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# HANDBOOK OF PERCUSSION INSTRUMENTS

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# NAMES OF PERCUSSION INSTRUMENTS IN ENGLISH-GERMAN-ITALIAN-FRENCH

The following table contains names of percussion instruments commonly used. For translations of frequently encountered performance instructions, such as damped, bowed, without snares, with soft mallets, with the hands, etc., pertinent dictionaries should be consulted.

The names of the instruments appear here in the order in which they are discussed in the book. For alphabetical listings see the Index.

ENGLISH	GERMAN	ITALIAN	FRENCH
Timpani Kettle Drums	die Pauken die Kesselpauken	i timpani	les timbales
Xylophone	das Xylophon	lo xilofono il silofono	le xylophone
Keyboard Xylophone	das Klaviaturxylophon	lo xilofono a tastiera il silofono a tastiera	le xylophone à clavier
Xylorimba Xylomarimba	die Xylomarimba	la xilomarimba la silomarimba	la xylomarimba la xylorimba
Marimba Marimbaphone	das Marimbaphon	il marimbafono la marimba	le marimbaphone
Bass Xylophone	das Bassxylophon	lo xilofono basso il silofono basso	le xylophone basse
Trough Xylophone	das Trogxylophon das Resonanzkastenxylophon	lo xilofono in cassetta di risonanza	le xylophone à cassette- résonance
Glockenspiel Orchestra Bells	das Glockenspiel das Stabglockenspiel	i campanelli	le glockenspiel le (jeu de) timbres
Carillon Chimes Bells	das Turmglockenspiel	il gariglione il cariglione la soneria di campane	le carillon
Keyboard Glockenspiel	das Klaviaturglockenspiel	i campanelli a tastiera	les (jeux de) timbres à clavier le glockenspiel à clavier
Celesta	die Celesta	la celesta	la célesta
Vibraphone or Vibes Vibraharp	das Vibraphon	il vibrafono	le vibraphone
Metallophone	das Metallophon	il metallofono	le métallophone
Loo-Jon	das Loo-Jon	il loo-jon	le loo-jon
Lithophone Stone Disks	das Lithophon das Steinspiel	il litofono la lastra di sasso	le lithophone
Antique Cymbals Crotals Greek Cymbals	die Zimbeln	i cimbali antichi i crotali	les cymbales antiques les crotales

# TABLE OF BEATERS, WITH ILLUSTRATIONS

Size, Character, and Illustrations of Beaters with their Common and Less Common Uses.

In addition to the sounding parts of the instruments themselves, the beaters, i.e., the means by which these parts are made to sound, are of considerable timbral importance to a majority of percussion instruments.

The independent development and proliferation of percussion beaters is particularly evident in today's availability of a large number of beaters that can be used for playing several different instruments instead of being integral parts of specific instruments only. We speak here of the beaters as such, not as components of any particular percussion instruments.

The various types of beaters are classified into the following five groups according to their construction and names:

1. Beaters:  
*Beaters* having as basic characteristics suitably long handles of wood or cane with ball-shaped, elliptical, or disk-shaped heads of various materials possessing different degrees of softness or hardness. Heads also may be wrapped, covered, or padded.
2. Hammers or Mallets:  
*Hammers* or *Mallets* differing from beaters by having a hammer-like beating part of wood, horn, metal, or synthetic material, any of which may or may not be covered or padded.
- 3a. Sticks:  
*Sticks* tapered towards their points and usually having small beater heads.\*
- 3b. Rods:  
*Rods*, cylindrical, of metal or wood in various lengths and thicknesses.
4. Metal Clappers:  
*Metal Clappers* similar to clappers in cast bells.
5. Switches and Brushes:  
*Switches* and *Brushes* characterized by a flexible, resilient beating part.

\*Transl. note: The reader should not be confused by the fact that in American usage the term "stick" is applied rather loosely, as in the case of "drum stick." We speak of side drum "sticks," and correctly so, but we also refer to bass drum and timpani "sticks" although strictly speaking they are beaters or mallets.

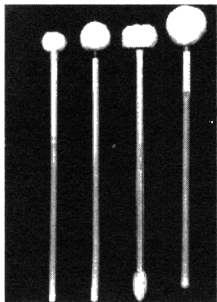
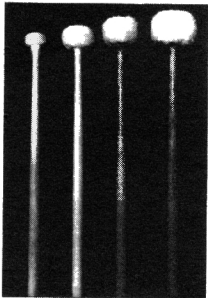
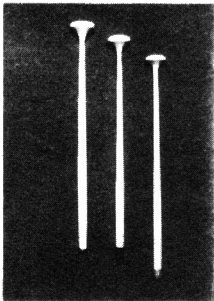
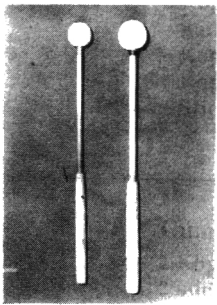

Illustration	Name Material (Measurements)	Instruments for which the respective beaters are commonly used -- Common --	Other instruments playable with the respective beaters, though only if spe- cifically indicated -- Not Common --
	<p>Timpani Beaters: Soft-felt beaters or pairs of beaters with cores of different sizes and degrees of hardness, covered with soft felt of various degrees of thickness and density. Diam. of head ca. 2.5 - 4.5 cm Length of handle ca. 30 - 35 cm</p>	<p>Timpani Bass Drum (rolls) Frame Drum Chinese Tom-Tom Loo-jon</p>	<p>Vibraphone Metallophone Marimbaphone Bass Xylophone Piano Strings Long Drum without snares Tenor Drum without snares Snare Drum without snares Bass Drum Boobam Bongo Drum Conga Drum Modern Tom-Toms Timbales Cymbals Small Tamtam Animal Bells     mounted on stand</p>
	<p>Beaters with heads consisting of several flannel disks. Diam. of head ca. 2.5 - 5 cm Length of handle ca. 30 - 32 cm</p> <p>Sponge Beaters (now generally replaced by soft-felt beaters)</p>	<p>Timpani</p>	<p>as above</p>
	<p>Wooden Timpani Beaters: Heads of hardwood, usually wound with straps of roughened leather, or with a leather band around the edge of the head. Diam. of head ca. 2.5 - 3.3 cm Length of handle ca. 30 - 32 cm</p>	<p>Timpani (in Baroque music)</p>	<p>Timpani (if wooden mallets are indicated) Metallophone (hard) Vibraphone (hard)</p>

Illustration	Name Material (Measurements)	Instruments for which the respective beaters are commonly used -- Common --	Other instruments playable with the respective beaters, though only if spe- cifically indicated -- Not Common --
	Hard-Felt Beaters: Heads of hard felt. Diam. of head ca. 2 - 5 cm Length of handle ca. 30 - 35 cm	Small Tamtams Tamtam (rolls) Suspended Cymbals (rolls) Slit Drums	Timpani Xylomarimba Marimbaphone Trough Xylophone Vibraphone Metallophone Piano Strings Bass Drum Drums without snares Tambourine mounted on stand Hand Drums Tom-Toms Timbales Suspended Cymbals (individual beats) Herd Bells (Almglocken) mounted on stand Wood Blocks
	Hands: <i>con la</i> (or <i>colla</i> ) <i>mano</i> (with the hand)	Hand Drums Arabian Hand Drums (Darabuccas) Bongo Drums Conga Drums Tablas Tambourine Glass Harp	Timpani Drums Tom-Toms Tamtam ( <i>ppp</i> ) Cymbal ( <i>ppp</i> )

# Instruments with Definite Pitch

## Timpani or Kettle Drums

Range and

Notation:

Sound: as notated

30", 32"  
(Bass or D Timp.)

28", 29"  
(Large or G Timp.)

25", 26"  
(Small or C Timp.)

23"  
(Piccolo or A Timp.)

Low Timpani

High Timpani

Common beaters: timpani beaters (different sizes of beaters with heads of soft felt or flannel)

Less common:      wooden beaters (wooden heads covered with leather)  
                          drum sticks  
                          wire brushes  
                          by hand (*con la* or *colla mano*)

*History.* The membranophones called timpani are of ancient Asiatic origin. The first timpani must have been made of clay and later of wood, covered with skins tied by ropes. Throughout the Orient, and spreading as far as India, timpani were usually used in pairs, tuned a fourth or fifth apart, to accompany straight trumpets and buysines.

In Europe—at first in Spain and southern Italy—very small timpani of Arabic origin appeared during the crusades and into the 13th century. The player carried them either by handles or attached to his belt in pairs, and they are still used in this way as drum-like instruments in the Islamic world.

The first large timpani of the modern Occidental type reached western Europe by way of Hungary and Poland in the middle of the 15th century. Closely associated with trumpets, they established themselves firmly in the musical life of the Renaissance courts. Gradually they became the dominant skin-membrane instruments everywhere, reaching the peak of their usefulness and importance in the large orchestras of the Classical and Romantic periods.

*Construction, Pitch Range, and Notation.* The truncated conical kettle, open at the top, is nowadays usually made of copper sheeting. The open top is covered with skin wound over a hoop so that its tension—and therefore its tuning—can be regulated mechanically. At the bottom of the kettle is a smaller round opening providing for equalization of air pressure during playing.

Especially prepared, tanned calf skin is preferable over all other animal skins for the batter head. A strip about the width of a man’s hand, called a “backbone,” runs across the center of the skin, constituting a natural thickening.

For some years now, batter heads of synthetic material have been used on timpani. These so-called plastic heads are bonded onto the hoop and have the advantage of being much less sensitive to climatic conditions, nor do they require the special concern for the “backbone,” since plastic heads do not have any. It is not easy, however, to convert instruments covered with calf skin to plastic, because a plastic head requires a kettle with a specially built rim.

Orchestras have always used at least two timpani: low and high. Today there usually are at least two low and two high drums at the timpanist’s disposal, to which more may be added in special cases. The pitch of a normal pair of timpani, i.e., a G drum (28” or 29”) and a C drum (25” or 26”), ranges from about F to f-sharp. For higher pitches, up to about b, a specially built drum is used—the so-called high A drum or piccolo timpano (23”). Its smaller diameter and special mechanism make possible a greater degree of skin tension.

Examples for the use of the A drum – Stravinsky: *Les noces*, *Le Sacre du printemps*;

Piston: Violin Concerto; Orff: *Die Bernauerin*, *Antigona*, *Trionfi* (Mus. Ex. 15), *Oedipus*; Hartmann: 7th Symphony (Mus. Ex. 11).

It is difficult to go beyond pitches above b, even on the specially designed piccolo timpani. For such pitches small, one-headed drums such as bongos are best suited.

Examples for the use of timpani above b – Britten's ballet *The Prince of the Pagodes* (c-sharp<sup>1</sup> - d<sup>1</sup>); Milhaud's *La création du monde* (d<sup>1</sup> - f-sharp<sup>1</sup> – Mus. Ex. 12)

The so-called D or bass timpano (30"-32") produces low pitches down to about D. Such a large drum needs a "well-rested" head because skin that has been frequently stretched to its full limit becomes impure in the lower pitches. Similarly, timpani that have been used for high pitches should not be tuned below d if a clear pitch is desired.

The nomenclature "G drum" and "C drum" goes back to the time before Beethoven when timpani were always notated G and c (dominant and tonic), while the actual ("concert") pitch—for example, Ạ and d—was given at the beginning of the work, just as with transposed instruments.

*Types of Timpani.* Timpani are classified according to their tuning devices. There are four basic types. First, the hand-screw timpani, designed in the 16th century and tuned by turning six or eight screws or even more, depending on the design. The screws were turned either with tuning keys or with wing nuts. Composers were forced to take this time-consuming tuning operation into account. For example, in Verdi's compositions up to 1874, tunings are found in the timpani parts which do not always conform to the key signature of the composition, solely because proper retuning could not be accomplished in the time available.



Screw Timpano

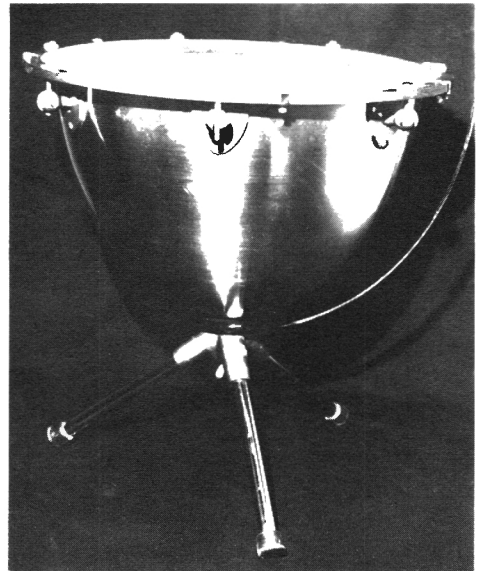
The development of compositional technique toward progressive chromaticism virtually demanded the construction of timpani with centralized tuning. G. Kramer, royal court timpanist in Munich, was the first to invent a device to operate all the tuning screws at once (1812). Numerous types of machine timpani have since been developed, of which the lever timpani are the most widespread. They are still used in smaller orchestras and as supplementary drums in larger ones. The lever timpani have all the tuning screws

combined in a central thread so that only a main screw needs to be manipulated, either with a master lever or with a crank. Within the limits of the possible pitch range of the instrument any desired changes may thus be obtained by operating only one device.



Lever Timpano

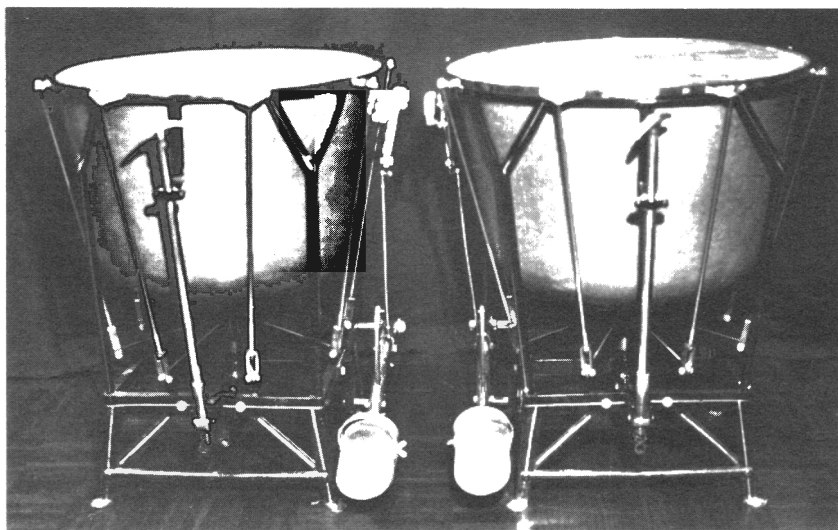
The rotary-tuned timpani represent another system, first built in 1821 by J. C. N. Stumpff in Amsterdam. In this type the kettle is mounted on a stand equipped with a central spindle which, as the entire kettle is rotated, functions as a main tuning screw. A variety of tunings are easily accomplished but there is the disadvantage that the beating spot keeps changing as the kettle is rotated. It is therefore impossible to avoid playing occasionally on the less desirable beating spots such as the “backbone” which vibrates poorly.



Rotary-Tuned Timpano

The pedal timpani, invented by Pittrich in 1872 and continuously improved ever since,

must be considered the best solution to date because it permits a relatively quick tuning by means of a pedal operated by pressure of the timpanist's foot. This makes it possible to change the tuning not only during short rests but also while playing. The desired pitch can be read from a gauge coordinated with the pedal. The percussion sections of present-day orchestras are usually equipped with modern timpani of this type.



Pedal Timpani

It is difficult, however, to achieve precise tunings with the pedal because of the different degrees of flexibility of the skins and the climatic influences upon them: the wider the required interval of retuning, the greater the difficulty. The timpanist is forced, therefore, to recheck the tuning again and again by tapping his finger softly on the drum head—insofar as rest-counting will permit.

For retuning a set of more than two timpani it is essential to estimate the minimum time needed for the transfer of the foot from pedal to pedal, and for the reading of the pitch gauge of each drum.

Altering the tuning immediately after striking produces a change in the reverberations equal to a glissando. One way of doing this is first to strike the initial, notated pitch, and thereafter to press down the pedal until the second (final) notated pitch has been reached. This rather delicate effect is only practical in solo playing; in an orchestral context it is not audible. A glissando produced in this manner, but progressing from a high pitch to a low one, is only very faintly perceptible and therefore even less useful. A second type of glissando may be produced while rolling and is effective going either from low pitch to high or *vice versa*, and at any dynamic level.

Examples for timpano glissandi – Bartók: *Music for Strings, Percussion, and Celesta*, *Violin Concerto*, *Sonata for Two Pianos and Percussion*; Egk: *Die chinesische Nachtigall*; Morton Gould: *Latin-American Symphonette*; Henze: *Elegy* (Mus. Ex. 8), *Il re cervo* (Mus. Ex. 9); Kotoński: *Musique en relief* (Mus. Ex. 77).

*Sound Factors.* The fullness and purity of the sound of a kettle drum depend chiefly upon a select, even-textured calf skin tuned by the six or more tuning screws with which each drum is equipped. Even the most minute unevenness in the sound of the skin must be eliminated through fine-tuning, which is difficult and requires careful and tedious listening. This fine-tuning operation must be repeated at intervals, depending on how much the instruments are used. Naturally, climatic conditions also play a large part as far as sound is concerned: dry heat or cold cause the skin to contract and will impair both sound and tuning, while high humidity (as for example in full concert halls\*) slackens the skins excessively.

\*Trans. note: Not to mention tropical climate.



made of horn. The reverberations are short. The pitch of these instruments, which are used occasionally in modern Japanese music, ranges within the three-line octave. A *tchanchiki* in  $f^3$  has a strike area of 10 cm (4"); its diameter at the open side, including the lip, is 12 cm (4 3/4"); and its depth is 2½ cm (1").

Examples -- Yuso Toyama: Rhapsody for Orchestra.

## Animal Bells

### Cow Bells, Herd Bells (Almglocken), Metal Block, Cencerro

Common beaters for Herd Bells (*Almglocken*):

bell clappers

Beaters for Herd Bells, according to score instructions:

soft-felt mallets  
hard-felt mallets  
rubber mallets  
vibraphone mallets  
leather cymbal beaters  
xylophone mallets  
wooden mallets  
drum sticks  
metal rods

Common beaters for Cowbells:

drum sticks

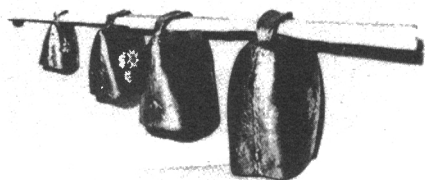
*Origin, Construction, Types.* Ever since man has herded domestic animals, bells have been hung on them to identify their location by sound or to protect them from evil spirits. Before metals were known, bells of wood were carved in the shape of broad trapezoids with one or several wooden clappers hung inside. Their sound resembled that of small slit drums. They were found in North India, ancient Persia, the Congo, and Estonia. In some places they are still used today.

In Africa the usual practice was to work fruit hulls into bells.

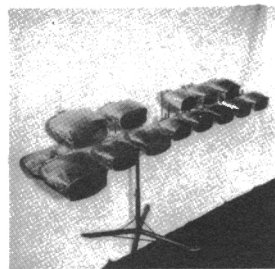
With the advent of ore mining, bells of bent and forged sheet-metal with rod-shaped inner clappers came into being. These bells were used singly, in pairs, or in bunches.

While the elongated, conical metal bells that originated in Africa and came down to us via Spain and Latin America have a clear, rather floating tone, the more pot-bellied bells common in the Alps sound duller and more muffled. In Switzerland such bells were also made of brass and used for ceremonial purposes; they have a maximum height of approximately 45 cm (18") and a circumference of approximately 150 cm (60") at their widest point.

By assembling a set of Alpine herd bells or *Almglocken*, from the largest to the smallest, a chromatic scale from about  $c$  to  $c^4$  or even to  $g^4$  may be obtained. It is necessary, however, to use a soft beater for the bells in the lowest octave to obtain a pitch.



Alpine Herd Bells

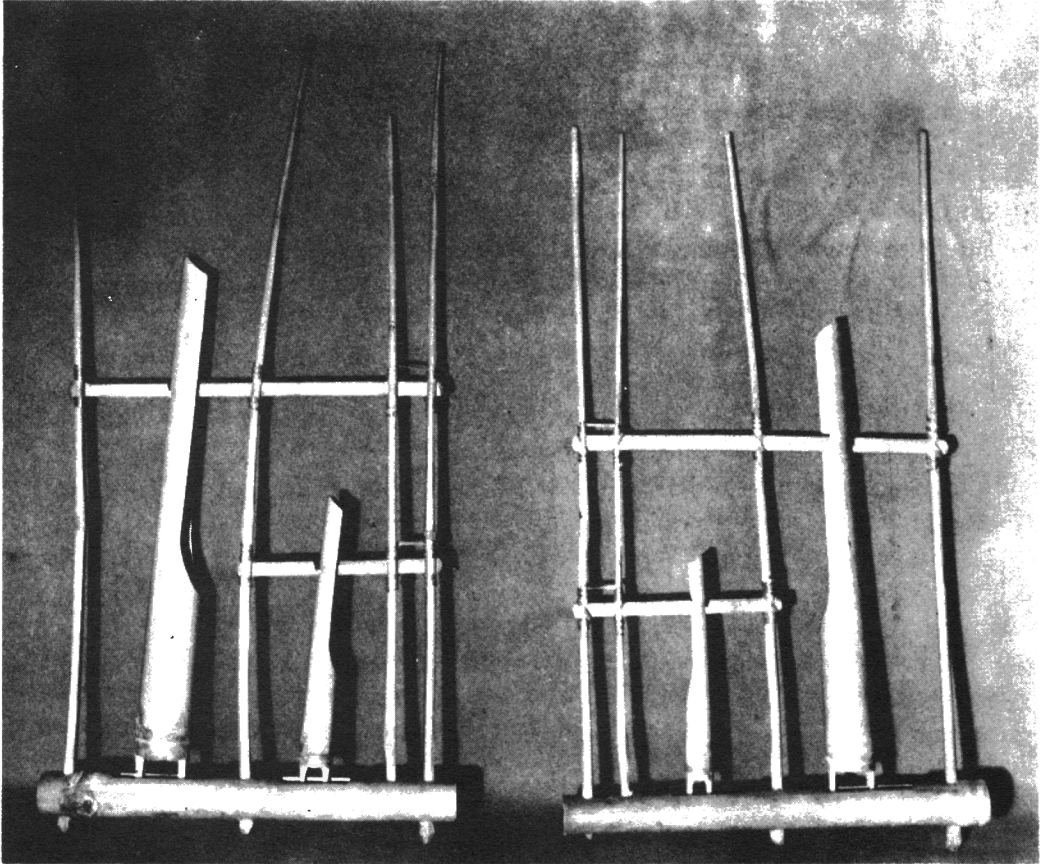


Chromatically tuned  
Alpine Herd Bells

developed. They are comparable to the sets of cowbells used in alpine pageants, or to the English hand bells.

Although the angklung sounds mostly like rattling bamboo, its pitch is clearly discernible. The possible pitch range lies within the two and three-line octaves, but very large specimens sound lower.

Examples – Orff: *Catulli carmina*, *Weihnachtsspiel* (Mus. Ex. 110 – both examples use several angklungs without indication of specific pitches), *Prometheus* (two angklungs tuned to  $g\flat$  and  $b\flat$ ).



Angklung

## Rattle Drum; Chinese Paper Drum

The rattle drum is a two-headed frame drum to which are attached small wooden or metal balls hanging from strings. When the drum is turned quickly on its axis, the balls are flung against the drumheads and produce a rattling sound.

A rattle drum in the shape of an hourglass and presumably coming from Tibet was originally made of two human skulls. The modern version with string-tensioned drumheads permits changes of tuning while being played, by varying the pressure on the tensioning strings with the hand that holds the instrument (see Ill. on p. 162).

The Chinese version of this type of rattle drum, also called Chinese paper drum, has a handle. Its diameter measures ca. 6 to 11 cm (2 3/8" to 4 3/8" – see Ill. on p. 162).

Examples – Kagel: *Match for Three Performers* (indicated in the score as Chinese paper drum – Mus. Ex. 101).



Ex. 13: Timpani, with wooden mallets (*mit Holzschl.*); Cymbal, with sponge beater (*mit Schwammmschl.*) or felt beater.  
(Gustav Mahler: *7th Symphony*)

Ex. 14: Timpani in Music of the Baroque Era, usually played with wooden beaters.  
(Jacques Philidor le cadet: *Partition de plusieurs marches*–1705)

Ex. 15: Bass Drum, with drum sticks; Tamtam; Timpani, with drum sticks.  
(Carl Orff: *Trionfi*)

Ex. 16: Soloistic Use of Timpani.  
(Benjamin Britten: *Nocturne for Tenor Solo, Seven Obligato Instruments, and String Orchestra*, Op. 60)

492  $\begin{pmatrix} 3 \\ 4 \end{pmatrix}$

Pk.

kl.Tr.

Bck.

gr.Tr.



490

Pk.

kl.Tr.

Bck.

gr.Tr.

Ex. 17: Soloistic Use of 6 Timpani, Snare Drum (*kl. Tr.*), Cymbal (*Bck.*), and Bass Drum (*gr. Tr.*).  
(Karl Amadeus Hartmann: *6th Symphony*)

R. Cr.

A. Gl.

3  $\Delta$

Ex. 18: Descant Set of Tubular Chimes (*R. Cr.*), Set of Herd Bells (*A. Gl.*), and 3 Triangles ( $\Delta$ ).  
(Michael Gielen: *Ein Tag tritt hervor, Pentaphonie*)

(♩ = 120)

This musical score is for a percussion ensemble. It includes staves for Timpani (Timp.), Xylophone (Xyl.), Tambourine (T.d.B.), Snare Drums (C. cl. and Tamb.), and Bass Drum (Gr. C.). The tempo is marked as quarter note = 120. The score shows various rhythmic patterns and dynamics such as *mf*, *sf*, and *f*.

Ex. 19: Timpani, Xylophone, Tambourine, Snare Drums (C. cl., Tmb.) with and without snares on, Bass Drum (Gr. C.).  
(Igor Stravinsky: *Les noces*)

This musical score is for a percussion ensemble. It includes staves for Glockenspiel (Glocksp.), Xylophone (Xyl.), Triangle (Trgl.), Snare Drum (kl. Tr.), and Celesta. The score features a 4-measure rest at the beginning of the Glockenspiel part, followed by complex rhythmic patterns and dynamics like *p cresc.*, *f*, *pp*, *p*, *mf*, and *sf*. A handwritten note "klingt wie notiert" is present above the Glockenspiel staff.

Ex. 20: Glockenspiel, Xylophone, Triangle, Snare Drum (kl. Tr.), and Celesta.  
(Karl Amadeus Hartmann: *6th Symphony*)

This musical score is for a Keyboard Xylophone. It shows a single staff with complex rhythmic patterns and dynamics including *mf* and *f*. The score is marked with a 3-measure rest at the beginning.

Ex. 21: Keyboard Xylophone.  
(Béla Bartók: *Bluebeard's Castle*)

ca. 72

45 sec. 55 sec.

2 (N) Becken

2 (N) Tam Tam

1\*) Glsp.

1\*) Vibra

1\*) Röhrengl.

1\*) Almg.

1\*) Becken

1\*) Marimba

1\*) constant motion or dense roll (Sound Panel: Glockenspiel, Vibraphone, Tubular Bells, Herd Bells, Cymbal(s), Marimba).

2\*) stroke the rim of the cymbal with a small file (nail file).

3\*) fast circular or rubbing motion.

⌀ = needle

\ = stroke from center to rim.

⊕ = small file

Ex. 22: 2 different Cymbals (*Becken*) and 2 Tamtams stroked or rubbed with a needle or with a small file; homogeneous sound-panel produced with the other instruments. (Walter Haupt: *Apeiron*)

(4/4)

vi Xyl.

II 1. Spieler

IV 2. Spieler

Marimb.

I 3. Spieler

III 4. Spieler

V Vib.

*f* molto cresc. *äußerst stark* *ff* *ppp*

Ex. 23: Xylophone, 4 Marimbas for 4 players (actually, only 2 marimbas with 2 players each are needed), Vibraphone.  
(Karl Amadeus Hartmann: *8th Symphony*)

(6/8)

1. Baß-xyl. 2.

3. Vib.

2. Spieler (mit Holzschlägel)  
rechtes Fell (Rand)

1. Spieler linkes Fell (mit Pk. Schlägel)

2. gr.Tr.

Ex. 24: Bass Xylophone (3 players), Bass Drum (2 players). First player strikes the left head of the bass drum (with timpani sticks); second player strikes the right head (with wooden beaters, at the edge of the skin).  
(Carl Orff: *Die Bernauerin*)