

The World Atlas of Musical Instruments

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THE CLASSIFICATION OF INSTRUMENTS

THE STUDY OF MUSICAL INSTRUMENTS, their history, evolution, construction, and systematics is the subject of the science of organology. Its subject matter is enormous, covering practically the entire history of humankind and includes all cultural periods and civilizations. The science studies archaeological findings, the collections of ethnography museums, historical, religious and literary sources, paintings, drawings, and sculpture. Organology is indispensable for the development of specialized museum and amateur collections of musical instruments. It is also the science that analyzes the works of the greatest instrument makers and their schools in historical, technological, and aesthetic terms.

The classification of instruments used for the creation and performance of music dates back to ancient times. In ancient Greece, for example, they were divided into two main groups: blown and struck. All stringed instruments belonged to the latter group, as the strings were “struck” with fingers or a plectrum. Around the second century B. C., a separate string group was established, and these instruments quickly acquired a leading role. A more detailed classification of the three groups – wind, percussion, and strings – soon became popular.

At about the same time in China, instrument classification was based on the principles of the country’s religion and philosophy. Instruments were divided into eight groups depending on the quality of the sound and on the material of which they were made: metal, stone, clay, skin, silk, wood, gourd, and bamboo.

In neighboring India, the system included fewer and larger categories, generally corresponding to the modern European classification: *tata*, *sushira*, *avanaja*, and *Ghana* – strings, wind, membranophones, and idiophones.

Around 1880, Victor Mahillon, the founder of the famous Brussels collection, published a full classification including non-European and folk instruments, the *Catalogue descriptif et analytique du Musée instrumental du Conservatoire Royal de Musique, Bruxelles*. In 1914, his study was followed by the publication of *Systematik der Musikinstrumente* by Erich von Hornbostel and Curt Sachs. Hornbostel and Sachs focused on the sound-generator: an air-column, a string, a membrane, or a hard surface. This standard was adopted in the science of organology, and serves as a basis for both teaching and research, although the classification of the symphony orchestra (strings, wind [woodwind and brass], and percussion) is still popular in musical circles.

Today, there are many systems of classification for musical instruments, based on their different characteristics. Each system has its own sphere of application.

The scientific classification of musical instruments, based on the principle of sound-generation, includes five groups:

aerophones (the sound is generated by an air-column),

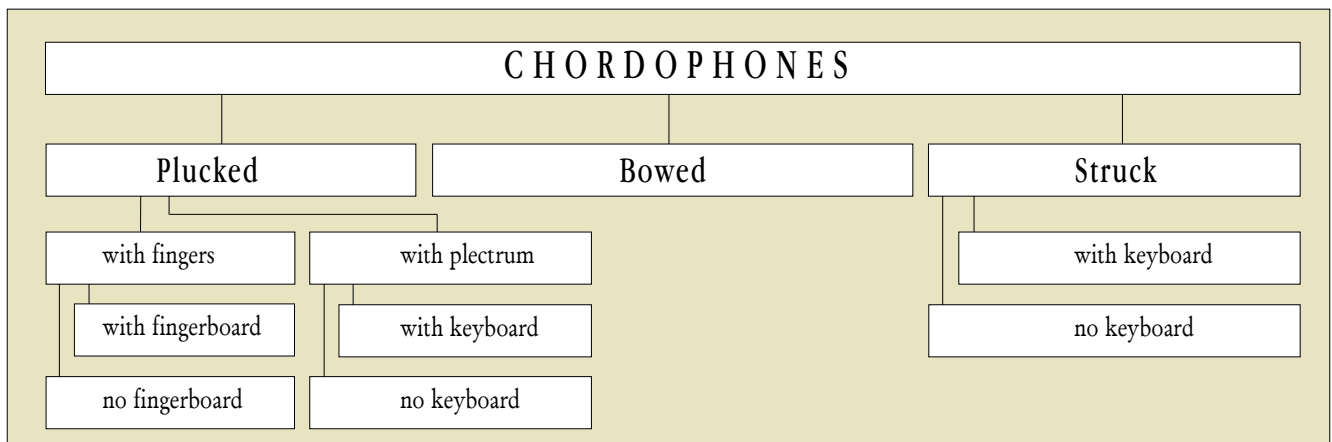
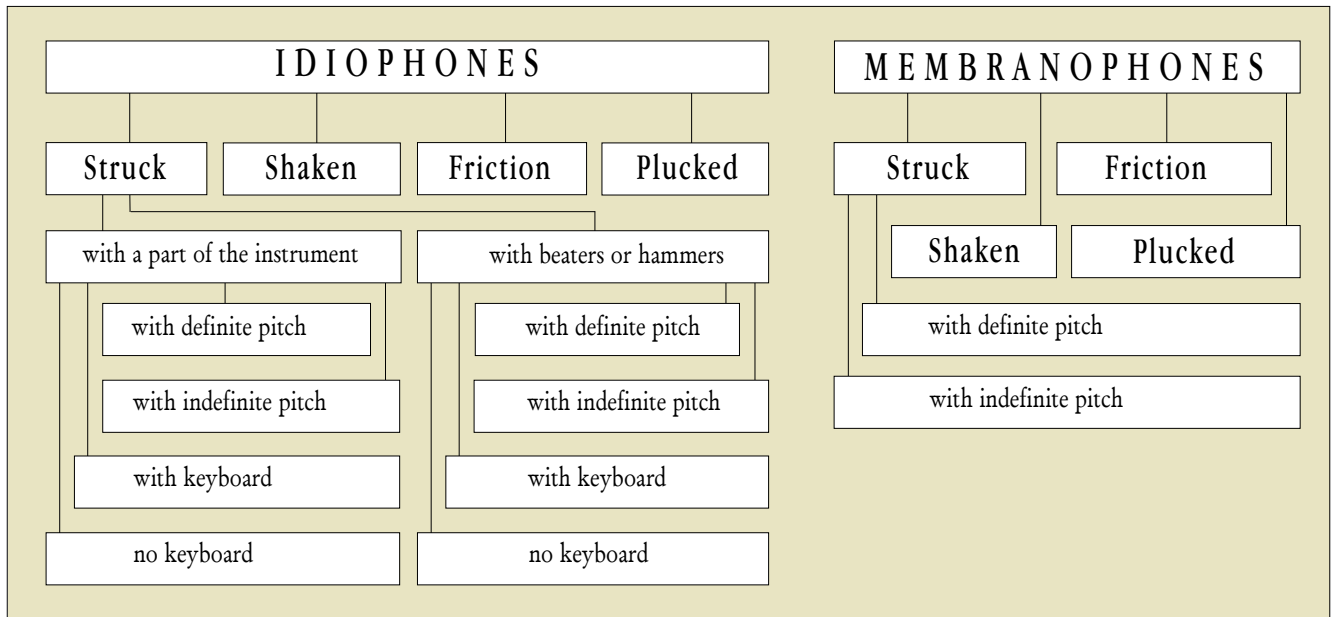
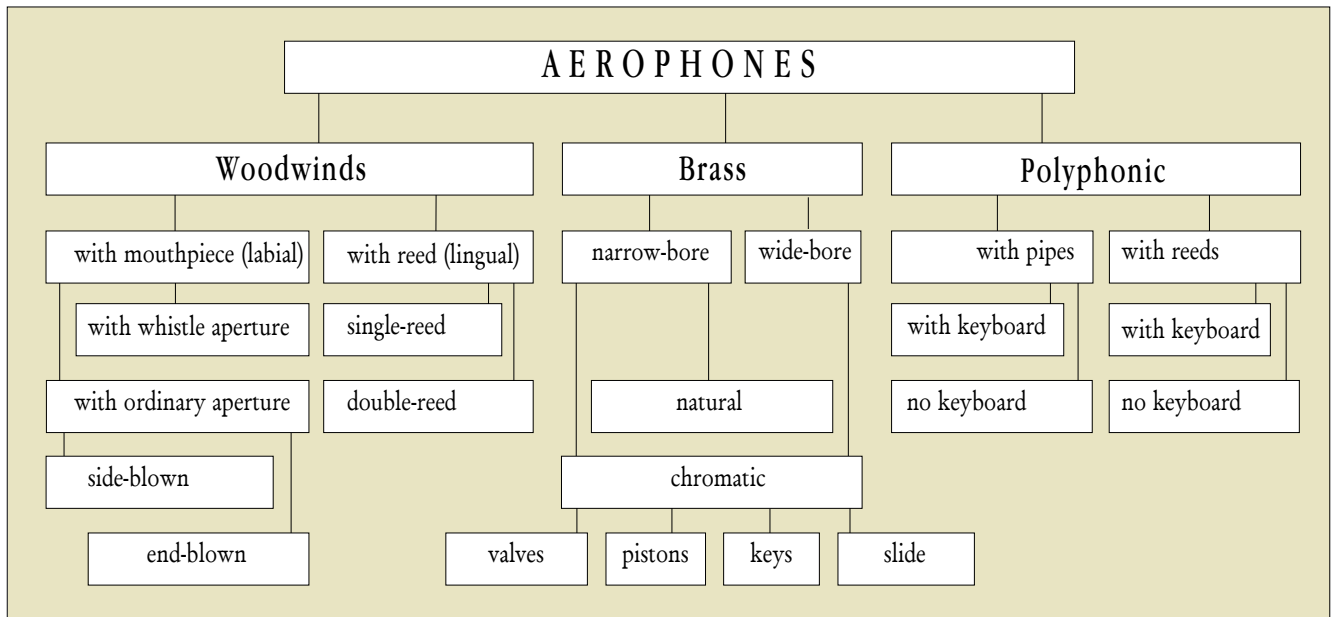
idiophones (the material itself generates the sound),

membranophones (the sound is generated by a stretched membrane made of skin or other material),

chordophones (the sound is generated by a stretched string), and

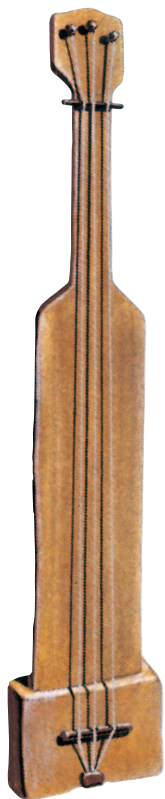
electrophones (the sound is generated by electronic means).

The European tradition is somewhat different. Instead of aerophones, European musicians use the term wind, more particularly woodwind and brass. Chordophones are referred to as strings. Membranophones and idiophones are united under the name of percussion. Keyboard instruments form a separate category. A keyboard allows the player to produce several tones simultaneously. Thus, this group unites very different instruments, such as the piano and the harpsichord (in which the sound is generated by vibrating strings), the organ (by a vibrating air-column), and the accordion (by vibrating metal tongues). This category also includes modern keyboards.



Lute

Ramkie: primitive guitar from South Africa, with a soundbox made of a gourd or a can and covered with pelt.



Ancient Egyptian lute, 16th – 14th centuries B. C.



Lute with a skin resonator, skin membranes, and sonorous metal plates in the upper part of the neck, Burkina Faso.

Ancient Egyptian lute. Reconstruction.



Egyptian lute, very similar to the ancient Egyptian model: a long wooden body with a resonator made of skin, a stick for a neck, and tightly attached strings.



Gnbri, a lute from North Africa, used predominantly in Morocco, with sheepskin stretched on the wooden soundbox and two or three gut strings running along a long neck with a pegbox.



Ancient Egyptian lute player. Relief from the Saqqarah Necropolis, 18th dynasty.



EUROPE

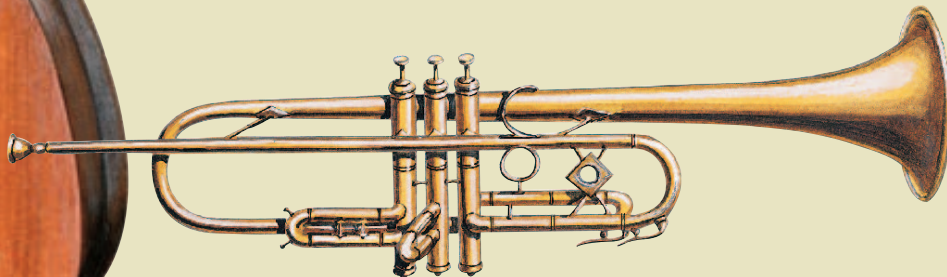
IT WAS IN THE EUROPEAN TRADITION that the art of music was first separated from the folklore. Moreover, from the theoretical studies of the ancient Greeks and their application to the present day, Europeans have been working on the evolution of this art, on the perfection of musical instruments and on the exploration of new ways of musical communication.

For almost five hundred years, particularly during the Renaissance and the Enlightenment, Europe has been persistently prioritizing the work of the composer, who is inevitably at the top of the musical hierarchy. Despite this, despite the continuing Euro-centrism in music, and despite the “colonialism” (of the Italian opera, the German symphony art, and the American pop-culture), European culture is highly receptive to a variety of influences. It adapts and incorporates examples of different cultural traditions and in its turn exerts influence on the development of music in other continents and in the world in general. This susceptibility to the flavour of previously alien, non-European cultures has enriched its palette which now ranges from preserved elements of medieval folklore to experiments in electronic music and sound production.

However, the greatest asset of European music is its immense variety: ethnic, regional, national, religious, folk, and even dialect variety. The Old World is the home of a wealth of half-forgotten music, never-played and rediscovered works: a rich resource for the trans-continental culture of the future. It is evident that the beginning of the third millennium A. D. will be an era of active cultural and musical exchange, of rapid integration of culturally less-known parts of the globe.

It has long been known that many of the instruments of the classical symphony orchestra have their origins and prototypes in the East. The development of more “democratic” genres and forms in the late 19th – early 20th century in North and South America reverberated in Europe. What is more, it was Europe that realized what was happening across the ocean and transformed it into a cultural process. The classical musical tradition in its turn was quick to conquer America and was later discovered in Japan. This connection was consolidated in the second half of the 20th century when the East attracted the attention of both artists and the general public with its rich cultural traditions. The gradual disintegration of ideological, political, and religious barriers provided a new opportunity for intercultural communication and influence exchange. This process had its forerunners in a few brilliant minds as early as the beginning of the 20th century. D. H. Lawrence wrote that humanity was like an uprooted giant tree. This thought resounded in the works of the writers James Joyce and André Malraux, the painters Paul Gauguin and Pablo Picasso, and the composers Igor Stravinsky and Karlheinz Stockhausen. Europeans have become increasingly receptive to the culture of non-European peoples.

As a result of this openness and of a wealth of research and theoretical work, Europe is still the only continent to offer a systematic method of tracing its musical development by historical periods, which we have tried to follow in the present chapter through the evolution of musical instruments.



Flute



*Slovak flauta,
with a beautifully
carved ram's head.*



Kaval, Bulgaria.



Flute, Hungary.



Stabule flute, Latvia.



Hungarian flute.



Norwegian recorder.



*Romanian double flute
with two channels,
one of them a drone.*

Dvoyanka

The dvoynka is a wooden wind instrument, usually prismatic in shape. It has two parallel ducts and a double mouthpiece. A Slavic instrument, it is most often made in sycamore, ash, or cherry wood, and up to 30 – 40 cm long. In most cases one of the ducts is without fingerholes, with a single side opening, and functions as a drone. The other has fingerholes and plays the melody. The dvoynka occasionally consists of two separate tubes joined together.



Making of a flute.



*Dvojnica (dvoynka): a double
flute of the southern Slavs,
carved from a single piece of wood.*



Russian wooden flute.

Bagpipe

The bagpipe is a wind instrument consisting of two or more pipes projecting from a flexible bag (most often made of skin) that acts as an air reservoir. The air is fed either from the mouth or by special bellows. There are at least two pipes: the chanter has fingerholes on it (all but one on the front, the other on the back), while the drone is longer and has no fingerholes. Some bagpipes have two or even three chanters, as well as several drones. Depending on whether the reeds are single or double, slit from the pipe itself or inserted separately, the bagpipe is an idioglot, a heteroglot, or mixed. The wind is fed to the pipes by arm pressure on the bag.



Russian bagpipe with a wide chanter ending in a horn bell.

Moravian bagpiper.



Bagpipe with bellows, Bohemia.



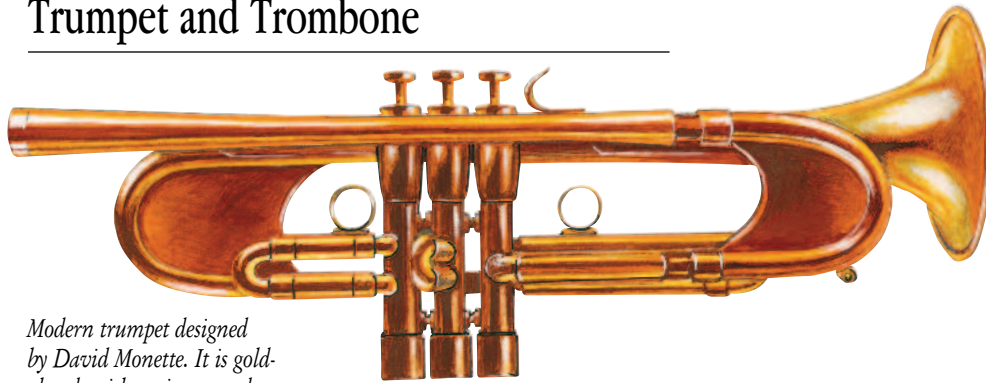
Italian zampogna with two chanters and a drone (all of them double-reed). This instrument is often played in an ensemble with a double-reed shawm.



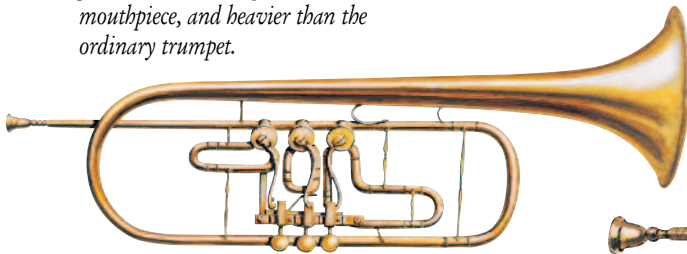
Bagpipe with a double chanter, Russia.

Trumpet and Trombone

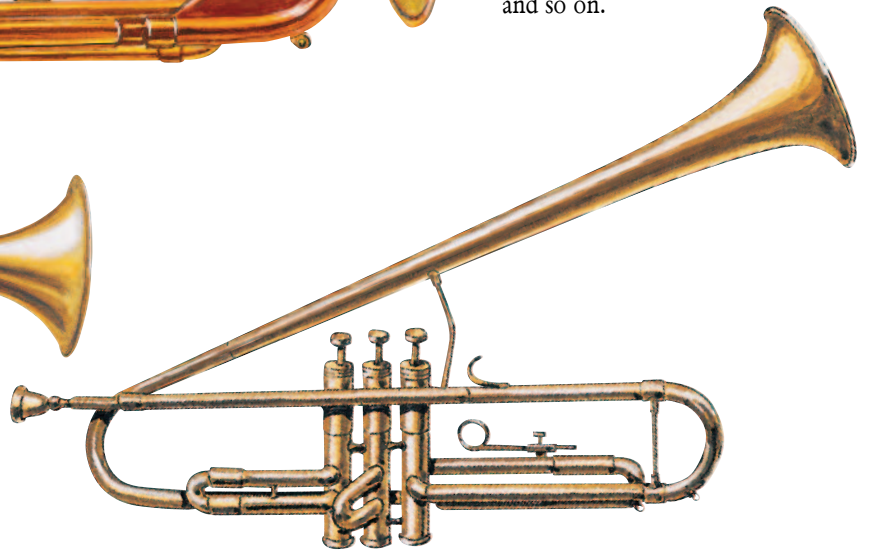
Jazz contributed much to the trumpet's development. In the 1920s it became the undisputed solo instrument and the favourite of jazz musicians such as Louis Armstrong, Dizzy Gillespie, Miles Davis, and so on.



Modern trumpet designed by David Monette. It is gold-plated, with an integrated mouthpiece, and heavier than the ordinary trumpet.



Modern valved trumpet.



Trumpet with a bell at an angle, a rare instrument used in jazz formations. In the 1960s, the trumpeter Dizzy Gillespie, one of the pioneers of bebop and modern jazz, first experimented with the straight instrument. His popularity and his immense influence in the world of jazz inevitably won followers for this practice. However, this type of trumpet failed to become permanently established and gradually fell out of use.



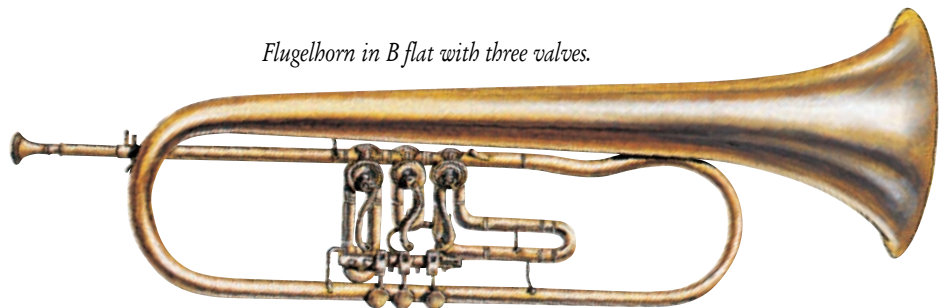
Valved tenor trombone.



Slide trombone in B flat.

Modern tenor slide trombone in B flat.

The slide trombone is used in jazz, dance orchestras and brass bands. In the second half of the 20th century, an electronically transformed trombone sound became popular in jazz, too, adding to the instrument's broad expressive range.



Flugelhorn in B flat with three valves.

Twelve-string Guitar

The 12-string guitar is often used for accompanying vocal solos. It is shaped like the modern folk guitar.



Twelve-string guitar.



Jazz guitar.

Jazz Guitar

The jazz guitar is a Gibson acoustic guitar of the 1930s with s-holes. With its wide soundbox and a proportional fingerboard, it belongs to the highest class of acoustic guitars, equally suitable for solos and accompaniment.



REPERTORY

Although an instrument with a softer sound, the guitar is used in the opera and the symphony orchestra. Rossini called for it in *The Barber of Seville*, Weber in *Oberon*, Berlioz in *La Damnation de Faust*, Verdi in *Otello* and *Falstaff*. Gustav Mahler included it in his Symphony no. 7. It should be noted that Schubert, Paganini and Weber themselves played the guitar and used it in chamber music. From the 1920s, the instrument found a place in the works of composers such as Webern, Schönberg, Henze, and Maxwell Davies. The tradition of the composer-guitarist was continued by Tárrega ("Chopin of the guitar"), Leo Brouwer, and many others. Major guitar pieces include works by Villa-Lobos (*Suite popular brasileira*), Joaquín Rodrigo (*Concerto de Aranjuez*), Benjamin Britten, William Bolcom, and André Previn.

Mandolin



Modern Portuguese mandolin, with an arched back.



Modern flat mandolin.



Ordinary modern mandolin.

Gibson mandolin, with narrow shoulders and two f-holes instead of a round soundhole.

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1 mm = 1 millimeter = 0.04 inches
1 cm = 1 centimeter = 10 millimeters = 0.39 inches
1 m = 1 meter = 100 centimeters = 39.37 inches
1 km = 1 kilometer = 1,000 meters = 0.62 miles
1 kg = 1 kilogram = 2.2 pounds = 35.27 ounces
1 metric ton = 1,000 kilograms = 1,102 short tons

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