

## Voice Combinations

# Piccolo - Sound Combinations

Since the Classical era the piccolo has been used to suggest certain themes and principally to represent sounds of nature (birds, storms, lightning). The shrill and piercing timbre has often been used to create special effects. The Romantic orchestra uses it to brighten the sound and extend it upward. The piccolo has important tasks to perform in tutti passages especially, in which it gives melody lines composed of many octave doublings a penetrating edge as the topmost octave. Solo passages are rare.

### **Piccolo + woodwinds**

A completely homogeneous overall sound together with the flute. The piccolo reinforces the flute by playing an octave above it. It can also reinforce the flute's highest notes when the two are played in unison.

The piccolo can also effectively double the other high woodwinds (oboe, clarinet) an octave apart. The resulting blend adds intensity to the upper register in the orchestra.

### **Piccolo + percussion**

#### **Piccolo + bass drum / snare drum**

A traditional pairing which provides a "military" flavor and is used for marches and processions in opera and programmatic orchestral works.

#### **Piccolo + cymbals**

The piccolo's staccato together with a cymbal crash has the effect of a short, piercing cry or a blow with a dagger. Spontini used this effect in his "Grand Bacchanale".

# Concert flute - Sound Combinations

Like the horn, the flute blends extremely well with all instrument groups. Particularly good blends are achieved with the woodwinds and the strings.

### **Flute + woodwinds**

#### **Flute + flute**

Two flutes in *unison* sound absolutely homogeneous, as do two flutes doubling an octave apart (whether concert flutes or piccolos).

In order to compensate for the lack of volume in the low register, several flutes are used playing in *unison*.

#### **Flute + oboe, clarinet**

The combination of flutes with oboes and clarinets sounds warm and mellow whether played in *unison* or in octaves.

### **Flute + bassoon**

The flutes are combined with the bassoon either one or even two octaves apart, which produces an exotic effect.

## **Oboe - Sound Combinations**

### **Oboe + woodwinds**

#### **Oboe + flute**

Played in *unison* with the flute the oboe sounds more mellow.

#### **Oboe + clarinet**

Combinations with the clarinet are possible every context: in *unison*, in octaves and in chords. All produce a full sound, which is dominated either by the substantial clarinet or the bright oboe, depending on the register.

#### **Oboe + bassoon**

The sound of the oboe and the bassoon is related due to the fact that they are both double-reed instruments. Played together they sound very powerful: the acerbic quality of the oboe is toned down somewhat while the bassoon sound becomes more clearly defined. Sound combinations in octaves or double octaves have proved useful and have an organ-like quality. Because of the instrument's different pitches the possibilities for playing in *unison* are limited.

### **Oboe + brass instruments**

#### **Oboe + trumpet**

Playing in *unison* with the trumpet produces a brilliant sound, because both instruments have a large number of overtones.

#### **Oboe + horn**

The horn is often muted for playing in *unison* with the oboe. The oboe is well suited to playing an octave above the trumpet and horn parts.

The lower-pitched brass instruments are less well suited for playing in combination with the oboe, unless they are played with a mute (especially the trombones).

### **Oboe + stringed instruments**

Stringed instruments achieve a good blend with the woodwinds. The oboe makes the strings sound more intense, while losing some of its own keenness.

#### **Oboe + violin, viola**

One of the most common sound combinations of all is the oboe and violin played in *unison*, since both are excellent melody instruments. Playing in *unison* is also possible with the viola.

### **Oboe + cello**

The oboe often plays an octave above the cello.

## **Clarinet in Bb - Sound Combinations**

Like all the woodwinds the clarinet is very well suited for combinations with other instruments. Its sound is adaptable enough to produce an excellent tonal blend with all instrument groups. A particularly good blend is achieved with the horn.

### **Clarinet + woodwinds**

#### **Clarinet + flute**

Played in unison an overall sound results which is at once mellow, bright and lustrous. Low notes played in this combination sound particularly warm and rich. In octave combinations the clarinet usually plays an octave below the flute; indeed it plays two octaves lower when combined with the piccolo.

#### **Clarinet + oboe**

Very full-sounding in unison as well as in octaves and in chords. In the low register the stern and acerbic properties of the oboe are more prominent, in the upper register the mellow clarinet. Because the clarinet's compass in the low register reaches almost an entire octave below the oboe the clarinet also plays an octave below the oboe or in unison with the English horn.

#### **Clarinet + bassoon**

Play mostly in octaves. Because the clarinet's sound is related to that of the bassoon and the oboe it supports the blend of those two instruments. The clarinet playing in the low register in unison with the bassoon is a little more prominent thanks to its darker and very powerful sound in this register.

### **Clarinet + brass instruments**

#### **Clarinet + trumpet, trombone**

Clarinet + trumpet produce a very bright effect especially when the clarinet is playing in the upper register.

Clarinet and trombone combinations do not produce a very homogeneous effect.

#### **Clarinet + horn**

A mellow-sounding blend in unison which increases in brightness the higher the notes are that the clarinet plays. The clarinet playing one or two octaves above the horns also produces a full sound.

### **Clarinet + stringed instruments**

The clarinets and strings combine to produce a very intensive blend.

The clarinet often plays an octave above the strings. If it plays in its highest (fullest-sounding) register the sound combination attains great volume.

### **Clarinet + cello**

The cello is the instrument best suited for playing in unison with the clarinet which plays in its low and middle registers.

### **Clarinet + singing voice**

Especially in opera the clarinet is often used in combination with the soprano or alto voices. The clarinet frequently accompanies the singer in unison or together with the viola an octave lower.

## **Bass clarinet - Sound Combinations**

The bass clarinet performs bass tasks in the orchestra and is combined with all the other bass instruments to fulfill this role. The characteristics of the low notes mean they are also used to play eloquent, solemn and emotive solos at moderate tempos. The full-sounding upper register is very well suited to thematic tasks (middle voices).

### **Bass clarinet + other woodwind instruments**

Bass clarinet + clarinet sound very homogeneous when played together, either in chords or with the bass clarinet an octave lower.

The bass clarinet also combines well with the deep woodwinds, for instance with the English horn in unison or an octave above. In combination with the bassoon in octaves or chords the bass clarinet usually provides the foundation, to avoid its weak middle register. The bass clarinet in combination with the contrabassoon playing an octave lower sounds very full.

### **Bass clarinet + brass**

Of the brass, the French horn is especially well suited for combinations with the bass clarinet; both instruments have a substantial and mellow sound, a high degree of blending is possible.

### **Bass clarinet + strings**

Bass clarinet and cellos in unison is a combination found in a great many scores which produces a particularly soft overall sound.

The bass clarinet in its low register can also play in unison with the double-basses. The sound is then very dark and rumbling.

Full-sounding combinations, especially at piano levels, are also possible with the harp.

# Bassoon - Sound Combinations

The fascination of the bassoon's sound lies in two qualities:

On the one hand, it achieves a good blend with most of the other instruments in the orchestra, as does the horn; This capability to blend with the sound of other instruments allows the bassoon to merge with the overall sound of the orchestra as an unobtrusive bass voice.

On the other hand, the bassoon's sound is also clearly defined and therefore suitable for thematic and solo tasks.

## **Bassoon and woodwinds**

### **Bassoon + bassoon, contrabassoon**

Produce a homogeneous, full-sounding and sonorous overall sound. In the orchestra of the Classical era it had become customary to use two bassoons which functioned purely as bass instruments. The bassoon retained this function in later styles, too, although it was increasingly entrusted with melodic tasks as well. Since the Romantic era a contrabassoon has been added to reinforce the sound an octave deeper and thus compensate for the increased volume of the larger orchestra.

### **Bassoon + flute**

Produce an interesting combination. The flute often plays one or two octaves above the bassoon, but the two instruments can also play in unison in the flute's low register.

### **Bassoon + oboe**

In the woodwind group the oboe often plays an octave above the bassoon. Although the resulting sound is powerful and the instruments are related due to the double reed, no tonal blend is achieved. The bassoon is dominated by the more incisive and reedy sound of the oboe. The combination with the deep oboes, on the other hand – the English horn and the Heckelphone – is very homogeneous.

### **Bassoon + clarinet**

When the bassoon plays in unison with the high woodwinds in their low registers, the sound is always dominated by the latter. With the clarinet playing an octave higher a mellow, substantial sound results. The mellow sound of the bass clarinet supports the bassoon in bass tasks in unison, in chords or an octave lower.

## **Bassoon and brass instruments**

### **Bassoon + horn**

The bassoon and the horn, which both possess an extremely mellow and full sound as solo instruments, produce an impressive volume when played in unison, which is particularly effective in tutti passages.

The two instruments also produce a homogeneous blend in chords.

### **Bassoon + trombone, tuba**

The bassoon takes the edge off the trombone's metallic timbre, making it more mellow, but is dominated by the trombones. The combination with trombones an octave above and tubas in

unison or an octave below produces a mighty bass voice which is used especially to provide a solid bass foundation in passages scored for many instruments.

### **Bassoon and strings**

In combination with the strings exceptionally velvety and voluminous blends are produced in which either the bassoon (or other woodwinds) or the strings can dominate, depending on the dynamic levels. The bassoon's staccato combines very well the strings' pizzicato.

### **Bassoon + cello**

Combine to produce a powerful, mellow and sonorous overall sound in unison. Supported by the double-bass an octave below this is the standard combination for bass tasks.

### **Bassoon + double-bass**

Full-sounding bass blend either in unison or with the bassoon an octave above. Staccato notes reinforce the double-bass's pizzicato, legato notes "prolong" the pizzicato's sustain.

## **Contrabassoon - Sound combinations**

As the deepest instrument in the orchestra along with the contrabass tuba, the contrabassoon generally plays one octave below the bass voice. It is used mainly in the octave between C1 and C2 (Brahm's Symphony no. 4 in E Minor, 3rd movement). It provides the bass foundation both in unison with the bass and contrabass instruments and an octave below the bass instruments.

In the past it was very occasionally used for thematic and solo tasks, too, between C2 and C3 and between C3 and C4.

Since the 20th century it has been entrusted with solo tasks more often (e.g., by Maurice Ravel, Alban Berg and Benjamin Britten).

### **Contrabassoon + woodwinds**

The contrabassoon in combination with the bassoon an octave above sounds completely homogeneous. Contrabassoon with the bass clarinet an octave higher sounds full and mellow.

### **Contrabassoon + brass instruments**

Contrabassoon + tuba an octave higher produce a mighty and full sound that is capable of carrying an orchestra tutti. It can also play in unison and in octaves with the trombones, although here the sound is harder and more precise; if the sound is strongly forced the contrabassoon can only add shading.

Contrabassoon + horn: good combinations with the low horns. Together with the tuba playing an octave above it, the contrabassoon provides the bass for the horns' chordal harmonies.

### **Contrabassoon + strings**

Contrabassoon + double-bass in unison produce a substantial, full composite sound. Good combinations with the cellos playing an octave higher.

## **Piccolo trumpet - Sound combinations**

The extreme clarity and brilliance of the piccolo trumpet makes it ideal as a solo instrument, but in 20th century orchestration piccolo trumpets of various pitches are often used to flesh out the sound, in unison with the oboes, for instance.

## **Trumpet in C - Sound combinations**

### **Trumpet + brass instruments**

#### **Trumpet + trumpet**

Two trumpets played an octave apart sound completely homogeneous as do a trumpet and a bass trumpet.

#### **Trumpet + horn**

Played in octaves with the horns beneath the trumpet sounds softer while remaining dominant.

Trumpets and horns played in unison are used generally to make the sound massive, the soft sound of the horns blending with the metallic ring of the trumpets. In the middle register the trumpet's sound is so predominant that its dynamic level equals that of four horns.

#### **Trumpet + trombone**

Homogeneous sound combination with the trombone in the lower octave. The trombone intensifies the trumpet's sound and lends it fullness. In chords the trumpet complements the similar-sounding trombone to produce the typical brass sound.

### **Trumpet + woodwinds**

In this sound combination particular attention must be paid to the dynamic relationships. Balanced dynamic levels are achieved for instance by muted trumpets + woodwinds, or trumpets + forced woodwinds in the upper register.

#### **Trumpet + oboe**

The oboe tempers the metallic side of the trumpet's sound. Especially in tutti passages the trumpet can be used for octave doubling with the high woodwinds (flute, oboe, clarinet).

#### **Trumpet + clarinet**

In unison, trumpets and clarinets produce a clearer, brighter sound than any other combination; for octave combinations the piccolo clarinet is best suited.

### **Trumpet + bass clarinet, bassoon**

The combination with bass clarinet and bassoons is used to produce a massive sound.

### **Trumpet + stringed instruments**

Dynamics are important here too. The trumpet's brilliance is emphasized when it is played in unison with the strings, a tonal blend is achieved only with the viola. In addition the combination of trumpets played *staccato* or *marcato* with strings using the "col legno" and "at the frog" articulation is very effective.

### **Trumpet + percussion**

#### **Trumpet + xylophone**

In unison with the xylophone: trumpet *fortissimo-marcato*, xylophone *fortissimo*.

## **Bass trumpet - Sound combinations**

Generally the bass trumpet is used in combination with other trumpets and brass instruments, for example in octaves as the bottom trumpet part, as the fundamental note of a trumpet chord or as the highest voice together with trombones.

In Wagner the instrument is also required to play solo passages in all registers.

The enormous dynamic intensity of a note played *fortissimo* in the lower register corresponds roughly to three trumpets or four horns.

## **Horn in F - Sound Combinations**

**The horn blends with all the instrument groups in the orchestra better than any other instrument.**

### **Horn + brass instruments**

If the horn is used in combination with other brass instruments the sound becomes thicker: cup and funnel-shaped mouthpieces mutually cancel out their characteristic sounds.

#### **Horn + horn**

Because four horns are usually used in the orchestra, chords are often written for four horn parts.

#### **Horn + tuba**

The sound of the tuba as the median between the sounds of the cup and funnel-shaped mouthpieces blends very well with the horn.

#### **Horn + trumpet, trombone**

In *unison* with the trumpet the horn loses its mellow euphony, the composite sound assumes a little of the trumpet's metallic edginess and becomes more sober as a result.

In chord combinations of horns with trumpets and trombones the instruments' dynamics must be carefully balanced: Played piano all brass instruments sound at more or less the same volume; but a horn played forte has only about half the volume of a trumpet or trombone played forte. These discrepancies can be compensated for by using proportionate dynamic instructions: trombones or trumpets *pp* = horn *p*. A trumpet or trombone played forte corresponds roughly to two horns played forte.

## **Horn + woodwinds**

### **Horn + oboe**

The combination of horn and oboe only produces a homogeneous sound if the horn is stopped or muted.

### **Horn + clarinet, bassoon**

Horns, clarinets and bassoons played in unison blend very well.

The horn/bassoon combination is very effective when the bassoon plays the bass part.

Blending is also very good with the bass clarinet when the latter plays *pp* or *p*.

Framing the woodwinds with horns is not recommended, because the latter smother the former.

## **Horn + strings**

Strings combined with horns blend into a homogeneous overall sound. The cello is particularly suitable for playing in unison with the horn, since both have more or less the same pitch. This combination increases the intensity of the sound of both instruments.

A particularly pleasing effect is achieved when the muted horn is played with muted strings, as in Richard Strauss's opera *Salome*.

**The horn is allocated a wide variety of functions thanks to its numerous possibilities of expression:**

**In closed chord groups, for the playing of melodic, harmonic or rhythmical passages, or as a solo instrument, in unison with several other horns for the evocation of distinct, dominant themes; the horn section can be assigned a number of specific tasks (performance of filling-in parts, counterpoint parts or sections of these, bass parts, tremolos or trills, figurations etc.).**

**The horn frequently carries the main musical theme.**

# **Tenor trombone - Sound combinations**

## **Trombone + brass instruments**

Good tonal blend with the other brass instruments.

### **Trombone + trombone**

In *unison* and in octaves: metallic sound, impression of power.

### **Trombone + trumpet**

Good sound combination, makes the trombone sound brighter. Particularly good blend in the lower register.

### **Trombone + French horn**

Overall sound rich and mellow, intensified by the trombones in *ff* passages. In higher registers the trombone makes the horns sound brighter, the rest of the time the metallic trombone sound is masked by the horns. 1 trombone = 2 horns when the written dynamic levels correspond.

### **Trombone + tuba**

Although it has a different timbre, the tuba is often used as bass to the trombone section. The main reason for this is to produce a full-sounding foundation in tutti passages. The trombone sounds much more compact and focused. The tuba can either be used on its own as bass to the trombones (as a fourth trombone), in octaves, or in unison with the bass trombone. These last combinations are often recommended. The overall effect is one of expansiveness and mellowness. The brightness of the trumpets and trombones is subdued.

### **Trombone + woodwinds**

The combination of trombones and woodwinds produces a very patchy blend, so homogenous effects cannot really be achieved.

### **Trombone + oboe**

are heard distinctly as a rule, although blending is good when the trombone is played with a mute.

### **Trombone + bassoon**

The bassoon masks the metallic quality of the trombone's tone, which results in delicate contours in the middle and lower registers and in *piano* passages. For the reinforcement of sound in *tutti* passages the octave combination of trombone and low woodwinds serves as the bass.

### **Trombone + strings**

The combination with strings does not generally produce homogeneity. Trombones play in *unison* or in octaves with the cellos and double-basses, fleshing out the sound and playing a supporting role. The result is a concentration of the sound. If a trombone bass part is also carried by a double-bass the sound is projected more effectively.

## **Bass trombone - Sound combinations**

### **Bass trombone + brass instruments**

#### **Bass trombone + trombone**

The bass trombone is notated as the 3rd trombone in orchestral scores and often plays the tenor trombone's lower octave or the contrabass trombone's upper octave. Its sound is effective in multiple octave combinations as well as the fundamental bass.

#### **Bass trombone + trumpet**

Good sound combination, makes the trombone sound brighter.

### **Bass trombone + French horn**

The metallic trombone sound is masked by the horns. 1 trombone = 2 horns when the written dynamic levels correspond.

### **Bass trombone + woodwinds, strings**

Since it shares its dark timbre with the cello, the double-bass, the bassoon and the contrabassoon it combines well with those instruments. The bass trombone is the carrying instrument, however, the bassoon or cello merely add color.

## **Contrabass trombone - Sound combinations**

### **Contrabass trombone + brass instruments**

#### **Contrabass trombone + trombone**

Written as the 4th trombone in orchestral scores the contrabass trombone often plays an octave below the bass or tenor trombone. It is given thematic tasks to perform as well as the fundamental bass in the four-part trombone section (Wagner, Verdi, Puccini, Strauss).

Combines with the tenor and bass trombones to form a polyphonic trombone section.

#### **Trombone + trumpet**

Trumpets blend well with trombones and give them a brighter sound.

#### **Trombone + horn**

Full and mellow overall sound, the trombone's brassy sound is masked by the horns.

#### **Contrabass trombone + tuba**

Bass lines are possible in unison with the bass tuba, which has a very different timbre from the contrabass trombone. In Wagner's *Ring*, in Richard Strauss and in Schoenberg's *Gurrelieder* it also plays an octave above the bass tuba.

A mute reduces the disparity between the timbres of the contrabass trombone and the bass tuba.

Despite its different timbre the tuba has often been used for the bass part of the trombone section instead of the contrabass trombone, mainly in order to provide a solid foundation in tutti passages. Compared to the tuba the contrabass trombone sounds far more concise, definite and metallic.

### **Contrabass trombone + woodwinds**

The combination with the contrabassoon and the bass clarinet produces a dark, warm, penetrating sound which is used especially for low bass lines.

# Bass tuba - Sound combinations

The bass tuba is a bass and contrabass instrument. One of its principal tasks is the doubling of other bass instruments, either in *unison* or an octave lower. Especially in *tutti* passages its role is to provide a firm fundamental bass. Forte pedal tones are generally played solo and are only combined with other instruments for *pianissimo* playing.

In especially large brass sections, for example with six or eight horns, two tubas are used, one of them playing the higher compass, the other the lower. In works which place particularly great demands on the tuba, two tuba players often share the task, relieving each other by turns.

## Tuba + Brass instruments

### Tuba + tuba

In brass bands the bass tuba often doubles with the contrabass tuba, playing an octave above it. This produces a massive sound.

### Tuba + trumpet

Poor blending with the trumpet. The bass tuba serves as the bass to the brass.

### Tuba + horn

Good tonal blend, since the tuba's timbre is closely related to that of the horn. Often doubles the 4th horn.

### Tuba + trombone

Are similar in force and complement each other, despite their disparate timbres. As bass voice to the trombones often plays the 4th trombone part. Doubles the 4th trombone. In keeping with its character the tuba also provides the bass voice for the entire brass ensemble.

## Tuba + woodwinds

### Tuba + flute, oboe

No tonal blend. In Benjamin Britten's violin concerto the tuba and the piccolo play a solo.

### Tuba + bassoon, contrabassoon

Doubling, also in octaves, of the bass voice with the contrabassoon.

## Tuba + strings

Very good blend with the double-bass. The *staccato* is comparable to the *pizzicato* of the double-bass. In early phonograph recordings a bass tuba with a front-facing bell was used to double the double-bass, which improved the quality of the recording.

# Contrabass tuba - Sound combinations

The contrabass tuba is a contrabass instrument. One of its principal tasks is the doubling of other bass instruments, usually an octave lower. Especially in tutti passages its role is to provide a firm fundamental bass. Pedal tones are only possible piano and are seldom used.

In especially large brass sections, for example with six or eight horns, two tubas are used, either two bass tubas or a bass and a contrabass tuba.

## Contrabass tuba + brass instruments

### Contrabass tuba + tuba

Played in unison the effect produced by a contrabass tuba with its bass counterpart is not particularly interesting. Played in octaves the sound combination is homogeneous and pleasing, although it can be “dangerous” to do this forte because it smothers instruments in the middle register. A good blend is achieved with the Wagner tubas.

### Contrabass tuba + trumpet, horn

Reverberant chord combinations can be produced together with the trumpets, horns and trombones.

### Contrabass tuba + trombone

The contrabass tuba often provides the bass to the trombone section, either on its own or an octave below the bass trombone or in unison with the contrabass trombone. The contrabass tuba and contrabass trombone are similar in volume, although their timbre differs greatly.

## Contrabass tuba + woodwinds

### Contrabass tuba + bassoon, contrabassoon

Doubling, also in octaves, of the bass voice (bassoon and contrabassoon).

## Contrabass tuba + strings

### Contrabass tuba + double bass

Very good blend with the double-bass. The contrabass tuba's *staccato* can be compared to the *pizzicato* of the double-bass.

# Wagner tuba - Sound combinations

Wagner tubas are best suited for the evocation of solemn, stately and heroic moods and their timbre bridges the gap between the horns and the low brass as well as between the bass tuba and the trombones. They have enough volume to play themes on their own or an octave above with the bass tuba. They perform the main tasks (harmony, melody and rhythm tasks) in the middle and low registers.

## Wagner tuba + brass instruments

### **Wagner tuba + Wagner tuba**

Four Wagner tubas form a self-contained group with a homogeneous sound for stately chord progressions. Played in octaves the effect opens out more.

### **Wagner tuba + horn**

Owing to the similarity in timbre a highly homogeneous blend is achieved in unison and in chords.

### **Wagner tuba + trombone**

A mighty and impressive blend when played in unison. If that isn't heroic?

### **Wagner tubas + bass tuba**

A very common combination both in unison and in octaves.

### **Wagner tuba + woodwinds**

A particularly effective combination is achieved with the bassoons (also together with the horns), which produces a dark luster in unison and in chords.

### **Wagner tuba + strings**

### **Wagner tuba + double-basses**

Possess equal volume and complement each other, merging to a homogeneous group with a dark timbre in the low and middle registers.

## **Cimbasso - Sound combinations**

### **Cimbasso + brass instruments**

#### **Cimbasso + trombones**

The cimbasso is the ideal instrument for the bass voice (4th trombone). The result is a powerful, four-voice section with barely surpassable homogeneity and sonority.

#### **Cimbasso + trumpet, horn, tuba**

Because of its sound characteristics the cimbasso blends very well with the trombones and with the tubas. Good sound combinations are also achieved with trumpets and horns.

### **Cimbasso + woodwinds**

The combination of the cimbasso + contrabassoon produces a very mellow, full-sounding landscape of sound.

## **Violin - Sound combinations**

All stringed instruments form a group with a homogeneous overall sound and perform tasks ranging from the subtlest tonal effects to the most eloquent reinforcements of sound and from the greatest possible tonal compactness to the greatest possible diversity. The stringed

instruments are the most homogeneous of all groups in the symphony orchestra. Since Claudio Monteverdi (1567–1643) the strings have been the heart of the orchestra.

### **String sections**

String sections in large orchestras are composed as follows:

- 1st violins: 16
- 2nd violins: 14
- Violas: 12
- Cellos: 10
- Double-basses: 8.

In late romantic works – R. Wagner, G. Mahler, R. Strauss – and 20th century pieces the strings are divided into a large number of parts (*divisi*).

### **Violin + string orchestra**

#### **Violin + Violin**

In the orchestra violins are always used in chorus and divided into 1st and 2nd violins. Each group is treated as a separate “part”: the 1st violins generally play the higher part, which is usually the main melody. The 2nd violins often play the part of “lower sisters”: they play an octave below, darkening the overall timbre, and complement the 1st violins in the middle register, often in unison. It is only in recent times that composers have begun liberating the 2nd violins from the shadow of their dominant sisters, in some cases even giving them higher parts to play.

#### **Violin + viola**

Produces a mellow and full sound which is dominated by the violins. Octave combinations of the 1st and 2nd violins or double octave playing by both violin groups with violas and cellos produces a broad, expansive and carrying effect. This combination is most effective when the orchestra reaches melodic high points.

#### **Violin + violoncello**

The full sound is dominated by the cellos. In octaves an expansive effect is produced for cantilenas in the tenor register.

#### **Violin + double-bass**

The violins can sound like a partial of the double-basses. It is particularly important to balance the respective dynamic levels.

#### **Violin + harp**

The violins’ *pizzicato* blends well with the harp.

### **Violin + woodwinds**

There is a great affinity between the strings and the woodwinds; on the one hand they have a very good tonal blend, in which either group can predominate depending on the dynamic level. On the other hand they complement each other to produce new sound mixtures. Strings and woodwinds can also play interesting harmonic successions when the two groups play in contrast.

Generally speaking woodwinds provide the strings with more volume and power, while the strings make the woodwinds more mellow, especially when playing in unison. If the strings are playing with a single woodwind instrument in different registers the latter can assert itself.

### **Violin + brass wind instruments**

The tonal blend with brass instruments is not so good as with the woodwinds and depends on which register the brass instruments are playing in and on which playing technique the strings are using (*pizzicato*, *col legno*). The use of the mute on brass instruments makes them sound similar to the strings and improves the blend. If the two groups are joined by the woodwinds, particularly the clarinets, the blend between strings and brass instruments is improved.

### **Violin + trumpet**

Two distinct sounds develop, poor blend.

### **Violin + horn**

The horn achieves the best blend of the brass section with the violins, especially in combination with the cellos.

### **Violin + trombone, tuba**

Poor blend.

## **Viola - Sound combinations**

### **Viola + string orchestra**

#### **Viola + viola**

The sound of the violas as a group achieves an austere charm which is used for melodic tasks at dramatic turning points, especially in the opera orchestra.

#### **Viola + violin**

Produces a mellow and full sound which is dominated by the violins. Gives the impression that the sound is reinforced. Octave combinations of the 1st and 2nd violins with the violas produce a broad, expansive and carrying effect, although such combinations are generally too weak to supply a firm foundation unless they have the support of the cellos playing in unison. Double and triple octaves played by the 1st and 2nd violins with the violas and cellos are most effective when the orchestra reaches melodic high points. The viola never matches the projecting volume of the violin.

#### **Viola + cello**

The cello sounds more powerful and more intense. Played together the two instruments produce a full sound which is dominated by the cellos. In the upper register the viola takes away some of the cello's brightness and the sound becomes more mellow. In the highest register the bright elements reinforce each other. In octaves an expansive and harmonious effect is produced for cantilenas in the tenor register.

### **Viola + double-bass**

The violas can sound like a partial of the double-basses. It is particularly important to balance the respective dynamic levels.

### **Viola + harp**

The strings' *pizzicato* blends well with the harp. Pizzicato is often used as a "harp substitute".

### **Viola + woodwinds**

There is a great affinity between the strings and the woodwinds.

Generally speaking woodwinds provide the strings with more volume and power, while the strings make the woodwinds more mellow, especially when playing in unison. If the strings are playing with a single woodwind instrument in different registers the latter can assert itself.

In high registers and played forte or fortissimo the viola is perfectly capable of matching the woodwinds for intensity and acerbity of sound, an effect that is intensified when the groups play in combination. In piano passages, on the other hand, the viola lends the woodwinds a more mellow sound.

### **Viola + oboe**

The high notes (A string) are to a certain extent related in timbre to the oboe.

### **Viola + brass wind instruments**

The combination of violas and the majority of the brass produces a relatively homogeneous sound. Particularly harmonious effects are achieved by piano playing in octave combinations. As a rule though, the tonal blend with the woodwinds is better.

The blend is strongly influenced by the playing technique employed by the strings (*pizzicato*, *col legno*). The use of the mute on brass instruments makes them sound similar to the strings and improves the blend. If the two groups are joined by the woodwinds, particularly the clarinets, the blend between strings and woodwinds is improved.

### **Viola + trumpet**

An interesting sound combination in *piano* passages and in octaves.

### **Viola + horn**

The horn achieves the best blend of the brass section with the violins, especially in combination with the cellos.

### **Viola + trombone, tuba**

Poor blend.

## **Cello - Sound combinations**

All stringed instruments form a group with a homogeneous overall sound and perform tasks ranging from the subtlest tonal effects to the most eloquent reinforcements of sound and from the greatest possible tonal compactness to the greatest possible diversity. The stringed

instruments are the most homogeneous of all groups in the symphony orchestra. Since Claudio Monteverdi (1567–1643) the strings have been the heart of the orchestra.

The same playing techniques can be played on the cello as on the other, higher-pitched bowed instruments, but in a lower register (tenor, bass). In the orchestra its tasks range from performing the bass part to expansive melody lines in the tenor register. In works of the classical period it forms a familiar sound pattern by playing in octaves with the double-bass.

### **String sections**

String sections in large orchestras are composed as follows:

- 1st violins: 16
- 2nd violins: 14
- Violas: 12
- Cellos: 10
- Double-basses: 8.

In late romantic works – R. Wagner, G. Mahler, R. Strauss – and 20th century pieces the strings are divided into a large number of parts (*divisi*).

### **Cello + string orchestra**

#### **The cello section**

The sound of the cello section achieves an intensity which is characterized by firm substance which serves in the lower register as a bass foundation as well as in the middle register for cantilenas. The cello has a particularly good blend with all the other instruments in the orchestra.

#### **Cello + violin**

The full sound is dominated by the cellos. In octaves an expansive effect is produced for cantilenas in the tenor register. This combination must be treated judiciously since the greater volume of the cellos can drown the violins.

#### **Cello + viola**

The cello sounds more powerful and more intense. Played together the two instruments produce a full sound which is dominated by the cellos. In the upper register the viola takes away some of the cello's brightness and the sound becomes more mellow. In the highest register the bright elements reinforce each other. In octaves an expansive and harmonious effect is produced for cantilenas in the tenor register.

#### **Cello + double-bass**

Cellos playing in octaves with double-basses is a “classic” combination. The bass voice in octaves it produces has the great virtue of retaining its credibility as a sustaining bass even at low volume; in other words it forms a bass foundation that always allows the other instruments to the fore. The bright sound of the cellos combines well with the relatively dull sound of the double-basses. Playing both instruments *pizzicato* produces a particularly resonant effect.

#### **Cello + harp**

The *pizzicato* blends well with the harp.

## **Cello + woodwinds**

There is a great affinity between the strings and the woodwinds.

Generally speaking woodwinds provide the strings with more volume and power, while the strings make the woodwinds more mellow, especially when playing in unison. If the strings are playing with a single woodwind instrument in different registers the latter can assert itself.

### **Cello + oboe**

The oboe accentuates the bright and clear properties of the cello's sound and its vibrato. The resulting sound is very sharply defined.

### **Cello + clarinet**

The clarinet makes the cello sound mellower.

### **Cello + bassoon**

The bassoon accentuates the cello's sonority, especially in the bass.

## **Cello + brass instruments**

### **Cello + horn**

The combination of cellos and horns played *piano* is particularly pleasing. As a rule a better tonal blend is achieved with the woodwinds.

The blend is strongly influenced by the playing technique employed by the strings (*pizzicato*, *col legno*). The use of the mute on brass instruments makes them sound similar to the strings and improves the blend. If the two groups are joined by the woodwinds, particularly the clarinets, the blend between strings and woodwinds is improved.

# **Double bass - Sound combinations**

Two tasks should be emphasized here: on the one hand the double-bass, as the fundamental bass instrument, is capable of particularly good tonal combinations with all the other instruments, especially with its smaller partner the cello and all harmony instruments as well. Its powerful sound must provide a solid foundation which can support the sound structure and with which the other instruments blend. It should not be overbearing. On the other hand it is also capable of playing melody lines, solo lines which stand out.

The greatest problem faced by the double-bass is its distance from the middle and upper voices.

Because of its construction the double-bass projects the first six partials particularly well, which results in a strong and broad sound that lacks the high properties responsible for brilliance and clarity. In orchestration it is important to take into consideration the fact that the double-bass's relatively powerful partials can mask the fundamentals of comparatively soft instruments with few overtones such as the flute. The double-bass must therefore be used judiciously, and rests from time to time.

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the greatest possible tonal compactness to the greatest possible diversity. The stringed instruments are the most homogeneous of all groups in the symphony orchestra. Since Claudio Monteverdi (1567–1643) the strings have been the heart of the orchestra.

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### **Double-bass and string orchestra**

#### **Double-bass section**

Double-basses played *divisi* in octaves create an impression of dullness because the sound is augmented by scarcely any higher partials which would brighten it. In addition the partials of higher instruments are masked.

#### **Double-bass + viola**

The violas often play parallel to the double-basses and two octaves higher, reinforcing the latter's partials. This is especially effective when the double-basses are in the lowest register. The acerbic character of this combination speaks for itself.

#### **Double-bass + cello**

Double-basses playing an octave below cellos is a “classic” combination. The bass voice in octaves it produces has the great virtue of retaining its credibility as a sustaining bass even at low volume; in other words it forms a bass foundation that always allows the other instruments to the fore. The cello brightens the relatively dull sound of the double-bass and tempers its roughness. Playing both instruments *pizzicato* produces a particularly resonant effect. The double-bass is often called upon to play *pizzicato* while the cello plays *arco* an octave above it.

#### **Double-bass + harp**

Produce an extremely resonant combination in unison as well as in chordal playing.

### **Double-bass and woodwinds**

#### **Double-bass + bass clarinet**

The mellowness of the bass clarinet is similar to that of the double-bass. The overall effect is mellow and full-sounding. Combinations in *unison* and octaves are possible.

#### **Double-bass + contrabassoon**

In *unison* with the double-bass the contrabassoon reduces the thickness of the former's sound and makes it more precise.

## **Double-bass + brass wind instruments**

### **Double-bass + horn**

The horn playing two or three octaves above the double-bass produces a mellow overall sound.

### **Double-bass + trombone**

The trombone makes the double-bass sound more precise. A good effect is produced when the double-bass plays the trombone line an octave deeper.

### **Double-bass + tuba**

The tuba played in unison with the double-bass broadens and reinforces the latter's timbre.

## **Double-bass + percussion**

### **Double-bass + timpani**

The bow tremolo played *fortissimo* together with a roll on the timpani provides a rumbling background for *tutti* passages.

## **The double-bass's function over time**

From the days of J. S. Bach onward it became increasingly common to have the bass voice played by the cello and the double-bass an octave below it. In *classical* works this combination, by now traditional, performed the fundamental bass with no support from other instruments. In Beethoven's music the double-bass slowly began to gain independence from the cello. Support for the double-bass as the fundamental bass instrument from the bass clarinet, contrabassoon, bass trombone and the bass and contrabass tubas did not arrive until the *Romantic* era when the orchestra began to expand.

During nearly 500 years of existence the double-bass has not been restricted solely to the performance of its principal role of deepest voice in the orchestra. In *Viennese Classicism* and from the end of the 19th century it was also entrusted with an increasing number of solo tasks. Composers such as Richard Strauss, Maurice Ravel and Igor Stravinsky also used it in higher registers (harmonics) because of its distinctive timbre.

# **Harp - Sound combinations**

The harp is often used to accompany singing voices and solo instruments. As a thorough-bass instrument it performed bass and harmonic tasks.

In orchestral composition it has retained both these functions: the bottom strings are often used to play the bass voice. The weaving of delicate harmonic sound backdrops (arpeggio technique) is another of its quintessential tasks. In addition, it is the various types of harp glissando that lend the undulations of the orchestra the shimmer of brilliance which is one of the most fundamental sound experiences of them all.

**The harp is one of the quiet instruments. In his revision of Berlioz's Instrumentation Theory, Richard Strauss deals with the subject in the following terms: "The harp must**

**always be treated as a solo instrument, even in the orchestra, if one wishes to avoid writing notes that will not be heard.”**

The harp combines well with all orchestra groups. It has the function of fleshing out the sound and is often treated as a filling-in instrument.

### **Harp + string orchestra**

The harp achieves a good blend with the strings because they are related to each other as stringed instruments, although in particular cases it depends on the playing technique used. The string orchestra can be used as a kind of giant harp (pizzicato technique), as often shown by Beethoven in his orchestral works, in which he uses the strings as a harp substitute.

### **Harp + violin**

Played in unison or in octaves with the violins a blend with contours unfolds which is especially well suited for melodic or thematic high points. The effect achieved when the harp plays harmonics to the violins in unison or octaves is particularly appealing.

### **Harp + double-bass**

When played in unison these two instruments reinforce each other through their resonance. When playing piano the harp provides a solid bass foundation even without the double-bass and can replace the double-bass's pizzicato, albeit with less volume.

### **Harp + woodwinds**

In the middle register the harp doubles the woodwinds' and horns' sustained chords in unison, which produces an extremely mellow effect. Woodwind chords in unison with the harp are one of the key combinations. If the harp plays an octave above the woodwinds in the upper register the harp sounds like an overtone of the woodwinds.

### **Harp + flute**

In unison with the flute, harp harmonics blend particularly well. The harp and flute have always been an extremely popular combination, the harp as the accompaniment to the flute melody.

### **Harp + clarinet**

The blend in unison with the clarinet is somewhat more acerbic than with the flute.

### **Harp + bassoon, contrabassoon and bass clarinet**

In alternating combinations, whether in unison or in octaves, a dark and sustaining effect with clear contours emerges, especially in pianissimo and piano passages, which is well suited as a bass foundation and for bass lines.

### **Harp + brass wind instruments**

#### **Harp + horn**

Both instruments blend well.

### **Harp + trombone**

Both instruments blend in unison, although the trombone must play two to three dynamic degrees lower than the harp so as not to drown it.

### **Harp + singing voice**

Here the aim is less a good tonal blend than the complementing of sound and substance. The harp and singing voice are traditionally partners that complement each other, one performing the role that the other is not performing so that two complementary tonal streams unfold. The singing voice has a higher dynamic level than the harp.

### **Harp + percussion**

#### **Harp + timpani**

Good effect played pianissimo or piano in unison.

#### **Harp + xylophone**

The harp in unison and in octaves with the xylophone lends the latter's short and sparkling notes the necessary resonance, while the xylophone lends the harp a certain edginess.

#### **Harp + celesta, glockenspiel**

In unison and in octaves in the upper register, chords played by these instruments produce a crystalline, gossamer-like, ethereal effect which is used to evoke fairy-tale atmospheres or to denote dream sequences in opera, ballet and film music.

## **Timpani - Sound combinations**

Played in *unison* and in unison with additional octave doubling with the bass instruments of the other instrument groups (bassoon, bass clarinet, cello, double-bass, bass trombone and bass tuba) the timpani produce a fairly homogeneous blend. A blend between the timpani and the rest of the orchestra is created.

If the timpani double an octave on their own (above or below, without any other instrument) their sound becomes more individual.

### **Timpani + brass instruments**

#### **Timpani + trumpets**

Timpani and trumpets form a pairing rooted in history; the significance of their sound and symbolism lies in the tonal development of magnificence: the timpani form a powerful base upon which stirring trumpet fanfares resound. There is no tonal blend between the two instruments, their sounds complement each other to marvelous effect. In pieces from the Classical period the timpani's tonic-dominant foundation is doubled by the trumpets one and two octaves higher – often in climaxes – so that a solid pillar of sound over three octaves results.

#### **Timpani + horns**

The horn – the orchestral instrument that blends with all the instrument groups in the orchestra better than any other instrument – plays the typical cadences in pieces from the

Classical period along with the timpani and the trumpets. The horns play the notes of the tonic and dominant triads in parallel thirds and sixths – about an octave higher than the timpani, while the timpani play the root notes which are usually doubled in two octaves by the trumpets.

The horns can also double the timpani in unison, in which case the first horns play in unison with the timpani, while the second horns play an octave higher. This results in an excellent blend.

If the horns play an octave above the timpani without playing in unison the higher voice is the principal voice and the lower voice (timpani) reinforces its sound.

### **Timpani + trombones**

Often play in unison. Timpani rolls played *piano* which are doubled by long trombone notes played in unison are very effective.

### **Timpani + tuba**

Some parts of the tuba's timbre are absorbed by the sound of the timpani. The tuba often plays an octave below the timpani. The effect of this is dark and powerful.

### **Timpani + woodwinds**

All the sound combinations with the woodwinds develop best in *piano* passages.

### **Timpani + flutes, oboes**

The sounds of these instruments are very distinct from one another.

### **Timpani + bass clarinet**

Produce a melancholy effect played in unison. Part of the bass clarinet's timbre is swallowed by the timpani.

### **Timpani + bassoon, contrabassoon**

The bassoon often plays in unison with the timpani, the contrabassoon an octave lower. The mellow overall sound that results is rich in overtones and develops best when played *piano*.

### **Timpani + strings**

The strings' tremolo chords, played over a foundation of timpani rolls, are tremendously dramatic and one of this combination's most thrilling effects. String tremolos coupled with timpani rolls are well suited for dynamic shifts – *crescendo* and *decrescendo*.

The timpani roll together with a bowed tremolo played *fortissimo* provides a vibrant mass of sound in tutti passages.

### **Timpani + cello**

Often play in unison. Both single strokes and tremolos together with the cellos are a common sound combination. The necessary resonance is provided by the double-basses an octave lower.

### **Timpani + double-bass**

The double-basses complement the timpani an octave below them; the timpani are the principal voice. Usually the cello also plays in unison with the timpani at the same time. The double-basses' pizzicato an octave below gives the timpani additional resonance.

### **Timpani + harp**

Played *pianissimo* or *piano* and in unison these instruments produce a good effect. Timpani, harps and pizzicato strings lend each other additional resonance.

## **Snare drum - Sound Combinations**

The snare drum's tasks are first and foremost rhythmic (rhythmic sound effects).

Probably the most famous example of this is Ravel's *Boléro*, in which two drummers lead the whole orchestra and can even reduce the conductor to the status of a spectator! (-:

However, since the Romantic period it has been entrusted with more and more tonal tasks, for instance lending other instruments a sharper edge by brightening their sound. Playing techniques such as tremolos, trills and bow noises produced by the strings can be emphasized by a drum roll, but single notes such as a pizzicato can also be accentuated by the snare drum.

The snare drum's classic task is the roll in build-ups and tutti passages. In addition to this, the instrument has also seen service as a solo instrument in 20th century works such as Ravel's *Boléro* (with snares) and Bartók's *Concerto for Orchestra* (without snares).

### **Snare drum + other percussion instruments**

In the drum group in the orchestra the snare drum brightens the sound. It usually plays rhythmic figures while the bass drum with its dark timbre accentuates the underlying beat and the dark and somber-sounding tenor drum plays the rolls. The drum group is often complemented by the timpani.

The possible combinations of the snare drum with other percussion instruments are of course many and varied. Which combination is chosen depends on the type of effect desired: together with bright and ringing instruments such as the cymbals, triangle, anvil etc. the composite sound is particularly hard. With darker and softer-sounding instruments, the snare drum is often played snares off.

### **Snare drum + woodwinds**

The woodwinds' *staccato* is accentuated by the snare drum's precise sound.

A sort of blend is achieved especially with the high woodwinds: the snare drum gives the flutes, oboes and clarinets a sharper edge, while its own sound is cloaked.

In combination with the snare drum the bassoon takes on extra brightness, but the two instruments are heard as two distinct lines.

## **Snare drum + brass instruments**

The metallic properties of the brass's timbre are emphasized by the snare drum. There is no blend, however, the sounds remain disparate and are heard as distinct lines.

There is a similarity between the sounds of the snare drum and the trumpet played with a metal mute, since the timbre of the muted trumpet also possesses a high noise level. The effect of the trumpet's noise-like flutter-tonguing is also similar to that of the drum roll.

## **Snare drum + strings**

The snare drum accentuates the strings' staccato, marcato and pizzicato. Because the snare drum is in the treble register this is particularly effective with the high strings.

The noise level of *col legno* (with the wood) playing and the bowed tremolo is also emphasized, which produces an eerie effect.

# **Bass drum - Sound Combinations**

In the orchestra the bass drum performs important tonal and rhythmic tasks in both tutti and solo passages. The marking of rhythm on accented beats, its fundamental task in military, rock, pop and jazz music, is also one of its functions in traditional orchestral music. In more recent times composers have entrusted the drum with other tasks, too.

Because the bass drum possesses tremendous volume, dynamic levels in combinations with other instruments must be carefully balanced. A tonal blend is achieved especially with mellow and full-sounding bass instruments. The bass drum's great resonance often creates the impression that it is playing the same pitch as the bass instruments (which is why, when the instruction *tacet* appears, it is occasionally covered with a cloth, or the drummer places a hand on the head, so that it does not vibrate in sympathy).

## **Bass drum + other percussion instruments**

### **Bass drum + other drums**

Within the drum group, the bass drum, with its deep, dark timbre supplies the bass voice, providing a rhythmic and tonal foundation with its single strokes. The snare drum adds brightness and performs mostly rhythmic figures, while the dark and somber tenor drum plays rolls. The drum group is often complemented by the timpani.

The bass drum's function in the orchestra is by no means limited to accentuating the beat; apart from rolls it can also perform complex rhythmic figures.

### **Bass drum + timpani**

On occasions the bass drum either replaces or reinforces the lowest notes of the D timpani, because in this register the loosely tensioned timpani head sounds dull while the drum sounds lively and energetic. In this instance the timpani notes are often played an octave higher.

### **Bass drum + cymbals**

Since Janissary music the bass drum has had the function of providing the rhythm in

marching music together with the cymbals. This combination remains the foundation of western brass band music today. For this type of music the cymbal is often mounted on the shell of the bass drum.

In the orchestra this practice is usually followed only in marches or waltzes or to suggest a military atmosphere. At certain dynamic levels and in certain playing techniques the combination of bass drum and cymbals is quite capable of creating subtle effects rich in nuances, e.g. by striking the rim of the cymbal only or striking the cymbal with a stick etc. The bass drum's single strokes in combination with a cymbal crash can sound majestic and solemn (the same is true of the gong and the tam-tam). One of the most powerful orchestral effects is the combination of the bass drum roll (especially as a crescendo) and an *fff* cymbal crash.

### **Bass drum + brass / woodwinds**

The combination with the warm and fat sound of the tuba is particularly effective. Single drum strokes and rolls merge with the tuba's single notes and tremolos to form a composite timbre.

The bass drum's resonance is also relatively effective together with the bassoon and contrabassoon.

### **Bass drum + strings**

#### **Bass drum + double bass**

Of the strings the double-bass is ideal for combinations with the bass drum. At appropriately low dynamic levels the bass drum's single strokes reinforce the double-bass's single notes and pizzicato. Its tremolos are also accentuated by the bass drum roll.

## **Field drum - Brief description**

### **Tenor drum/field drum**

*German:* Wirbeltrommel/Rührtrommel

*French:* caisse roulante, caisse sourde

*Italian:* tamburo rulante, cassa rulante

The tenor drum and field drum are drums in the tenor register. In both size and pitch they rank between the snare drum and the bass drum.

Historically the field and tenor drums are two different instruments. The former is up to 70 cm deep and has snares, like the side (lansquenet) drum of the late Middle Ages, while the latter is less deep, has no snares and was introduced in the 19th century to provide a contrast to the bright, snapping sound of the snare drum.

Today both drums are roughly the same size (50 cm deep on average) and possess a dark and somber timbre. In most orchestras one drum with snares (field drum) is used as an all-round instrument, the snares being lifted off whenever necessary. In Great Britain and the U.S.A. a drum without snares (tenor drum) is the standard instrument.

Because the terms "field drum" and "tenor drum" are both used to designate a drum in the

tenor range, it is important to write 'with snares' or 'without snares' next to the name of the drum being called for.

A special form of the field drum is the **Basel drum** (parade drum) with its head diameter of about 40 cm and a shell depth of 40–45 cm. Among its typical characteristics is a particularly tightly braced drumhead for a bright sound (something not desired of the tenor drum). The Basel drumming style places great importance on embellishments and ornamentation and is still maintained with great care and pride by the Basel carnival societies and by drum corps in the English-speaking world.

## Tambourine - Sound combinations

In the orchestra the tambourine performs rhythmic and tonal tasks which generally serve the creation of moods suggestive of folklore, gaiety, dancing, ecstasy etc. It plays solo dance rhythms and accentuates and adds noisy brightness to the overall sound of the orchestra.

### Tambourine + other percussion instruments

As a rule the tambourine combines well with the other drums (snare drum, tenor drum and bass drum) and with metallic-sounding percussion instruments. The snare drum and triangle together with the tambourine produce a diverse composite noise that adds substance to tutti passages.

The combination with the mallet-played instruments (xylophone, marimba) produces a familiar sound image. With wood percussion instruments such as the castanets, wood blocks, temple blocks, slit drum and all the others that require a short, sharp attack, a broad spectrum of subtle sound and noise effects is possible.

### Tambourine + woodwinds / strings

The tambourine can join the woodwinds and lend them a bright, noisy element resulting in a composite sound reminiscent of dance music. Trills, tremolos and rapid rhythmic sequences are reinforced by the tambourine's roll.

*Col legno* playing on the strings is further accentuated by the tambourine.

Excellent effects can also be achieved with the piano.

## Xylophone - Sound combinations

Because of its ability to play bright and incisive notes, the xylophone in the classical-modern orchestra has been given the task either of accentuating the top notes of a melody line or of doubling the melody line of another instrument an octave above it. A further "classic" role of the xylophone is the doubling of rapid runs and figures one or two octaves higher. Such sound combinations achieve a scintillating brilliance that is audible above the entire orchestra. The xylophone is the instrument that can etch sharp lines against a background of sound.

In 20th century music the number of tasks entrusted to the xylophone has increased. In ensembles it features more and more as a solo instrument. Its sound is suitable for all tasks from solo performance to assimilation in the overall tonal background.

### **Xylophone + other percussion instruments**

Full-sounding combination in unison and octaves with the celesta and the glockenspiel. The xylophone is dominant.

### **Xylophone + brass instruments**

Penetrating effect in unison and octaves with the trumpet. Octave and double-octave combinations are possible with the French horn and the lower brass; in these combinations the xylophone sounds like a kind of shrill overtone.

### **Xylophone + woodwind instruments**

Good effects in unison and octaves with the higher woodwinds such as the flute, clarinet and oboe. The xylophone is dominant. In octave and double-octave combinations the xylophone sounds like a shrill overtone.

### **Xylophone + strings**

Full-sounding combinations in unison and octaves with the violin and viola. The xylophone is dominant and lends the strings' pizzicato more of an edge, enabling it to assert itself better. In octave and double-octave combinations the xylophone sounds like a shrill overtone.

### **Xylophone + harp**

Full-sounding combinations in unison and octaves with the harp. The xylophone is dominant.

## **Vibraphone - Sound combinations**

The vibraphone is one of the melody instruments in the percussion group. This is true of all mallet instruments (glockenspiel, xylophone, marimba, lithophone) as well. The tasks performed by the mallet instruments in the orchestra are determined by their sound characteristics and are consequently many and varied:

**Vibraphone:** mellow sound, great resonance. Used to prolong notes or chords. In the lower register it tends to be drowned by other instruments, in the middle and upper registers it can assert itself better. Inaudible in tutti passages. Performs both harmonic and solo tasks, especially in smaller ensembles.

### **Vibraphone + woodwinds**

Similarity with clarinets played with a soft embouchure. A good blend is also achieved with the saxophones.

### **Other mallet instruments**

### **Glockenspiel**

The extremely bright and high sound adds brilliance to melody lines and doubles them an octave higher. Thanks to the increased brightness provided by the glockenspiel the melody line becomes more prominent. In smaller ensembles the glockenspiel also performs solo tasks.

### **Xylophone**

Thanks to the short and very high-pitched sound of the xylophone, note sequences become more sharply defined and can be distinguished even in an orchestra tutti. The sound of the xylophone is audible in every combination of instruments. The xylophone's specialty in the orchestra is the precise definition of immediately recognizable contours and not the blending in with other sounds.

### **Marimba**

Unlike the xylophone the mellow, warm and gentle sound of the marimba is very well suited for tonal blends with other instruments. It performs chiefly harmonic tasks in keeping with its low register. Its ability to assert itself is limited.

## **Marimba - Sound combinations**

The marimba is important primarily as a solo instrument and in various ensembles (chamber music). However, since the second half of the 20th century it has also been entrusted with an increasing number of tasks in the orchestra. It can be used especially in a thin, open or transparent orchestral setting.

### **Marimba + other percussion instruments**

Full-sounding combination in unison and octaves with the celesta and the glockenspiel. Interesting blends with other wood instruments. The hard wood instruments – e.g. the xylophone – are dominant.

### **Marimba + brass instruments**

As a harmonic accompaniment to trumpet melodies. Common combination in Mexican folk music.

### **Marimba + woodwinds**

In general, mellow-sounding and sonorous blends in unison and in octaves with the woodwinds, especially with the deep clarinets.

The combination with the saxophones has proven popular.

### **Marimba + strings**

A very problematical possibility which still has a great deal of potential. A lot of research still needs to be done. Full-sounding combination in unison and octaves with the low strings. The strings are dominant, no new composite sound emerges, the blend is incomplete.

## **A comparison between four mallet instruments**

The marimba is equally capable of performing melodic and harmonic tasks. The tasks performed by the mallet instruments – glockenspiel, vibraphone, xylophone, marimba, lithophone – in the orchestra are determined by their sound characteristics and are

consequently many and varied. Scoring for the various mallet instruments in one single orchestral work requires great subtlety of the composer. In recent decades the use of several different mallet instruments simultaneously has become more common.

### **Marimba**

Unlike the xylophone, the mellow, warm and gentle sound of the marimba is very well suited for tonal blends with other instruments. In the middle and low registers it performs chiefly harmonic tasks. Its ability to assert itself is limited. A full-sounding combination results from octave doubling with the xylophone, in which the xylophone remains dominant. A good timbral balance with other instruments can be achieved through a transparent orchestration within a chamber music setting.

### **Glockenspiel**

The extremely bright and high sound adds brilliance to melody lines and doubles them an octave higher. Thanks to the increased brightness provided by the glockenspiel, the melody line becomes more prominent. In smaller ensembles, the glockenspiel also performs solo tasks.

### **Vibraphone**

Mellow sound, great resonance. Used to prolong notes or chords. In the lower register it tends to be drowned by other instruments, in the middle and upper registers it can assert itself better. Inaudible in tutti passages. Performs both harmonic and solo tasks, especially in smaller ensembles.

### **Xylophone**

Thanks to the short and very high-pitched sound of the xylophone, note sequences become more sharply defined and can be distinguished even in an orchestra tutti. The sound of the xylophone is audible in every combination of instruments. The xylophone's specialty in the orchestra is the precise definition of immediately recognizable contours and not the blending in with other sounds.

## **Glockenspiel - Sound combinations**

Although the glockenspiel player could hold two mallets in each hand the main playing technique is the performance of one-part melody lines, similar to the xylophone. Chords and harmony are nowadays more the province of the marimba. The vibraphone, on the other hand, is equally well suited to the playing of both melody and harmony.

In the orchestra, the main task of the glockenspiel is to add brightness to melody lines played by other instruments by doubling either in unison or one, two or three octaves above. It performs this task most frequently in combination with the flute, piccolo, celesta and harp, less often with the violin, oboe and clarinet.

Solos are fairly rare, though very effective and noticeable. They appear less for tonal reasons than for symbolic ones (the glockenspiel represents birds, or the swift passage of time).

The glockenspiel, as both a doubling and a solo instrument, can be seen as having an accentuating effect. In Classical-Romantic tradition it was used only sparingly so that its extremely bright timbre did not tire the audience. With the shift of the sound ideal in the 20th

century the glockenspiel has been entrusted with a much greater range of tasks in a wide variety of musical styles.

## **A comparison between four mallet instruments**

The glockenspiel is one of the melody instruments in the percussion group. This is true of all the other mallet instruments (vibraphone, xylophone, marimba, lithophone) as well. The tasks performed by the mallet instruments in the orchestra are determined by their sound characteristics and are consequently many and varied:

### **Glockenspiel**

The extremely bright and high sound adds brilliance to melody lines and doubles them an octave higher. Thanks to the increased brightness provided by the glockenspiel, the melody line becomes more prominent. In smaller ensembles, the glockenspiel also performs solo tasks.

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### **Xylophone**

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### **Marimba**

Unlike the xylophone, the mellow, warm and gentle sound of the marimba is very well suited for tonal blends with other instruments. It performs chiefly harmonic tasks, in keeping with its low register. Its ability to assert itself is limited.

## **Celesta - Sound combinations**

- The celesta is a relatively quiet and soft-sounding instrument and is easily drowned by other instruments.
- The dynamic range is also limited, far narrower than the piano's.
- The resonance of its notes is similar to that of the piano in the same registers.
- The range is from the middle register (C3) to the highest register (C8).

Its sound characteristics mean that the celesta's main tasks are the addition of color rather than melodic, harmonic or rhythmic parts. In combination with other instruments it brightens the overall sound. It combines most effectively with the **harp**, the **high strings** and the **woodwinds**, especially the flute. The warm sound of the celesta is less apparent in sound combinations than that of the glockenspiel.

### **The celesta's tasks**

The celesta's tasks in combinations with other instruments can be divided into three main categories:

- Providing highlights in the form of single notes or chords (similar to the triangle and the glockenspiel). In such cases it is distinctly audible. The playing of melody excerpts.
- Doubling other voices in unison or an octave, two octaves, a third or a fifth apart. Here the celesta's sound merges with other instruments to form a composite timbre similar to the mixture stops of the organ. An example of this effect can be found in Maurice Ravel's *Boléro*.
- Piano figures consisting of glissando-like scales, arpeggios or octave tremolos lend a silvery sheen to stirring orchestral passages. Gustav Mahler (e.g. in his 6th Symphony) and Béla Bartók (in *Music for Strings, Percussion and Celesta*, for instance) gave the celesta such demanding tasks which require a pianist to perform them.

The celesta best fulfills the tasks described above in transparent, chamber music like scoring.

The celesta can also replace the glockenspiel to play challenging parts originally written for the keyed glockenspiel, which fell into disuse owing to its unsatisfactory sound.

## Cymbals - Sound combinations

Pairs of cymbals are used to add a particular timbre to the overall sound of the orchestra, to provide accents and accentuate climaxes.

The instrument's sound is very conspicuous and should therefore be used with care.

### **Pair of cymbals + other percussion instruments**

A good blend of percussion instruments is achieved especially by those with a bright and penetrating sound such as the triangle, tambourine, bells, sleigh bells and castanets.

The combination with the bass drum and other lower percussion instruments (timpani, tom-tom etc.) produces a different, very particular and effective composite timbre.

### **Pair of cymbals + brass instruments**

Trumpets and trombones combine especially well with the cymbal and the timbre becomes more penetrating.

## Suspended cymbal - Sound combinations

### **Turkish cymbal**

The Turkish suspended cymbal is used chiefly to add a particular timbre to the overall sound of the orchestra or to provide accents. The instrument's sound is very conspicuous and should therefore be used with care.

#### **Turkish cymbal + other percussion instruments**

A good blend of percussion instruments is achieved especially by those with a bright and penetrating sound such as the triangle, tambourine, bells, jingle bells and castanets.

The combination with the bass drum and other lower percussion instruments (timpani, tom-tom etc.) produces a different, very particular and effective composite timbre.

#### **Turkish cymbal + brass instruments**

Trumpets and trombones combine especially well with the cymbal and the timbre becomes more penetrating.

### **Chinese cymbal**

The Chinese suspended cymbal is always distinctly audible. Because its exotic timbre is only rarely used in the orchestra it is often felt to be outlandish. For this reason it should always be used with great care.

#### **Chinese suspended cymbal + other percussion instruments**

The Chinese suspended cymbal achieves its best blend with the tom-tom, but combinations with other percussion instruments such as the bass drum, side drum, Turkish suspended cymbal and gongs are also possible.

## **Gong - Sound combinations**

Because the sounding note has a precise pitch it can be used to color a melody or the overall sound of the orchestra. It should always be used sparingly, however, because it is highly conspicuous.

#### **Gong + other percussion instruments**

A good blend of percussion instruments is achieved especially by those with a deep and dark sound such as the bass drum, tam-tam etc.

However, the gong can also add bass to groups of high mallet-played instruments such as the marimba, the vibraphone, etc.).

#### **Gong + brass instruments**

Deeper brass instruments blend relatively well with the gong, their timbre becomes darker or more majestic.

#### **Gong + woodwinds, strings**

When a gong is played at a low dynamic level (*p*), a degree of blending is possible with low woodwinds such as the bassoon and with the low strings, such as the cello and the double-bass.

## **Tam-tam - Sound combinations**

The tam-tam is used to add a particular timbre to the overall sound of the orchestra or to provide accents. The instrument's sound is very conspicuous and should therefore be used with care.

### **Tam-tam + other percussion instruments**

A good blend of percussion instruments is achieved especially by those with a deep and dark sound such as the bass drum, gong, timpani etc.

However, the tam-tam can also add bass to the high, metallic timbre of instruments such as the cymbals, triangle, tambourine, bell-tree, bells, etc.).

### **Tam-tam + brass instruments**

Trumpets and trombones combine especially well with the tam-tam and the timbre becomes more penetrating and more metallic, although it can also sound more threatening.

*Piano* tones can also achieve a good blend with mellow-sounding brass such as the horns.

### **Tam-tam + woodwinds, strings**

*Piano* tones can achieve a good blend with low woodwinds such as the bassoon and with low strings such as the cello and the double-bass.

## **Tubular bells - Sound combinations**

Tubular bells are used principally to perform two tasks: as a substitute for church bells and to add color. The practice of combining them with metallophones of all kinds was inspired by the music of eastern Asia and was adopted by orchestra music in the 20th century.

The extent to which tubular bells blend with other orchestra instruments depends on the sound structure. They are made in such a way that their harmonic series is as harmonic as possible which favors combinations with other orchestra instruments that have a harmonic structure of partials. Tubular bells still retain inharmonic partials, however, so that the bell-like character of the sound, which contains a much larger proportion of inharmonic components, is not lost.

### **Tubular bells and other orchestra instruments**

These properties mean that a particularly good blend is achieved with metal idiophones with definite pitch: glockenspiel, vibraphone, gong.

In addition, they combine well with all instruments that have a sound composed of attack and resonance: gong, cymbals, tam-tam, timpani, harp, piano.

Tubular bells are always distinctly audible because their timbre is different from that of all the other orchestra instruments. A large dynamic spectrum, from extremely soft *pp* tremolos to great crescendos, is possible. Combinations particularly with the brass and woodwind playing fat chords create a stately, festive and magnificent setting. In such cases the brass support the strike note with *sforzando* attack and the resonance with sustained notes.

To achieve a particularly powerful sound, tubular bells and plate bells are played simultaneously (often by the same musician).

## **Plate bells - Sound combinations**

Bell plates are used principally to perform two tasks: as a substitute for church bells and to add color. The practice of combining bell plates with metallophones of all kinds was inspired by the music of eastern Asia and was adopted by orchestra music in the 20th century.

The extent to which the bell plates blend with other orchestra instruments depends on the sound structure. Their properties mean that a particularly good blend is achieved with metal idiophones with definite pitch: glockenspiel, vibraphone, gong. In addition, they combine well with all instruments that have a sound composed of attack and resonance: Gong, cymbals, tam-tam, timpani, harp, piano.

Played simultaneously, bell plates and tubular bells produce a powerful combination.