

The Theories of Musical Pitch in the Song Times

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In imperial China, the court used the absolute pitch named *huangzhong* as the standard of measurement for length, volume, and weight. That is why many scholars from the Han period on suggested how to make correct pitch pipes in their philosophical discussions.

Emperor Ren Zong ordered a revision of the method of determining pitches to Li Zhao, who insisted on adopting the yardstick of Taifu-si to determine twelve absolute pitches. He attached such importance to the number 'twelve' that he was against the suggestion that provision of four bells as semitones be necessary to play music in harmony. Fan Zhen also adhered to 'twelve', and debated with his friend Si-ma Guang on the subject how to define the pitch pipe of *huangzhong*, that is, whether regulating it with a volume of one thousand and two hundred grains of millet or with the length of ninety grains of millet. Chen Yang made a point of the character of the sacred number 'twelve', too. But he denied to use an artificial measure as the pitch pipe. This way of thinking was developed by some of Neo-Confucianists. One of them was Cai Yuan-ding, who established the theory of pitches with flat tones and semitones. He mentioned the term *li* (principle) in his work on music so as to get adherence to 'twelve'. His theory kept its established status until Zhu Zai-yü found the mathematical solution of the equal-tempered chromatic scale in late Ming.