



**Рис. 3.** Аерофони: а – зігнута кістяна флейта з Неаполя Скіфського (Крим);  
б – подвійний аерофон; в – однотрубковий аерофон;  
г – пряма кістяна флейта з поховання скіф'янки

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### BELLS BIANZHONG IN CHINESE INSTRUMENTAL MUSICAL CULTURE OF THE BRONZE AGE

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The article examines bianzhong sets of bells of the Bronze Age, known from the archaeological site of China. It analyzes their form, the system of acquisition and characteristics of sound production. Based on ancient texts, historical and archaeological sources, we define bianzhong functions and its importance in rituals, ceremonies and social hierarchy (ranking system).

**Key words:** bianzhong, bronze age, Zhou Dynasty, Han Dynasty, Chinese musical and instrumental culture.

*Aim of the article.* The article is dedicated to the set of bianzhong bells of the Bronze Age (1st millennium BC) which were discovered during archaeological excavations. The bianzhong bells are a unique phenomenon in the history of the musical culture of the Ancient World. These instruments need further research and are not well-known among European musicologists.

*Review of latest publications.* At present, there is no comprehensive instrumental research dedicated to the issues of morphology of the sets of Chinese bells, their systematization according to chronological order and quantitative correlation according to the social hierarchy rank. Information about the findings of specific sets of bianzhong bells is contained in the reports of archaeological excavations [11, p. 37-39; 12, p. 24; 13, p. 18-19; 14, p. 27-28], as well as in the studies on the history of Chinese court orchestras [2, p. 38-39] and in the works of art studying the culture of the period of the Zhou dynasty [4].

*The purpose of the article* is to introduce new archaeological materials into the scientific circulation, to analyze forms, assembly systems and features of sound production; to determine the functions and significance of bianzhong in rites, ceremonies and social hierarchy (system of ranks) on the basis of ancient texts, historical and archaeological sources.

*Presentation of research results.* Chinese classical name «Bianzhong» means «ordered bells». For the first time, tuned sets of bells appear in Europe only in the 9th century. The earliest descriptions of bianzhong are known from the treatises of the 2nd century BC [8; p. 328]. Well-preserved instruments were found in the tombs of rulers and noblemen of high rank thanks to the intense archaeological excavations that began in the second half of the 20th century. The instrument consists of a set of different-sized bells without a tongue which are tuned in certain tones and placed on a wooden frame in two or three rows (Fig. 1, 2, 3).

Archaeological finds indicate that castings of small-sized bells in China began in the 2nd millennium BC. Unlike the bells of Indian origin which are round in crossing, the oldest Chinese type of the instrument has a square shape. At the end of the reign of the Shang Dynasty (1766–1122 BC) and at the beginning of the Zhou Dynasty (1122–247 BC), the body of bells acquires almond shape [7; p. 183]. Characteristic feature of these instruments is the short duration of sound that makes it possible to extract two sounds of different

heights from one bell (depending on the place of impact on the body). Due to this feature, intonation by combining several different sized bells became possible. In one of the most ancient Chinese written sources of the Bronze Age «Shijing» («The Book of Songs», 11th-5th centuries BC), the bells are mentioned in the plural: «bells ... should be ordered» (that is, set in a certain order – *C.N.*) [9; p. 231]. Thus, sets, consisting of several bells, have already existed during the creation of «Shijing». According to archaeological excavations, the first sets of tensile bells appeared during the reign of the Shang Dynasty (1766–1922 BC). They usually consisted of three units of different sizes. It was possible to extract six sounds from these instruments. In particular, a similar set, dated 1100 BC, was discovered during the excavations of the burial of the nobles near the city of Anyang (Northern China) [1; p. 227].

At the beginning of the reign of the Zhou dynasty (1122–247 BC), there was a development of the manufacture of almond-shaped bells and an increase of units in the set. Bianzhong becomes one of the main instruments of the court rituals and ceremonies. Only the emperor and nobles of the highest rank had the right to own it. At the end of the 6th century BC, the process of increasing the number of bells in the set continues, as evidenced by archaeological finds dating back to the 6th-4th centuries BC. In 1956, bianzhong, consisting of 9 different bells, was discovered in one of the burials in Henan Province (North China). The way of hanging bianzhong bells remained unchanged for centuries. Descriptions of the construction of a wooden frame for bells, as well as the names of specific details, are given in the treatise «Shiming» which dates back to the time of the reign of the Han Dynasty (202 BC – 220 AD). The author writes: «... vertical risers are called xun, and the board, where the bells are attached to, is called ye» [8; p. 328]. The burial dates back to the 6th century BC [1; p. 227]. A year later, during excavations near Chantaiguan (Xinyang County, southern Henan Province), archaeologists found a set of 13 bells. They were hung in one row (from the smallest to the largest) on a wooden crossbar, which was attached to two risers and each of them ended with a massive square pillar. The excavated tomb belonged to one of the rulers of the Zhanguo period (405–221 BC) [8; p. 48]. Except for the bells, there were remains of other wind and percussion instruments. All thirteen bells are very well-preserved, so it became possible to arrange them in order from the largest to the smallest:  $gis-ais-h-fis^1gis^1-ais^1-h^1-cis^2-dis^2-fis^2-gis^2-ais^2dis^3$  [8; p. 48].

The burial grounds of the late 5th-4th centuries BC, which belonged to the rulers and noblemen of high rank, were excavated in the late 1970s and early 1980s. In 1977, in the suburbs of Suizhou (Hubei Province, Southern China) archaeologists discovered a small graveyard consisting of several graves of noblemen. A special place in this graveyard belongs to the burial of the ruler I-hou (died about 433 BC) [13; p. 1–24]. He was a prince (hou) of a small vassal state of Zeng, which belonged to a range of political and cultural influences of the mighty neighboring kingdom of Chu [14; p. 26]. Among the numerous precious items and musical instruments, there was bianzhong consisting of 65 bells (fig. 1). According to the size of the bells, the entire complex is divided into three tiers. The risers with crossbars were in the form of a letter «L». The largest of the bells is 152.3 cm high and weighs 203 kg; the smallest – 20.2 cm high and weighs 2.4 kg. The total weight of all bells is 4421 kg. The range of sound is more than five and a half octaves. Seven basic tones correspond to C major. The middle register (the second row), which covers three octaves, is tuned according to the chromatic twelve-pitch Shí-èr-lǜ scale. This makes it possible to perform melodies in all tonalities. On this instrument Chinese musicians were able to reproduce ancient Chinese melodies with tonality changes. The fully preserved tuning of bianzhong allowed us to make two important conclusions: firstly, in addition to pentatonic, the ancient Chinese had seven-scale mode; and secondly, this discovery confirmed the information from ancient written sources about the existence of transposition practices into a different tonality at the end of the 5th century BC.

This made it possible to change our perceptions of ancient Chinese music. Each of the bells (if struck in the middle or on the side) produces two different pitched sounds that create minor and major third. In general, there were more than 3,700 hieroglyphs engraved on their surfaces. Experts define the content of these texts as «a lost treatise on the ancient Chinese musical theory» [14; p. 29]. The instrument from the I-hou tomb is unique among all the known bianzhong sets in terms of quantity, size, design, range and preservation condition. Along with the instrument there was a detailed «instruction» on how to play it, which was carved on the stone, as well as a set of 6 wooden hammers for playing on medium and small bells and a special heavy stick for hitting the largest bells. Through experiments, it was possible to discover that there were at least five bianzhong performers: two musicians hit the bells of the lower row with a heavy stick, and the other three hit the bells of the middle and upper rows with hammers. The lower and upper rows of this instrument are capable of extracting pentatonic and seven-scale mode sounds, and the middle row is tuned in the chromatic sequence of sounds. From the epigraphic records taken from this grave, it is known that the first bianzhong bell was tuned like a standard huangzhong bell – «the yellow bell» that symbolized the legendary first Emperor Huangdi. We should note that in different epochs the pitch of the standard bell was different and was ordered by the emperor [5; p. 259–260].

In the 1980s, the Chinese experts produced an exact copy of bianzhong, as well as copies of other percussion, string and wind instruments from the burial of I-hou. The Bianzhong ensemble was created at that

time [6; p. 11]. Following the instructions engraved on the bells, the ensemble performers managed to reconstruct the technique of playing bianzhong. It turned out to be extremely difficult because of the constant changing of hitting different parts of the body of bells at a fast pace, tremolo, quick replacement of hammers, mallets et cetera. In 1981, another aristocratic grave was discovered at a distance of approximately 104 meters to the north of the burial of the ruler I-hou, which contained sets of only 36 bianzhong bells. This burial dates back to the 4th century BC [12; p.18]. The rich inventory indicates that it belonged to one of the members of the ruling dynasty. Since there was not found any weapon among the equipment, archaeologists believe that the wife of one of the rulers of the State of Zen could have been buried there [11; p. 39]. A smaller number of bells in a set may indicate status differences. In particular, two graves belonging to the Chinese noblemen – a man and a woman – were excavated in Hubei Province (Southern China). They date back to the end of the 3rd-2nd century BC [4; p. 37]. Among the many valuable items found in these graves there were two sets of bianzhong. The set, found in the man's grave, consisted of 34 bells hung on two crossbars in two rows, and in the woman's – only of 11 bells. This fact indicates woman's lower position in relation to man.

According to the texts of «Zhou ly» («Rites of Zhou»), sets of bianzhong bells and bianqing lithophones have always been played together. It was believed that their combination produces «golden sound» [10; p. 154]. This interaction of two instruments correlated with the traditions of the ancient Chinese statehood. In particular, according to the system of noble ranks, mentioned in ancient texts, the rules of using sets of lithophones and bells should reflect the social status of their ruler. «Son of Heaven» («van» – «ruler» in Chinese) could hang out sets of idiophones, aiming them at four sides of the world; prince (zhuhou) – at three; nobles (dafu) – at two, and officials of the lower rank (shi) – only at one side. This arrangement of instruments was kept not only for the court rituals, but also for the funeral. It was clearly indicated by the location of sets of idiophones in the tomb of the ruler I-hou. According to his prince rank (zhuhou), instruments were aimed at three sides indicating his vassal position in relation to the ruler (van) of the kingdom of Chu. In the burial of a nobleman, which was found near Jiaojiang, according to his noble rank (dafu), the instruments were aimed only at two sides. Thus, according to the requirements of the ritual, representatives of each rank should have respected the status differences and comply with the requirements regulating the performance of certain musical compositions and the use of musical instruments. Obviously, the number of bells in the sets also corresponded to the status differences. Archaeological excavations and written sources indicate that during the Zhou era (1122–247 BC) bianzhong remained one of the most important musical instruments, a symbol of power.

During the reign of the Qin Dynasty (221 – 206 BC), orchestras of rulers and nobles of high rank stop using bianzhong as a symbol of the previous imperial Zhou Dynasty, and there is no archaeological evidence about it being among the funeral equipment. All in all, the Qin Dynasty (whose representatives were not of Chinese origin) became tragic for the Chinese cultural tradition of previous dynasties. In 213 BC, the Emperor Qin Shi Huang-di ordered to destroy all books, musical notes and instruments, trying to destroy everything that would remind about the previous dynasties. There is evidence of court and temple musicians risking their lives and burying bianzhong as the greatest treasure, so that the following Chinese emperors could revive the lost traditions of the Zhou Dynasty [7; p. 184].

During the reign of the following dynasty, Han (202 BC – 220 AD), there were attempts to revive old traditions. The Emperor Wu of Han (140-87 BC) created the Music Chamber (Yuefu), which was engaged in collecting and organizing folk music, as well as the revival of ancient musical and instrumental traditions. The court orchestras of that time were created in order to arrange and restore the heritage of orchestral music and instruments of the Zhou Dynasty. As before, bianzhong became the main instrument of the orchestra [2; p. 38]. The images of the late period of the rule of the Han Dynasty indicate that there were not more than two bells of different sizes fixed on the same frame. This also indicates a decrease in the role of bianzhong bells in the ritual orchestras of Chinese aristocracy.

*Conclusions.* Since the reign of the Zhou Dynasty (1122 – 247 BC), bianzhong has become one of the main instruments of the orchestras of imperial court and Chinese aristocracy. The number of units in bianzhong bell sets depended on the rank hierarchy system. The largest set of bells (65) comes from the burial of the ruler I-hou (4th century BC). They were tuned according to the chromatic twelve-pitch Shí-èr-lǜ scale. This indicates that in the 4th century BC, in addition to pentatonic, there were seven-scale modes, and confirms the information from ancient written sources about the practice of transposition into a different tonality. During the reign of the Qin Dynasty (221 – 206 BC), bianzhong, as a symbol of the imperial Zhou Dynasty, disappears from the orchestra instrumental equipment. During the reign of the Han Dynasty (202 BC – 220 AD), a), there were attempts to revive ancient traditions, however, the «golden age» of bianzhong bells ended along with the decline of the Zhou rituals.

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**ДЗВОНИ БЯНЬЧЖУН У МУЗИЧНО-ІНСТРУМЕНТАЛЬНІЙ КУЛЬТУРІ КИТАЮ ДОБИ БРОНЗИ**

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Досліджуються набори дзвонів бьяньчжун доби бронзи (I тис. до н. е.) виявлені під час археологічних розкопок, проведених на території Китаю. Здійснено аналіз їх форм, систем комплектування та особливостей звуковидобування. На основі давніх текстів, історичних та археологічних джерел визначено функції і значення бьяньчжуна в обрядах, церемоніях та суспільній ієрархії (система рангів).

**Ключові слова:** бьяньчжун, доба бронзи, династія Чжоу, династія Хань, китайська музично-інструментальна культура.

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**ДЗВОНИ БЯНЬЧЖУН У МУЗИЧНО-ІНСТРУМЕНТАЛЬНІЙ КУЛЬТУРІ КИТАЮ ДОБИ БРОНЗИ**

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**Мета статті** – увести до наукового обігу нові археологічні матеріали, здійснити аналіз форм наборів дзвонів бьяньчжун, систем їх комплектування та особливостей звуковидобування. На основі давніх текстів, історичних й археологічних джерел визначити їх функції і значення інструмента в обрядах, церемоніях та суспільній ієрархії (система рангів).

**Методологія.** Застосовано методологію та методику системного дослідження, що поєднують методи музичної археології з методикою органологічних (інструментознавчих) досліджень.

**Результат.** З початку правління династії Чжоу (1122–247 рр. до н. е.) бьяньчжун стає одним із головних інструментів у дворцових ритуалах і церемоніях. Інструмент складається з набору різних за розмірами дзвонів мигдалеподібної форми без язичка, настроєних у певних тонах і розміщених на дерев'яній рамі в один, два чи три ряди. Характерною особливістю цих інструментів є коротка тривалість звуку, що дає можливість на одному дзвоні видобувати (в залежності від місця ударів по корпусу) два звуки різної висоти. Вони настроєні за хроматичною 12-ступеневою шкалою луй-луй. Згідно з системою аристократичних рангів, зафіксованою у давніх текстах, правила використання наборів дзвонів та їх кількість відображали соціальний статус їх володаря.

**Наукова новизна.** Зроблено першу спробу інструментознавчого аналізу дзвонів бьяньчжун доби бронзи, їх хронологічної систематизації та кількісних співвідношень згідно до суспільної рангової ієрархії.

**Практичне значення.** Впровадження матеріалів статті до європейського музикознавства стане поштовхом для проведення подальших порівняльних студій музичних інструментів Сходу і Заходу в галузі музичної археології.

**Ключові слова:** бьяньчжун, доба бронзи, династія Чжоу, династія Хань, китайська музично-інструментальна культура.

**Illustrations**

**Plate 1.** *I-hou ruler' bianzhong (4th century BC)*



**Plate 2.** *Han Dynasty' bianzhong (202 BC – 220 AD)*

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