

WU XING 五行 AND WU SHENG 五声
IN CHINESE MUSIC CULTURE

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Abstract: *This paper addresses the links between the ancient China's concept of wu xing (五行) and Chinese music culture. The key element of China's musical tradition is a five-tone scale – a pentatonic scale. The pentatonic scale, or five tones (wu sheng, 五声), and the twelve-tone musical system shi er lü (十二律) are an integral part of the ancient Chinese culture of yin yang (阴阳) and wu xing (五行); apparently it is based (along with binary and tertiary approaches) on a notion of “quinary”, or a quinary classification. Also, the paper discusses various views on the pentatonic scale origin and development in China, the interrelationship and links between the pentatonic scale and music system of shi er lü (十二律).*

Keywords: Chinese philosophy, musical mode, concept of wu xing (五行), fivefold conceptual scheme, binary conceptual scheme.

The music culture of China goes back to high antiquity. Chinese music is based, together with the tuning system of twelve pitches “lü” (*shi er lü*, 十二律吕), on a special five-note scale – a pentatonic scale. The word “pentatonic” may be translated from the Old Greek as “five tones” (in the Old Greek: *πέντε* means penta, or five, and *τόνος* means tone). In Chinese it sounds like *wu sheng* 五声 (five tones) or *wu yin* 五音 (five sounds). To start with, it should be noted that the pentatonic scale is not an exclusively Chinese tonal music system, musical thinking of many nations is based on this scale (e.g., the Vietnamese, Tatars, Bashkirs, etc.). However, in Chinese culture, as the most developed, the pentatonic music system evolved into a remarkably harmonious and self-contained system with thorough theoretical justification in the ancient Chinese classics¹.

In the Soviet times, in Russia, there were two primary concepts of the pentatonic scale origin and development. The first concept – a stadial theory – is linked with the names of the Soviet musicologists such as A.S.

¹ M. Rubets, “Visual manipulation with written signs in Chinese culture: from tradition to cyber-culture”, in *Philosophical Problems of Information Technologies and Cyberspace*, 2018, vol. 15, no. 2, p. 4-24. 10.17726/phillT.2018.2.15.1

Ogolevets, R.I. Gruber, and others^{2,3}. Their understanding of the pentatonic scale falls entirely within the scope of Marxist theory: they consider this scale as an obligatory initial stage of musical thinking development in general, and more primitive as compared to the diatonicism – a seven-note scale. Long existence of the pentatonic scale, up to the mid-19th century, as the primary tonal system of Chinese music is attributed to the isolation and stagnation of Chinese culture in general, the absence of external contacts, etc. They believe that the change of social structure goes in parallel with the change of cultural patterns, and musical pitch as well. R.I. Gruber says: “In III century BC, two additional tones were included into the pentatonic scale (*wu sheng*, 五声) and a seven-tone musical system (a heptatonic scale) appeared; ... and subsequently a twelve-tone musical system (*shi er li*, 十二律) was formed”⁴.

The second concept is well presented in the works of the Soviet musicologist K.V. Kvitka. He considers the pentatonic scale as a separate musical system, which does not necessarily exist in all cultures as an initial stage of development⁵. Such an approach to the pentatonic scale emphasizes its artistic self-sufficiency and adequacy and explains the large presence of the pentatonic approach in the modern music culture of economically developed China. In its article “Pervobytnye Zvukoryady” (or “Primitive Scales”), K.V. Kvitka criticizes “the theory of the pentatonic scale’s primacy”, according to which the pentatonic scale is “the only most ancient phase of the musical thinking development”, and argues that “non-pentatonic mode systems have existed since olden times and exist now”⁶. In the said article K.V. Kvitka refers to the opinion of the Austrian musicologist R. Wallaschek (1860-1917), who argued that: “The pentatonic scale in China originated from the heptatonic scale, and not the other way around. As for the heptatonic scale, it originated from the twelve-tone system through elimination of chromatic tones. ... Nowhere in the world we can find arguments in favor of the scale development from a five-note pattern to a seven-note one. ... All samples

² M.V. Kononenko, “Establishment of pitch/tone system in Chinese ethnic music”, in *The World of Scientific Discoveries*, 2013, vol. 5, no. 41, p. 11-25.

³ R.I. Gruber, *General history of music*, Gosudarstvennoye Muzykalnoye Izdatelstvo, Moscow, 1960.

⁴ R.I. Gruber, *General history of music*, Gosudarstvennoye Muzykalnoye Izdatelstvo, Moscow, 1960.

⁵ M.V. Kononenko, “Establishment of pitch/tone system in Chinese ethnic music”, in *The World of Scientific Discoveries*, 2013, vol. 5, no. 41, p. 11-25.

⁶ K.V. Kvitka, *Primitive scales*, Sovetskii Kompozitor, Moscow, 1971.

of the ancient Chinese music, which have survived to our days (we mean medieval manuscripts), are based exclusively on heptatonic scales⁷. All these statements certainly require further thorough scrutiny and clarification.

The essence of the five tones in ancient China

As for the interpretation of the pentatonic scale in China *per se*, the careful thinking and learning of this musical mode and the whole musical system was initiated as early as several centuries BC. Five tones *wu sheng* (五声) apparently belong to the ancient culture of *yin yang* (阴阳) and *wu xing* (五行), which is based (in addition to binary and tertiary approaches) on a notion of “quinary”. Fivefold conceptual scheme, or a quinary classification, provides for the application of this numerical scheme to all natural, social, and cultural phenomena, including harmonic structures.

Quinary classification, initially represented by five elements *wu xing* (五行) with specific spatio-temporal dimensions, became progressively more complicated through correlation, i.e. comparison of its components with other objects. As it is known, the quinary classification in its original form is presented, to the fullest extent possible, in the “Documents of Antiquity” (Shang Shu, 尚书), also known as the “Book of Documents” (Shu Jing, 书经), in Chapter “The Great Plan” (Hong Fan, 洪范). Shang Shu (尚书) is a collection of China’s historical documents going back to high antiquity. Chinese character 尚(*shang*) in this case has one of the meanings of the character 上(*shang*): foregoing, preceding, previous, precursory. In this context, the title of the collection – Shang Shu (尚书) – may be translated as “Documents of High Antiquity,” or “Ancient Documents”⁸. Another known translation of Shang Shu (尚书) is

⁷ M.V. Kononenko, “Establishment of pitch/tone system in Chinese ethnic music”, in *The World of Scientific Discoveries*, 2013, vol. 5, no. 41, p. 11-25.

⁸ Shang Shu, 2020. Available at: <http://dict.baidu.com/s?wd=%E5%B0%9A%E4%B9%A6>.

“Venerated Documents”⁹. Hong Fan, 洪范 (the “Great Plan”, “Great Law”, or “Magnificent Paragon” (洪 *bong* = 大 *da* – great, 范 *fan* = 法 *fa* – plan, paragon)). Historically, this work is attributed to the Western Zhou period (1046-771 BC), and the collection was later compiled by Confucius. As early as in the Great Plan¹⁰, in addition to Five Elements (*wu xing*, 五行) *per se*, the following aspects were presented:

- Five Flavors – *wu wei*, 五味;
- Five Personal Matters – *wu shi*, 五事;
- Five Dividers of Time – *wu ji*, 五纪;
- Five Natural Phenomena – *wu zheng*, 五征;
- Five Blessings – *wu fu*, 五福.

Five tones – *wu sheng* (五声) – complement the list of correlation matches within the fivefold conceptual scheme of the universe. Ancient Chinese Canons emphasize the role of music for governing of a state, achieving civil order and harmony, as well as for aesthetic sensitivity education. For example, the Shang Shu book (尚书) in Section titled “Book of Yu” (Yu Shu, 虞书) in Chapter “The Canon of Shun” (Shun Dian, 舜典) (one of the earliest mentioning of the Chinese musical system) says: “Shun... streamlined the system of *li* (律) and the system of weights and measures” (“舜... 同律度量衡”¹¹). Chinese character 虞 (*yu*), more than likely, means here the principality of Yu, which was populated, at one time, by the clan of Youyu (有虞); Shun, a legendary emperor, was a descendant of this clan. According to a tradition, Shun became the leader of this clan, therefore he received the name of “有虞氏帝舜” – “Emperor

⁹ L.V. Stezhenskaya, V.M. Mayorov, Venerated Documents: Ancient Chinese texts and translation of the Shang Shu (Shujing) and the small preface (Hsiao-hsü), IFES RAS, Moscow, 2014.

¹⁰ S.I. Kuchera (ed.), *Great law*, Mysl, Moscow, 1972.

¹¹ Yu Shu, Shun Dian, 2020. Available at: http://so.gushiwen.org/guwen/bookv_3082.aspx.

Shun from Youyu 有虞 clan”¹². As is seen from the citation, the musical system of *lii* (律) appeared to be quite important for the governor as he gave priority to this matter as compared to the setting up a system of weights and measures. The document further states: “The need to establish a court orchestra for the purposes of educating and upbringing the younger generation. Music will help young people to become honest and gentle, generous and decisive, firm, but not self-assertive, and to be able to come to an agreement and not be arrogant” (“...命汝典乐·教胄子·直而温·宽而栗·刚而无虐·简而无傲”¹³).

Further, in respect of the musical system *per se*, Emperor Shun says: “(Five) tones form a basis of singing, (six) *lii* (律) harmonize (five) tones” (“[五]声依永·[六]律和声”). As we may see, music was assigned a truly important social role: teaching children to live up to high moral standards.

The music system of ancient China

Now, it is necessary to explore in more detail the musical system as such. Five-tone scale (*wu sheng*, 五声), called a pentatonic scale, consists of the following five notes (Table 1).

Table 1: Five-tone scale

宫	商	角	徵	羽
Gong	shang	jue	zhi(zheng)	yu
C	D	E	G	A

One of the earliest mentioning of five tones – *wu sheng* 五声 – can be found in the ancient treatise “The Rites of the Zhou” (Zhou Li, 周礼), included into the group of thirteen classics of Confucian tradition “The Thirteen Classics” (Shisan Jing, 十三经). The Zhou Li treatise, in Section

¹² Yu Shun, 2020. Available at: <http://hanyu.baidu.com/zici/s?wd=%E8%99%9E%E8%88%9C>.

¹³ Yu Shu, Shun Dian, 2020. Available at: http://so.gushiwen.org/guwen/bookv_3082.aspx.

“Spring Offices” (Chun Guan, 春官), says: “Everywhere the following five tones are used: *gong* 宫, *shang* 商, *jue* 角, *zhi* 徵, *yu* 羽” (“皆文之以五声：宫、商、角、徵、羽”¹⁴). Seven-tone scale is presented as follows (Table 2).

Table 2: Seven-tone scale

宫	商	角	清角/ 变徵	徵	羽	闰/ 变宫
Gong	shang	jue	qing jue/bian zhi	zhi(zheng)	yu	run/bian gong
C	D	E	F/F sharp	G	A	B-flat/B

Chinese seven-tone scale differs from the five-tone scale due to the presence of four passing tones, *pian yin* 偏音 (“non-core” tones): 清角 *qing jue* (F)/变徵 *bian zhi* (F sharp) and 闰 *run* (B-flat)/变宫 *bian gong* (B). The said passing tones are not used simultaneously, only two of them are used together, thus forming a seven-tone scale. The use of seven tones, it should seem, aligns this scale with the diatonic scale, or usual seven-tone scale; however, the similarity with the diatonic scale here is only formal. Such a seven-tone scale may not be regarded as a scale independent from the pentatonic one. Despite the presence of the passing tones, the musical thinking remains within the limits of the pentatonic scale, and the non-core tones are used only in melismatic singing, or embellishments. One version of such pentatonic mode is traditional for the northern provinces of China, and is a variation of the pentatonic scale¹⁵. Therefore, the Soviet musicologists’ assumption that musical modes evolved from a five-tone to a seven-tone scale is not quite true: only the five-tone scale with passing tones existed and there was no independent seven-tone scale similar to the diatonic scale. As for the twelve-tone musical system, known as *shi er lü* 十二律 (or *shi er lü lü*, 十二律吕), it may be presented as follows (Table 3).

¹⁴ Chunguan Zongbo Dasile, *Little teacher's*, 2020. Available at: http://so.gushiwen.org/guwen/bookv_3213.aspx.

¹⁵ M.V. Kononenko, “Establishment of pitch/tone system in Chinese ethnic music”, in *The World of Scientific Discoveries*, 2013, vol. 5, no. 41, p. 11-25.

Table 3: Twelve-tone musical scale

黄钟	大吕	太簇	夹钟	姑洗	仲吕
huang zhong	da lü	tai cu	jia zhong	gu xi	zhong lü
C	C sharp	D	D sharp	E	F
蕤宾	林钟	夷则	南吕	无射	应钟
rui bin	lin zhong	yi ze	nan lü	wu she	ying zhong
F sharp	G	G sharp	A	A sharp	B

As we may see, this is a chromatic scale (all “black-key” and “white-key” scale steps.) Twelve pitches (*lü lü*, 律吕) support well the argument for close links of the musical system with the culture of *yin yang* (阴阳) and *wu xing* (五行): twelve pitches are divided into six Yang *lü* (律) and six Yin *lü* (吕). It is to be recalled that there was a hypothesis stating that this scale was the pinnacle of China’s music theory development, and that it appeared after the formation of five-tone and seven-tone scales. Indeed, its origin is connected with the discovery made by Chinese scholars, who established: “String length ratios (or heights of the air columns) of 1:2, 2:3 and 3:4 corresponded, respectively, to octave, perfect fifth and perfect fourth. On the basis of the obtained regularities an acoustic instrument *lü* (律) was constructed of 12 pipes; it served a pitch standard”¹⁶. The role of this instrument was great, it helped to determine pitches, tune musical instruments, in particular the ceremonial ones. Obviously, the system of *shi er lü lü* (十二律吕) served an acoustic and theoretical basis of the ancient China’s music; the groundwork for this system had lasted for more than a century, most certainly. The theory developed in parallel with the musical practices of Chinese people, based on the pentatonic scale. Will it be correct to say that the pentatonic scale was the first to appear, and afterwards the system of *shi er lü lü* (十二律吕) appeared? May we pull them apart and attribute to different time periods? According to the sinologist M.V. Isaeva: “For the moment, it is difficult to make any conclusions on the nature of relationship between the five(seven)-tone and twelve-tone systems. On the basis of the general concept of music

¹⁶ R.I. Gruber, *General history of music*, Gosudarstvennoye Muzykalnoye Izdatelstvo, Moscow, 1960.

development, the five-tone system apparently was used in musical practices before the twelve-tone system formation”¹⁷. Based on these considerations, we may agree that the pentatonic scale, it seems, is more ancient as compared to the system of *shi er lü lü* (十二律呂). However, we cannot find any appropriate evidence in this respect in the ancient Chinese records, since “the documents of the Zhou period already contain evidence related to both systems”. Therefore, while referring to the traditional music culture of China, we always have to deal with both music theories. They closely coexist and complement each other, while performing different functions¹⁸.

In summary, we may say that the pentatonic scale is the tonal basis for Chinese music, providing it with original sounds. It is the pentatonic scale that helps us to easily define a music as “Chinese”. In addition, the pentatonic scale is a way of thinking with the help of five tone musical structure. Basically, for China this is the way of thinking in general, originating from the early categorical thinking. Five tones, *wu sheng* (五声), are a component of the fivefold conceptual scheme of the universe and a major element of a “more general system of twelve *lü*”. Twelve-pitch system of *lü*, resulting from the ancient Chinese science development, which discovered acoustic laws behind the string lengths ratios, provides a theoretical basis for Chinese music theory. The music itself and its melody evolve according to a five-tone approach, in line with a specific way of thinking. The hypothesis on a five-tone scale evolution into a seven-tone scale has not been proved, as there was no seven-tone scale as an independent musical mode in ancient China. There was only a five-tone scale with passing tones in use. For many centuries, five tones, *wu sheng* (五声), and the musical system of *shi er lü* (十二律) have served a basis for the music culture of China.

¹⁷ M.V. Isaeva, “Musical and theoretical basis of *lü* and methodologies of traditional Chinese historiography”, in *History and Culture of East and South-East Asia*, Nauka, Moscow, 1986, p. 114-171.

¹⁸ N.V. Pushkarskaya, “To the problem of the early categorical thinking in ancient China”, in *Philosophy and Culture*, 2016, no. 10, p. 1430-1441.