Father Amiot's Report of the Kangxi Emperor's "Improvements" to Ritual Instruments in Eighteenth-Century China

Stewart Carter and Zhiyu (Alex) Zhang

In 1713, the fifty-second year of the reign of China's Kangxi Emperor (1654–1722, r. 1661–1722; fig. 1), and also in 1718, the Son of Heaven issued edicts that stipulated certain changes in the construction of musical instruments used in court rituals, providing precise measurements for them. Our article describes these changes, as reported by Joseph-Marie Amiot (1718–1793) in his manuscript treatise "De la musique moderne des chinois"[1] (ca. 1754[2]; see fig. 2) and confirmed in contemporary Chinese sources, described below. Our findings shed light on Kangxi's desire to set the ritual music of his dynasty, the Qing, apart from that of the previous dynasty, the Ming.[3] We further demonstrate how Amiot relied on contemporary Chinese sources for descriptions and measurements of musical instruments, and also for his illustrations.

The strategic actions of early Qing emperors regarding the practice of ritual music were primarily driven by their political aims. According to Chengkang Guo (郭成康), at the transition from the Ming to the Qing dynasty, the Ming loyalists branded the Qing as usurpers—barbarians who had stolen the heavenly mandate.[4] In the early years of the dynasty,

1. Paris, Bibliotheque nationale, Rés. Vmb ms 14. Amiot's manuscript bears no date, but François Picard has made a convincing case for the year 1754. See Joseph Marie Amiot s.j., "De la musique moderne des chinois", BnF Rés Vmb ms 14, c. 1754, ed. Picard, 6–7; see also Benjamin-Marie de la Borde, Essai sur la musique ancienne et moderne (Paris: Ph.-D. Pierres, 1780), 360, 364.

2. Amiot's manuscript bears no date. François Picard writes "c. 1754" in the title of his edition of this treatise (Joseph Marie Amiot s.j., "De la musique moderne des chinois", BnF Rés Vmb ms 14, c.1754, https://ctext.org/library.pl?if=en&res=5542&remap=gb), yet he makes a convincing case for the date 1754, especially on pp. 6–7.

3. For further information on the music of Qing Dynasty court rituals, see Guiteng Liu (刘桂腾), 清代乾隆朝宫廷礼乐探微 ("An Exploration into the Court Rituals and Music of the Qianlong Reigns of the Qing Dynasty"), 中国音乐学 (Musicology in China), 2001 (03): 43–67.; and Yi Wan (万依), 清代宫廷音乐 ("Court Music in the Qing Dynasty"), 故宫博物院院刊 (Palace Museum Journal), 1982 (02): 8–18.

4. Chengkang Guo, 清朝皇帝的中国观 ("The Qing Emperor's view of China"), 清史研究 (Qing History Research), 2005 (04): 1–18.

FIGURE 1. Emperor Kangxi (1654–1722, r. 1661–1722). Portrait by an unidentified court artist.

the Manchu conquerors' insistence on the use of their own language rather than Mandarin in official proceedings did not help the situation, nor did the Manchu Prince-Regent Dorgon's edict of 1645 that all men were required to shave their foreheads and wear the rest of their hair in a queue. But early in his reign, Shunzhi (順治, 1638–1661, reigned 1644–1661), the first Qing emperor to govern from Beijing,[5] began to assuage the doubts of many Ming loyalists by learning Mandarin and encouraging the celebration of Confucian rituals.[6] Shunzhi's son Kangxi (r. 1661–1722) implemented a conciliatory policy towards the Han populace even as he modified the legal statutes and musical scales of the Ming dynasty. According to Amiot, Kangxi also relaxed the unpopular policy that all Chinese men had to adopt the Manchu hairstyle.[7] These actions not only reaffirmed the emperor's authority but also aimed to dismantle the perception of the Qing rulers as ethnic outsiders. Kangxi also knew that

> because it is an essential point in the Chinese government that each dynasty should have its own particular music, he wanted that of the Manchu Tartars [i.e., the Qing] to have its own as well. He had it composed according to the principles adopted in the Empire, precisely the same as those I have given the details of in what I sent on ancient music [i.e., the translation of Li Guangdi's treatise]. If there is any change, it is only in the construction of the new instruments, for which he has preserved their old names, their form and their use.[8]

According to Amiot, Kangxi said that his chief minister and the heads of his nine imperial tribunals had stated, "with one voice,"[9] that

5. There are two perspectives regarding the chronology of Qing emperors. Some historians consider Shunzhi as the first Qing emperor, while others place Nurhaci, the founder of the Qing dynasty who did not fully control China, as the first. Our phrasing reconciles these views by acknowledging Shunzhi's governance from Beijing as a key turning point, which factually aligns with both interpretations.

6. Peter Cheng-main Wang, "The Significance of State Sacrifice in Early Qing: An Examination of the Shunzhi Period," *Central Asiatic Journal* 58 (2015): 133–147.

7. Amiot, "De la musique modern," 3.

8. "comme c'est un point essentiel dans le gouvernement chinois que chaque dynastie ait sa musique particulière, il voulut que celle des Tartares Mandchous eut aussi la sienne. Il la fit composer suivant les principes adoptés dans l'Empire, les mêmes précisément que ceux dont j'ai donné le détail dans ce que j'ai envoyé sur l'ancienne musique. S'il y a du changement, c'est seulement dans la construction des nouveaux instruments auxquels il a conservé leurs anciens noms, leur forme et leur usage." Amiot, "De la musique modern," 2–3. Translated Stewart Carter.

9. "Ils ont fait d'une commune voix." Quoted in French translation in Amiot, "De la musique modern," 11.

FIGURE 2. Joseph-Marie Amiot, "De la musique moderne des chinois." title page. Paris, Bibliothèque nationale, Rés. Vmb ms 14 (ca. 1754).

> The musical instruments made under the preceding dynasty [the Ming], are very imperfect. They express neither the delicacy nor the embellishments nor even the true sound of the music, according to the principles by which they should be constructed. But Your Majesty has found, through his profound reflections, the means for correcting the defects and making them able to render these sounds accurate and truly harmonious. We believe and we are completely convinced that Your Majesty will render an essential service to the Empire if he is willing to give his orders so that all these instruments are engraved and inserted in the Book of the Great Customs of the Empire [Daqing huidian 大清會典, "Statutes of the Great Qing"],[10] with the method of constructing them, their dimensions, and all the means that have been employed to make them as they now are. It is to be feared under this precaution that we will gradually forget, and that in the course of time, our music will fall back into that state of imperfection from which your Majesty took it. We therefore believe that it is appropriate to insert them in the Book of the Great Customs of the Empire, marking not only the method and the theory of their construction, but also the year and the month when by order of Your Majesty we began to use them, etc."[11]

10. This book of edicts was begun in 1690; supplements were issued at various times throughout the Qing dynasty. Amiot probably consulted the editions of 1690 and 1732. See Amiot, "De la musique modern," ed. Picard, 11, 63–64.

11. "Les instruments de musique faits sous la dynastie précédente sont fort imparfaits. ils ne sauraient exprimer ni la délicatesse, ni les agréments, ni même les véritables tons de la musique suivant les principes de laquelle on voit bien qu'ils n'ont pas été construits. Mais votre Majesté à trouvé par ses profondes réflexions le moyen de corriger ce qu'ils avaient de défectueux et d'en faire qui puissent rendre ces tons justes et véritablement

Kangxi's interest in music, both Chinese and European, is well known. According to one report, the emperor had several keyboard instruments in his palaces.[12] He had great respect for the musical abilities of several European missionaries in Beijing, including in particular the Portuguese Jesuit Tomás Pereira (1645–1708). Pereira apparently built a Western-style keyboard instrument—probably a clavichord—for the court and taught Kangxi to play it.[13] The emperor's interest in Chinese music theory led Kangxi (or more likely, his minions) to develop a new (and totally misguided) temperament, with fourteen tones to the octave.[14] Kangxi probably overstated his concern for the "imperfections" of the musical instruments of the Ming. Amiot reports that he said, "The instruments that were in use under my predecessors were in truth of a very good construction, but they were old and the tones they produced were dull and distorted."[15] Like many Chinese emperors before him, he wanted to set the music of his reign apart from that of the preceding dynasty.

Ironically, in ordering new standards for the construction of musical instruments for rituals, Kangxi was in fact deferring to ancient Chinese practices. When a new dynasty, or even a new emperor of the same

harmonieux. Nous croyons et nous sommes pleinement convaincus que votre Majesté rendra un service essentiel à l'Empire si elle veut bien lui donner ses ordres pour qu'on grave tous ces instruments, et qu'on les insère dans le livre des grands usages de l'Empire, avec la méthode de les construire, leurs dimensions, et tous les moyens qu'on à employé pour les rendre tels qu'ils sont. Il serait à craindre sous cette précaution, qu'on a perdit peu à peu la mémoire, et que dans la suite des tems, notre musique ne retombent dans cette l'état d'imperfection d'où votre Majesté la tirée. Nous croyons donc qu'il n'a propos qu'en les insérant dans le livre des grands usages de l'Empire, on marque non seulement la méthode et toute la Théorie de leur construction, mais encore l'année et la lune, où par ordre de votre Majesté on commencera à s'en servir. &c." Amiot, "De la musique moderne," 8–9.

To the best of the authors' knowledge, this quotation does not appear in the Daqing huidian of either 1690 or 1732.

12. *Memoirs of Father Ripa during Thirteen Years at the Court of Peking in the Service of the Emperor of China*, translated. Fortunato Prandi (New York: Wiley and Putnam, 1846), 63.

13. Joyce Lindorff, "Missionaries, Keyboards and Musical Exchange in the Ming and Qing Courts," *Early Music* 32 (2004): 403–414.

14. Hu Zhuqing, "From Ut Re Mi to Fourteen-Tone Temperament: The Global Acoustemologies of an Early Modern Chinese Tuning Reform" (Ph.D. diss., University of Chicago, 2019). https://www.proquest.com/docview/2273835354?pq-origsite=gscholar&fromopenview=true&sourcetype=Dissertations%20&%20Theses.

15. "Les instruments dont on se servait sous mes prédécesseurs étaient à la vérité d'une très bonne construction; mais ils étaient vieux et ne rendaient plus que des tons sourds et altérés." Amiot, "De la musique moderne," 7.

dynasty, came to power, the emperor, often acting in concert with music theorists, wanted to be certain the music of his reign was "proper," by consulting earlier sources, even one as ancient as the Zhouli (周禮, "Rites of Zhou").[16] Joseph S. C. Lam calls this music guyue (古樂, literally, "old music"). Lam describes in some detail how scholars strove to achieve guyue during the Ming Dynasty.[17] This issue was revisited virtually throughout the history of China, since music and measurement were inextricably intertwined with cosmology, the calendar, and human behavior.[18]

In order to achieve guyue it was crucial to establish the correct pitch for huangzhong (黃鍾), the "yellow bell," which was named for the legendary Yellow Emperor, Huangdi (黃帝). The color yellow was a symbol of imperial power in China. The "yellow bell" was not a bell per se, but rather an absolute pitch for Chinese music, similar to Western music's a^1 = 440 Hz. The pitch of the yellow bell was established by a bamboo pipe of a prescribed length. A new dynasty—or even a new emperor of the same dynasty—had to establish this basic pitch in order to ensure the harmony of the realm. Standardization in these matters was a hallmark of authority and control.

Lam reports that in the Ming Dynasty, the theorist Gong Wan (萬恭), in his treatise *Wenmiao liyueshu* (文廟禮樂書, 1583), said that "the huangzhong pipe measures nine cun (寸) in length, nine fen (分) in outer circumference, three fen in inner diameter, and has a volume of 1,200 millet grains; the remaining eleven pipes are to be derived from the huangzhong pipe through the method of sanfen suyi (三分損益), which means, literally, the addition and subtraction of a third."[19] For the Qing, Amiot says that in the fifty-second year of Kangxi's reign, it was determined, after much reflection, that the length of the bamboo pipe representing the pitch of the

16. See Joseph S. C. Lam, "Ritual and Musical Politics in the Court of Ming Shizong," in *Harmony and Counterpoint: Ritual Music in Context*, ed. Bell Yung, Evelyn S. Rawski, and Rubie S. Watson (Stanford, CA: Stanford University Press, 1996), 35–53, here 41.

17. Joseph S. C. Lam, *State Sacrifices and Music in Ming China: Orthodoxy, Creativity, and Expressiveness* (Albany: State University of New York Press, 1998), 79–93.

18. See Anon., "Mémoire sur les danses chinoises, d'après une traduction manuscrite de quelques ouvrages de Confucius," in *Variétés littéraires*, ed. François Arnaud and Jean Baptiste Antoine Suard (Paris: Lacombe, 1768), 1:472–502, here 496–498. This article has been transcribed by Michel Brix in *Les danses rituelles chinoises d'après Joseph-Marie Amiot*, ed. Yves Lenoir and Nicolas Standaert (Brussels: Éditions Lessius / Namur: Presses universitaires de Namur, 2005), 293–307.

19. Lam, *State Sacrifices and Music*, 84. Lam goes on to explain the problems associated with this method of tuning.

yellow bell should be 1 *pied*, 7 *pouces*, 2.9 *lignes* (= 555.4mm).[20]

Kangxi soon ordered his "new" instruments to be put into use for rituals.

> In the fifty-fifth year of Kangxi [1716], the emperor ordered the government of the province of Petchely [Bei Zhili, 北直隸, a historical province of the Qing empire that includes Beijing] to have the new music played in the Hall of Confucius and to use only the instruments of the new type of construction in the performance of this music. In second year of Yong-Tcheng [Yongzheng 雍正, 1678–1735, reigned. 1722–35], the emperor ordered that the head of music of the descendants of Confucius should take orders and instructions for the new music in the family of Confucius from the Tay-Tchang-see [Taichang si 太常司, the emperor's Court of Imperial Sacrifices; also the name for a type of ceremony honoring "the conservateur of the five virtues"]. His Majesty gave the same orders for all the musicians of the empire who are in charge of the music of the temples, halls, and other places where public ceremonies are held.[21]

Father Joseph-Marie Amiot S. J. and His Sources

Joseph-Marie Amiot (1718–1793); Chinese name, Qian Deming (錢德明, see fig. 3) was a French Jesuit missionary, active in Beijing from 1751 until his death. His manuscript "De la musique moderne des chinois," which had disappeared for nearly 200 years, resurfaced in the second half of the twentieth century and is now in the Bibliothèque nationale in Paris, where it has been digitized and can be accessed at http://gallica.bnf.fr/ark:/12148/btv1b105513595. The noted French scholar of Chinese music François Picard has published an excellent diplomatic edition of

20. See Table 1 for an explanation of the relationship between Amiot's units of measurements and contemporary Chinese units.

21. "La 55e année de Kang-hi [Kangxi] [1716], l'empereur ordonna au gouvernement de la Province de Petchely de faire jouer la nouvelle musique dans la salle de Confucius et de n'employer pour l'exécution de cette musique que les instruments de la nouvelle construction. La 2e année de Yong-Tcheng [Yongzheng], l'empereur ordonna que le chef de la musique des descendants de Confucius viendrait prendre du Tay-Tchang-see les ordres et les instructions nécessaires pour l'exécution de la nouvelle musique dans la famille de Confucius. Sa majesté donna les mêmes ordres pour tous les autres musiciens de l'empire qui avaient soin de la musique des temples, salles et autres lieux où se font les cérémonies publiques. Amiot, "De la musique moderne," 9–10.

this source online, in French, with annotations and commentary.[22] Our article compares Amiot's reporting of Kangxi's edicts on musical instruments to contemporary Chinese documents that Amiot clearly knew, and which were approved and/or commissioned by the emperor. His principal source was the 1732 edition of Daqing huidian. Amiot often refers to this work as "le livre des grands usages de l'Empire" ("The Book of Great Customs of the Empire"), though on one occasion gives its name as Tay-Tsing hoie-Tian, which is his romanization of Daqing huidian.[23] Amiot mentions this compilation several times in his text, though without identifying the specific edition; Picard references both the 1690 and 1732 editions.[24] Amiot's chief resource was clearly the edition of 1732; he translated substantial portions of its text and copied several of its illustrations.[25] The early versions of the Daqing huidian were based on a similar compilation from the Ming Dynasty, the Ming huidian (明會典), which followed a long tradition of similar collections of statutes, dating back to the Zhouli of the Warring States period (ca. 476–221 BCE).[26]

The following list briefly describes imperially sanctioned Chinese sources on music and musical instruments that Amiot certainly knew:

1. Gujin tushu jicheng (古今圖書集成 "Complete collection of pictures and books of old and modern times," 1701–1706, rev. 1722–1726).

2. Lülü yuanyuan (律曆淵源), "(Imperially endorsed) Origins and foundations of musical tuning, calculation, and the calendar," is a collection of three treatises on astronomy, mathematics, and music that assemble Chinese and Western knowledge in these three fields. Its second part, the treatise that concerns music, is itself divided into three parts, Lülü zhengyi (律呂正義) shangbian (上編), xiabian (下編), and xubian (續編). This project was commissioned by Kangxi himself and compiled under the leadership of his third son, Yunzhi (允祉). The second item in this series of three treatises, xiabian (下編: Hesheng

22. See above, n. 2.

23. Amiot, "De la musique moderne," 106.

24. Amiot, "De la musique moderne," 4.

25. As one example among many, Amiot (or a draftsman working with him) clearly copied his illustration of the qin directly from the Daqing huidian, p. 6812. Amiot added his romanization of the Chinese character in the upper right corner of the drawing, and also the legend "fig. 8" in the upper left-hand corner. See below, fig. 10. Regarding Amiot's French translations of portions of text from the Daqing huidian, see Amiot, "De la musique moderne," ed. Picard, 34.

26. See http://www.chinaknowledge.de/Literature/Historiography/qinghuidian.html.

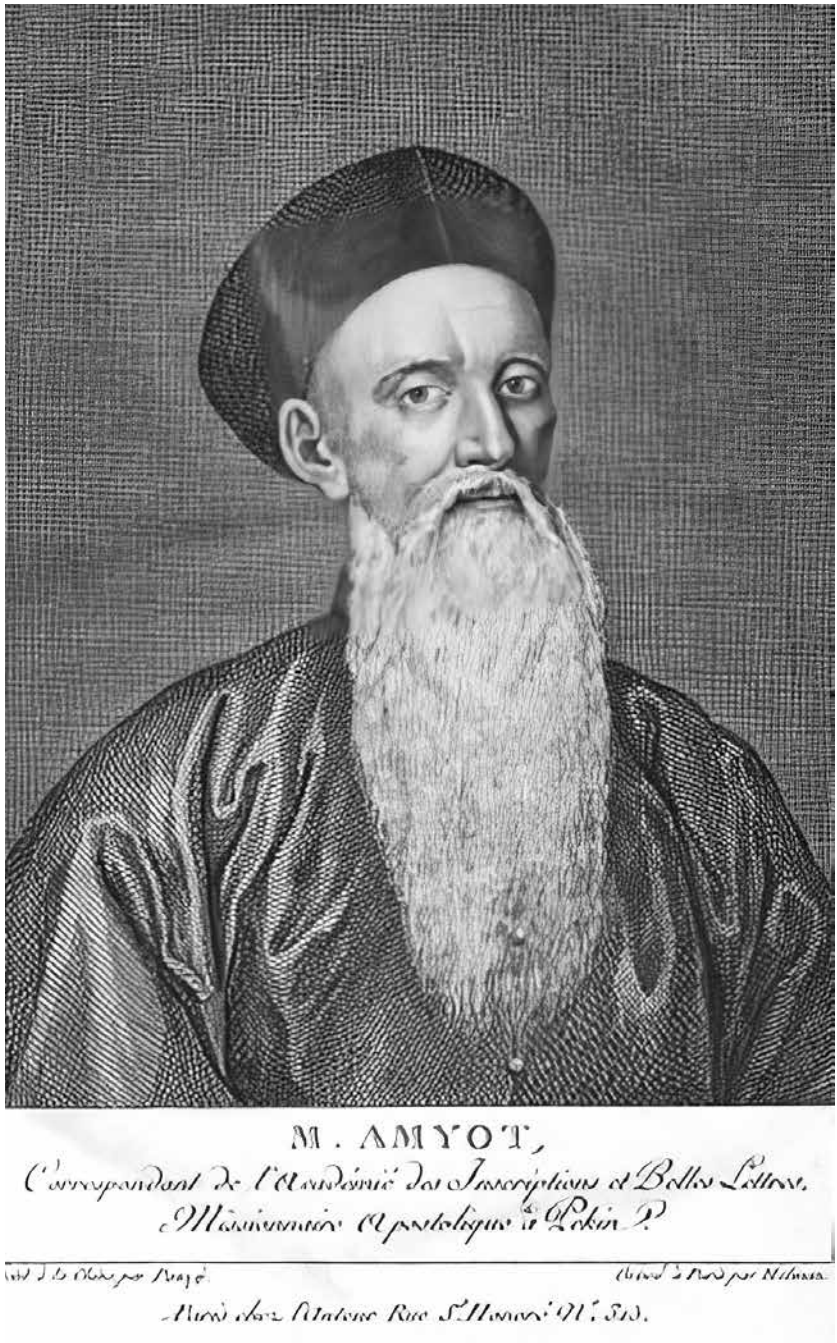

FIGURE 3. Joseph-Marie Amiot, S. J. (1718–1793).

dingyue 和聲定樂, "Harmonizing sounds and determining music") provides some illustrations and measurements for musical instruments but is less complete and hence less useful than other sources for comparison with Amiot's treatise.

3. (Qinding) Daqing huidian (欽定大淸會典, "Statutes of the Great Qing"), editions of 1690 and 1732. This work, which Amiot mentions in his text, though without mentioning specific dates, apparently was his principal source of information. It was published during the reign of the Yongzheng Emperor, Kangxi's son.

4. (Yuzhi) Lülü zhengyi houbian ([御製]律呂正義後編, "Imperially commissioned correct meaning of the pitch pipes, later edition," 1746, with additions in later years). Created by order of the Qianlong (乾隆) Emperor, Kangxi's grandson, this expansion of the Lülü zhengyi adds considerable information on musical instruments. Given the involvement of Kangxi's third son, Yunzhi, in the creation of this document, it is ironic that this project was supervised by Yunlu (允祿), who was the sixteenth son of Kangxi and thus Qianlong's uncle. As many of the drawings and depictions of instruments in the houbian match those of the 1732 Daqing huidian, it is quite possible that the latter document played a significant role in the creation of the former.

Amiot arrived in Beijing in 1751, where, like so many Jesuit missionaries before him, he threw himself into the task of learning the native language and understanding Chinese culture. Amiot studied several aspects of Chinese culture, sending back to France several of his own writings, some of which remained unpublished to this day, including a book on Confucius, a translation of several Chinese treatises on war, a Manchu-French dictionary, a Manchu grammar, and a treatise on Chinese dance, to name but a few. His writings on Chinese music, both in print and manuscript, represent the earliest comprehensive approach to this subject in any European language. In addition to the information on instruments provided in Amiot's "De la musique moderne des chinois," Amiot also described in this book the Chinese system of music notation known as gongchepu (工尺譜) and transcribed seven different Chinese "airs" in both Chinese and Western notation.[27] His "Mémoire sur la musique des chinois, tant ançiens que modernes" (fig. 4), which was completed in manuscript in 1776 and published in an edition by Jean-Pierre Roussier in 1779 and reprinted in

27. Amiot, "De la musique moderne", 143–150.

1780,[28] was widely read by scholars and students of Chinese music well into the twentieth century and, with some cautions about its shortcomings, is still consulted today. The Chinese scholar Hongyu Gong (龚宏宇) regards Amiot as "the first foreigner to systematically introduce Chinese music to Europe," playing a pivotal role in the musical exchanges between the East and the West.[29] Zhijie Kang (康志杰) says that Amiot had a profound understanding of classical Chinese texts and a strong interest in Chinese musical instruments and systems; he also carried forward Matteo Ricci's (1552–1610) missionary zeal, perpetuating Sino-Western musical cultural exchange during the Qing Dynasty.[30]

The term "musique moderne" in the title of Amiot's treatise of 1754 probably was an attempt to set this treatise apart from an earlier work of his, now lost—a French translation of Guyue jingzhuan (古樂經傳, "Commentary on the Ancient Canon of Music," 1727), by a neo-Confucianist scholar and official in Kangxi's court, Li Guangdi (李光地).[31] This translation apparently circulated in French intellectual circles before it disappeared, as Jean-Philippe Rameau commented on it in his *Code de musique pratique* (1760).[32] An unsigned article published in the French periodical *Journal étranger* in July 1761 purported to translate Li Guangdi's treatise, but in fact it contains transcriptions of excerpts from Amiot's "De la musique moderne des chinois", with some additional material on the music of the ancient Greeks and the Egyptians.[33]

The present study examines specifications for musical instruments in Amiot's 1754 treatise, and to a lesser extent also in his later treatise on

28. Paris: Nyon. The 1776 manuscript has been digitized by the Bibliothèque nationale and can be accessed at https://gallica.bnf.fr/ark:/12148/btv1b9060852f?rk=21459;2.

29. Hongyu Gong, 朱载堉与中国礼仪乐舞之西渐 ("Zhu Zaiyu and the spread of Chinese ritual music and dance"), 中央音乐学院学报 (Journal of the Central Conservatory of Music), 2010, (02): 91–97.

30. Zhijie Kang, "The Last Jesuit—Amiot" (最后的耶稣会士——钱德明), 世界宗教文化 (*World Religions Culture*) 2002, (03): 20–21.

31. For further information on Li Guangdi, see On-cho Ng, *Cheng-Zhu Confucianism in the Early Qing: Li Guangdi (1642–1718) and Qing Learning* (Albany: State University of New York Press, 2001).

32. Paris: Imprimerie royale, pp. 189–191. On Rameau's understanding and misunderstanding of the work of Li Guangdi, see Qingfan Jiang, "In Search of the 'Oriental Origin': Rameau, Rousseau and Chinese Music in Eighteenth-Century France," *Journal of Eighteenth-Century Music* 19/2 (2022): 125–149, here 142.

33. *Journal étranger*, July 1761, pp. 5–49. The article is entitled "Traduction manuscrite d'un livre sur l'ancienne Musique Chinoise, composé par Ly-koang-ty, Docteur & Membre du premier Tribunal des Lettrés de l'Empire, Ministre, &c."

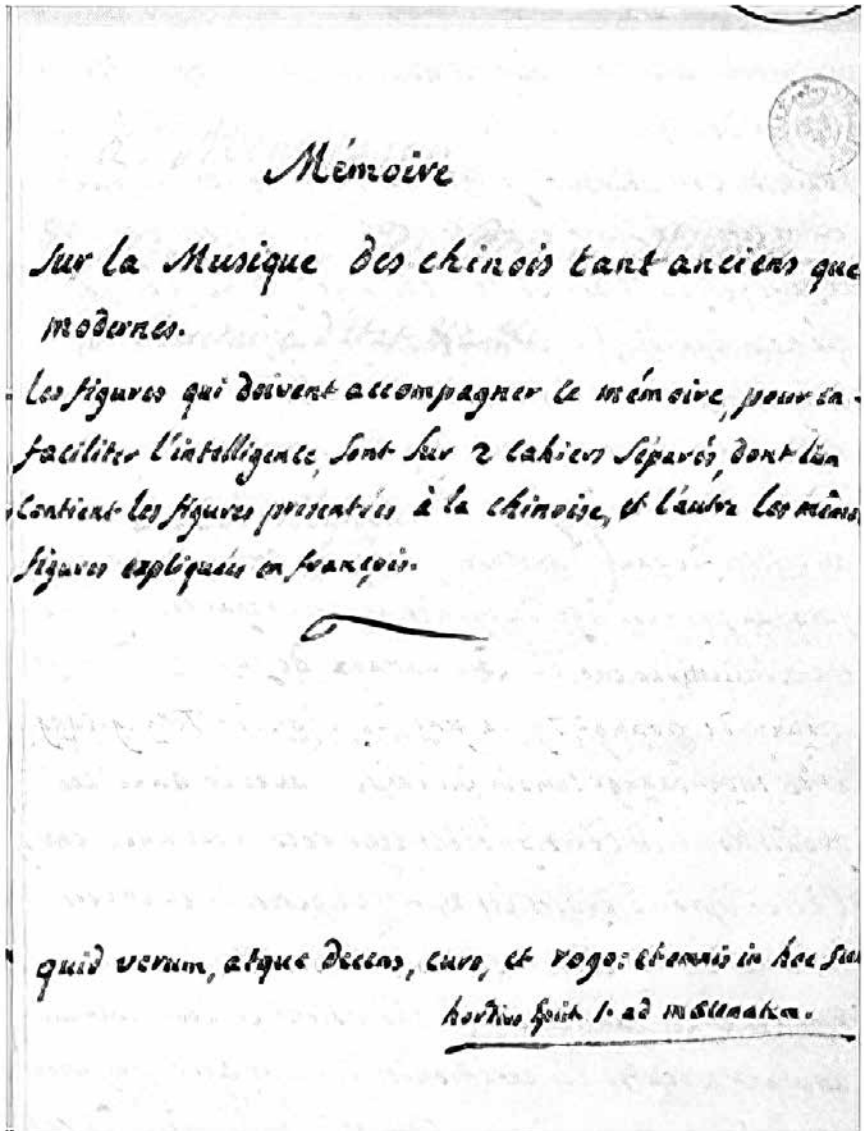

FIGURE 4. Amiot," Mémoire sur la musique chinoise, tant anciens que modernes" (1776), title page. Paris, Bibliothèque nationale, ms Bréquigny 13.

Chinese music, "Mémoire sur la musique des chinois, tant anciens que modernes," completed in manuscript in 1776 (fig. 4). Amiot sent two copies of the 1776 manuscript back to France, one of which went to Henri Léonard Jean Baptiste Bertin (1720–1792), Louis XIV's Secretary of State.[34] As mentioned above, the latter treatise was edited for publication in Paris in 1779 by Pierre-Joseph Roussier. It was reprinted in 1780 as vol. 6 of the series *Mémoires concernant l'histoire, les sciences, les arts, les mœurs, les usages, &c. des Chinois*, with a different title page and with a 126-page supplement of miscellaneous material, only a small part of which concerns music.[35]

Chinese ritual practices and ritual music

It is worth reiterating that Kangxi's edict specifically concerned musical instruments used in state rituals. Joseph S. C. Lam has written extensively about state sacrifices in the preceding dynasty, the Ming, whose ritual practices exerted a strong influence on the Qing.

> State sacrifices and music, the most prominent and official manifestation of Chinese ritual and music, were not only established means of governance for Chinese emperors and scholar-officials but also culturally sanctioned channels in which to express their religious, social, and personal concerns. Performed with a wealth of ritual paraphernalia that displayed governmental control of human and material resources, state sacrifices were copiously described in classical documents and enthusiastically discussed and promoted by Confucian scholar-officials. Projecting a representation of the natural and supernatural worlds of the emperors and scholar-officials, state sacrifices revealed the ways in which they understood, in abstract and specific terms, their existence and the roles they played.[36]

34. Paris, Bibliothèque nationale, ms Bréquigny 13.

35. Paris: Nyon, 1789, 21780. Concerning Roussier's editorial work on Amiot's 1776 manuscript, see Stewart Carter, "The Editor from Hell: Information and Misinformation on Chinese Music in Late Eighteenth-Century France," in *Music in Eighteenth-Century Culture*, ed. Mary Sue Morrow (Ann Arbor: Steglein, 2017), 23–47.

36. Joseph S. C. Lam, *State Sacrifices and Music in Ming China: Orthodoxy, Creativity, and Expressiveness* (Albany: State University of New York Press, 1998), 15–16. See also Peter Chen-main Wang, "The Significance of State Sacrifice in Early Qing—An Examination of the Shunzhi Period," *Central Asiatic Journal* 58, Nos. 1–2 (2015): 133–147; and Joseph S. C. Lam, "The yin and yang of Chinese Music Historiography: The Case of Confucian Ceremonial Music," *Yearbook for Traditional Music* 27 (1995): 34–51. Regarding ritual

State rituals in Qing-era China were religious rites, based on Confucian traditions. The Jesuits, unlike most Catholic religious orders engaged in missionary endeavors, worked assiduously to understand the local culture and adapt their missionary efforts accordingly.[37] Fig. 5 shows a court ritual from the reign of Yongzheng (1723–1735), the Sacrifice to the First Farmer (Xiannong 先農 or Shennong 神農), which took place in the second month of the lunar year. It was celebrated in the south of Beijing, at the Xiannong tan (先農壇, Temple of Agriculture), near the Yongdingmen (永定門, Yongding Gate).[38] The painting gives a general idea of the splendor of the ceremony, with the altar as its central focus. According to Nicolas Standaert, "On the ground closest to the altar are approximately fifty musicians . . . . Behind them are 128 dancers, . . . arranged in eight rows of eight dancers [each]."[39] If there are indeed fifty musicians, it is difficult to determine what instrument each is playing. Clearly visible, however, are a bianqing (編磬, set of sixteen stone chimes) on the left side of the walkway leading to the altar; and on the right side, a large drum beneath a canopy and a bianzhong (編鐘, set of sixteen bronze bells). In front of the stone chimes on the left and similarly in front of the bronze bells on the right there appear to be several musicians—perhaps as many as ten on each side—before whom instruments can somewhat vaguely be seen, possibly qin (琴, seven-string zither), resting on tables. Standaert further says that "The '. . . dancers who have a pheasant feather in the right hand and a short flute [?] in the left are waiting to move to the front in order to dance during the second and third oblations."[40] The positioning of the various participants as well as their clothing follow the descriptions in the Daqing huidian.[41] Two officials on the right-hand side of the walkway, close to the nearest of two small wooden pavilions on

dance in the mid-Qing era, see *Les danses rituelles chinoises*.

37. Church authorities in Rome, however, failed to see the Jesuits' point of view. This eventually resulted in the long-lasting Chinese Rites Controversy. See Liam Matthew Brockey, *Journey to the East: The Jesuit Mission to China, 1579–1724* (Cambridge, MA / London: The Belknap Press of Harvard University Press, 2007), 8, 11.

38. Court Painting of the Qing Dynasty, compiled and edited by the Palace Museum (Beijing: Cultural Relics Publishing House, 1992), 267–268.

39. Nicolas Standaert, "Ritual Dances and Their Visual Representations in the Ming and the Qing," *The East Asian Library Journal* 12/1 (2006): 68–181, here 69.

40. Ibid.

41. Beijing: Neifu, 1732, juan 92, pp. 18a–b

stilts, hold the ritual implement Amiot calls hoei (hui 麾), a banderole attached to a standard. In Amiot's description of this ritual device, the hui is supposed to be placed on a wooden base. The officials, however, have removed the hui from its base, which rests on the ground behind them.[42] Two other officials, one on either side of the walkway, are each holding aloft a banderole called tsie (jie 節), which is also described and depicted by Amiot, who says it is a "type of banderole that is waved in front of a troop of dancers, when they assemble."[43]

Amiot mentions three different types of Chinese ritual music: Tchoung-ho-chao-yo (Zhonghe shaoyue 中和韶樂), Tan-pi-chang (Danbi shang 丹陛上), and Tay-Tchang-see (Taichang si 太常司, "conservateur of the five virtues"[44]), though he discusses in detail only the first two. For these two categories, Amiot gives the number of court officials ("mandarins" involved and their placement for the ceremony, the number of singers, and the number of each type of musical instrument and non-musical ritual objects:

1.On the music called Tchoung-ho-chao-yo [Zhonghe shaoyue 中和韶樂], music that inspires true harmony.

> On the east side there are two music mandarins [officials], 1 singer, and 14 symphonistes or players of instruments.
>
> The instruments are the hoei [hui 麾], or standard, 1 Tchou [zhu 柷, wooden box struck with a stick], 1 Yng-Kou [yinggu 應鼓, barrel drum mounted on a pole], 16 metal bells [bianzhong], 2 Kin ([qin], 1 chê [se 瑟, plucked zither with moveable bridges], 2 cheng [sheng 笙, mouth organ], 1 siao [xiao 簫, vertical flute], 1 Ty [di, 笛, horizontal flute], 1 hiun [xun, vessel flute], 1 pay-siao [paixiao 排簫, panpipes] and a po-fou [bofu 搏拊, barrel-shaped drum].
>
> On the west side there are two music mandarins and 14 players of instruments. The instruments are 16 King [Bianqing 編磬], set of lithophones, or stone chimes] of precious stone or agate, which one commonly calls yu-King

42. Amiot, "De la musique moderne," 94; drawing, plate 1. For an English translation of Amiot's description of the hui, see below.

43. "espèce de banderole qu'on fait marcher devant la troupe de danseurs, lorsqu'ils s'assemblent." Ibid., 20; drawing, plate 42.

44. Amiot, "De la musique moderne," 11.

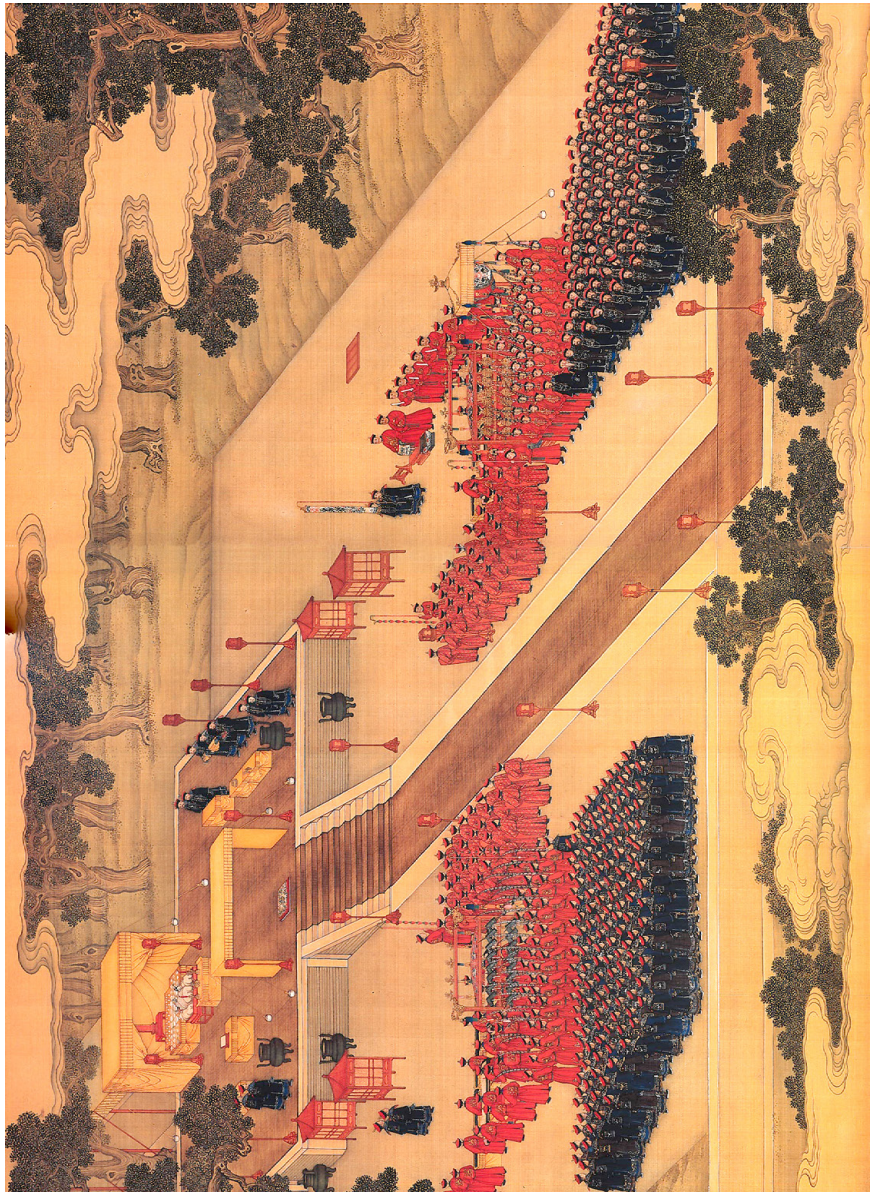

FIGURE 5. *Ji Xiannongtan tu* (Painting of the Sacrifice to the First Farmer), Scan of the image in Gugong bowuyuan (故宫博物院, National Palace Museum), ed., *Qingdai gongting huihua* (清代宫廷绘画, Beijing: Wenhua chubashe, 1992), plate 44.

[yu-qing 玉磬], 1 chê [se 瑟], 2 cheng [sheng], 1 siao [xiao], 1 ty [di], 1 hiun [xun],1 Tché [chi 篪, short transverse bamboo flute], 1 pay-siao [paixiao], 1 po-fou [bofu], and an ou [yu 敔, percussion instrument shaped like a tiger].[45]

2. Tan-pi-chang (Danbi shang 丹陛上), music "of the vestibule" ("du vestibule").

On the east [side] are three mandarins with the title of initiator (Lyng-yo-Koan [lingyueguan 領樂官]), and on the west, three mandarins with the same title, and there are besides four mandarins with the title of pay-Tchang [paichang 俳長], two on each side, who hold in their hand a type of tablet called Kan [gan 桿], The duty of these four mandarins is to assign to the musicians the airs that they must play or sing. For this music there are 2 singers and 28 instrumentalists [symphonistes].[46]

Amiot lists the instruments used in the Danbi shang, but unlike the music of the Zhonghe shaoyue, described above, he does not specify the exact disposition of instruments on the east and west sides. "The instruments are two large drums (Ta-Kou) [dagu 大鼓], 2 Fang-hiang [fangxiang 方響], sets of sixteen metal plates suspended from a frame], 4 cheng [sheng], 4 koan [guan 管], 4 Ty, 2 Yun-lo [yunluo 雲鑼], 1 Pai-pan [paiban 拍板, clappers], and 1 Tchang-Kou [changgu 杖鼓, large barrel drum].[47]

After describing these two categories of music, Zhonghe shaoyue and Danbi shang, Amiot returns to them, listing again the instruments required, but this time giving precise measurements,[48] most of which are duplicated elsewhere.[49] For more on these instruments and their measurements, see below.

45. "De la Musique Appellée Tchoung-ho-chao-yo (c'est-à-dire Musique qui inspire la veritable concorde.) Du côté de l'Est sont 2 Mandarins de Musique, 1 Chanteur et 14 Symphonistes our Joueurs d'instruments. / Les Instruments sont le hoei ou Etendard, 1 Tchou, 1 yng-Kou, 16 cloches de métal, 2 Kin, 1 chê, 2 cheng, 1 siao, 1 Ty, 1 hiun, 1 Tche, 1 pay-Siao et un po-fou. / Du côté de l'ouest Sont deux mandarins de Musique, 1 Chanteur et 14 joueurs d'instrumens. / Les instruments sont 16 King de pierre précieuse ou d'Agathe, qu'on appelle communément yn-King, 1 chē, 2 Cheng, 1 Siao, 1 Ty, 1 hiun, 1 Tché, 1 pay-Siao, 1 po-fou et un ou. Amiot, "De la musique moderne."

46. "A l'Est sont 3 mandarins du titre d'introducteurs (Lyng-yo-Koan), à l'Ouest sont aussi 3 mandarins du même titre; il y a outre cela 4 mandarins du titre de pay-Tchang, 2 de chaque côté, lesquels tiennent en main une espèce de tablette appelée Kan. L'office de ces 4 mandarins est d'assigner aux musiciens les airs qu'ils doivent jouer ou chanter. Il y a pour cette musique 2 chanteurs et 28 symphonistes." Amiot, "De la musique moderne," 72–73.

47. "Les instruments sont 2 gros tambours (Ta-Kou), 2 fang-hiang, 4 cheng, 4 koan, 4 Ty, 2 Yun-lo, 1 Pai-pan, 1 Tchang-Kou." Ibid., 73.

48. Amiot, "De la musique moderne," 86–105.

49. Amiot's detailed list of the instruments and their measurements appears in his "Explication des Principaux instrumens de la Musique chinoise" ("Explanation of the principal instruments of Chinese music"), ibid., 21–69.

FIGURE 6. Qianlong (1711–1799, r. 1735–1796). Portrait by Giuseppe Castiglione.

Ritual Instruments and Their Measurements

Both of Amiot's manuscripts on Chinese music and two of the Chinese publications mentioned here, Daqing huidian and Lülü zhengyi houbian, provide very precise measurements for many instruments, though Amiot's 1776 manuscript does not refer to Kangxi's specifications. Amiot states that Chinese systems of measurement changed over time, and the ancient system was not the same as that of his day. The "modern" system was first established in the fifth year of the reign of Emperor Chun-Tché (Shunzi; 1649), confirmed in the eighteenth year of Kangxi (1680), and entered in the Tay-Tsing-hoei-Tien (Daqing huidian), article 23 of the hou-pou (houbu 後部), appendix, article 1.[50] Amiot provides measurements in his native language, using the French terms *pied* (foot), *pouce* (thumb), and *ligne* (line). These measurements use the same terms as the pre-Revolutionary French system, but with different meanings. Amiot's *pied*, or foot, is exactly equivalent to the Chinese chi (尺), his *pouce*, to the Chinese *cun*; and his *ligne*, to the Chinese fen. Moreover, while the pre-Revolution pied was divided into twelve pouces and the pouce into twelve lignes, Amiot adopted the Chinese practice, subdividing each of these units of measurement by ten. As the intellectual community in France apparently was Amiot's target for his 1754 treatise, his readers there would likely have been quite confused by measurements.

Metric equivalents for these measurements, based on four rulers drawn across the last two pages (unnumbered) in Amiot's 1754 manuscript, as confirmed by Picard, are shown in Table 1.[51] The rulers are reproduced in fig. 7. Amiot, or a draftsman working with him, presumably drew the rulers in their precise lengths. Picard had access to Amiot's manuscript in the Bibliothèque nationale in Paris and apparently based his measurements on personal examination of the rulers. Starting at the top of the page, the first ruler shows the "ancient" Chinese foot, measured, following a long tradition, in grains of millet arranged vertically; the second, the "modern" Chinese foot, measured in grains of millet arranged horizontally. The third and fourth rulers duplicate the ancient and modern measurements, without the grains of millet.

50. Amiot, "De la musique moderne," 105–106.

51. See Amiot, "De la musique moderne," ed. Picard, 8.

Most of the instruments described and depicted in Amiot's two manuscripts were intended for "elegant music" (yayue, 雅樂), the music of court rituals, though some were intended for comedy performances or dance music. Lülü Zhengyi houbian describes and depicts these instruments as well, but it also includes several instruments used in contemporary Chinese entertainment music, banquet music, and opera, such as the pipa (琵琶) and sanxian (三弦). In his 1754 manuscript and to a lesser extent in his 1776 manuscript, Amiot is quite specific about the ritual use of instruments, identifying the number of each type of instrument to be used for certain rituals and also providing illustrations of some of these instruments. Unfortunately, nearly half of Amiot's illustrations of musical instruments and other ritual objects are missing from the 1754 manuscript.

Fig. 8, from Amiot's 1776 manuscript, shows the arrangement of musicians for a ceremony honoring the emperor's ancestors. Amiot does not say where this ritual took place, but most likely it was in the Taimiao (太廟, Imperial Ancestral Temple), just outside the Forbidden City. At the extremities of the drawing, the four cardinal directions—east, south, west, and north—show the proper disposition of the musicians and also of the table at the top, which is placed in front of the representations of these ancestors. From the top right, the instruments are (a) zhong (鐘), (b) pan (板, clappers, also known as paiban); (c) siao (xiao, vertical flute); (d) cheng (sheng, mouth organ); and from top left, (e) kou (gu 鼓, drum); (f) tao (鼗 pellet drum); (g) koan (guan, small double-reed pipe); and (h) ty (di, transverse flute). Unfortunately, the published editions of Amiot's Memoire sur la musique des chinois (1779 and 1780) omit this illustration and its accompanying text.

Now to look more closely at the dimensions given for some of these instruments. The ty (di) is a transverse flute traditionally made of bamboo (fig. 9). It has an additional hole placed between the mouth hole and the six fingerholes that is covered with a very thin membrane of bamboo, which gives the di a very distinctive resonance, "making it brighter and louder, and adding harmonics to give the tone a buzzing, nasal quality."[52] No other traditional Chinese flute has this feature. Table 2 employs the conversion factor the authors used for converting measurements from Amiot's 1754 manuscript and the Daqing huidian into the metric

52. *New World Encyclopedia*, s.v. "Dizi," https://www.newworldencyclopedia.org/entry/Dizi.

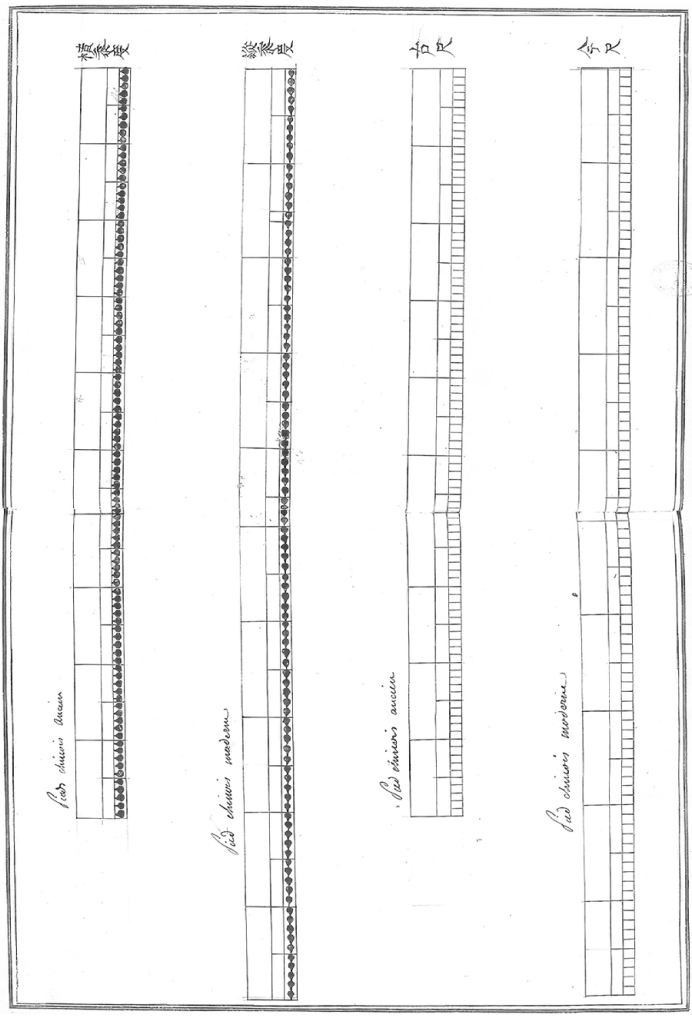

FIGURE 7. Rulers. Amiot, "De la musique moderne des chinois," rulers, unnumbered pages at the end of manuscript.

TABLE 1. Units of length in Amiot's "De la musique moderne des chinois," with their metric equivalents.

Amiot's *pied* ("foot") = 1 Chinese *chi* (尺) = 321.3 mm
Amiot's *pouce* ("thumb") = 1 Chinese *cun* (寸)
Amiot's *ligne* ("line") = 1 Chinese *fen* (分)
10 *pouces* or Chinese *cun* (寸) to the *pied* or Chinese *chi* (尺)
10 *lignes* or Chinese *fen* (分) to the *pouce* or Chinese *cun* (分)

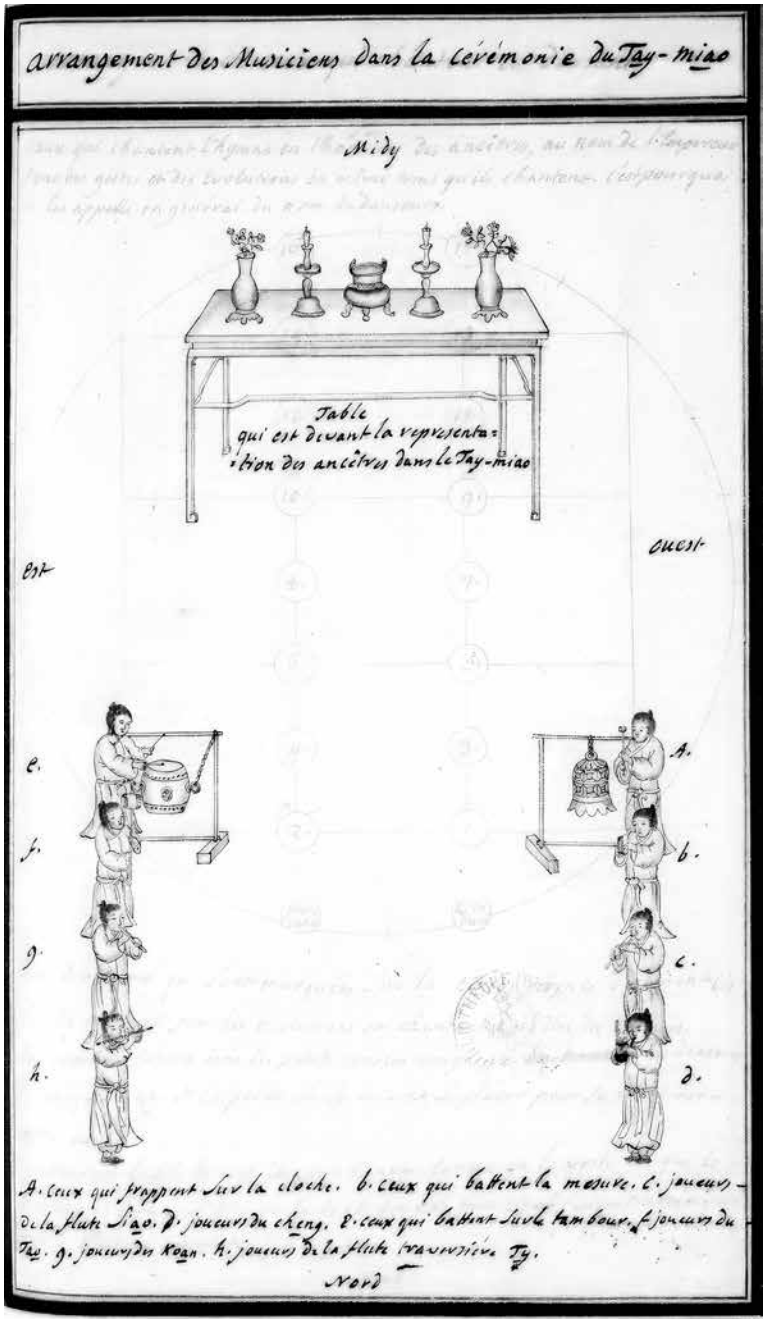

FIGURE 8. Ritual honoring the emperor's ancestors. Amiot, "Mémoire sur la musique chinois, tant anciens que modernes," part 3, plate 39. Paris, Bibliothèque nationale, ms Bréquigny 13 (1776).

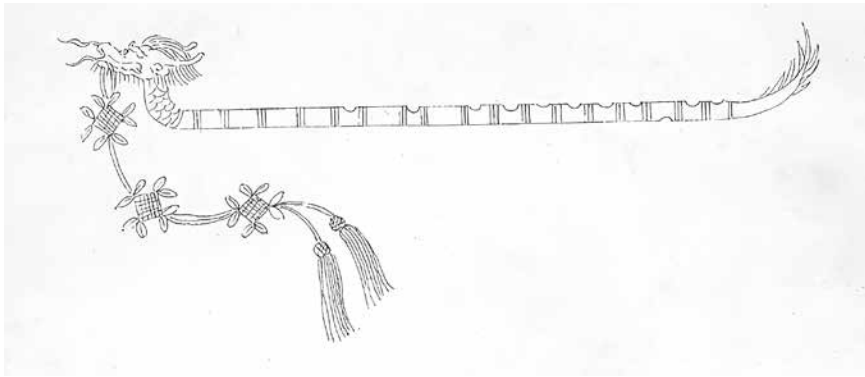

FIGURE 9. *Di* (transverse flute). Amiot, "De la musique moderne des chinois," plate 10.

TABLE 2. Comparison chart of measurements for the *guxian di* (Amiot, "De la musique moderne des chinois," and *Daqing huidian*, 1732).

Parameter	**Amiot (1754) (mm)**	***Daqing huidian* (1732) (mm)**
Total length	402.1	402.1
Diameter	13.9	13.9
Mouth hole to finger hole 1	284.4	284.4
Mouth hole to finger hole 2	254.5	254.5
Mouth hole to finger hole 3	226.2	226.2
Mouth hole to finger hole 4	201.0	201.0
Mouth hole to finger hole 5	171.6	171.6
Mouth hole to finger hole 6	142.2	142.2

system—321.3mm to the Chinese *cun* (foot). Looking at this table, we can see that the measurements Amiot gives for the length and diameter for the ty (di) of kou-si (guxian 姑洗, i.e., "in the key of mi"[53]) match those of the Daqing huidian exactly.

Amiot's illustration of the ty (di) in fig. 9 was probably based on the corresponding image in the *Daqing huidian*, though it does not match it exactly. The di was a very common instrument in China at the time, so Amiot or his draftsman (who possibly was one of Amiot's Christian converts) might have modified the drawing according to his own knowledge of the instrument.

53. Kou-si (guxian/姑洗) is a major third above the basic Chinese pitch of the yellow bell, huang-tchoung (huangzhong). The exact pitch of huangzhong changed from time to time, particularly when a new dynasty came to power. In Amiot's day, huangzhong was roughly equal to the note F, hence kou-si would have been approximately equal to A.

The pay-siao (paixiao, fig. 10), an instrument similar to the Western panpipes, traditionally consists of a set of sixteen pipes. Once again, we can see that Amiot's measurements match those in the Daqing huidian (see Table 3).

Not all of the ritual "instruments" mentioned in "De la musique moderne des chinois" are "musical" instruments. Both Amiot and the Daqing huidian describe and depict a few non-musical ritual objects or implements that are essential to the proper execution of court rituals. One of these implements is the hui, which Amiot describes as a banderole (fig. 11). With regard to its use in the music known as Zhonghe shaoyue, Amiot describes it in some detail:

> At the head of these instruments is a hoei [hui], standard [banner], the pole of which is covered with red varnish and is 11 pieds long. At the upper end [of the banner] is a collar with a figure of a particular species of goose, made of iron, and gilded. At the top of this collar is a head of a dragon, also gilded, holding in its mouth a bronze ring from which the standard hangs. This standard is 9 pieds long and 1 pied wide. The two faces of the standard are decorated with clouds and dragons. In the upper part there is half a cloud. Then in the middle there are dragons, and the other half of the cloud is below. All this is painted on yellow[54] silk, and is mysterious. The base in which the hui is placed is studded with golden nails. [The base] is made of wood, but to make it heavier, tin is poured into it. It is varnished in red with gilded iron ornaments.[55]

While the gilded goose and the half-clouds are difficult to discern in the illustration in fig. 11, clearly Amiot's hui was copied from the Daqing huidian; Amiot simply added his own romanizations of the Chinese characters. If Chinese statutes of the Qing Dynasty described the "new" ritual musical instruments with considerable precision, they applied the same detail to their descriptions of non-musical ritual implements.

54. The Chinese traditionally have considered the color yellow to be very auspicious.

55. À la tête de tous ces instruments est un hoei ou étendard, dont le bâton verni en rouge est long de 11 pieds. Au dessus, ou sur le bout d'en haut est le col d'une oie d'une espèce particulière, fait de fer, et doré. Au bout de ce col est une tête de dragon également de fer doré tenant à sa gueule un anneau de cuivre d'où pend l'étendard. Cet étendard est long de 9 pieds et large d'un pied. Ses 2 faces sont peintes avec des nuages et des dragons. À la partie d'en haut il y a la moitié d'un nuage. Viennent ensuite les dragons qui occupent le milieu, et l'autre moitié de nuage est en bas. Tout cela est peint sur de la soie jaune et ne manque pas de mystère. Le pied dans lequel on met le bâton du hoei est parsemé de clous dorés, il est de bois, mais pour le rendre plus pesant on y coule de l'Étain. Il est verni en rouge avec des ornements de fer doré." Amiot, "De la musique moderne," 94–95.

FIGURE 10. *Pay-siao (paixiao). Lülü Zhengyi houbian* (1746 and following years).

TABLE 3. Comparison chart of measurements for the *paixiao*, Amiot, "De la musique moderne des chinois" (1754) and *Daqing huidian* (1732).

Pipe	**Amiot (1754) (mm)**	***Daqing huidian* (1732) (mm)**
1	292.4	292.4
2	259.9	259.9
3	234.2	234.2
4	208.2	208.2
5	185.0	185.0
6	164.4	164.5
7	146.2	146.2
8	129.9	129.9
9 (Amiot–1 on the right side[R])	277.6	277.6
10 (Amiot–2R)	246.7	246.7
11 (Amiot–3R)	219.3	219.3
12 (Amiot–4R)	194.9	194.9
13 (Amiot–5R)	173.2	173.2
14 (Amiot–6R)	156.1	156.1
15 (Amiot–7R)	138.8	138.8
16 (Amiot–8R)	123.4	123.4

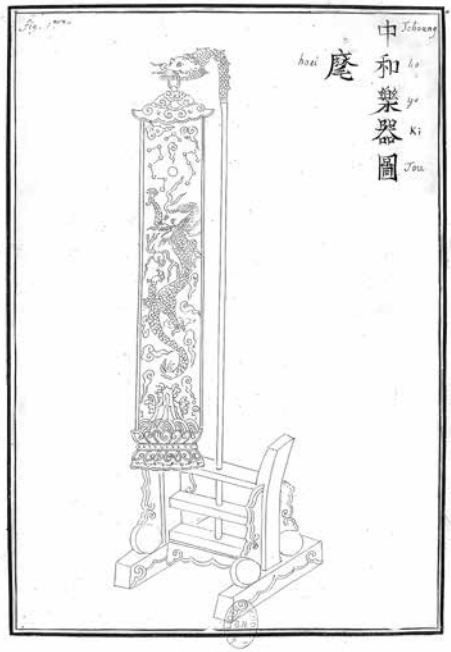

FIGURE 11. *Hui* Amiot, "De la musique moderne des chinois," plate 1.

In Amiot's "Catalogue des nouveaux instruments avec l'explication et l'usage de chacun en particulier" ("Catalogue of new instruments with the explanation and use of each one in particular"),[56] Amiot says of the hui that "It serves to bring together in a moment all the musicians at the head of whom she is always when they go to the place where the emperor's music should be made."[57] The hui is depicted in the hands of two officials on the right of the walkway leading to the altar of the Temple of Agriculture in fig. 5.

Father Amiot's 1754 manuscript provides precise measurements for more than fifty musical instruments, primarily in a section of his treatise entitled "Explication des principaux instruments de la musique chinoise" ("Explanation of the principal instruments of Chinese music"), pp. 21–71. He repeats many of these measurements when he returns to the instruments of the music of Danbi shang (pp. 86–94) and of Zhonghe shaoyue

56. "De la musique moderne", 10–105.

57. "Catalogue des nouveaux instruments avec l'explication et l'usage de chacun en particulier". . . "Elle sert à rassembler dans un instant tous les musiciens à la tête desquels elle est toujours lorsqu'ils se rendent dans le lieu où doit se faire la musique de l'empereur." Ibid., 10.

(pp. 94–105). For many of these instruments he refers to their illustrations in the plates at the end of the book, though as was mentioned above, nearly half of these plates are missing. But since Amiot (or a draftsman working with him) copied these drawings from the Daqing huidian, the missing drawings can be supplied.

In the measurements of instruments given in our tables, neither Amiot nor the Daqing huidian gives the smallest measurements in decimals, but in fractions. For example, Amiot writes of the distance from the length of the qin, 3 *pieds*, 1 *pouce*, 3 *lignes* + 4/10 + 7/100 *lignes*. For the same parameter, the Daqing huidian has 3 *chi*, 1 *cun*, 3 *fen*, 4 *li* (釐, 1/100 *cun*), 7 hao (literally, hair, or 1/1000 cun). For the purposes of this article, it seems simpler to use decimals.

The Qin

The kin (qin 琴, also guqin 古琴) is an ancient Chinese seven-string plucked instrument. In imperial times it was the preferred instrument of Chinese scholars. It was made in different sizes: Amiot's 1776 manuscript mentions three different sizes, grand, moyen, and petit ("large," "medium," "small"). Fig. 12 is Amiot's drawing of the qin, based on that of the Daqing huidian, showing that Amiot simply added his own romanization of the Chinese character for the instrument. The measurements for the instrument are the same in both sources, except for two parameters that Amiot did not address.

Amiot provides some further information on the qin. He says that the string for the note koung (gong, of huanzhong) is made of 240 threads of silk and that each thread has twelve strands. This is the largest (and lowest-pitched) string. Amiot goes on to describe the structure of the remaining six strings, all of which have twelve strands of silk per thread, but the number of threads gradually decreases. The highest string, for the note ou-ouang, has only 104 threads. He also talks about the positioning of the thirteen clou (hui 徽), small mother-of-pearl dots on the surface of the instrument that mark the positions of acoustical nodes on the strings. He speaks of the placement of these dots in terms of proportions, or relative distances, rather than specific measurements. For example, he says that "From the bridge to the fourth clou is one-fourth the total length of the string. This is the terme (i.e., "location") of the second octave."[58]

58. "Du chevalet au 4.e clou il y a un quart de la longueur totale. C'est le terme de la

FIGURE 12. *Qin (guqin).* Amiot, "De la musique moderne des chinois," plate 8.

TABLE 4. Measurements for the *qin*, from *Daqing huidian* (1732).

Parameter	**Amiot (1754) (mm)**	***Daqing huidian* (1732) (mm)**
Total length	520.2	402.11
Diameter	14.0	13.97
Mouth hole to finger hole 1	223.2	223.2
Mouth hole to finger hole 2	273.1	273.1
Mouth hole to finger hole 3	319.9	319.9
Mouth hole to finger hole 4	359.9	359.9
Mouth hole to finger hole 5	402.1	402.1
Mouth hole to finger hole 6	475.8	475.8
Hole in rear, not played	508.9	508.9

Sheng

The cheng (sheng) is a free-reed mouth organ, a member of the gourd family of Chinese musical instruments. It is virtually unique among Chinese wind instruments in being able to sound more than one note at a time. Covering the hole at the base of the pipe allows the pipe to sound. If the hole is open, the resonant frequency of the reed does not match that of the pipe and the pipe cannot sound. Amiot's drawing of this instrument in plate 9 of his illustrations matches that of the Daqing huidian (fig. 13), except that Amiot added his romanization of the name of the instrument next to the Chinese character in the upper right-hand corner, and wrote "fig. 9" in the upper left-hand corner. He also added the letter A to mark the embouchure, which he mentions in his commentary on the instrument. What he says about reference points in his commentary do not seem to match the drawing in his fig. 9, however; his letter A marks the mouthpiece ("embouchure"), but no letter B is visible in the drawing.

Sheng in Amiot's day typically had seventeen pipes, though some of them were "dummies," rendered mute in order to enhance the instrument's visual representation of a mythical bird, the phoenix. As the chart in Table 5 shows, four adjacent pairs of pipes have the same length.

Qing

The king (磬qing) is a lithophone, a carefully shaped idiophone made of stone, agate, or jade. Though a single qing suspended from a wooden frame can be used as a musical instrument, often one finds a set of sixteen such stones, arranged in two rows of eight stones each, which Amiot calls Pien-king (bianqing).[59] Each stone is shaped rather like an upper-case letter L. The measurements of all sixteen stones in a set are typically the same, with exception of thickness, which is the parameter that determines each stone's pitch. According to Amiot, the jeu de King (bianqing) is "tuned with the bells,"[60] by which he means the bianzhong. He further states that

second octave." Amiot, "De la musique moderne," 46.

59. The specific term Pien-king does not appear in Amiot's 1754 manuscript, though it does appear in his 1776 manuscript, "De la musique des chinois, tant anciens que modernes", part 2, plate 13.

60. "ils s'accordent avec les cloches." Amiot, "De la musique moderne", 103.

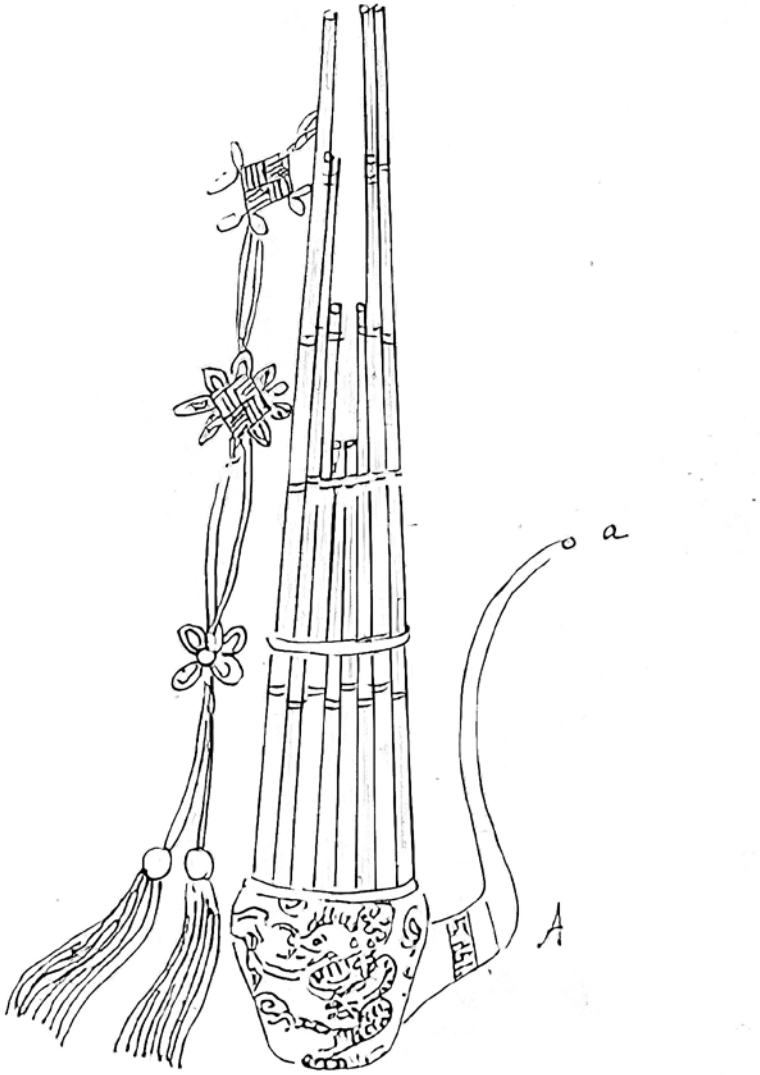

FIGURE 13. *Sheng* Amiot, "De la musique moderne des chinois," plate 9.

TABLE 5. Measurements for the pipes of the *sheng*, from *Daqing huidian* (1732).

A–B = 7.3 pouces (226.9 mm)
B–C = 5.5 pouces (170.2 mm)
A–D = 1.9 pieds (602.3 mm)
D–E = 3.5 pouces (107.9 mm)

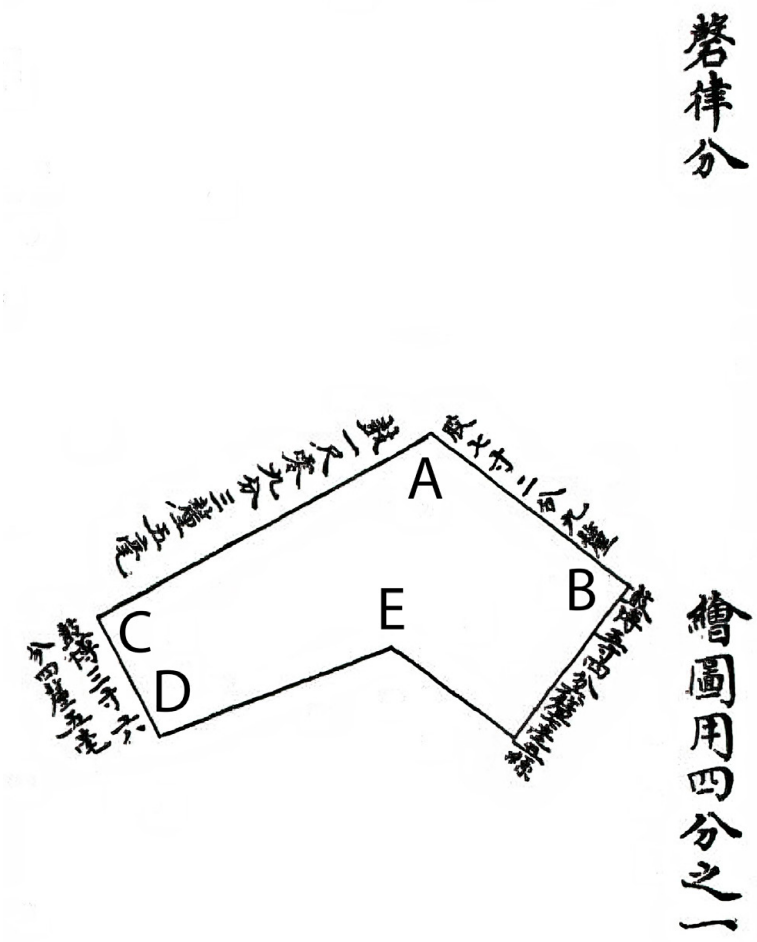

FIGURE 14. *Qing. Lülü Zhengyi houbian,* vol. 2, p. 5008. Reference points (letters A, B, etc.) added by the authors.

TABLE 6. Measurements for the *qing* stone in Figure 13.

Length: 3尺1寸3分4釐7毫 = 1007 mm
Length of strings: 2尺9寸1分6釐 = 936.8 mm
Soundpost to the "forehead": 2寸1分8釐7毫 = 70.3 mm
Width of the "forehead": 5寸1分0釐3毫 = 163.9 mm
Width of the "shoulder": 5寸8分3釐2毫 = 187.4 mm
Width of the "waist": 4寸3分7釐4毫 = 140.5 mm
Width of the "tail": 4寸3分7釐4毫 = 140.5 mm
Thickness of bridge: 2寸4分3毫 = 78.1 mm

> In the fifty-seventh year of Kangxi [i.e., 1718] it was determined that the caisses (lit., "boxes") should be 7 *pouces*, 2.19 *lignes*, and the corresponding piece, 1 *pied*, 9.35 *lignes*, that the width of the caisses . . . should be 5 *pouces*, 4.68 *lignes*, and that of the other side, 3 *pouces*, 6.45 *lignes*. The sixteen king all have the same form; they differ due to their greater or lesser thickness.[61]

The shape of the qing of the Daqing huidian (1732) and reference points for its dimensions are shown in fig. 14. The stone's measurements are given in Table 6. These measurements match those in Amiot's "De la musique modern", p. 63.

In his explanation of the king earlier in his 1754 manuscript, Amiot gives the thickness of all sixteen stones of the bianqing, ranging from 6.07 lignes for the smallest stone to 12.96 lignes for the largest, or from 11.9mm to 41.6mm.[62]

Conclusion

The Chinese took their court rituals very seriously, since they were the core of their state religion, dating from the time of Confucius and perhaps earlier. Thus it is hardly surprising that Kangxi, his sons who worked on the Lülü Zhengyi xiabian and houbian, and his grandson Qianlong, all of whom represented a newly established dynasty, were eager to place the music and the musical instruments used in these rituals on a firm footing.

One wonders how Kangxi and his minions arrived at these precise measurements. Did associates of the emperor, such as officials of his bureau, identify some particularly fine examples of ritual instruments, then measure them very precisely and recommend those instruments to the emperor? Were these instruments made in an imperial musical instrument atelier near the Forbidden City? These are provocative but ultimately unanswerable questions, since there is no known evidence that could address them.

61. "La 57.^{e} année de Kang-hi il fut déterminé que les caisses seroient de 7 pouces 2 lignes + 9/10 de ligne, et la piece corespondante de 1 pied, 9 lignes + 3/10 + 5/100 de ligne que la largeur des caisses seroit de 5 pouces, 4 lignes + 6/10 + 7/100 + 5/1000 de ligne, que la des caisses seroit de 5 pouces, 4 lignes, + 6/10 + 7/100 + 5/1000 de ligne, et celle de l'autre coté de 3 pouces 6 lignes + 4/10 + 5/100 de ligne. Ces 16 King ont une même forme, ils different par les plus ou le moins d'épaisseur." Amiot, "De la musique moderne", 104.

62. Amiot, "De la musique moderne," 32–33.

One might well ask how valuable these measurements are to readers of this Journal. The last few decades have witnessed a flowering of interest in Chinese traditional music. As reported by Lam, there has been a resurgence of interest in Confucian rituals in China since 1990.

> Between the late 1950s and 1984, the government of mainland China banned public performance of Confucian ceremonial music, rejecting it as an undesirable legacy of imperial China. However, realities of the open-door policy and the economic boom of the 1980s relaxed the ban. Now, the authorities have a renewed interest in Confucius, and are actively promoting the reconstruction and performance of Confucian ceremonial music.[63]

Still, there is only slight evidence of craftsmen producing historically accurate reproductions of early Chinese ritual instruments. Perhaps the most striking example of the production of a historically informed replica of a historical Chinese instrument, albeit from a much earlier era, is the Wuhan Conservatory of Music's copy of the bianzhong recovered from the tomb of Marquis Yi of Zeng (曾侯乙墓), a set of sixty-four carefully tuned bronze bells, dating from ca. 433 BCE. The bells, along with a few other musical instruments and many ritual bronzes, were found in Yi's tomb, which was discovered in 1977 in Leigudun Community (擂鼓墩社区) in Hubei Province.[64] Another example, concerning non-ritual instruments, is provided in a newspaper article about the efforts of Qi Mingjing (漆明镜) of Huzhou University (湖州师范学院). Drawing on materials and designs from a treatise of the Ming Dynasty, Qi reconstructed an early pipa and a yueqin (樂琴, "moon lute") from that era.[65] As interest in traditional music grows in China, perhaps some of the many outstanding Chinese instrument makers will want to produce historically accurate reproductions of instruments from the early Qing era. The measurements available in Amiot's treatise and his Chinese sources could

63. Joseph S. C. Lam, "The yin and yang of Chinese Music Historiography: The Case of Confucian Ceremonial Music," *Yearbook of Traditional Music* 27 (1995): 34–51. See also Paula Swart and Barry Till, "A Revival of Confucian Ceremonies in China," in *Turning the Tide: Religion in China Today*, ed. Julian F. Pas (Hong Kong: Hong Kong Branch, Royal Asiatic Society, 1991), 210–221.

64. See Jenny F. So, *Music in the Age of Confucius* (Washington, D.C.: Freer Gallery of Art and Arthur M. Sackler Gallery, 2000).

65. "Replicating Ming Dynasty musical instruments from Weishi yueqitu (从《魏氏乐器图》复原明代乐器), Guangming Daily (光明日报), 20 October 2023, p.16, https://epaper.gmw.cn/gmrb/html/2023-10/20/nw.D110000gmrb_20231020_3-16.htm.

be of considerable value in such endeavors, particularly since few genuine Chinese instruments from this era are known to survive.

The ability to provide very precise measurements for many musical instruments is an indication of the depth of Amiot's engagement with Chinese scholarship and cultural traditions. Such interactions involved in-depth study and understanding of Chinese culture, for which we now have concrete evidence as regards music and musical instruments. Additionally, our findings lend a degree of authenticity and accuracy to Amiot's writings, demonstrating that his accounts were based on direct experiences and direct knowledge of authentic Chinese intellectual and musical traditions. In particular, we have shown that the Daqing huidian of 1732, with its measurements, descriptions, and illustrations of instruments, was Amiot's principal source of information relating to Kangxi's edicts relating to "improvements" of Chinese instruments.

A note on the romanization of Chinese characters: The pinyin transliteration for Chinese characters was first published by the People's Republic of China in 1958. It was adopted by The International Organization for Standardization in 1982 and by the United Nations in 1986. Earlier the Wade-Giles system, developed by Thomas F. Wade in the mid-nineteenth century and finalized in Herbert A. Giles's Chinese-English Dictionary *in 1892,*[66] *was widely used. Jesuits and other missionaries in China in the sixteenth century through the early nineteenth, including Joseph-Marie Amiot, employed their own semi-phonetic system. In this article, when citing an instrument mentioned in one of Amiot's books, the authors first give his transliteration of the Chinese character(s), then the modern pinyin version. When citing instrument names from Chinese sources, we give only the modern pinyin. As some Chinese terms and names are mentioned several times, we give the Chinese characters only on the first instance.*

66. Herbert A. Giles, Chinese-English Dictionary (London: Quaritch, 1892).