chords involving more than 4 notes can be played with a roll or arpeggio effect (pronounced)
- Stretch of a 10th is considered a safe practical limit

5 Traditional to roll *all* chords slightly

- The vertical wavy line for rolled chords should only be used when a much more pronounced roll is desired
- A vertical bracket is used to indicate chord with *no* roll



6 Doubled 3^{rds} & 6^{ths} are quite feasible either harmonically or melodically



7 Rapid repeated notes on same string are not very practical

- Sudden return to same string damps out previous note strike
- Solution is to tune (via pedals) two adjacent strings to same pitch and alternate strokes

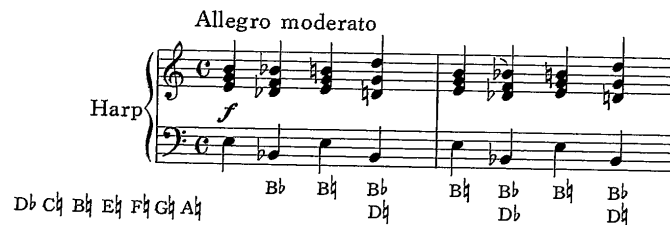


8 For added volume can use single sound played on 2 enharmonically tuned strings

9 Avoid unnecessary pedal changes

- Utilize enharmonic tunings
 - : Will produce incorrect harmonic spelling
 - : Justified for harp writing
- Avoid double pedal change on same side pedals

Double Pedal Change of D & B Pedals



Enharmonic Solution to Double Pedal Change (utilizing enharmonics on different strings)



D. SOUND

1 Registers

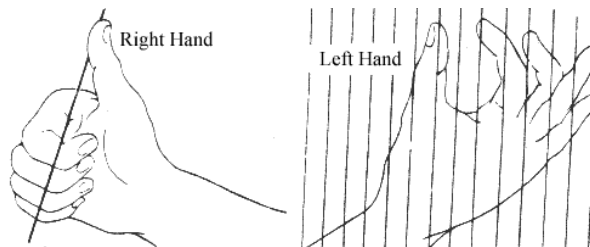
- Bottom notes are dark and sonorous
- Middle is rich and warm
- Upper notes do not have much volume or sustaining power
 - : Dry and percussive in quality
 - : Enables them to come through more clearly than expected
- What ever register is sounding the harp cannot compete with a large mass of sound

2 Slightly more resonant in top notch pedal position (flat position)

- Flat keys should be preferred when a choice is possible
- Can utilize enharmonic keys to favor the upper notch flat pedal position (key of B and Cb)

3 Harmonics can be produced

- Touch string lightly in middle with lower part of left hand and pluck string with left thumb
- Touch string lightly in middle with knuckle of right index finger and plucking with right thumb



- Produces 1st overtone (octave higher than normal string pitch)
- Harmonics involving higher overtones are possible but almost never used
- Harmonics have a crystalline and bell-like quality
 - : Have little volume
 - : Require extremely light background

- Harmonics are useful for single notes and (rarely) short melodic lines
 - : Melodic lines must move slowly enough to allow for the required playing technique
 - : Possible to play 2 harmonics at once with left hand
 - 3 or 4 if within range of a 5th
 - Only one possible with right hand
- Middle register is best for harmonics
- Harmonic notation currently has two different systems in use
 - : Written in actual pitch with small circle above note
 - : Written an octave lower with small circle above note
 - : Need written indication in harp part as to which system is employed

(a) *Fire Bird Suite*

Stravinsky

Andante

Solo

Bsn.

Harp

p

The image shows a musical score for the Fire Bird Suite by Stravinsky. It features two staves: a Bassoon (Bsn.) staff and a Harp staff. The Bsn. staff is in 4/4 time, with a key signature of two flats (Bb and Eb). The tempo is marked 'Andante'. The Bsn. part is marked 'Solo' and 'p' (piano). The Harp staff is also in 4/4 time, with a key signature of two flats. The Harp part is marked 'Andante' and 'p'.

E. EFFECTS

- 1 Finger nails used to strike strings producing a brittle and metallic sound
- 2 Back of finger nails on a glissando which produces a 'falling hail' effect
- 3 Playing close to the sound board
 - Produces a 'special' tone quality
 - Use 'Sons prè de la table' or 'prè de la table' to indicate the effect
- 4 Timpanic sounds striking most sonorous part of sound board with 3rd finger of right hand while left plays normally
- 5 Fluidic sounds sliding the metal tuning key on the string
- 6 Metallic sounds by holding pedal half way between two notches

7 Sliding pedals

- Play note in normal manner
- Then move pedal one notch (up or down) and resulting either higher or lower pitch with use of hand strike



II THE CELESTA

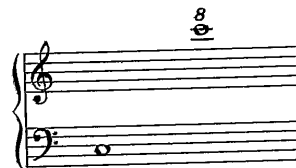


Celesta, It



Celésta, Fr

Celesta, Gr



Sounding an 8ve higher.

Celesta Range

A. CHARACTERISTICS

- 1 Like a small piano in appearance
 - Has a short piano keyboard and damper pedal
 - In place of strings it utilizes steel bars with individual resonators
- 2 Produces a delicate and bell-like tone
- 3 Has little power and requires an extremely light background

B. USE

- 1 Most often utilized to add a 'silvery' edge to a melodic line
- 2 Other times it provides 'shimmer'
- 3 May take a melody or complete harmonic passage solo on rare occasions

(a) *Nutcracker Suite*



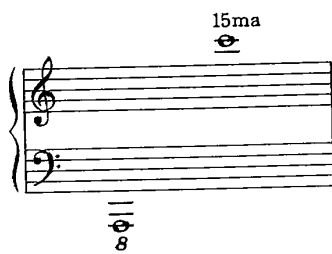
III THE PIANO



Pianoforte, It

Piano, Fr

Klavier, Gr



Piano Range

A. CHARACTERISTICS

- 1 Not strictly speaking an orchestral instrument
 - Occasionally used in orchestra for color or special effect
 - Register
 - : Upper register can add sparkle or bright 'clang'
 - : Bottom register
 - Used for dark, faintly gong-like quality
 - To add percussive force and body to a bass line
 - : Middle register is more neutral in color and less interesting in an orchestral setting
 - Used for harmony parts can produce a small studio allusion
 - Used in small orchestras to replace missing horns, bassoons, and other instruments
- 2 Avoid (as a rule) the 'funny' rich-textured writing of Romantic era concertos
 - Simple and striking will be far more effective
 - Seem to be most successful in orchestral setting in getting away from over-familiar solo piano figures

B. Use

- 1 Called for relatively rarely in orchestral writing (even in contemporary works)
- 2 When included in orchestral setting best used in small 'doses' like other special orchestral colors

(a) *Fire Bird Suite*



16 SCORING FOR FULL ORCHESTRA

I GENERAL CONCEPTS

A. BACKGROUND

- 1 Does not imply using all instruments
- 2 Tutti scoring makes up only a relatively small portion of score
- 3 Utilized instruments should be appropriate to music being orchestrated
 - Choose instruments appropriate to musical ideas (if instrument or section is not needed indicate a rest)
 - Score for musical character of piece
 - : Heavy or light
 - : Color (brilliant, somber, warm, cool, etc.)
 - : Consider range and technical abilities
 - : Style and period of music and composer

B. SCORING TECHNIQUES

- 1 Polyphonic
 - No harmonic masses which can be sounded easily
 - Relative weight of each line must be calculated with 'special' care
- 2 Chordal
 - Succession of chords
 - Voice leading between tones a consideration
- 3 Homophonic
 - Music that consists of a prominent melodic line against a subordinate harmonic background
 - The melody stands out clearly from the background
 - Best achieved by giving melody to one color and background to another

C. POLYPHONIC SCORING

- 1 Background
 - Main objective is to bring out the individual voices clearly
 - Color differences can give the lines clarity *and* independence
 - Not always necessary to use sharply contrasting colors
 - Care to use instruments that can be made to balance properly
 - Composite contrast of sections can be scored against another composite color or with a pure color

2 Doubling

- Octave (or 2 octave) higher for top voice
- Octave lower in bottom voice
- Doublings of inner voices are less successful

: Often involve a crossing of parts
: Will cause a muddled effect

3 Voicing

- Instrument or section beginning a particular voice should follow through to end of phrase or musical thought
- Changes in scoring for fugue after all original voices announce the subject
- Re-entrance of a particular voice can be *doubly* effective if it can be scored in a timbre not recently heard in score for several bars

D. WORKING THE SCORE

1

Fugue II (Book II of *The Well Tempered Clavier*)

Moderato, quasi andante (♩=56)

Bach

Vl. I
p
Vl. II
p
Vla. mf

Vc., mf; also Basses
(sounding an 8ve lower) if desired

Shows indicated instruments in piano score
No tempo or dynamics were given in original
Supplied for scoring purposes

- 3rd & 4th entrance of subject is marked louder than 1st & 2nd entrance to make sure entrance is clear against upper voices
- Pure colors are best at beginning
 - : Mixed tones best reserved for later sections
 - : Possible to give a heavier color (i.e. brass) to later sections
 - : Best to reserve heavier colors for the more emphatic announcements of subject which occur latter in fugue

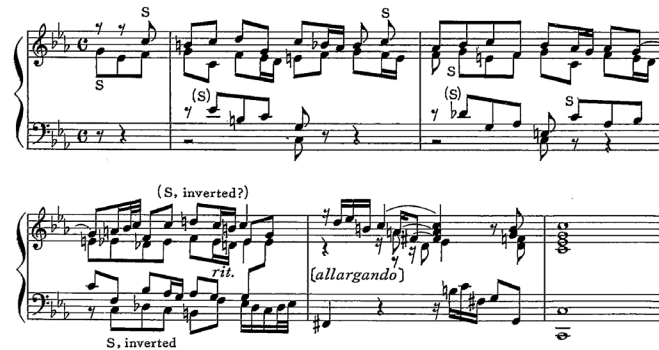
2



A stretto where the subject statement comes in at shorter intervals and overlap
 Subject appears in 3 different versions: Original form, Augmentation
 (note values doubled), Inversion (direction of intervals reversed)

- To make musical content of this passage clear each voice must stand out sharply on its own
- Best achieved utilizing a different color on each voice

3



Last 5 1/2 bars of fugue again, a stretto with each entrance marked with 'S'
 Marcato effect seems appropriate for scored version
 Full orchestra including Brass is utilized

- Voices are equally important and must be *balanced*
 - : Distributed among brass, strings, and woodwinds
 - : Doubled either in unison or at the octave
- Score builds from strings with woodwinds being added one or two at a time
 - : Accentuates each entrance of the subject
 - : Achieves a cumulative effect in leading to the ending tutti
 - : Possible to reverse the orchestration by starting the final stretto with strings and woodwinds and then adding brass at each entry of the subject
 - : Brass should not be included only in fortissimo and heavily scored passages
 - All brass instruments need not play simultaneously
 - Lower dynamic levels can often be maintained between a single brass instrument and a single woodwind or string group

Prelude to *Die Meistersinger*

Wagner

Sehr mässig bewegt

I Gr. Fl. *p* *stacc.*

II *p* *stacc.*

I Hb. *p* *stacc.*

II *p* *stacc.*

I Kl. in B *p ausdrucksvoll*

II *p* *stacc.*

2 Fg. *mf*

4 Hrn. in F *p ausdrucksvoll* *stacc.*

I II in F Tr. *p* *stacc.*

III in C *p*

I II Pos. *p*

III *p*

Btb. *aber sehr markiert*

Trgl. *p*

I VI. *p aber sehr ausdrucksvoll*

II *p scherzando* *stacc.* *immer gleichmässig leicht*

Br. *p scherzando* *stacc.*

Vlc. *p* *aber sehr ausdrucksvoll*

Kb. *aber sehr markiert*

Combines 3 distinct musical ideas (or elements)
 3 voices doubled at octave (2 Flute, 2 Oboe, 1 Clarinet,
 3 horns/1 Trumpet, Violin II, Vla); Unison I (1 Clarinet/Vln I,
 1 Horn/Cello octave lower); Unison II (2 Bassoon/Tuba and
 Bass octave lower)

-
- Wagner's Choice
 - : Greatest differentiation of 3 elements could have been achieved by use of sharply contrasting colors
 - : Chose to use composite tone color utilizing at least one woodwind, one brass, and one string group
 - : In performance the 3 composite elements stand out
 - Because of difference between the *composite* tone colors
 - For musical reasons of articulation, note values, and registers

Third Symphony
(a) Meno mosso (♩ = 76) Copland

Picc.
I
Fl.
II III
Ob.
I II
C. Ang.
I II
Cl. in Bb
Cl. b.
Fag.
I II
Cf. g.
I II
Cor.
III IV
I II
Tr. in Bb
III IV
Trb.
I II
Trb. b.
C. Tb.
Timp.
Cym.
Gr. C.
Tam-tam
VI. I
VI. II
Vla.
Vc.
Cb.

Utilizes abbreviated foreign names

- High dynamic level necessitates each line be included within brass section to maintain balance
- Woodwinds and strings take unison or upper octave doubling of these lines

6

Six Pieces for Orchestra, Op. 6, No. 1

Webern

Langsam $\text{♩} = \text{ca. } 50$

9 (a2) 10 11 12

1. 2. Fl. *p dim.*

1. 2. Ob. *p dim.*

1. 2. Kl. in B *a2*

B. Kl. in B *a2*

1. 2. Fg. *2. nimmt Contrafg.*

1. 2. Hn. in F *Dmpf. ab*

3. 4. *Dmpf. ab*

1. Trp. in B *a3 mit Dmpf.*

2. 3. 4. *p dim.*

1. Gg. *ohne Dmpf.*

2. *mit Dmpf.*

Br. *mit Dmpf.*

Vlc. *mit Dmpf.*

Cb. *mit Dmpf.*

Reverse approach from Ex 5 & 6: each of musical elements is given a separate color Provide analysis for doubling and unisons (conductor's score?)

- No mixing of timbres from different sections (except for use of composite color *within* woodwind section)
- Two sections of Violins differ with one unmuted in a high & intense register the other muted playing bowed tremolos in a much less brilliant register

Variations for Orchestra, Op. 31

Schönberg

Moderato (♩ = 72) 78 79 80 81 Calando

Picc. *ff* *a3* *ff* *a3*

Fl. 1.2.3. *ff* *a2* *ff* *a2*

Ob. 1.2.3. *ff* *a2* *ff* *a2*

E.H. *ff* *a2* *ff* *a2*

Es.Kl. *ff* *a2* *ff* *a2*

Kl. 1.2.3. *ff* *a2* *ff* *a2*

Bs.Kl. *ff* *a3* *ff* *a3*

Fg. 1.2.3. *ff* *a2* *ff* *a2*

K.Fg. *ff* *a2* *ff* *a2*

Hr. 1.2.3. *ff* *a2* *ff* *a2*

O.Dpf. 1.2.3. *ff* *a2* *ff* *a2*

Trp. 1.2.3. *ff* *a2* *ff* *a2*

M.Dpf. *ff* *a2* *ff* *a2*

Pos. 1.2.3. *ff* *a2* *ff* *a2*

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

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

I Gg. *ff* *a2* *ff* *a2*

II Gg. *ff* *a2* *ff* *a2*

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

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

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

(hart)

81 Calando

pizz. arco

(pizz.) arco

attacca

Serial technique scoring

- Vast majority of contrapuntal scoring involves both techniques of utilizing both composite color and pure color
- In contemporary music involving a complex linear fabric separate timbres can be a necessity to keep lines distinct

-
- A favored leaner and more transparent sound
 - : With full orchestra instruments are employed consecutively rather than simultaneously
 - : Mean relatively few instruments are employed at one time
 - Changes in orchestration are likely to occur frequently
 - Instruments are often treated in soloistic fashion
 - Octave doublings are often *avoided*
 - : To avoid giving any note or notes special importance which might lead to tonal implications
 - : Simply to achieve a particular clarity of sound
 - Increased use of 'C' scores with all instruments written in concert pitch
 - : Retains octave transpositions to simplify ledger line use
 - : Players parts are written in transposed form

(b) II. Variation

82 Langsam $\text{♩} = 56$ 83 84 85

Fl. 1 *pp dolce*

Ob. 1 *pp*

Bs. Kl. *pp dolce*

Fg. 1 *pp dolce*

Solo Gg. *m Dpf.*

Solo Vcl. *pp*

(c)

98 Poco calando 99 100 101

Fl. 1 *f*

Ob. 1 *pp dolce*

E. H. *pp*

Es. Kl. *p*

Kl. 1 *p*

Bs. Kl. *p*

Fg. 1 *p*

Hr. 1 *f*

Pos. 1 *f*

Solo Gg. *p cantabile*

m Dpf. *f*

Solo Vcl. *pizz. p arco*

A complex 'web' of 4 to 6 voices
All instruments in actual sounding pitch

- Show a pronounced use of the 'soloistic' approach
- 8b utilizes only pure colors with each voice allotted only one instrument
 - : Effect (even with large orchestra) is that of a chamber group
 - : Even with later unison doublings the texture remains essentially the same

beschleunigend lebhaft $\text{♩} = \text{ca. } 160$ wieder sehr ruhig, doch nicht schleppend $\text{♩} = \text{ca. } 112$

Fl. *molto f*

Ob. *f* *p*

Kl. *p* *mp*

Bkl.

Hrn. *m. Dpf.* *p*

Trp. *mit Dämpfer* *f* *f* *m. Dpf.* *p*

Pos. *m. Dpf. b6* *p*

Tu. *Dämpfer auf* *f* *m. Dpf. b6* *p*

Cel. *f*

Hrf.

1. *beschleunigend* *lebhaft* $\text{♩} = \text{ca. } 160$ *arco* *pizz.* *f* *wieder sehr ruhig, doch nicht schleppend* $\text{♩} = \text{ca. } 112$

Gg. *G. Saite* *p* *f* *pizz.* *get. zu 3* *sf*

2. *p* *f* *pizz.* *get. zu 3* *mp*

Br. *p* *f* *pizz.* *get. zu 3* *p*

Vlc. *p* *f* *pizz.* *get. zu 3* *p*

Kb. *p* *f* *pizz.* *get. zu 3* *p*

Individual passages are so brief (sometime a single note) with so little simultaneous instrument use that total effect is extremely delicate and transparent
All instruments in actual sounding pitch

- Fragmentation (Webern's innovation) has been a major feature of 20th Century music
 - : Brought the possibility in orchestration of melodic lines formerly taken by a single instrument to now sometimes being *divided* among several
 - : In serial music each note row is given to a separate instrument
- Octave displacement
 - : A frequent device in serial music
 - : Contributes to fragmented scoring when applied in an orchestral setting
 - : Extremely wide leaps feasible on piano present problems for individual orchestral instruments
 - : Results in necessity of allotting melodic idea to several instruments
 - : 'Pointillistic' is sometimes applied to this type of orchestration
 - From French school of painting
 - Utilizes small dots of unmixed color to achieve effect
 - Slight confusion as was also associated with Impressionistic Period scores of small touches of tonal color but now commonly associated with Fragmentation

In a sense a return to the Medieval polyphonic technique called 'hocketing' where rests were inserted into vocal parts (even in middle of words) to intensify expressive effects

10

Webern's Orchestration of Ricercar
from Bach's *Musical Offering*

Tempo giusto

poco accel.

sost.

pp Trb., con sord.

p Horn, con sord.

p Tpt., con sord.

p Horn and Harp

pocch. accel.

poco allarg. al giusto tempo

Fl.

pp Trb.

p Horn

pp Tpt. and Harp

Vla., con sord. etc.

Pointillistic technique may be applied to music of non-serial character
Has had reaction from 'delight' to 'outrage' with the esthetic widely debated

- : Klangfarbendelodie (tone color melody)
 - Schönberg's concept
 - Melody made up solely of changing colors
 - Anticipated and encouraged this use of individual melodic colors in the pointillistic type of orchestration

Feierlich bewegt ♩ = bis 80

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www.thereelscore.com

1
Gr. Fl.

2

1
Ob.

2

1
Klar.

2

1
Fag.

2

1
Hr.

2

1
Trp.

2

1
Pos.

3

Tb.

Pk.

1
Viol.

2

Br.

Vcl.

Kb.

Four orchestral settings involving same theme but orchestrated differently each time and with different counterpoints
Consider: distribution of instruments, weight of instruments in relation to other lines, weight of other lines to each other

(b)

(c)

- Example 'a' includes all six measures of one variation (seventh appearance of the theme plus two measures of next
- Example 'b' shows first two measures of first following variation
- Example 'c' shows first two measures of second following variation

II CHORDAL AND HOMOPHONIC SCORING

A. CHORDAL

1 General Principles still apply

- Four ways of Chordal combinations
 - : Juxtaposition
 - : Interlocking
 - : Enclosure
 - : Overlapping
- Chords rarely arranged with different color on each part
- Current practice is to write upper woodwinds in close spacing
- Better to give stationary one voice and moving voice another
- Best to have a clear octave at the bottom
- Music originally in open voicing
 - : Fill in gaps between upper parts with octave doubling
 - : Open spacing is frequent for strings and possibility for other instruments
 - : Close spacing more effective in the orchestra
 - : Sometimes necessary to fill in gap between voices
- Doubled top voice an octave higher of closely spaced chord produces a good effect
- In general with a primary triad in 1st inversion do not double the bass note in upper parts
- Bass doubling for 7th chords in any inversion should be avoided
- When active tone in a 4 note chord (7th) is taken by a particular instrument its resolution must occur in the same instrument
- A succession of chords is involved with voice leading between chord forms a consideration

2 Technique Examples

Rhapsody, Op.119, No. 4

Allegro risoluto

Brahms

Piano



Suggests a full orchestral tutti, fairly brilliant in coloring, need to fill in gap between Left & Right hand

- 1st sketch out orchestration for at least 1st chord or two

- Use of timpani either on 1st beat or whole rhythmic pattern

(a)

1st Beat

(b)

Rhythmic Pattern

- Then after arrangements of instruments need to work with voice leading
 - : Want to produce a good melodic line for each individual instrument
 - : Will be different arrangements of the instruments as musical structure changes

Death and Transfiguration

Strauss

Moderato tranquillo

I II
 Fl. *pp*
 III
 2
 Ob. *pp*
 Engh. *pp*
 2
 Kl. in B *pp*
 B. Kl. *pp*
 2
 Fag. *pp*
 K. Fag. *pp*
 I II
 Hrn. in F *pp*
 III IV
 I II in C *pp*
 Trp. *pp*
 III in F *pp*
 I II *pp*
 Pos. *pp*
 III *pp*
 Tb. *pp*
 P. K. *pp*
 Hfe. *p*
 I *triquillo*
 VI. *pp*
 II *pp*
 Br. *pp*
 VIc. *div. pp*
 Kb. *pp*

- Good example of primarily chordal music scored for full orchestra
- Illustrates first that tutti scoring is not only for loud passages (use of *pp* dynamic level)

Promenade (from Pictures from an Exhibition)

Mussorgsky - Ravel

Allegro giusto

3 Fl.

3 Ob.

2 Cl. in Bb

Cl. b.

2 Fg.

Cfg.

I II Cor. in F

III IV

3 Tr. in C

I II Trb

III Tuba

I VI.

II

Vla.

Vc.

Cb.

Pfte. (Original Version)

Chordal scoring with the original piano score for comparison

B. HOMOPHONIC SCORING

1 General Principles (Chap 12 in Kennan Chap 13 in Notes)

- Doubling
 - : Woodwinds
 - Three octave doubling possible with piccolo on top and bass clarinet on bottom
 - Four octave doubling occasionally seen
 - Rarely used doubling produce intriguing colors but demand intimate knowledge of orchestra
 - : Woodwind & strings
 - Unison doubling between woodwinds and strings the strings will overshadow the woodwinds
 - Certain octave doubling of woodwind playing one octave and strings another are effective allowing woodwinds to be heard more clearly than unison doubling
 - Woodwinds combination in octaves plus strings is a powerful and useful doubling
- Use of contrasting sections
- If large orchestra is involved the principles are not altered
 - : Additional woodwinds and full brass section will provide greater potential volume and increased range in woodwind and brass sections
 - : New colors which may be used in a solo capacity

2 Technique Examples

Seventh Symphony

Beethoven

Vivace

2 Fl. *ff*

2 Ob. *ff*

2 Cl. in A *ff*

2 Fg. *ff*

2 Cor. in A *ff*

2 Tr. in D *ff*

Timp. *ff*

I Vln. *sf sempre ff*

II Vln. *f*

Vla. *f*

Vlc. *ff*

Cb. *ff*

- Use of full orchestra in Beethoven's time which excluded trombones
- Melody in Vln I and Hrn I in octave
- Harmony in 2nd Hrn with same rhythm as bassoons later joining to double both voices in lower octave
- Upper woodwinds in sustained harmony parts
- Vln II and Viola take an idiomatic accompaniment figure
- Trumpets, timpani, and lower strings reiterate 'A' pedal point

Symphony in D minor

Allegro non troppo

Franck

The musical score is arranged in three systems. The first system includes 2 Flutes (Fl.), 2 Oboes (Ob.), Cor Anglais (Cor. ingl.), 2 Clarinets in B (Clar. in B), Bass Clarinet (B. Clar. (B)), and 2 Fagots (Fg.). The second system includes I and II Cor. in F (Cor. in F), 2 Trumpets in F (Tr. in F), 2 Cor. à pist. in A (Cor. à pist. in A), I and II Trombones (Trb.), III Tuba, and Timpani (Timp.). The third system includes Violins I and II (Vl.), Viola (Vla.), Violoncello (Vcl.), and Contrabass (Ctb.). The score features a key signature of two sharps (D minor) and a common time signature. Dynamics include *ff* (fortissimo) and *div.* (divisi). The woodwinds and strings play a melodic line in octaves, while the brass provides a harmonic background and moving bass.

- Chief melody line in octaves
- Given to doubling of woodwinds, brass, and strings
- Harmonic background and moving bass also distributed between woodwinds, brass, and strings

Symphony in E minor (*New World*)

(a) Allegro molto

(b) Dvorák

- 19a
 - : Melody is in bottom voice with harmonies above
 - Uncommon in piano music
 - Frequent in orchestral setting
 - : Octave doubling made up of brass, strings, and woodwinds
 - Used for melody
 - Brass predominates

- 19b
 - : Two melodic lines are played by trumpets with trombones in last two bars
 - In middle voices
 - Harmonic parts above and below
 - : Because of power of trumpets and trombones 2 of each will cut through rest of orchestra

Fifth Symphony

Tchaikovsky

Moderato assai molto maestoso

3 Fl. *a3* *ff*

2 Ob. *a2* *ff*

2 Cl. in A *a2* *ff*

2 Fg. *a2* *ff*

I II Cor. in F *f*

III IV *f*

2 Tr. in A *f*

I II Trb. *f*

III Tuba *f*

Timp. *f*

I Vl. *largamente* *ff*

II *div. largamente* *ff*

Vla. *div. largamente* *ff*

Vc. *largamente* *ff*

Cb. *ff*

-
- Most important melody is given to strings
 - Counter melody to woodwinds
 - 2nd counter melody to upper brass
 - 'E' pedal point shared by lower brass and double bass
 - With the exception of the pedal point illustrates the general principle allotting a separate color to each voice
 - : Achieves maximum distinctness
 - : Maintains independence of line
 - Counter melody in trumpets and horns
 - : Marked dynamic level softer than woodwinds and strings
 - : Ensures that greater dynamic power of brass will not make line *too* prominent
 - Hovers between polyphonic and homophonic
 - : Dealing with separate lines
 - : Counter melody in woodwinds and brass seem to have character more of ornamental harmony parts

III SCORING TYPE CONSIDERATIONS

A. CONSIDERATIONS

- 1 Music does not always fall exclusively into a category of either chordal, homophonic, or polyphonic
 - These are broad approaches to scoring
 - Hybrid types occur constantly
- 2 Counter melodies require care to weight the principle idea strongly enough
 - With dynamics or numbers
 - Weight must be sufficient enough so as not be eclipsed by secondary counterpoints

B. TECHNIQUE EXAMPLES

Les Préludes

Liszt

Allegro moderato

3 Fl.
2 Ob.
2 Cl. in C
2 Fg.
I II Cor. in C
III IV
2 Tr. in C
3 Trb.
Tuba
Timp.
Arpa
I Vl.
II
Vla.
Vc.
Cb.

- Woodwinds and horns take melody and parallel harmonization
- Strings play counter melody
- Subordinate parts in the brass

Iberia. II. Les parfums de la nuit

Debussy

Lent et rêveur (♩ = 92) *Sans rigueur*

Gdes Fl. *p* *più p* *pp*

Ptes Fl. *p* *più p* *pp*

Hrb. *p* *più p* *pp*

Cor. A. *p* *più p* *pp*

Cl. en LA *p* *più p* *pp*

Bons *p* *più p* *pp*

Cors. en FA *p* *più p* *pp*

Tromp. en UT *pp* *pp*

Xyl. *pp* *pp*

T. de B. *pp* *pp*

Célesta *pp* *pp*

2 Harpes *pp*

1^{re} Vons Div. (sourdines) *pp* *pp* *pp* *pp* *Sans rigueur*

2^{de} Vons (sourdines) *pp* *pp* *pp* *pp*

Altos (sourdines) *pp* *pp* *pp* *pp* *1.2.3. expressif et pénétrant*

6 Velles Div. (sourdines) *pp* *pp* *pp* *pp* *4.5.6. ten. arco pp*

(pizz) 4.5.6. p *ten. arco pp* *Les autres pp expressif et pénétrant*

sur la touche pp expressif et pénétrant

Tutti pp expressif

-
- Impressionistic scoring for fairly large orchestra
 - Impressionistic approach
 - : Frequent division of string groups into numerous parts
 - : 'Velvety' richness of the lower strings (in last two measures)
 - : Unusual doubling (horn with piccolos 2 octaves higher)
 - : 'Delicate' touches in Xylophone, Celesta, Harp, and Tambourine
 - : Avoidance of heavy masses of sound and dynamic 'bombast'
 - : Constant concern for subtleties of dynamic nuance

In the
Impressionistic
approach color has a
chiefly *decorative*
function

In pointillistic school
(Webern) color has a
constructional
function

17 SPECIAL DEVICES

I EMPHASIS ON INDIVIDUAL COLORS

A. TONE COLOR MELODY (KLANGFARBENMELODIE)

- 1 Part of Pointillistic Scoring
 - Color is a *constructional* function
 - Opposed to the *decorative* function of color in Impressionistic scoring
- 2 Basis for Schönberg's Five Pieces for Orchestra, Op. 16 (Summer Morning by a Lake [Colors])

Moderato ♩ = 64

Schönberg

2 Fl.,
Clar.
E.H.,
muted
Tpt.,
Bn. I
Bsn. II,
1 solo
Vla.
Hrn.,
1 solo
D.B.

ppp

- Harmonic & melodic activity have been reduced to nearly zero
- Only 'motion' is subtle shifting from one orchestral color to another

B. HISTORY

- 1 A major factor in music since Webern's day
 - Emphasis on color as an actual compositional element rather than decorative
 - Often applied to melodic lines assigning of different instrumental timbre to each *note*
- 2 Certain inherent dangers
 - Letting color substitute for a strong and interesting line
 - Can become monotonous with the constantly changing orchestral color

II THE CREATION OF PARTICULAR TONE QUALITIES THROUGH OVERTONE REINFORCEMENT

A. TECHNIQUE

- 1 Instruments softly play certain upper partials of a fundamental to arrive at tone qualities not found in *any one* of the orchestral instruments
- 2 Ravel's Bolero

Bolero Ravel

The musical score for Bolero by Maurice Ravel is shown. It features five staves: Flute I (Fl.), Flute II (Fl.), Horn in F (Cor. (F)), and Celesta. The Horn part is marked 'Solo' and 'mf'. The Flutes and Celesta are marked 'pp'. The Celesta part is marked 'p'. The score shows the first two measures of the piece, where the horn plays a melody of eighth notes, and the flutes and celesta provide harmonic support with specific upper partials.

- Horn plays *mf* while 2 piccolos *softly* play partial 3 & 5 and a celesta plays 2 & 4
- Resulting *sound* is striking and exotically colored

B. USE

- 1 Most often employed in making orchestral transcriptions of Baroque Organ Music
 - This period employed organ stops which 'strongly' reinforced some or all upper partials through the 6th
 - Sounding two octaves and a 5th higher than the fundamental
 - With orchestra that sound registration can be simulated by placing high woodwinds or occasionally strings on the upper partials
 - : Not all partials need to be included
 - : Doubling line softly a 12th higher or 2 octaves plus a 5th higher will suggest this Baroque effect
 - : Doubling combined with one or two octaves above the basic pitch is moderately effective

III UNUSUAL SPACING

A. TECHNIQUE

- 1 Many contemporary scores achieve highly interesting effects by *departing* from traditional patterns

Agon, (Gailliarde)

Agon, (Gailliarde) Stravinsky

♩ = 108

I II
Flauti
III

Mandolino

Arpa

Viola Sola

Violoncelli
I II III Soli

I
Contrabassi
Soli
II

pp *mf* *sim.* *arco* *poco sfz* *etc. sim.* *harm.-real pitch-suoni reali* *etc. sim.* *sf* *sf* *sf*

- Triad placed at the very bottom where intervals would normally be wider
- Middle register contains numerous gaps rather than usual close spacing
- Special colors produced by harmonies in flutes, harp, and solo double basses, plus the mandolin creates total effect that is 'fresh' and highly distinctive
 - : Little more than a C major triad is involved harmonically
 - : Exceptional spacing and scoring would be decidedly out of place in most music of earlier periods

B. GENERAL PRINCIPLE

- 1 Scoring with wide gaps in middle register will likely sound unsatisfactory
- 2 This arrangement is employed for a particular effect

Ninth Symphony

Mahler

Plötzlich wieder langsam (*wie zu Anfang*) und etwas zögernd

K. Fag.

1 Vl.

Vlc.

Kb.

pp

pp ohne Empfindung

pp

- : Two voices (one doubled at lower octave) are separated by a 'vast' distance
- : Here the passage is intensely effective and dramatic

IV EMPHASIS ON TEXTURE

A. USE

- 1 Texture (like color) has become an important element considered by many composers
 - Planned carefully and utilized for its *own* sake
 - Not a new idea

The Rite of Spring

Stravinsky

$\text{♩} = 66$

1
Fl. Picc.

2

1
Fl. gr.

2

Fl. in Sol.

1
Oboi

2
3

Cor. ingl.

Cl. picc.
in Re

Cl. in La1

2
Cl. in Sib

3

Cl. bas.
in Sib

1

2
Fag.

3

1
C. Fag.

2

3
Cor. in Fa

4

Tr. picc.
in Re

VI.
Solo

Vle. div.

2 Vc.
Soli

1.
2.

6 Cb.
Soli

- 2 Certain sections suggest that Stravinsky's purpose was to build up a complex fabric of sound

B. TECHNIQUE

- 1 Done by superimposing many instruments playing different parts
- 2 Here the listener tends to hear the overall texture rather than individual parts
 - Often involved in music of a much thinner nature where individual lines come through clearly with this thinner texture
 - Also involved with music in which the thematic content is more important

V SPECIAL DYNAMIC ARRANGEMENTS

A. TECHNIQUE

- 1 Sneak-in
 - Instrument is introduced so softly listener is not aware of entrance
 - : Then raises dynamic level to that of other instruments
 - : Effective in building an orchestral crescendo with instruments entering one or two at a time till all are playing
 - Reverse of the process useful in decrescendo
- 2 Contrapuntal Dynamics
 - Dynamic markings that operate independently for various parts (includes crescendo & decrescendo)
 - Direct opposite of the 'block dynamics' of the Classical period
 - Romantic Era made considerable use of this (Wagner, Berlioz, Rimsky-Korsakoff, and Strauss)
 - Works of Mahler was first to carry effect to great lengths

Fourth Symphony

Mahler

Plötzlich frisch bewegt
Vivace subito

Fl. 1.2. a2

Picc. a2

Ob. *mf*

Cor. ingl. *mf*

Cl. (B) 1. *mf* 2. *mf* Camp. in aria! Schalltr. auf!

Fg. 2.3. *ff*

Cor. 1.3. a2 *mf* gest. chiuso immer gest. sempre chiuso 2.4. a2 *mf* gest. chiuso con sord.

Tr. (B) *mf*

Trgl. *mf*

Sonagli *f*

Ptti. mit Schwammschlägel *pp* con bacchetta di spugna

I *Plötzlich frisch bewegt* senza sord. *f*

VI. senza sord. *f*

II senza sord. *f*

Vla. senza sord. *f* non div. *ff* battuto coll' arco

Vlc. senza sord. *f* non div. *ff* arco

- : Indication for 6 different dynamic levels
- : Demonstrates Mahler's 'intense' concern for the most minute dynamic subtleties
- : Stems (in some cases) from a desire to bring out a particular voice or tone color
- : In others a need to compensate for inherent differences in weight between instruments
 - Brass will be marked lower
 - Harp a degree louder

- Ultimate in independent dynamics occurs in certain serial music especially the 'Totally Organized'
 - : Here dynamic pattern is one of the pre-determined elements
 - : Every note has a separate indication
 - : Abrupt changes between soft & loud are a result

Kontra-punkte, Nr. 1

Stockhausen

- Distant Effect (interna or diatra ;a scena, It; dans la coulisse or derrière la scène, Fr; auf der Bühne or in der Ferne or auf dem Theater, Gr.)
 - : Instrument is playing off-stage
 - : Most often applied to solo trumpet but also called for in woodwind parts
 - : Beethoven, Leonore Overture, No. 3; Mahler, First Symphony; Strauss, Ein Heldenleben; Verdi, Requiem; Berlioz, Fantastic Symphony

- Drop Outs

- : Instrument or group of instruments playing forte simply drop out with another group or instrument enters piano on last note
- : Stravinsky was especially fond of this device

Petrouchka

(a) $\text{♩} = 100$
con 8va
W. W., Tpt. Piano
1 Muted Tpt.
(All notes are actual pitches)

(b) $\text{♩} = 50$ Stravinsky
Clars.
2 solo Vls.

VI OTHER DEVICES

A. DIVISION OF A MUSICAL IDEA

- 1 Musical idea is sometimes divided between two instruments of the same kind
- 2 Done to ease technical problems
 - Fast passage, awkward leaps, or fast tonguing

Schelomo

(a) Animato ($\text{♩} = 108 - 112$) Bloch
Fl. I, II
f

(b)
Fl. I
ff
Fl. II
ff

- Also lengthy wood parts with too few 'breath' rests

(c) $\text{♩} = 58$
Bsn. I
pp
Bsn. II
pp

- Insures that melodic line will not be broken for even the quietest breath

B. USE OF SMALL INSTRUMENTAL GROUPS

- 1 Involves instruments of different sections of the orchestra
 - Often with the inclusion of harp, piano, and vibraphone
 - Belongs to 'chamber' category in terms of size
- 2 With inclusion of many regular orchestral instruments (normally no more than one of each) sometimes suggests an orchestra in miniature i.e. Stockhausen's *Kontra-punkte* Nr. 1 for 9 instruments

Kontra-punkte, Nr. 1

Stockhausen

The musical score for *Kontra-punkte* Nr. 1 by Stockhausen is presented for 9 instruments. The score is divided into two systems. The first system includes Flute (Fl.), Clarinet (Klar.), Bass Clarinet (Bklar.), Bassoon (Fag.), Bassoon/Double Bass (Pos.), Piano (Klav.), Harp (Hfe.), Violin (Viol.), and Viola (Vlc.). The second system includes Flute (Fl.), Clarinet (Klar.), Bass Clarinet (Bklar.), Bassoon (Fag.), Bassoon/Double Bass (Pos.), Piano (Klav.), Harp (Hfe.), Violin (Viol.), and Viola (Vlc.). The score features various musical notations, including dynamics (pp, p, mf, f), articulation (accents, staccato), and performance instructions (e.g., '8' for piano, '5' for bassoon). The tempo is marked as 120 for the first system and 152 for the second system. The key signature is one flat (B-flat).

C. DIVISION OF ORCHESTRA INTO GROUPS

- 1 Divides the orchestra into two or more parts
 - Dates from the earliest days of the orchestra
 - Involves the same or different instrumentation
 - : These arrangements suggest antiphonal effects and broad contrasts of weight and color
 - : In contemporary usage
 - Lend themselves to stimulating clashes between the groups
 - Clashes either notated in normal notation or with aleatoric music to chance

2 Examples

- Gabrieli, Sonata Pian' e Forte with divided choir technique of the Venetian Church Music
- Mozart, Notturmo done for 4 orchestras
- Vaughn Williams, Fantasia In A Theme of Tallis
- Bartok, Music For String Instruments. Percussion, and Celesta with a double string orchestra
- Stockhausen, Gruppen with 3 orchestras
- Xenakis, Strategy with two orchestras each with own conductor engaging in competition for producing the more interesting results under same set of musical condition with results decided by judges

D. THE USE OF EXTREME REGISTERS

- 1 20th Century composers tend to make considerable use of extreme instrument registers
- 2 These extreme registers were avoided in earlier periods due to difficulties with intonation, sound quality, or technique
- 3 Considerations
 - Does not negate the validity of normal tessitura for an instrument
 - Technique is not always successful

E. CUT OUT SCORES

Improvisation sur Mallarmé

Boulez

Lent, flexible (♩ = 46-48)
les petites notes avant le temps

Harpe
 Do♯ Si♯ La♯

Cloches
id.

Vibr.
Vibrato lent

Piano
molto dim.
relever très lentement la Péd.
sans Pédale

Cel.

Cym. susp.
 3
 2
len . . . ti (cède, mais très légèrement)
p laissez vibrer (laissez vibrer)

Mar.
 4
p *mf* *dim. molto* *pp*

Voix
pp *f*
 Tel le

- 1 Here an instrument is given a staff *only when playing*
 - Does not use rests
 - Space is left blank rather than notate the *measure/measures* of rest
- 2 Mixed comments on the benefits
 - Reduces needless clutter on score and concentrates on points of actual playing
 - Not enough benefit gained to justify extra work in setting up the score

F. NON-TRADITIONAL METHODS OF PRODUCING SOUND ON INSTRUMENTS

- 1 A contemporary technique calling for sounds produced by special and unorthodox means
- 2 Woodwinds
 - Producing sound by clicking of keys
 - : In process of playing musical note
 - : As a separate effect
 - Chords on individual woodwind achieved through special fingerings allowing upper partials to sound as upper notes
 - Crow into mouthpiece or 'kissing' sound in case of flute
- 3 Brass
 - Clicking effect with valves
 - Blowing air through instrument
 - Talking or shouting through instrument
 - Striking mouthpiece with hand
 - Blowing into mouthpiece alone ('X' sometimes used to indicate approximate pitches)
 - Half-valving on the trumpet producing a choked quality sound (exact pitch is difficult to obtain)

Some composers are indicating particular percussion instruments with small symbols of particular percussion in the score (with legend of symbols listed at beginning) – not in general use
- 4 Percussion
 - Playing softly on edge of an inverted cymbal on head of timpani
 - Playing trumpet or trombone with bell close to the head of timpani with drum head sounding a sympathetic vibration
 - Playing piano with mallets directly on the string
- 5 Strings
 - Bowing right behind the bridge
 - Produces a dry, thin, and somewhat eerie sound
 - : Pitch indicated with an 'X' placed on open string
 - : Values indicated with stem and flags

G. TONE CLUSTER

- 1 Properly a musical rather than an orchestral device
- 2 Is a frequent technique of certain contemporary composers (Pendericki)

-
- 3 Usually done with the string groups divided into many parts
- Notes are bunched closely together (usually minor 2^{nds})
 - Result is not as dissonant as might be expected (especially with use of higher registers and softer dynamic levels)
 - Occasionally a cluster is presented as a glissando

18 INFREQUENTLY USED INSTRUMENTS

I WOODWINDS

A. SAXOPHONE



Straight Soprano



Curved Soprano



Alto



Tenor



Bari



Bass

Italian

French

German

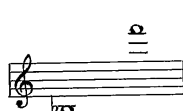
Sassofono
Sassofoni

Saxophone
Sasophones

Saxophon
Saxophone



	Written	Actual Sounds	Best Range (Written)
Bb Soprano			
Eb Alto			
Bb Tenor			
Eb Baritone			
Bb Bass			



Bb Soprano, sounding a major 2nd lower.
 Eb Alto,¹ sounding a major 6th lower.
 Bb Tenor, sounding a major 9th lower.
 Eb Baritone,² sounding an 8ve and a major 6th lower.
 Bb Bass, sounding 2 8ves and a major 2nd lower.

Saxophone Ranges

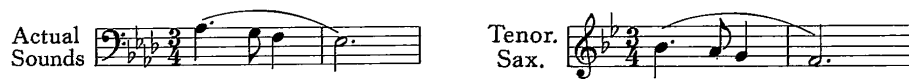
1 General Concepts

- All saxophones have the same basic written range
 - : Notated in Treble Clef
 - : Transpositions are different



Sounding C on each Sax

Need to watch for correct octave for tenor, baritone, and bass



Tenor Sax Transposition Example

- Actual Ranges



Sounding Range of Saxophones

- This system allows the player to use same fingering on any saxophone

2 Use

- History
 - : Sopranino and contrabass saxophone are generally not in current use
 - : C-Melody saxophone while in 'vogue' at one time is all but extinct
 - : Bass & Soprano saxophones are little used
 - Soprano is still used in dance and jazz settings
 - Two types of soprano are used, curved and straight
 - : Alto, tenor, and baritone saxophone are in constant use in commercial arrangements
- Symphonic Orchestral Setting
 - : Saxophone is employed rarely
 - Ravel, Bolero and orchestration of Mussorgsky's Pictures at an exhibition; Britten, Sinfonia da Requiem
 - School orchestra often use saxophones as substitutes for horns, bassoons, or other missing instruments

3 Characteristics

- Entire compass of the saxophone is usable
 - : Bottom 2 or 3 semitones on solo soprano, alto, and tenor are inferior and best avoided
 - : Top register on tenor, bari, and bass is thinner and less characteristic
- Instrument is remarkably agile
 - : Every type of figure is practical
 - : Not well suited for playing rapid repeating notes
 - : Bass saxophone is not quite as nimble in bottom 5th of register because of size

B. FLUTE IN G



Piccolo



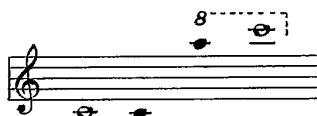
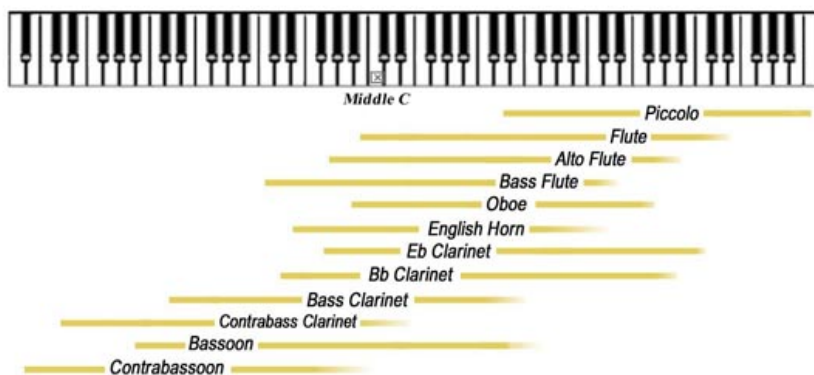
Concert 'C' Flute



Alto Flute



Bass Flute



Sounding a perfect 4th lower.

Alto Flute in G Range

1 History

- Know both as Alto Flute and Bass Flute the Alto designation is the logical choice

The alto flute was first constructed in England in 1891 by Rudall Carte & Co in London. At the time, the alto was the lowest member of the flute family, and was sold under the name of 'Bass Flute in G'. The later invention of a still lower member of the flute family, pitched in C to sound one octave below the concert flute, caused considerable confusion amongst players. In modern times, composers have adopted the terms 'Alto Flute in G' and 'Bass Flute in C'. However older works using the alto flute sometimes refer to the instrument as the Bass Flute in G. This may be seen in various orchestral scores, including the Planets Suite by Gustav Holst.

- Same written range as concert flute in C
 - : Sounds a 4th lower
 - : Extends range down to 'G' below middle 'C'

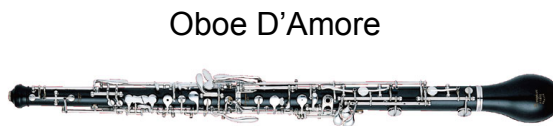
2 Characteristics

- Tone is rich and 'velvety'
- Best in lower and middle parts of range
- High part of range is rendered more effectively by Concert Flute

3 Examples

- Ravel, Daphnis and Chloe Suite No. 2
- Stravinsky, Rite of Spring

C. THE OBOE D'AMORE



Oboe, Corno Inglés y Oboe d'amore.

Oboe d'Amore, It

Hautbois d'Amour, Fr



Sounding a minor 3rd lower.

Oboe d'Amore Range

Written in actual pitch in Bach's time but transposing in modern scores

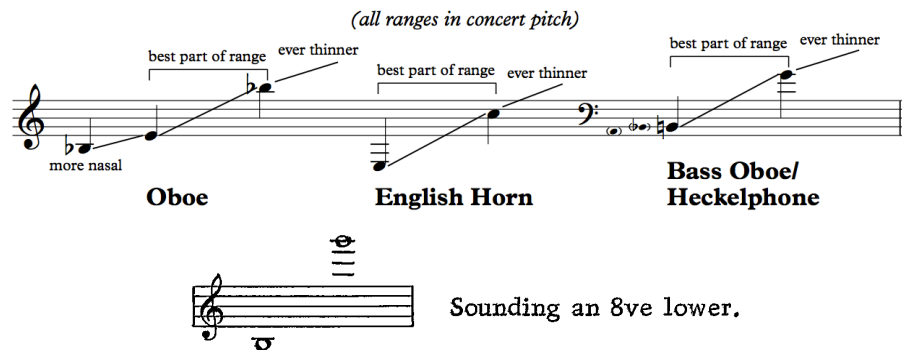
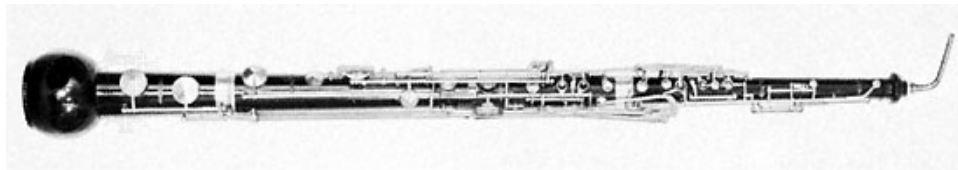
1 History

- Used in Bach's day and revived by Strauss in his Sinfonia Domestica
- An extreme rarity today
- Used in extended part in Ravel's Bolero

2 Characteristics

- Like an oboe in fingering
- Tone is sweeter and less biting
- Midway in size between oboe and English horn
- Sometimes described as a mezzo-soprano oboe

D. THE HECKELPHONE



Heckelphone Range

1 History

- Invented by Heckel in 1904
- An oboe pitched an octave lower than normal oboe

2 Characteristics

- Longer than an English Horn with a large distension at the bell
- Tone quality is reedy and full particularly in the lower register
- Used by Delius and Strauss (Salome) but use is rare only now finding some use in commercial recording

E. THE E FLAT CLARINET



Sounding a minor 3rd higher.

Eb Clarinet Range

1 History

- Small clarinet favored by military bands but little used with orchestra
- Occasional use in orchestra has been exploited
 - : Berlioz, Fantastic Symphony (Dream of a Witches' Sabbath)
 - : Strauss, Ein Heldenleben
 - : Ravel, Daphnis and Chloe Suite No. 2

2 Characteristics

- Tone lacks the mellow warmth of the Bb Clarinet and is rather hard and inelastic
- Because upward compass in actual sound, it can take passages too high for clarinet in Bb or A
- Higher range requires a first range instrument and a first class player as apt to be out of tune and unpleasantly shrill

Clarinet in D was used by Strauss and has the same range as the Eb Clarinet sounding a Maj 2nd higher than written. It is all but unknown in the U.S.A

F. THE BASSET-HORN



Corno di Bassetto, It Cor de Basset, Fr Bassethorn, Gr



Sounding a perfect 5th lower.

Basset-Horn Range

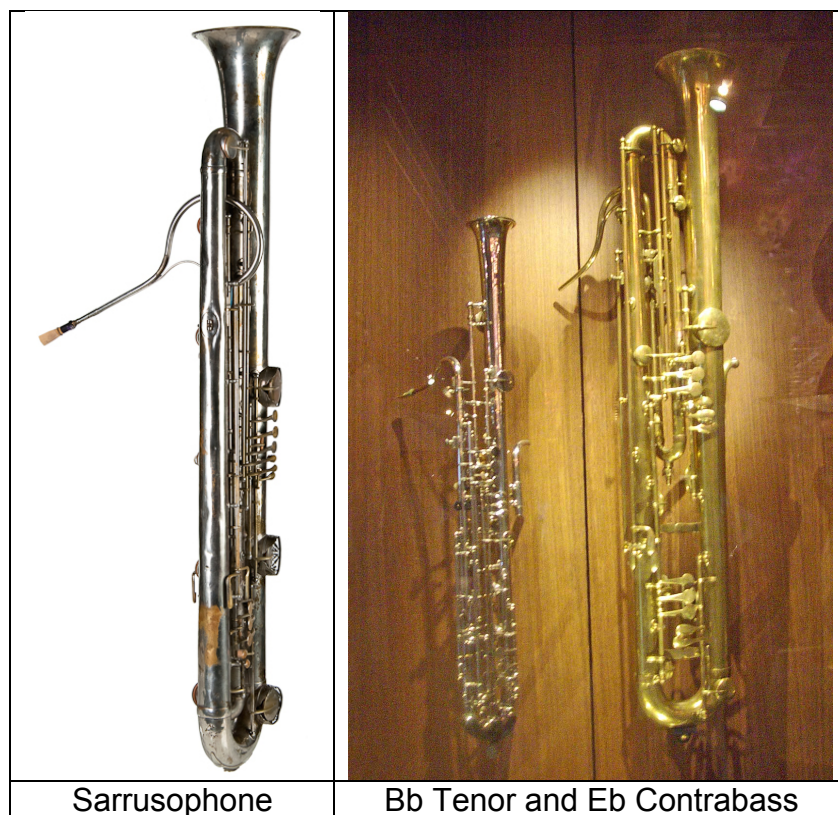
1 History

- Not a horn but derives name from the man (Horn) who introduced it and was translated 'literally' by the Italians
- Was a forerunner of the Eb Alto clarinet

2 Examples

- Beethoven, Prometheus
- Mozart, Requiem
- Strauss, Electra

G. THE SARROUSOPHONE



Sounding an 8ve lower.

Sarrusophone Range

1 History

- Invented by French Bandmaster Sarrus
- A double reed instrument similar to the bassoon but constructed of metal

2 Characteristics

- Originally in 6 sizes pitched in Bb & Eb
- The largest was used in orchestra sometimes substituting for contra-bassoon
 - : Contrabass sarrusophone in C was introduced to read parts without transposition
 - : Used in French orchestra's and appears on rarely in Americans
 - : Used in Ravel's Rapsodie Espagnole

II BRASS

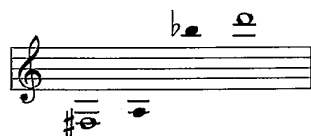
A. THE CORNET



Cornetto, It
or Cornetta

Cornet à pistons, Fr
or piston

Kornett, Ger



Sounding a major 2nd lower.

Cornet Range

- 1 Conical bore producing a slightly mellower and less invasive sound than the trumpet
- 2 Seen principally in French scores of late 19th century and early 20th century
- 3 Appears in Stravinsky's Petrouchka

B. TRUMPET IN D OR E FLAT



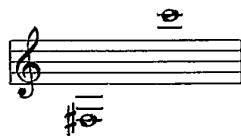
Trumpet in D & Eb



Slide



Bb – C – D/Eb – Eb – A/Bb



In D, sounding a major 2nd higher.
In Eb, sounding a minor 3rd higher.

Eb / Db Trumpet Range

- 1 Smaller than Bb or C trumpets with the D trumpet converted to Eb by means of a slide
 - Chief virtue is ability to play parts uncomfortably high for larger trumpets
 - Lower register is rarely used

2 D Trumpet Score Parts

- Stravinsky, Rite of Spring
- Ravel, Bolero
- Replacement for natural trumpet in D during Baroque Period replacing the high trumpet parts in music of Bach and his contemporaries
 - : Two other small trumpets are utilized for Baroque scores
 - One in F sounding a P4th higher
 - One in Bb sounding a m7th higher
 - : Both are so rare as to be impractical to score for them

C. THE BASS TRUMPET



Bass Trumpet (3 Valve)

	In Eb, sounding a major 6th lower.		In C, sounding an 8ve lower.
			In Bb, sounding a major 9th lower.

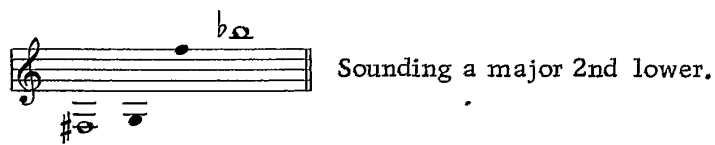
Eb / C / Bb Trumpet Range

- 1 Bass Trumpet in Eb equipped with a 4th valve allows a written F natural a half step lower than the trumpets usual bottom note of Ab a major 6th below
- 2 Not often used
 - : Stravinsky, Rite of Spring
 - : Also used by Strauss
- 3 When used within range of Bb or C Trumpet the lower notes have a greater strength and security
- 4 The C and Bb Bass trumpets are described by Piston as a 'valve trombone' and played by trombonists with a trombone mouthpiece

D. THE FLÜGELHORN



Flicorno, It. Bugle, Fr. Flügelhorn, Gr.

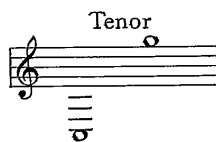


Flügelhorn Range

Range is same as Cornet & Trumpet but top 4th of range is not generally used

- 1 Resembles Cornet in construction and size but with wider bore
- 2 Tone is similar to horn but more open and less mellow
- 3 Rarely used
 - Respighi, Pines of Rome
 - Stravinsky, Threni

E. THE WAGNER 'TUBAS'



Sounding a
major 2nd lower.



Sounding a
perfect 5th lower.

Tenor / Bass Wagner Tuba Range

- 1 Constructed for Wagner to use in his music dramas
 - Tuba is a misnomer as they are really modified horns
 - Little used by other composers
- 2 Examples
 - Bruckner, 7th and 9th Symphonies
 - Strauss, Elektra

F. THE BARITONE AND THE EUPHONIUM (BOTH IN B FLAT)



Baritone



Euphonium



Sounding as written.

Baritone / Euphonium Range

1 Characteristics

- Alike in general appearance and in range
- Great technical agility
- Built with either 3 or 4 valves with current trend of 4 valves
- Upright or bell-front construction

2 Tone

- Smooth and mellow
 - : Euphonium has a slightly larger bore
 - : Results in a broader and slightly darker sound than the baritone
- No real consistent difference between the two instruments with names practically synonymous today

3 Use

- Regular members of Bands
- Often used in orchestral setting to for parts labeled 'tenor' and higher tuba parts
 - : Strauss, Don Quixote
 - : Holst, The Planets
 - : Stravinsky, Petrouchka (high tuba parts)

4 Scoring

- Fingering patterns on Baritone same as cornet (former cornet players frequently players)
- Treble clef baritone part often made available for those players not familiar enough with bass clef scoring
 - : Treble clef parts are written a major 9th higher than sounding
 - : Makes the treble clef scoring a transposition instrument
 - : Orchestral scores are bass clef standard

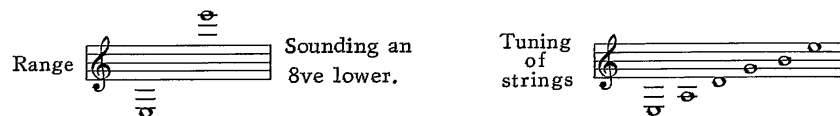
III FRETTED AND BOWED INSTRUMENTS

A. GUITAR



Classical Guitar (with cutaway)

Chitarra, It. . Guitare, Fr Guitarre, Gr.



Guitar Range and Tuning

- 1 Ancient oriental origin appearing in various forms (and names) over the centuries
 - Flat back with inward curved sides
 - Fretted neck
 - Plucked with thumb and four fingers of the right hand

- 2 Standard notation is used for 'serious' guitar music
- 3 Extremely rare in orchestral music
 - Intended to provide a Spanish or Latin atmosphere
 - Folk like atmosphere with strummed or arpeggiated background
 - Use for distinctive plucked sound
- 4 Examples
 - Opera scores, The Barber of Seville, Oberon
 - Mahler, 7th Symphony
 - Gould, Orchestra Suite – The Plow That Broke the Plains
 - Schönberg, Serenade Op. 24

B. THE MANDOLIN



Mandolino, It Mandoline, Fr Mandoline, Gr



Mandolin Range and Tuning

- 1 Characteristics
 - Smaller than Guitar and pear shaped
 - Eight strings (4 Courses) tuned the same as open strings on Violin
 - Played with a pick (plectrum)
 - Fretted finger-board
- 2 Use
 - Single short notes possible
 - Rapid alteration is possible creating a quasi-sustained tremolo effect

3 Examples

- Occasionally used in opera (Verdi, Otello)
- Mahler, 7th Symphony
- Schönberg, Serenade
- Respighi, Roman Festivals
- Stravinsky, Agon

C. THE VIOLA D'AMORE



Viola d'Amore

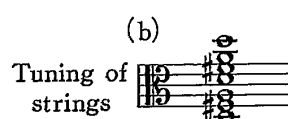
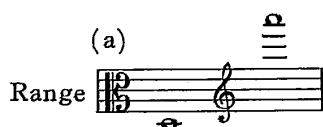


Sympathetic Strings through Bridge

Viola d'Amore, It

Viole d'Amour

Liebesgeige, Gr



Viola d'Amore Range and Tuning

1 Differs from standard Viola

- Larger and heavier
- Strung with 7 strings with a sympathetic string strung beneath each (not touched by the bow)

2 Limitations

- Tuning is centered around D major triad making passages not involving these notes less effective and resonant
- Uneven spacing of open pitches produces some irregularities of fingerings

3 Examples

- Bach & Mayerbeer wrote for instrument
- Loefler, Le Mort de Tintagel
- Hindemith, Chamber music No. 6 for Viola d'Amore and Chamber Orchestra

IV KEYBOARDS

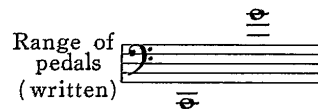
A. THE PIPE ORGAN



Contemporary Pipe Organ Installation



Pipe Organ Stops



Pipe Organ Range

1 Use

- Sometimes used to supply added volume, liturgical atmosphere, or majestic tone quality
- Occasionally used with pedals only (16' & 32' stops) to double lower orchestral instruments creating an extra-dark and ponderous effect)

2 Characteristic

- Stops provide differing timbres and textures
 - : 8' sounds at written pitch
 - : 4' sounds an octave higher
 - : 16' sounds octave lower
- Couplers allow one manual to be linked to another or with pedals
- Scored on 3 staves with upper two for manuals and bottom for pedals

Suggested registration:
R.h. 8' level
L.h. 16' level
Ped. 8' level (or 4' level played one octave lower)

I Come, O Sa

The musical score is written on three staves. The top two staves are grouped under the label 'Organ' and the bottom staff is labeled 'Pedals'. The top staff is in treble clef and the bottom two staves are in bass clef. The music is in common time (C). The Organ part consists of a melody in the right hand and a bass line in the left hand. The Pedals part provides a rhythmic accompaniment.

3 Use

- Regular member of instrumental group accompanying oratorios and cantatas of the Baroque
 - : Realized the basso continuo part (later relinquishing that role)
 - : Parts for symphonic music do not appear until late 19th Century
- Examples
 - : Saint-Saëns, 3rd Symphony
 - : Scriabin, Poem of Ecstasy
 - : Mahler, 2nd & 8th Symphonies
 - : Strauss, Thus Spake Zarathustra
 - : Resighi, Pines of Rome & Roman Festivals
 - : Holst, The Planets

B. THE HARMONIUM



Harmonium



Harmonium Metal Reeds



Harmonium Range

1 Characteristics

- Described as a 'reed organ' with 'reeds' made of thin metal
- Reeds are vibrated by an air stream from bellows operated by feet of player
- Some variety of timbre is possible by means of stops

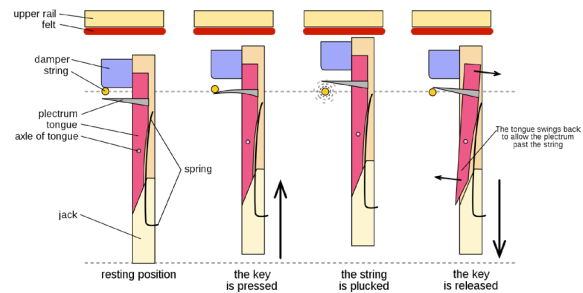
2 Examples

- Tchaikovsky, Manfred Symphony
- Mahler, 8th Symphony
- Strauss, Ariadne auf Naxos
- Hindemith, Kammermusik No. 1
- Shostakovich, The Golden Age (a ballet suite)

C. THE HARPSICHORD



Harpsichord



Harpsichord Action

Clavicembalo, It
or Cembalo

Claverin, Fr

Cembalo, Gr
or Kielflügel



Harpsichord Range

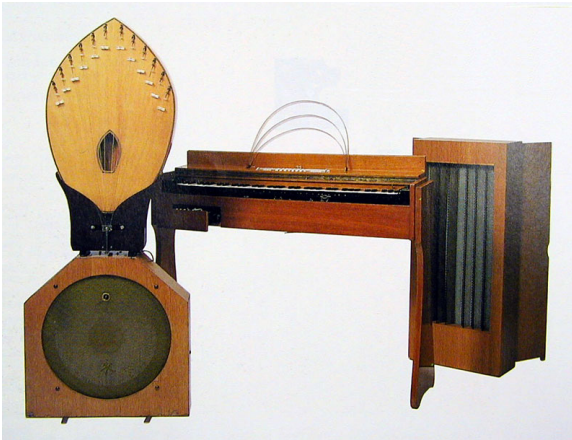
1 Characteristics

- Tone is so light can be covered easily by other instruments
- If used it is usually for a small group or lightly scored passages
- Differs from piano in that strings are 'plucked' with a plectrum
 - : No sustaining pedal and sustaining power is less than piano
 - : *Cannot* make difference in volume through touch
- Doubling at lower or upper octave, coupling both manuals, and some variation in tone quality are available through pedals

2 Use

- Used frequently in combination during the Baroque period
 - : Supplied the realized figured bass
 - : Modern orchestral appearances are few
- Examples
 - : Strauss, Dance Suite After Couperin
 - : Falla, El Retablo de Maese Pedro & Concerto for Harpsichord and Five Instruments
 - : Poulenc, Concert Champêtre for Harpsichord and Orchestra
 - : Martin, Petite Symphonie Concertante

D. THE ONDES MARTENOT



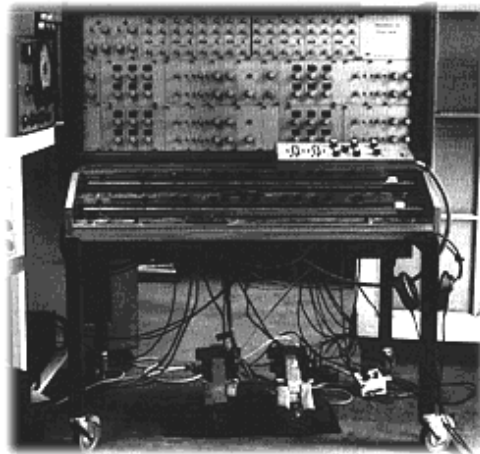
Ondes Martenot



Finger Ring

1 History

- Invented in 1928 by a Frenchman named Martenot
- Used chiefly by French composers
- Trautonium is a similar instrument
 - : Invented by Trautwien and developed in Germany in 1931
 - : Capable of imitating certain orchestral instruments with surprising fidelity



Trautonium

- 2 Produces tone through amplification of airwaves resulting from two slightly different combined frequencies
 - Pitches may be controlled through a keyboard (same range as piano) or a ribbon attached to a ring on players finger
 - Use of ring makes in-between pitches available producing a 'siren' effect
- 3 Examples
 - Messiaen, Turangalîla
 - Honegger, Jeanne d'Arc au Bûcher
 - Jolivet, Concerto for Ondes Martenot and Orchestra

19 SCORING FOR THE HIGH SCHOOL ORCHESTRA

I BACKGROUND

A. CONSIDERATIONS

1 Instrumentation

- Differences between schools in terms of musical resources
- Generally use same instrumentation as 'medium sized' orchestra

2 Flute, 2 Oboe, 2 Bb Clarinet, 2 Bassoon
4 Horn, 2 or 3 Trumpets, 2 or 3 Trombone
Tuba if available, 2 or 3 Timpani, other
Percussion, Stings

2 Scoring

- Parts for saxophone (2 alto & 1 Tenor) are included
 - : Generally marked 'ad libitum'
 - : To be included at conductor's discretion
 - : Generally duplicate Horn parts but also can replace or bolster Bassoon & Cello
- Parts for piccolo, English Horn, Bass Clarinet, Harp, and Celesta are occasionally included

B. LIMITATIONS

- 1 Many schools do not have all instruments available under normal instrumentation
- 2 Players are inexperienced and unwise to give parts to be realized entirely on their own
- 3 Sections (strings particularly) may be unbalanced due to number of available players (Viola section especially)

4 Cost of instruments a problem for both student and school budgets

- Plenty of performers on flute, clarinet, saxophone, trumpet, trombone, and percussion
- Oboists and bassoonists a problem due to the high cost of the instruments
 - : Solo parts are reasonably safe to assign to the popular instruments
 - : Parts for oboe, bassoon, or horn are often 'cued' to another part so passage can be played with *available* instrumentation
 - Bassoon cued to trombone or cello
 - Horn passages cued to trombone, trumpet, strings, or saxophones
- Junior High can use same arrangements as High School if sufficient instrumentation and skill is present
- If less skilled or smaller number use a much more modest instrumentation

1 or 2 flutes
1 oboe
2 B \flat clarinets
1 bassoon
2 F horns
2 B \flat trumpets
1 trombone
timpani (2)
other percussion
(piano)
strings

- Piano part is sometimes included
 - : Placed above strings or at bottom of full score page
 - : Usually a 'condensed' score
 - : May be played or not
 - Needed to replace missing instruments
 - Reinforce 'weak' sections or instruments
 - Reinforce orchestra as a whole

- Scoring for Junior High School

Type-Casting System

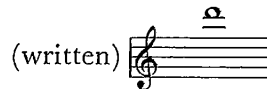
<i>Melody</i>	<i>Upper Register Harmony Parts</i>	<i>Middle Register Harmony Parts</i>	<i>Bass</i>
Flute	(1st Clarinet?)	Horns	Bassoon
Oboe	2nd Clarinet	2nd Violins	Trombone
1st Clarinet	(and/or 2nd Violins)	(and/or 2nd Clarinet)	Cellos
1st Trumpet	2nd Trumpet	Violas	Basses
1st Violins			

- : Each instrument has part written throughout piece
- : Conductor will cut certain parts to lighten scoring when appropriate
- : System provides
 - Enough volume when & where needed
 - Each voice will be played
 - Eliminates need for writing cues
 - Allows maximum number of possibilities in substitution
 - Provides flexibility with varying orchestra make up from year to year
 - Can be used with smaller string groups (including quartet, quintet, and small string group)
 - Easier to ‘delete’ parts than to add them with full orchestra
- Drawbacks to Type-cast System
 - : Tends to involve heavy doubling which produces a constantly mixed tone which can become monotonous
 - : Necessity to provide large or small group sound restricts most interesting or effective use of instruments
 - : Method is born of practical necessity rather than artistic choice
 - : Applies chiefly to homophonic music and would still have to be altered from piece to piece to fit music’s individual structure
 - Counter melody would involve change in distribution of voices
 - If entirely contrapuntal a different approach to musical elements would be needed

C. SCORING

1 Woodwinds

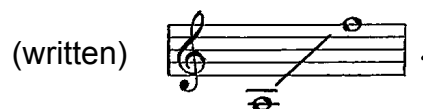
- Stay within *practical* woodwind range
- For JHS safest to work within upper range about a 3rd lower than practical range
- Provide sufficient rests for breath especially for Flute & Oboe
- Flute is weakest in bottom octave and should be written higher for tutti or heavy background passages
- 1st clarinet parts are played by more skilled players with 2nd clarinet less skilled
- Clarinet become shrill above written 'D5'



- Often part for bass clarinet or contra-bass clarinet is used to reinforce the bass or compensate for weak bassoons
- Parts are written in single clef regardless of custom
 - : Bassoon parts usually written in tenor clef when relatively high will remain in bass clef for school scoring
 - : A debatable practice as player will be certain to encounter the standard two clef practice later on
 - : Same question with trombone & cello parts

2 Brass

- Horn
 - : Parts should be kept within written range of A2 and F4



- : Notes above F4 are risky and below A2 or G2 are difficult for young players
- : Best to use only Horn I and Horn II as not all school orchestras have full four horn section available
 - Players are also too inexperienced to manage separate parts
 - Can score for four horns but with ability to sound satisfactory with only two horns

- Trumpet and Trombone
 - : Usually these players are proficient on the instrument
 - : Few limitations apply for these players
 - High entrances should be avoided
 - Trombone parts use bass clef exclusively

3 Percussion

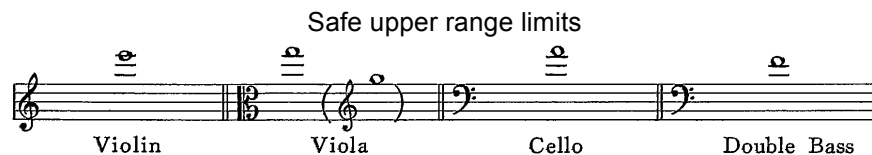
- Most schools have two pedal timpani
 - : Avoid fast pedal changes
 - : Avoid great number of pedal changes in succession
- Usually no problems for snare, bass drum, cymbals, etc.
- Chimes, glockenspiel, xylophone are usually available with vibraphone as a scarce inclusion

4 Harp, Celesta, and Piano

- Scores utilizing Harp for school orchestra are more common now
- Celesta parts appear occasionally but are most often rendered by the Piano as few schools own the instrument
- Piano is usually in a utilitarian role rather than coloristic

5 Strings

- Previously school string scoring divided the violins into 3 parts (A,B,C or I, II, III)
 - : 3rd part a simplified version for inexperienced players
 - : Often involved same notes as viola parts (range permitting)
- Now listed in usual symphonic format (Vln I, Vln II, Vla, V.C., D. Bass)
- All string groups may be written as high as 3rd position safely with 5th position possible for Vln I and V.C.



- If higher notes than safe range is required for Vln I score in divisi octaves with lower part available for inexperienced players
- Tenor clef is rarely used
- Only easier multiple stops should be used preferably using open strings

-
- Harmonics are seldom seen in High School scoring
 - : Harmonics on E string are possible
 - : Can be useful for color
 - Divisi string sections should be used sparingly and no more than two sections
 - : Groups are more likely to be small
 - : Players are inexperienced
 - : Instruments can be inferior in quality
 - : Not at all for VIa
 - Parts to included for publication
 - : Some include only one part for each string part with additions to ordered separately
 - : Other publishing houses classify by sets (3) of varying sizes
 - : Note that two string players usually read from one music stand

Common 3 part sets

	<i>Set A</i>	<i>Set B</i>	<i>Set C</i>
1st Violins	2	5	8
2nd Violins	2	5	8
Violas	1	3	5
Cellos	1	3	5
Basses	1	3	5

All include one of each woodwind, brass,
and percussion, full score, piano conductor
score

- Considerations
 - : Parts should be challenging and interesting to play but not so challenging as to be impractical
 - : Choose easier keys of no more than 3 sharps or 4 flats (be mindful of the transpositions)

Written or arranged by American composers for High School Orchestra using either the 'medium' size orchestra or the 'modest' instrumentation

Vignettes, I

Theron Kirk

2 Fl. *a2* *ff* *poco meno*

2 Ob. *ff* *mf* *mf*

2 Bb Cls. *a2* *ff* *mf* *mf*

2 Bns. *a2* *ff* *mf* *mf*

I II Hns. in F *ff*

III IV *ff* *Hns. III, IV*

Bb Trpts. *ff* *Bns.* *mf*

2 Trbs. *a2* *ff* *mf*

Timp. *Cym.*

Perc. *B.D.*

1st Vl. *ff* *pesante* *poco meno*

2nd Vl. *ff* *mf* *mf*

Vla. *mf* *mf*

Vc. *mf* *mf*

D.B. *mf*

Oboe & bassoon
parts cued to
clarinets &
trombones in last
two measures

Two Sketches for Orchestra, I. Poem

Clare Grundman

Moderately In a Free, Flowing, and Singing Manner (♩ = 80)

2 Fl.
1 Ob.
2 B♭ Cl.
B♭ Bass Cl.
Optional Sax. Parts
I B♭ Alto Sax.
II B♭ Tenor Sax.
1 Bsn.
2 F Horns.
I B♭ Tpts.
II B♭ Tpts.
I Trb.
II Trb.
Timp.
Perc. Bells
Triang.
VI. I
VI. II
Vla.
Vcl.
D. B.
(Optional) Piano
W.W. I
Bass

More extensive & less typical use of cues

Vlins cued for Tpt I for added body and support

Includes optional saxophone parts at conductor's discretion

Melody in strings within easy 1st position

Ex. 4*The Orchestra Song*

William Schuman

Moderato $\text{♩} = \text{ca. } 126$

Picc. *sub, ff*

Fl. *sub, ff*

Ob. *sub, ff*

B \flat Cl. *sub, ff*

B. Cl. *sub, ff*

Bsn. *sub, ff*

1, 3 Hrngs. in F *sub, ff*

2, 4 *sub, ff*

1, 2 B \flat Tpt. *sub, ff*

3 *sub, ff*

Trb. 1, 2, 3 *sub, ff*

Tuba *sub, ff*

Timp.

S. D. *ff*

B. D. *ff*

S. Cym. *ff*

Tamb. *ff*

Tri. *ff*

Tuned Perc. *ff*

1 Vls. *sub, ff*

2 *sub, ff*

Vla. *sub, ff*

Vc. *sub, ff*

D. B. *sub, ff*

Polyphonic in nature so only single line written for each of woodwinds

Notes indicate that one of each woodwind may be used on each part at conductor's discretion

And that number of horns, trumpets, and trombones may be reduced

Ex. 5

Three Miniatures for School
Orchestras, I. Rustic Dance

David
Ward-Steinman

Lively

2 Fl.
1 Ob.
2 Cl.
in B \flat
1 Bsn.
2 Hrns.
in F
2 Tpts.
in B \flat
2 Trb.
Tam-
bourine
Xylo-
phone
I
Vlins.
II
Vla.
Vc.
D. B.
Piano
(Original
Version)

Piano piece and arrangement
for school orchestra

All voices have been doubled at
octave (fullness & brilliance)

Bowing indications carefully
marked

Double stops in Vla and V.C.
involve open strings making
them simple and providing
greater resonance

20 WRITING SCORE AND PARTS

I CONCERNING THE SCORE

A. BASIC SET-UP

- 1 Ordinary music paper 12 to 30 line depending on size of orchestra
- 2 Dynamics *must* be shown beneath each part
- 3 Tempo shown at top of page *and* just above Violins
- 4 Meter signature can be written in each part of score or elongated covering several staves
 - Modern score best to utilize the large elongated meter due to possibility of several meter changes in course of piece

Violin I

Violin II

Viola

Cello

Bass

9 10 11 12

- If meter change occurs at top of new page customary to show in advance at bottom of previous page
- 5 Rehearsal Letters
 - Include in all parts & score for navigation
 - Sometimes placed at likely starting points
 - Also can be placed to just indicate every 10 or 20 bars
 - Should be enclosed with a square or circle

16

D

f

- 6 Separate different instrument sections by using gap in bar line placement to group instrument sections

B. OTHER CONSIDERATIONS

- 1 If single melodic staff is shared by 2 woodwinds or 2 brass instruments indicate if 1st, 2nd, or both are to play line (1, 2, or a2)



- 2 When a portion of the orchestra is playing two systems are possible
 - All instruments are listed on each page with rests for those not playing
 - Some or all of instruments not playing are omitted from page
 - : Enables reducing space required for full score
 - : Use 'slash' marks to separate full score sections on same page
 - : First page of score should show all instruments to be used

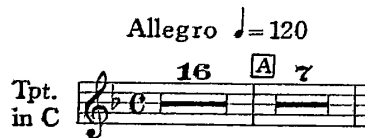
II CONCERNING PLAYER PARTS

A. BASIC SET-UP

- 1 Use 12 line or 10 line manuscript
- 2 Staves
 - Separate sheet for each wind instrument
 - Possible to put pairs of woodwinds or brass on same sheet with separate staff for each
 - : If 'a2' for much of time possible to use same staff
 - : Horns part previous practice is to put I & II on one sheet and III & IV on another
 - : Current practice for Horns is separate sheet for each
- 3 Labeling
 - Name of composition
 - Composer and arranger
 - Instrument name
- 4 Page Turn
 - Planned to provide time for player to make the page turn
 - Layout with sufficient rest at bottom of page to make the turn

B. RESTS

- 1 Can use multi-measure rests



Note that rehearsal letter occurs in middle of rest
Rest *must* be divided to show number of measures
before and *after* rehearsal letter

- 2 Rest of one or two measures are simply indicated using whole rests
- 3 'Tacets' indicate instrument is not to play for specified length of time
 - Indicates for large number of measures
 - Can be whole movement (2nd movement tacit)
 - Can be part of a movement (Tacit to end of movement; Tacit 200 bars)

C. STRING PARTS

- 1 Two players share each part
- 2 Each part *must* include tempo, dynamics, expressions, phrasing, slurring, bowing, rehearsal letter, and meter

D. CUES

- 1 Provides help to the player
- 2 Often included just before entrance after a lengthy sequence of rests
- 3 As 'landmarks' in middle of long rests
- 4 Choose a prominent part for cue so it is easily heard
 - One or two bars are usually sufficient though longer cues are common
 - Written in smaller notes with stems in 'wrong' direction



- 5 Preferable to write a transposed part for transposing instruments
 - Can also appear at concert pitch but not preferable
 - If cue part might be necessary to play (H.S. orchestra) to cover missing or weak instruments transposed is a must