



COMPARATIVE SYUDY OF TRADITIONAL CHINESE AND THAI WIND INSTRUMENTS



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2023



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คณะศิลปกรรมศาสตร์ มหาวิทยาลัยศรีนครินทรวิโรฒ
ปีการศึกษา 2566
ลิขสิทธิ์ของมหาวิทยาลัยศรีนครินทรวิโรฒ

COMPARATIVE SYUDY OF TRADITIONAL CHINESE AND THAI WIND INSTRUMENTS



A Dissertation Submitted in Partial Fulfillment of the Requirements

for the Degree of DOCTOR OF ARTS

(D.A. (Thai and Asian Music))

Faculty of Fine Arts, Srinakharinwirot University

2023

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THE DISSERTATION TITLED
COMPARATIVE SYUDY OF TRADITIONAL CHINESE AND THAI WIND INSTRUMENTS

BY
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HAS BEEN APPROVED BY THE GRADUATE SCHOOL IN PARTIAL FULFILLMENT
OF THE REQUIREMENTS FOR THE DOCTOR OF ARTS
IN D.A. (THAI AND ASIAN MUSIC) AT SRINAKHARINWIROT UNIVERSITY

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This research uses Chinese and Thai wind instruments as the research object, investigates historical development and classification of Chinese and Thai wind instruments, analyzes their shapes and musical characteristics, compares the characteristics of Thai wind instruments in terms of sound production principles, playing techniques, and musical styles, using the Chinese Bamboo Flute and Thai Khlui and discovering the characteristics of folk music. Through literature analysis, investigation, in-depth interviews, and experimental practice, the viewpoint of common shaping between Chinese and Thai wind instruments was formed and the relationship between Chinese and Thai wind instruments in structural association and iterative integration and transformation were clarified. Therefore, a framework system of iterative transformation and integration development of Thai wind instruments was constructed, which played a positive role in activating the wind music culture hidden in national colors, enriching the connotation of national culture, and promoting cultural and educational cooperation.

Keyword : Traditional music history, Chinese wind instruments, Thai wind instruments

ACKNOWLEDGEMENTS

My doctoral studies have been the most memorable in my life journey. In my studies, I experienced the charm of Thai and Asian music, the simplicity, the majesty, and the beauty of Thai music. Nowadays, I often listen to Thai traditional music because it reflects the simplest feelings of the Thai nation, people, and society, and it makes me pure and spiritually enriched. Looking back on the three years of study and the process of my dissertation, from the selection to the opening of the topic, review, revision, definition, and refinement, my teachers guided me in my dissertation writing and fieldwork with their noble sentiments, professional knowledge, and rich experience, allowing me to gain knowledge and the most sincere and unbreakable friendship between teachers and students.

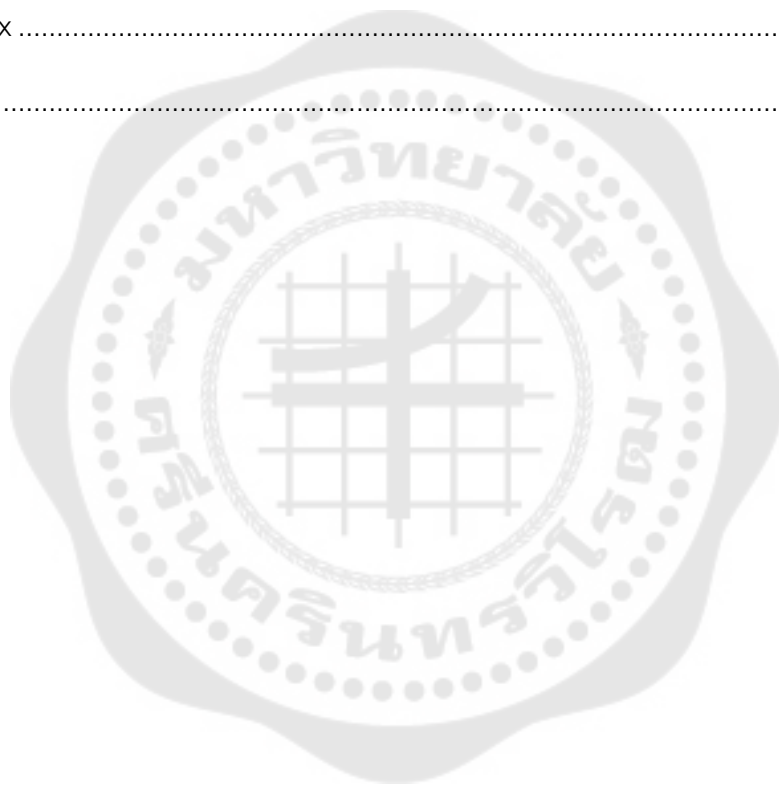
Here, I sincerely thank Assist. Prof. Dr. Veera Phansue and Assist. Prof. Dr. Surasak Jamnongsarn for their hard guidance. Thank you to Assoc. Prof. Dr. Somsak Ketkaenchan, who taught me Thai Khlui skills, and thank Professor Somsak Ketkaenchan for his patient and meticulous teaching; I would like to express my gratitude to Assoc. Prof. Dr. Rujee Srisombut, Prof. Dr. Manop Wisuttiapat, Assist. Prof. Prateep Lountratana-ari, and Assist. Prof. Dr. Meteore Punvararton, who led my field trip, and thank the professors for their guidance all the way. Thanks to the opinions and suggestions put forward by Assist. Prof. Dr. Tepika Rodsakan and Dr. Pongsapich Keawkuntorn in thesis writing and professional study; thanks to Mr. Gao Bi, Mr. Xie Wenzheng, Mr. Satchakron Kaewsaikaen, and Mr. Aphichart Setapan who helped in the investigation; and thank you for your generosity. Thank you to the teachers in the school office for their guidance and help in my studies and life. The sea of art is boundless, and exploration is endless. Doctoral study is not the end, but the starting point. I believe that I will follow in the footsteps of teachers and make progress in the exploration of scientific research and teaching practice in the future.

HAIBO SHUAI

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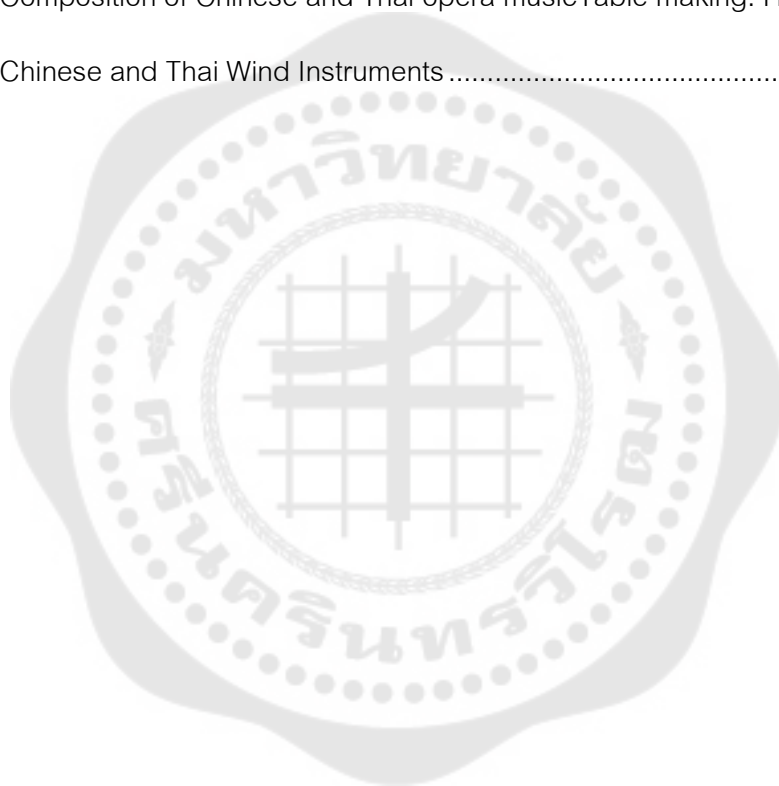
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Chapter 1

Introduction

Research Background

China and Thailand are in Asia, the eastern and southern portions of the continent, respectively. Since ancient times, with the advantage of their geographical proximity, whether because of war migration or cultural integration, the two countries have exchanged, lived in local production, and settled down, forming a good situation of ethnic integration, cultural interchange, and economic interchange, which has become a dual channel for the rapid development of the Chinese and Thai societies. China proposed the "Belt and Road Initiative" in 2013 to establish a community of mutual political trust, economic integration, and cultural tolerance. In the past decade, China and Thailand have made new strides in cooperation in various disciplines, with closer exchanges on many fronts and accelerated cultural cooperation.

For this reason, crucial to interpret the diversity of ethnic and cultural development in China and Thailand from the perspectives of anthropology, sociology, and ethnology; to explore the characteristics and commonalities of regional ethnic music; to take the social activities and language sounds of different environments and groups as the direction of cultural research; and to use the study of Chinese and Thai wind instruments to reveal the musical character of these cultures. In his book "The Interpretation of Culture," the American scholar Geertz (1973) (20 discusses the definition of the concept of culture by other scholars, such as Clyde Kluckhohn's "Realm of Man" Tayloresque hodgepodge (Pou-au-feu) theoretical approach, which ends up comparing culture to a map, a filter, and a matrix. In this regard, more important to follow the same guideline that the British mathematician and philosopher Whitehead provided for the social sciences: "Find complexity and make order out of it" (Geertz, 1973). According to the Norwegian scholar Frederick (1998), in his book "Ethnicity and Boundaries," about the approach to the research problem, stable, continuous, and extremely important social relations can be maintained across these boundaries and are

frequently based on the duality of ethnic status, which clarifies the approach and significance of studying this problem.

As the most representative wind instrument in world music culture, it has a long history and is the most widely distributed in the world. For example, Chinese Zhudi (the traditional Chinese bamboo flute), Thai Khlui, Korean Daegum, Japanese Ryutek, etc. Wind instruments all over the world have their own characteristics in shape and melody, but the social and artistic functions of wind instruments have universal characteristics, which are of research value and practical significance for raising questions not only a comparison of musical theories but also a proposal of musical concepts.

Due to cultural background, international communication, research methods, and many other reasons, Chinese researchers still have limited understanding of Thai music culture, which is manifested in the fact that there are few organizations for music culture research, mainly concentrated in national research centers or cooperative organizations, universities, literary and art groups, and so on, in the border areas between the two countries. The channels of music and cultural exchanges between the two countries have not been fully opened, and the exchanges between the two countries are more economic exchanges, especially the study and exchange of music.

Concurrently, we should observe that China and Thailand study each other less in the field of research on world music culture in terms of the deeper content and results of folk music culture. Through literature searches or library data searches, the current research literature focuses primarily on Thai music rhythm, morphology, musical instruments, etc., while the study of the development of Chinese and Thai wind instrument culture is virtually nonexistent, which is the focus of this research breakthrough.

This dissertation examines the historical origins, instrument classification, development, and artistic characteristics of wind instruments in both China and Thailand, using the bamboo flute and Khlui as case studies. From the perspective of ethnicity, we examine the trajectory of musical activities among social groups; from the perspective of culture, we investigate the cultural essence and cultural similarities and

differences among ethnic groups condensed in the culture of wind instruments; and from the perspective of development, we investigate the influence of environmental changes, human changes, and social changes on the development of wind instrument culture.

Research Objectives

1. To clarify the historical background and the classification of the Chinese and Thai wind instruments.
2. To compare the wind instruments between "Zhudi" (traditional Chinese bamboo horizontal flute) and "Khlui Piang Au" (traditional Thai flute) in organology and musical aspect.
3. To examine the contexts of Chinese and Thai sociocultural interaction through the dimension of wind instrument songs.

The Importance of Research

The fundamental theory of the British functional school, "cultural functionalism," emerged in England in the 1920s. According to this theory, the primary objective of anthropological research is to examine culture as an organic unity and to clarify the contribution of each component to the organism as a whole and their relationship. According to the functional theory of culture, the study has the following implications:

1. The exposition of the national characteristics of traditional culture

Wind instruments are an integral part of national and traditional cultures. In the process of national affairs, the value goal realized by the national attribute of wind instruments not only shows the discourse system of wind instruments as a material medium but also makes wind instruments have a unique national temperament, a unique aesthetic appearance, and a unique playing style formed by time, place, and person, which will activate the national color hidden in wind instrument culture. For example, the style characteristics presented by the sound and shape of Chinese wind instruments, the wind instruments of Thailand, India, Korea, and other countries have their own

characteristics, and this cultural attribute has a very strong national character, representing the perception and identification of the country and nation with the culture.

2. The social function role positioning of national wind instruments is more accurate.

The social function of national wind instruments is also expressed in folk festivals, weddings and funerals, housewarmings and jubilees, childbirth, and other social activities close to human life, making national wind instruments in social relations the organism of social development and enriching the sound of human social activities. These musical functions are also present in the perception of religion and mythology, such as music for religion, which later developed into humanistic or other functional attributes. From their historical origins to the development of folk wind instruments in China and Thailand, their value and significance are not only in their artistic function but also in their social function. For example, the "bone flute" unearthed in China and the relief sculptures in Ratchaburi province, Thailand, can reflect the scenes and characteristics of human activities at that time. There is also the Suona (traditional Chinese double-reed oboe), which is widely used in many Asian countries. This shows that wind instruments have an irreplaceable "role" in the diversity of social activities. The value and function of ethnic wind instruments have gradually emerged. Through the role-playing of social activities, it becomes an integral part of the inner demand of spiritual activities, expanding the space for the functional value of wind instruments. With the development of society. Wind instruments also reflect the era of social development in the process of changes in materials, playing postures, and the number of sound holes. In this study, the Chinese and Thai wind instruments are studied to trace the origin of the cultural development of wind instruments, especially the "Di", which is the representative of wind instruments, as an individual, and to capture the role of the "Di" in the cultural development through traditional music melodies.

3. The heritage of the cultural development of wind instruments in the context of multiculturalism is more active.

The unique ethnicity of wind instruments and their diverse social nature enrich the development of national culture. How to better develop and inherit the culture of wind instruments is a topic that should be discussed by all walks of life nowadays. The development of Chinese bamboo flute and Thai Khlui as the representative wind instrument cultures intersects with the integration and development of other cultures as the task of maintaining the essence of the national attributes of wind instruments as the inheritance, and innovation and development as the essential requirement of education. In the process of education and innovation and development, the integration of modern production and creation techniques, the cultural, artistic, In the process of education and innovative development, we integrate modern production and creation techniques, fuse culture, artistry, professionalism, and sociality into the musical instrument itself, explore its rich value connotation, and realize the value and significance of inheriting national culture. At the same time, the full use of the platform, the development of scientific measures, and the development of wind instrument culture research in the blank areas and controversial areas will help achieve new breakthroughs. For example, the development of wind instrument culture can be deepened more through cultural construction in China and Thailand. Through research and practice, it will promote cultural exchange to form a closer relationship and play a positive role in promoting cultural cooperation between China and Thailand.

Research Scope

As for the scope of the study, the main subject is Chinese and Thai wind instruments. The research content aspect is mainly the study of the cultural development of Chinese and Thai wind instruments, from the study and analysis of the sound and characteristics of wind instruments to the value function of wind instruments in terms of context, metaphor, and inheritance from a cultural point of view. Cross-studying in the fields of ethnomusicology, musicology, sociology, anthropology, and material science broadens the research field.

1. Focusing on the research objectives in terms of the history and culture of Chinese and Thai wind instruments, the research scope mainly ranges from the brief history of China and Thailand to the overview, classification, and artistic characteristics analysis of the development of literature and art and studies the causes of the integrated development. Secondly, it examines the historical and cultural development of Chinese and Thai wind instruments and analyzes the classification of wind instruments. In the research, the focus is on the research ideas, from the general direction to the small scope needed to realize the research results. Not only beneficial to clearly see the historical and cultural development of wind instruments in China and Thailand, but also beneficial to the present situation of wind instrument culture development in different environments, regions, and historical periods.

2. In the study of the structure, technique, and melody of Chinese and Thai wind instruments, such as the bamboo flute and Khloi Piang Au, the emphasis is on the analysis of the structure, technique, and melody of Chinese and Thai wind instruments. This process will be carried out through case studies, fieldwork, literature analysis, experimental practice, and in-depth interviews to observe the performance of Chinese and Thai wind instruments (band) and the process of flute making; investigate wind instrument players in China and Thailand to understand the cultural development of Chinese and Thai wind instruments and the current situation; and collect information about the cultural development of the Chinese bamboo flute and Thai Khloi Piang Au. In particular, the structural correlations in the hypothetical definitions of the Chinese bamboo flute and Thai Khloi Piang Au are analyzed in terms of their artistic characteristics and skills.

3. In terms of research on the fusion and development of Chinese bamboo flute and Thai Khloi Piang Au multiculturalism under the historical dimension, the scope of the study focuses on in-depth reflection on the cultural development of Chinese and Thai wind instruments, bamboo flute and Khloi Piang Au, in terms of fusion, intersection, and reflection. Analyze the representative works and performance styles of the Chinese

bamboo flute and the Thai Khlui Piang Au. This paper analyzes the hidden functional values of the Chinese bamboo flute and Thai Khlui Piang Au in painting, poetry, folk customs, festivals, and other cultural aspects. This paper analyzes the Chinese bamboo flute and Thai Khlui Piang Au in terms of acoustics and materials and looks at the cultural characteristics and historical significance of Chinese and Thai wind instruments from different levels and cultural perspectives.

In the research process, the research content is summarized by combing and analyzing the literature to find out the past and present research results, and the research gaps in the literature and the problematic or controversial content of the past research results are re-examined and conclusions drawn.

Definition of Terms used in the Study.

1. Structural Association

Chinese and Thai wind instrument cultures have a long and rich history of development. There are connections but also differences in terms of sound, construction, and technique. The connection lies in appearance, materials, articulation principles, and cultural attributes, while the differences lie in the specific characteristics of wind instruments in terms of sound, emotion, cultural context, function, and symbols. From the most intuitive musical features to the musical instrument features, there is a certain relationship between them in the main structure. This connection may be the difference between China and Thailand in a certain structure or aspect, or it may be influenced by other music or instruments and external connection that forms a unique model.

2. Iterative Change

The term "iterative change" refers to the changes in historical and cultural development of wind instruments in China and Thailand. The lack of historical records is not a break in the development of wind instruments, but a lack of historical records in the process of development, which results in "iterative change", overlapping or compressing the unrecorded parts. But development does not stop; it continues.

Research Conceptual Framework

1. The conceptual framework of historical and cultural research on Chinese and Thai wind instruments is based on the theories of the British functional school on cultural functions. The historical culture of Chinese and Thai wind instruments and the interrelationship of change in the cultural development of Chinese and Thai wind instruments regarding iterative fusion are studied to explore the cultural development of wind instruments change and analyze the theory of fusion of wind instruments in the historical development. In the hierarchical definition, the theme of historical development is highlighted, the historical and cultural development of wind instruments is studied as a part of the overall cultural research, and the crossover of historical development and the fusion of cultural development of wind instruments is studied as the main task in the concept of historical culture.

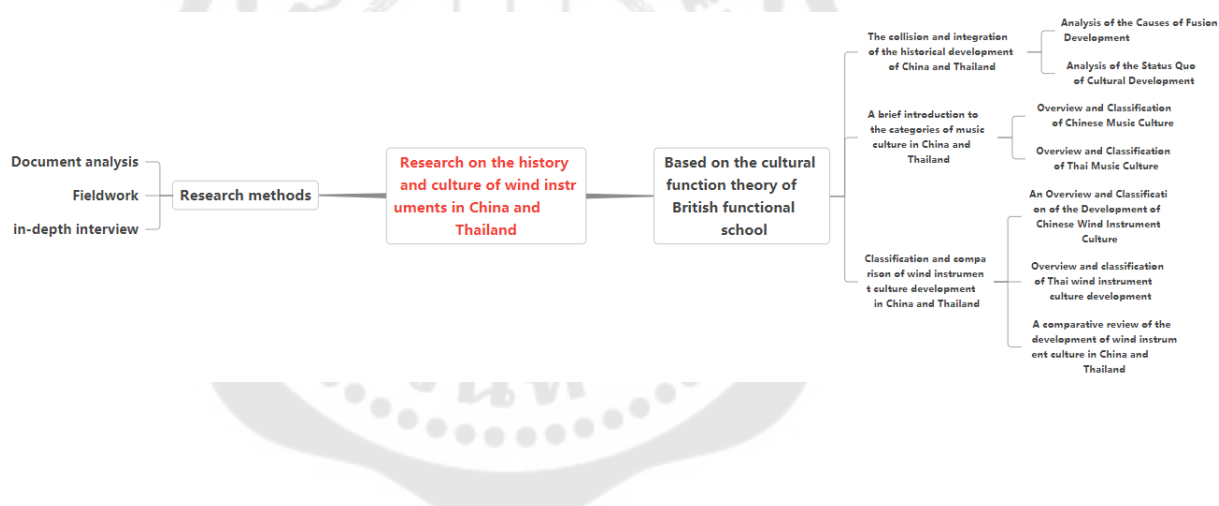


Figure 1 The conceptual framework of historical and cultural research on Chinese and Thai wind instruments

Source: Haibo Shuai, 2022

2. Analyze the artistic characteristics of Thai Khlui Piang Au and Chinese bamboo flutes in terms of classification, structure, and technique using structural changes as a theoretical concept. The artistic characteristics of wind instruments are analyzed by comparing the classification and structure of wind instruments and the artistic characteristics of the representative wind instruments Khlui Piang Au and bamboo flute are analyzed by visual methods such as data, charts, and scores.

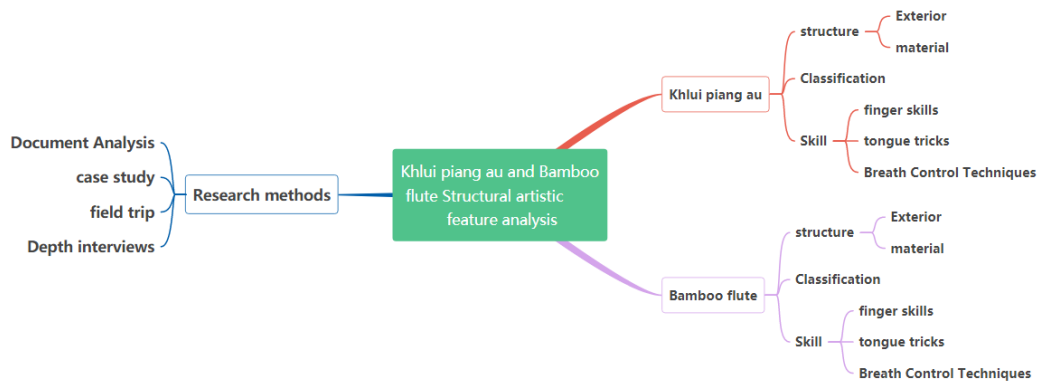


Figure 2 The framework System of Artistic characteristics of Thai Khloi Piang Au and Chinese bamboo flutes

Source: Haibo Shuai, 2022

3. Based on the cross-cultural comparative study proposed by American anthropologist George Peter Murdock, this paper tries to find the similarities and differences in cultural development between the bamboo flute and Khloi Piang Au. Therefore, from the cultural perspective of China and Thailand, this paper analyzes the cultural development of the Chinese bamboo flute and the Thai Khloi Piang Au. The historical process of cultural development in China and Thailand, the national culture has played a decisive role in the development of wind instruments, which includes the influence of national policies, decrees, and specific measures on wind instruments, the consolidation of royal power by rulers in the process of social development, and the influence of human aesthetic standards and spiritual needs on the culture of wind instruments. The study is an empirical study with examples of representative works and performers of wind instruments and research to reflect on the influence of national and social culture on the development of wind instruments.

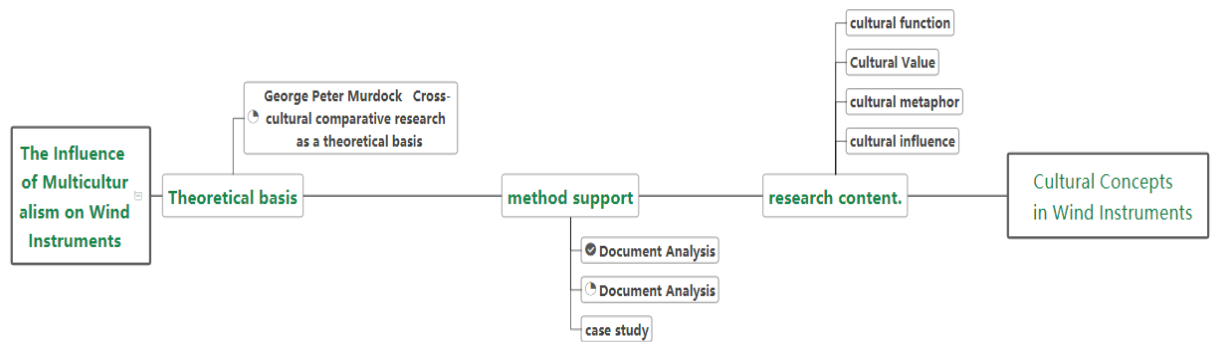


Figure 3 A conceptual framework for the study of Chinese and Thai wind instrument culture

Source: Haibo Shuai, 2022

Through the construction of the conceptual framework, the research terms "structural linkage" and "iterative change" are derived so that the research hypotheses can be conceptualized through specific analysis to form a definition of the entire system of research, as well as ideas, methods, and conclusions.

Chapter 2

Literature Review

For the research on the development of wind instrument culture in China and Thailand, the collection, analysis, and application of literature theory can be carried out in many ways. We will make full use of books, electronic resources, surveys, and other empirical proofs and investigate in China and Thailand to find documents that are beneficial to the research.

Documents Related Academic Texts

The literature focuses on several aspects of history, culture, and development, and collects and organizes the literature on the historical development, sound, form, artistic characteristics, and cultural values of Chinese and Thai wind instruments, thus embodying a cultural research paradigm characterized by descriptive, explanatory, educational, and practical aspects, and providing a broader research horizon for cultural transmission and dissemination. At the same time, it adds an indispensable dimension to the profundity of world music by studying the wonderful microcosm of Chinese and Thai music cultures.

Based on the domestic scholars' research on the society, culture and education of China and Thailand, and through the literature of China about "Explore Asian music and culture-A Review of the 14th Symposium of the Asia-Pacific Ethnomusicology Society" (Guo & Lin, 2015), and Seek advice with Professor Panya, Dean of the Faculty of Music, Bangkok Thonburi University, Thailand, "Keeping the Tradition Inside and Outside" (Ren, 2017), "Interpreting the 2013 Singapore "Asia-Pacific Music Education Symposium"-New Trends in Music Education in the 21st Century" (Yu, 2013), and other literature study. The traditional music of Thailand (Morton, 1976), musical journeys in northern Thailand (Dyck, 2009), a brief history of the land of Thailand (Wyatt, 2003), and a review of the collection at the libraries of Srinakharinwirot University, Chulalongkorn University, Chiang Mai University, and Rajabhat University, Chiang Mai. The theoretical Concepts of Thai Classical Music (Wisuttiapat, 2020), A Musical Journey in Northern

Thailand (Dyck, 2009), and *A Brief History of Thai Land* (Wyatt, 2003) are analyzed and are summarized in the following aspects of Ren Yung.

1. Literature Review on the Historical Aspects of Wind Instruments

In ancient China, there are many treatises on wind instruments, such as "Mister Lv's Spring and Autumn Annals" (Lv, 2014), "Theory of sound without sorrow" (Ji, n.d.), etc. The most representative one of "DiFu" (Ma, 2015) in Eastern Han Dynasty, which is a more comprehensive discussion of "Di". The "DiFu" of Ma Rong in the Eastern Han Dynasty is the most representative and comprehensive discussion of "Di". Historical documents document the origins of the di, its evolution, and its impact. From Tang to Song dynasties, when ancient poetry flourished, there are numerous poems about wind instruments.

According to statistics, there are more than 480 poems about "Di" in Tang poetry, and there are also many poems and lyrics about "Suona" (Traditional Chinese Double Reed Oboe) and "Xiao" (Traditional Chinese Vertical Flute). These written records are the most powerful examples of ancient literature about wind instruments, also evident that wind instruments were of great interest in ancient times. In modern times, the historical development of wind instruments has also been studied by many scholars, *The Traditional Music of Thailand* (Morton, 1976), *Music in Mainland Southeast Asia* (Douglas, 2010), and *Thai Music* (Chen, 1962), which discusses the development of Thai music, the introduction of Western music and orchestras to the early years of King Chulalongkorn Rama V's reign, and ensembles with Thai Piphat bands, among others. *Harmonics of Thai Music* (Thayarnyong, 1973) talks about the historical development of Thai music, and "A Review of the Musical Archaeology of 'Di' in Recent Decades" (Ma, 2012), the cultural development of "Di", a representative wind instrument, has been thoroughly analyzed and discussed. The cultural development of "Di", a representative wind instrument, has been thoroughly analyzed and discussed.

Especially in the 21st century, the historical and cultural research on wind instruments is increasing day by day. Meng (2019), Chen (2021) and Xiao (2010), Ph.D. students from China Conservatory of Music, China Academy of Art and Central

Conservatory of Music in China Conservatory of Music, made a comparison between Chinese bamboo flute, Korean Daegum and Japanese Ryutek, and analyzed the development of Chinese bamboo flute under the multicultural background of Singapore.

"A Study of Qu Di of Kunqu Opera" (Wang, 2012) the development of the flute, the emergence, music and shape of "Qu Di" were introduced in detail, and the relationship between the flute and Kunqu Opera was expounded from the traditional techniques of "one flute with many cavities". In this period, the number and quality of research articles on wind instruments increased year-on-year. From this, we can see that scholars at home and abroad are studying wind instruments more and more carefully, and all walks of life are paying more and more attention to wind instruments, and the audience and learning scale of wind instruments are growing.

2. Literature Review on the Musical Rhythms of Wind Instruments

The theoretical works "Introduction to Ancient Chinese Musical Rhythms" (Chen, 2011) and "Recent Studies on Tuning Systems and Temperaments of Chinese Music" (Zhao, 2015), "Issues in the History of Ancient Chinese Music", "A Brief History of Chinese Rhythms " and other studies have been systematically explained. In the chapter of "Introduction to Ancient Chinese Rhythmology", "The hypothesis of ancient 'finger width rhythm' - Analysis of the sound rhythm of the Chinese Jiahu bone flute" points out that the Jiahu bone flute is more than 8000 years old. The absolute and relative pitches of the Jiahu bone flute reveal the true connotation of "ancient rhythm-making" and move the germination and formation of rhythm forward to the early Neolithic period. In another study by Chen Qishe, "A Review of the Study of the Flute Rhythm of Ling Lun", the modern acoustic formula is used to calculate the height of the yellow bell rhythm by taking the standard of Wang Mang's scale by Liu Fu and the length of the aperture of Meng Kang as quoted in Yan Shigu's note. Pointed out that Chen Qiyou, Wu Nanxiao, Wang Guangqi and other researchers in the "flute rhythm" contains less, differential flute rhythm, three-part pipe rhythm and other issues, put forward different views of theoretical research.

At present, the study of "flute" music and "flute" rhythm has continued from ancient times to the present day, and the results of rhythmical research are becoming more and more abundant, the study of the rhythm of the flute is rich in theoretical significance, using the "three points of gain and loss", "twelve average rhythms", and "sixty rhythms of the Kyoban". The research of different scholars on the music and rhythm of the flute. For example, there are different voices in the academic community regarding the discussion of the ancient Chinese seven-mean-rhythm flute. In the study of the Kunqu Qudi (Wang, 2012), Mr. Guo Jingwen of the Department of Engineering of St. John's in 1937 showed that it was not a "seven-mean-rhythm flute"; "In the study of the flute voice" (Xiao, 2010), it was said that it was "closer to the twelve-mean-rhythm and the three-point loss and gain-rhythm, but far from the seven-mean-rhythm. Later, Mr. Yang Yinliu elaborated on "the theory of the house tune", "pure fifths" and "five correct tones". In 1956, Mr. Pan Huaishu put forward the idea of "twenty-three unequal pure laws" and other scholars' corresponding ideas, thus opening the prelude to the discussion of flute laws. What is involved is the interrelationship between theory and practice. "Equiheptaonic" Tuning in Thai Classical Music: Strict Propriety and Step Sizes (Rahn, 2019) by means of fundamental frequency measurements of Thai classical music the deviations between "Equiheptaonic" are analyzed and modeled. A Comparison of Audio Features of Thai Classical Music Instrument (Boonmatham et al., 2012) by Data Analysis, Analyze and compare in Piphat Band, Mahori Band and Khruang Sai Band. The Distinctive Thai Traditional Music System (Cheng, 2015) talks about timbres, melodies, styles, tunes, ensemble music, etc. in Thai music. The treatise Harmonics of Thai Music (Thayarnyong, 1973) deals with the musical characteristics of Thai instruments in the form of data analysis.

The display of different research results also enriches the cultural value of wind instruments. By tracing the history of wind instruments, we can find the time scale of China and even the world. It can be seen from the above research that the exploration of wind music and wind law has promoted the further improvement of the knowledge system. The musical system of Thai traditional music is seven-average, and the

characteristics of equal division between sounds form the unique musical characteristics of Thailand. And in the performance, commonly used pentatonic. The same paradigm exists for the formation of the basic tones, but there are also differences. In this study, we try to find the relationship between the five tones of Chinese and Thai at the beginning of their formation, especially in the context of the musical study of the Chinese and Thai "Flute", and the changes of the Chinese bamboo flute in various stages of its historical development.

3. Literature Review on the Ethnology of Wind Instruments

"The General Theory of Ethnology" by Wang (1997) studies the theoretical exploration of human origin, race and nationality, language and nationality, culture and civilization, religion and belief, oral literature, and art, etc. In the study, the descriptions of various ethnic groups in East Asia and South Asia are relatively sufficient. It also talks about the object, method and scope of ethnology research, which provides theoretical basis and practical guidance for this study and puts forward more in-depth problems. The Theory and Practice of Western Applied Ethnomusicology (Harrison, 2018) highlights applied research in ethnomusicology from an ethnomusicological perspective, focusing on the context of "application" and reflecting the research findings presented by the cross-discipline. "Innovation is Focused - Review of the 14th Symposium of the Asia Pacific Ethnomusicology Society" (Ren, 2009). Thanee Sfiwong, Mahasarakham University, Thailand, "Modulation in Thai Classical Music" uses the word "Thang", which has multiple meanings in Thailand, as a breakthrough to analyze the different musical connotations of Thaws when combined with different musical contents in terms of performance style, composition style, and scale names different musical connotations. And the Liu wen's article "The Musical Creativity of Southeast Asian People from the Perspective of Yao and Zhuang Bronze Drum Music Terms" takes bronze drums as a link, connects Chinese bronze drums with those of Southeast Asian countries through comparison, further reveals the use of the same instrument among different ethnic groups, and constructs a special theory of Southeast Asian bronze drum cultural circle. Based on many previous research results, the author analyzes the

influence of copper drums on the music of various ethnic groups in Southeast Asia from the aspects of communication, history, economics, psychology, and environment, to gain a deeper understanding of the characteristics of the music creation of Southeast Asian people.

In "Southeast Asian Folk Music" (Zhu, 2012), we analyze the similarities and differences, commonalities and differences of the ethnic music, songs and dances, and musical instruments of some Southeast Asian countries through the analysis of the cultural contact, collision, fusion, variation, and development among the ethnic groups. Through the analysis of the similarities and differences, commonalities and differences between the cultures of some Southeast Asian countries, we will analyze the formation of Southeast Asian folk music cultures, explore the attributes of Southeast Asian folk music cultures and the laws of fusion, micro-variation and variation arising from the contact of these cultures with other cultures. The above research shows that the researcher takes "ethnography" as the direction of research and considers the differences between different groups, environments and cultures. In the same way, the cultural differences between Chinese and Thai wind instruments in the ethnomusicological interpretation of ethnicity and region, as one of the main contents of this study, have been considered in depth in terms of cultural awareness and cultural values formed by different countries, ethnicities, and cultures.

"A Study on the Ecological Genealogy of Musical Instruments in the East Asian Music and Culture Circle" from (Rao, 2015) talks about the connection between traditional Chinese musical instruments and East Asian Japan, Korea, South Korea, and Vietnam, where the musical instruments have undergone modifications and improvements in form and construction, resulting in traditional instruments with national characteristics of each country.

4. Literature Review on the Social Functions of Wind Instruments

"A Study on the Social Changes of Chinese in Southeast Asia after World War II" (Liang, 2001) taking the Chinese society in Southeast Asia as a whole, it is of guiding significance to study the basic commonalities, social commonalities, and

characteristics of the history of the formation and development of Chinese society in Southeast Asia, and to understand the social history, form, and culture. The recognition of Chinese culture in Southeast Asia mentioned; the influence of multi-culture and the road of national integration put forward constructive suggestions. These provide a reference for Chinese and Thai wind instruments as a medium of cultural communication, in terms of cultural identity and national integration.

Sang Signal of Kui tribal men in Krapho village, Thatum district, Surin province, Thailand, (Pramote Danpradit), Daitai Shadow Drama of Wat Khanon Rathaburi district, Thailand (Thanin Krasae), Folk Songs of Pathumthani Mon (Chanyapath Sutaputre). The above research results, from the integration between small and large groups after the war to the Sang signal of tribal men, fully demonstrate the universality of social development of "peace and difference," "peace and commonality," and "peace and perfection. "The universal principle of social development.

From the music used in the cremation ceremony of Mongo nationality to the folk songs of Meng nationality, it shows that social groups place their musical emotions in real life and spiritual realm in different contexts, which is thoughtful music. From the study of the development of wind instrument culture, the recognition and feedback of culture to reflect on the cultural situation of society at different stages.

5. Literature Review on Human Culture of Wind Instruments

According to the study of Hakkas crossing the ocean (Luo, 1994), the total number of overseas Chinese in Thailand is more than 4.5 million, with more than 600,000 clients. From the perspective of social groups and migration, the overseas Chinese who have gone through three generations have undergone new changes in identity and address, and have gradually integrated into Thai society, which needs to be further expanded in the specific dimension of space-time docking for cultural exchange and transmission with wind instruments. In "Yunnanese in Northern Thailand: Ethnic Formation, Cultural Adaptation and Historical Change" from Duan (2013), from the anthropological point of view, through the analysis of the ethnic migration in Thailand and its ethnic formation, cultural exchange and adaptation with Chinese mainland,

Taiwan Province, China, and Southeast Asia. From the perspective of human cultural communication, the social activities of human beings (ethnic groups) and the local culture in northern Thailand blend with each other, which not only brings the culture of China, but also promotes the culture of China and Thailand. However, we should also see whether the vitality and influence of culture influence each other in concrete practice, and the cultural value of its development process is worth considering. Folklore (Tao, 2021) "We often see the phenomenon that a new folklore is formed in a nation and a region, and after a period of refinement, its functions and values are fully revealed, and not only accepted by the people of that nation and region as the continuation and development of traditional culture, but also begins to other ethnic regions penetration. This transmission of folk culture can be seen everywhere. "Music and Dance Cultural Exchanges between Ancient China and Thailand" (Li, 2007), the research talked about the two-way communication between ancient China and Thailand, including the spread and influence of ancient China on Thailand's music culture and Thailand on China's music culture. Thailand's contribution to music exchange is mainly to act as an intermediary between China and India. "Introducing Chinese talents into Chinese teaching in Thailand-taking bamboo flute, paper-cutting and calligraphy as examples", Zhao (2012) shows the integration of China traditional culture into Chinese classroom teaching in Thailand, which has made a powerful exploration for the educational exchange between China and Thailand. In summary, taking "people" as the activity object is not only the disseminator of sound, but also the creator of matter. In the process of spreading music, making musical instruments, and creating music, the influence is positive, which is the concentrated expression of cultural activity area, human flow, and the development of things, and has different characteristics. As far as research is concerned, the production process of wind instruments, the mode of music transmission and the characteristics of cultural activities of wind instruments are worth considering.

6. Literature Review on Materials and Sounds of Wind Instruments

As for the research of materials and sounds, the light industry standard defines the general technical conditions of China's national musical instruments, and sets standards for zhudi, sheng, xiao, suona, etc. in terms of terms and definitions, classification, marking and test methods, which will help to compare China's wind instruments with those of Thailand and the world. "An acoustic empirical study on the sound of "point, line, and surface" in the string group of national orchestras" (Huang, 2021), based on the acoustic theory, through scientific measurement and analysis, from the acoustic angles of instrument structure and sound generation principle, the acoustic acoustics of stringed instruments and plucked instruments in the band "point, line and surface" were tested. In "Acoustics of Individual Tones of Ethnic Musical Instruments" (Kuang, 2015), the acoustical principles profoundly analyze the timbral characteristics of ethnic musical instruments and analyze the changes in timbre in terms of different material properties such as density, hardness, and purity of artificial and natural materials, etc. "The Acoustics of Chinese Ethnic Musical Instruments" analyzes the effect of sound holes on the sound waves in the tubes by means of physics formulas and by using methods such as Green's functions, using wind instruments such as the sheng, suona, and bamboo flute as research objects. In the acoustic determination of bamboo flutes, the analysis of the sound spectrum of bamboo flutes with and without membranes was focused. From different perspectives, the relationship between the materials of musical instruments and the composition of acoustics is seen. In "Progress of research on the improvement of acoustic vibration properties of wood for musical instruments" from Liu et al. (2020), the density, moisture content, and moisture absorption of wood are used as entry points, and recommendations are made for the treatment of wood from the perspectives of heat treatment, chemical treatment, and biological treatment of materials, with a view to achieving the most favorable results for the acoustics of musical instruments.

As for the research of the thesis, the author obtained the information related to the research of the thesis through different fields such as ethnology, history,

musicology, anthropology, sociology, education, materials science, and acoustics, and obtained the information from different channels such as library materials, electronic resources, field visits and interviews, which provided theoretical support and real data for the research of the thesis.

Relevant Research

1. Research and Analysis on Historical Documents of Chinese and Thai wind Instruments

Chinese wind instruments are more abundantly studied in the literature, mainly from ancient times to modern times, and the historical development and characteristics of wind instruments such as Zhudi, Guanzi, Suona and Paixiao are recorded in more detail in the "乐记" (the book of music) (Liu, n.d.) and "长笛赋" (Chang Di Fu), which can be seen more clearly in their development. In recent years, there is more research literature on Chinese and Thai traditional musical instruments and more extensive attention has been paid to them.

For example, *A Brief Study of the Development of Thai Music History* (Yu, 2013); *The Origin and Development of Musical Instruments* (Guan, 2001) and other studies focus on the development of Chinese and Thai music or musical instrument history. Before the 13th century, the main reason for the paucity of literature on wind instruments in Thailand is that before the unification of Thailand the tribes were divided and gathered and did not form their own texts, so there are relatively few documentary records, the difficult to access the older records. The documentary records that can be accessed at present are mostly pictorial, and those of the temples in Thailand are recorded by murals and so on. Most of the textual studies are from around the 20th century. The time of the historical literature on wind instruments is also basically after the 13th century, and the content of the generalization is relatively single, and empirical information is rare. As empirical evidence, there are many wind instruments excavated in China, such as the Zeng Houyi Tomb in Suixian, Hubei Province and the Mawangdui Han Tomb in Hunan Province, which are Provincial Museum the Hunan Provincial and Hubei Museum. In terms of the empirical evidence of wind instruments in Thailand, from

the perspective of pictorial research, some of the literature talks about the relevant records of temple murals. The Uncertain Musical Evidence in Thailand's Temple Murals (Miller, 2007) analyzes the historical development of Thai wind instruments through the lens of "inconclusive" historical development evidence. The article discusses that French and British missionaries or emissaries in Thailand (known as Siam) recorded temple murals and social phenomena, and that manuscripts of Thai musical activities or mural motifs from the 17th-20th centuries survive in England. Although there is little documentary research on the interaction and fusion of Chinese and Thai wind instruments in their historical and cultural development. However, Terry E. Miller's "inconclusive" evidence refers to Wat Maharashtra in Bangkok, which records Chinese lion dances in Thailand of the Ayutthaya period, and to the "Phu Khao Thong" (Golden Mountain) shrine in Thailand. Wat Saket near the base of the "Phu Khao Thong" (Golden Mountain) shrine in Thailand, three Chinese musicians playing in an ensemble, and other musical events of festivals such as the Chaozhou Temple Festival, which is currently popular in Thailand. There is also "The History of Thai Musical Instruments" which talks about the historical development of the Pai Sheng in southwest China and the Kaen in Thailand, which was transmitted from southwest China to Vietnam, northeast Thailand, and other places. From the analysis of the literature about the historical development of music as a theme, there are fewer documents about the history of music in China and Thailand that overlap, intertwine, or influence each other, and some images and texts can be consulted as a reference basis, is also more difficult to form more accurate or comprehensive supporting materials.

2. Study and Analysis of the Artistic Characteristics of Chinese and Thai Wind Instruments

The literature on wind instrument rhythms is rich in both Chinese and Thai literature. In the analysis of the literature, Thai wind instruments have undergone few adjustments and changes in their rhythms and have remained largely unchanged. The analysis of the rhythmic and artistic forms of each wind instrument in Thailand is more elaborated in the literature.

For example, *Harmonics of Thai Music* (Thayarayong, 1973) analyzes the sound of Khlui in a numerical and graphical form, presenting harmonic mean and error values. At the same time, there are more literature introducing Chinese and Thai wind instruments in terms of form construction, tonal characteristics, and skill techniques. For example, *The Development History of Thai Traditional Music and an Introduction to its Musical Instruments* (Cheng, 2015). However, the current research in the literature lies more in the Chinese and Thai wind instruments themselves, and there are also studies by Chinese scholars on Thai traditional music and the culture of wind instruments, and there is a basic gap in the research on the cross-study and comparison of Chinese and Thai wind instruments. There is more literature on the rhythmic aspects of the instruments, but not much attention has been paid to exploring the acoustics and materials of Chinese and Thai wind instruments, and there is no comparative analysis specifically on the acoustics of Chinese and Thai wind instruments, and these aspects deserve to be studied.

3. Research and Analysis on the Functional Value of Chinese and Thai Wind Instruments

The functional value of wind instruments in China and Thailand is mainly manifested in social value, cultural value, research value and practical value. By sorting out and analyzing the relevant literature, there are much research on the functional value of wind instruments in China and Thailand, which are mainly reflected in the history and culture of wind instruments, their contribution to social development in terms of etiquette, sacrifice, and wedding at the social level, which is also the embodiment of the social function of wind instruments.

At the same time, it also analyzes the musical characteristics and structural characteristics of wind instruments, which is also an exploration of the cultural attributes of wind instruments. A Probe into the Flavor of Thai Traditional Music from Zheng (2018), "Taking the typical music of Thailand, Japan, and China as an example to analyze the cultural communication function of music" from Liu (2017) and other documents, all of which are China scholars studying Thai traditional music, while Thai scholars studying China traditional music are very few, while those studying China wind instruments are

basically blank. Foreign scholars study the history of Thailand and China and the literature of traditional music. For example: *Musical Journeys in Northern Thailand* (Dyck, 2009); A study of the literature such as "Creative Research in Music" (Reid et al., 2021). the functional value of traditional music in social development is discussed from historical, cultural, and spiritual perspectives. For example, the emergence and development of court music; the spirituality of ritual music and the dialogue between heaven and earth and the gods; and the ritual music of festive customs all reveal the functional value of music in different degrees. Meanwhile, in the era of digitalization, the technological revolution and the development of traditional music have put forward new propositions.

Concepts and Related Theories

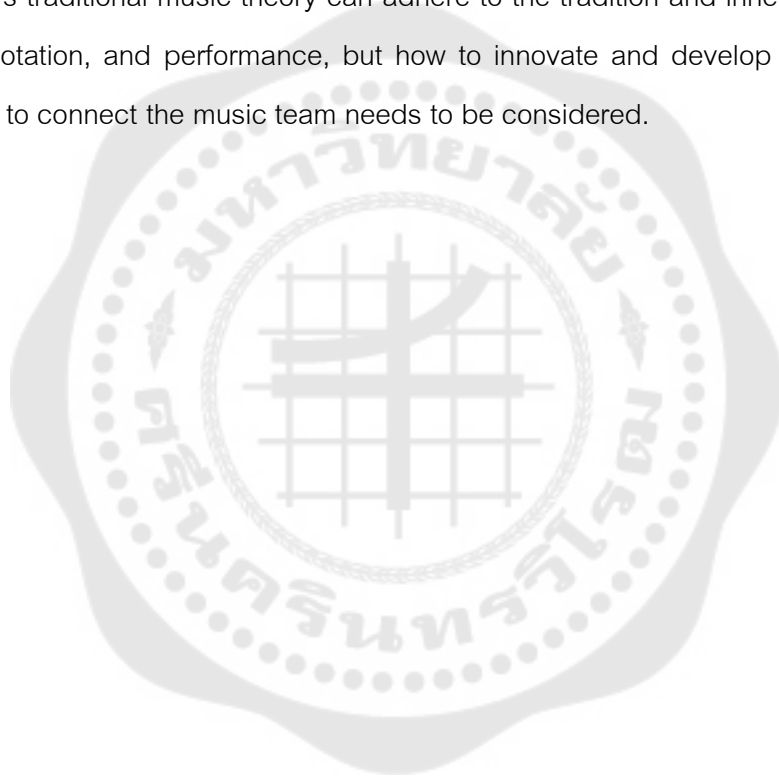
1. Marking Concept

In the study, it was found that Chinese and Thai wind instruments have developed their own definitions and characteristics in terms of cultural development concepts. In terms of instrument names and techniques, Chinese wind instruments are more clearly defined conceptually, forming a unified instrument name, technique symbols, and performance method markings. Thai traditional music has developed through time and has a unique style. At present, the names of Thai wind instruments are translated in Thai, but because of the pronunciation and translation of Thai pronunciation, the names translated by English letters will often be different in the literature. In the traditional music techniques, the way of oral instruction and the playing of the same music have formed different playing styles, but the method of notation, especially the symbols used in techniques, is not unified and the concept is vague.

2. Theoretical Issues in the Study

Inheritance and development of traditional music. How to inherit and develop traditional music in China and Thailand should be the most urgent problem at present. Since modern times, China has been influenced by "the spread of western learning to the east", and China's traditional music theory has gradually merged with western music, forming a situation in which Chinese and western music develop

synchronously, and the twelve instruments have the same law, while the different instruments of Chinese and western instruments have different musical resonance, which has a great impact on the development of traditional music in China. Looking at the music played by Chinese traditional musical instruments, there are much music created in modern times, but there are not many ancient songs that have been handed down, and there are not many interpretations of music. This is the space that China traditional music and wind instruments need to expand in theory and practice. Thailand's traditional music theory can adhere to the tradition and inherit and develop in music, notation, and performance, but how to innovate and develop the music theory and how to connect the music team needs to be considered.



Chapter 3

Research method

With the cross-cultural comparative research method proposed by American anthropologist George Peter Murdock as the theoretical support, this paper makes a comprehensive, in-depth, and detailed study of Chinese and Thai wind instruments from the perspectives of ethnology, sociology, education, and musicology, combining literature analysis, field investigation, case study, in-depth interview, and experimental practice. According to literature collection, analysis, field trips, the research methods mainly include the following aspects:

Research Method

1. Literature Analysis

1.1 Makes full use of the existing data resources, collects and sorts ancient and modern books, cultural collections, temple murals, etc., analyzes the literature data to obtain effective information on the cultural development of Thai music culture and Thai wind instruments, and creates achievement materials to obtain additional research-friendly resources. (Appendix 1)

1.2 Utilizes China's electronic resources, including the "China National Knowledge Internet (CNKI)" and the "China Conference Paper Database (CCPD)," to consult pertinent materials, such as the history, musical characteristics, and cultural development of wind instruments in China and Thailand. The study also focuses on inter-disciplinary topics, such as Chinese and Thai history, sociology, anthropology, cross-border ethnic groups, Hakka migration, and other topics, in addition to research methodologies.

Moreover, for monographs, journal articles, and academic papers on research content in China and Thailand, the information is gathered, and the research results of experts and scholars in related disciplines are analyzed in a targeted manner to draw conclusions.

1 . 3 Utilize "Scirus," "Study Mode," "Free Book Spot," "Proust," and other search engines for foreign literature to obtain pertinent literature.

1 . 4 Utilize the collections of the Srinakharinwirot University Library, Chulalongkorn University Library, Chiang Mai University Library, and Gannan Normal University Library to obtain the necessary literary resources. Based on the literature review, a comprehensive analysis of the literature is conducted to address the problems that must be addressed in the research, and the significance and influence of the literature results on the research are evaluated. (Appendix 2)

2. Field Trip

Visited local music classes to fully understand the construction of music classes; visited local cultural departments to understand the development of wind instruments in a multicultural context; we collected, organized, and analyzed the representative music scores of wind instruments "Flute"; deeply understood the process of making wind instruments; discussed the historical development of wind instruments and made a comparative analysis of the process of making wind instruments in different cultures; and analyzed the process of making wind instruments in different cultures. By interviewing the process of making wind instruments in Bangkok, China, and Thailand, the study of Thai wind instruments is combined with literature analysis, and the practical portion is verified with the theoretical portion so that the specifics of Thai wind instruments can be grasped in greater depth. (Appendix 3)

1 . Visit Dr. Pongsapich Keawkunthorn's wind instrument-making studio in Bangkok on October 25 , 2022 , to conduct research on the Thai Khlui-making procedure and conduct examinations and exchanges.

2. On December 3-5, 2022: Travel to Goung Meng Ta, Thailand, to study the culture of Karen music and dance.

3. On February 2, 2023, conducted a study of the Chinese bamboo flute making process and Seek advice Wenzheng Xie of the "管子先生" (Guan zi xian sheng) flute studio in the "Bamboo Flute Township" in Yuhang District, Hangzhou,

Zhejiang Province, and China. Interview with Mr. Xie Wenzheng of "管子先生" (Guan zi xian sheng) Xiao and Di studio.

3. In-depth Interview

In the interviews with experts of Chinese bamboo flute and Thai Khlui, 1-2 experts with profound theoretical knowledge and rich performance experience in the professional field of Chinese bamboo flute and Thai Khlui were selected for each seek advice to gain an in-depth understanding of the history and culture of Chinese bamboo flute and Thai Khlui as well as the performance skills, music, and scores. Flute and Thai Khlui, as well as their performance skills, music, and scores. (Appendix 4)

1. Seek advice with Assoc. Prof. Dr. Somsak Ketkaenchan at Srinakharinwirot University FoFa, Bangkok, Thailand, and November 7, 2022, for an in-depth understanding of the history, culture, and artistic characteristics of Thai wind instruments.

2. Seek advice with Associate Professor Gao Bi, a Chinese bamboo flute concert performer, in Ganzhou City, Jiangxi Province, China, on February 9, 2023, for an in-depth understanding of the history, culture, and artistic characteristics of Chinese wind instruments, as well as an analysis of the Chinese bamboo flute, Xiao and Thai Khlui, Whode, and other wind instruments.

3. On November 24th, 2022, I seek advice Mr.Satchakron Kaewsaikaen in Wat Koh Klang Pa Daet, Chiang Mai, and learned about the musical forms, artistic features, and musical instruments such as Pi Nae in northern Thailand.

4. Experimental Practice

The most representative "Flute" of China and Thailand should be studied, and the sound and skills should be compared and analyzed, and the music and score should be analyzed, and the experimental method should be used to compare the performance of the "Flute" of Chinese and Thai wind instruments. The differences between Chinese and Thai wind instruments. At the same time, we will select the representative music of both countries and compare the characteristics of the music in the same key, the same tone, and the same melody.

Education and Information Preparation

The first is to determine the content or form of research objectives, scope, and methods. In previous studies, the scientific research system is determined, and a detailed research plan is formulated to ensure the implementation of the research plan. The second is to collect, sort out, analyze and refine the research content, the problems to be solved, and the arguments and arguments needed for the argument, to ensure the achievement of the research objectives. Third, the application of research results and the embodiment of research value. The completion of the research objectives, as well as the solution of the research problems, provides a reference basis for the research value formed by the later research, as well as the formation of influential and valuable data from related cultural disciplines. Especially in the application of the value of the research, the research results need to be presented through the media, information, and other channels, with a view to obtaining maximum value.

Tools and Equipment for Data Collection

To achieve the research objectives, Flute, camera, recorder, computer, and other equipment are needed for the selection of equipment and objects. In data collection, filming, and storage devices such as cell phones, mobile hard drives, and cameras were mainly used to facilitate data collection. In data analysis, the data were also analyzed by Excel, Eop Nmn Master, Corel Video Studio Pro X8, and other APPs to form the stage results.

Data Analysis

Combining theory and practice, the use of research methods in practice must demonstrate their validity through results, whether literature analysis or fieldwork. To investigate the cultural development of Chinese and Thai wind instruments from a historical perspective, necessary to examine the intersection of China and Thailand in music theory, music culture, and music practice from multiple perspectives. I have a comprehensive plan for research and data analysis, as outlined below.

1. The historical background and the classification of the Chinese and Thai wind instruments

1.1 Overview of Chinese Art

1.2 Classification of Chinese wind instruments

1.3 Special Characteristics of Chinese Music

1.4 Overview of Thai Art

1.5 Classification of wind instruments in Thailand

1.6 Special Characteristics of Thai Music

2. The comparison of the wind instruments between "Zhudi" (a Chinese bamboo flute) and "Khlui Piang Au" (a Thai flute) in organology and musical aspects

2.1 The technical characteristics of the Chinese bamboo flute

2.2 The rhythm characteristics of the Chinese bamboo flute

2.3 The technical characteristics of Khlui Piang Au

2.4 The rhythmic characteristics of Khlui Piang Au

2.5 Analysis of Chinese Wind Instrument Songs

2.6 Analysis of Thai Wind Instrument Songs

2.7 Comparative Analysis of Technique and Rhythm of Khlui Piang Au and Chinese Bamboo Flute

3. The Chinese and Thai socio-cultural interaction contexts through the dimension of the wind instrument song

3.1 The artistic features of Thai Khlui Piang Au and Chinese bamboo flutes in terms of structure, technique, and rhythm

3.2 Thai and Chinese social and cultural interactions through the dimension of the wind instrument song

3.3 Comparison of common characteristics and musical differences between Chinese and Thai music

3.4 Cultural Interaction between Thai and Chinese Music in Historical and Musicological Contexts

The summary and discussion

1. Summary

The study of the cultural development of Chinese and Thai wind instruments in the historical dimension, as a theoretical study, analyzes the subject objects, definition concepts, and framework structures in cross-culture through the cross-cultural comparative research method, sorts out the valuable and meaningful contents of the research objectives, and presents the research viewpoints. Literature research provides a more powerful theoretical basis, field trips collect more extensive research data, and with the historical dimension as the research background, research viewpoints are put forward in the development of wind instrument culture in China and Thailand. The diversity of research methods is more conducive to finding the key to the problem. Historical span of music or wind instrument culture; The structural differences between Chinese and Thai wind instruments; The cross-cultural research ideas such as the style of wind instruments and the basic characteristics of playing techniques are clearer.

2. Discussion

For the research objectives, important to clarify the key points and difficulties in the research, and to solve the problems in the research through scientific and reasonable research methods. For the research on the cultural development of wind instruments in China and Thailand under the historical dimension, the breadth and depth of cultural theory research is advanced, and the research on the cultural development of wind instruments in China and Thailand is taken as a case study to clarify the concept of crossover, integration, and development in the development of music culture in China and Thailand.

Chapter 4

Analysis

This study focuses on the introduction of the history, category, shape, and temperament of Chinese and Thai literature and art, Chinese and Thai wind instruments, and the playing skills of the Chinese bamboo flute and Thai Khlui Piang Au. This paper compares and analyzes the historical background, cultural interpretation, musical style, band characteristics, and cultural similarities and differences of the Chinese bamboo flute's representative work "Travel in Gusu", and the Thai Khlui Piang Au's representative work "Lao Duang Deun" and looks at the social and cultural interaction between Chinese and Thai wind instruments from a historical perspective.

In the study, the data were collected through literature analysis, fieldwork, expert interviews, and experimental practice, and the data were integrated and analyzed to form valuable results by closely focusing on the research objectives, research scope, conceptual framework, and the definition of terms. In the analysis of data, the list method and graphing method are mainly used to visualize and analyze the data, to show the results of data analysis in a simple and clear way, and to form the application of results that are valuable to the study. The details are as follows:

The historical background and the classification of the Chinese and Thai wind instruments

1. Overview of Chinese of Art

Chinese literature and arts include music, dance, opera, poetry, painting, calligraphy, etc. Chinese music, dance, opera, and other arts have a long and profound history. As a representative of culture and art, Chinese music was developed through the exchange and integration of Chinese and foreign cultures, forming its own characteristics. Traditional Chinese music includes court music, folk music, religious music, and the music of the literati. Music has been recognized and valued differently in China from dynasty to dynasty. There is the great educator Confucius, who proposed the concept of "poetry, calligraphy, ritual, and music", and there is also the touching

story of "Bo Ya drumming the Qin and Zhong Zi Qi listening to the sound", as well as the "Music House" set up the Han Dynasty and the "Pear Garden" set up the Tang Dynasty. The music institutions, such as "Liyuan", were established the Han Dynasty and the Tang Dynasty. The study of Chinese literature and arts is actually a very large system.

1. Court music

In ancient China, court music was mostly dancing music; that is, poetry, dance, and music were integrated and played in the imperial court and the outfield, respectively, praising the merits of the royal family and shaping the majesty of the royal power. According to the function of music, it can be divided into ritual music in sacrificial ceremonies, court meetings, grand ceremonies, and entertainment music in banquets and lucky deeds. The musical instruments performed mainly include "编钟" (bianzhong), "筑" (zhu), "鼗" (Tao), "鼙" (Yue), 埙(xun), 排箫(paixiao), 古琴(guqin), 箏(zheng), 瑟(se) and 琴(qin), etc. After passing through the Han and Tang dynasties, due to the absorption of foreign musical instruments, the musical instrument composition of court music changed, including the huqin, flute, and pipa. The history of court music has a long history, and it began to take shape in China in the "春秋时期" (spring and Autumn Period, 770-476 BC.) and the Warring States Period. After the development of the Han Dynasty, it reached its heyday of Tang Dynasty, and set up a special management body, "大乐署" (Dayue Shu). Yan music was mainly played at court banquets, originated in the Zhou Dynasty, and continued to be fused with foreign music in the Han and Wei periods. The tonal "雅乐" (Yayue) was a joint performance of music and dance, music songs, and musical instruments, and there were strict requirements in terms of musical tuning, musical costumes, composition of musical instruments, and the number of people in the orchestra. But not only a glorification of civil and military power but also plays an edifying role in the management of the country and society.

2. Folk Music

Chinese folk music, including folk songs (folk songs, minor songs, and labor songs), folk rap, opera, etc., has different musical expressions for different regions and nationalities, forming their own unique style and characteristics.

Folk song - a ballad sung work, including herding folk songs, Tian Yang folk songs and general folk songs. Folk songs can be solo or duet, mainly improvisation. The tune is bright and clear, the rhythm is free, the melody is long, the voice is high and bright, and the emotion is delicate and euphemistic. Folk songs appeared very early, and Guofeng in the ancient "Shijin" is the record of folk songs' performance forms. Folk songs are representative works of **"越人歌"** (Yue ren ge) in the Spring and Autumn Period. Mainly popular in mountainous areas, hills, and other areas where Han and ethnic minorities gather, such as the ethnicity of Guangxi Zhuang folk songs, Guizhou Dong folk songs, northern Shanxi **"信天游"** (Xintianyou), Inner Mongolia Mountain Climbing Tune and so on, which are deeply loved by the public.

Ditty Song - In China, the Han folk song and dance compositions popular at town fairs correspond to the genre category of Han folk songs. The ditty falls into three categories: singing melody, ballad, and seasonal tune, also known as a ditty, vulgar tune, vulgar tune, seasonal tune, alley ballad, village folk tune, and local ballad. Shandong and Hebei in the lower reaches of the Yellow River and Jiangsu in the Yangtze River's lower reaches are Minor's principal representatives. It has artistic processing, a balanced structure, a regular rhythm, delicate melodies, and gentle music due to been passed down through the centuries. Most Ditty songs are multi-paragraphed, with four seasons, five shifts, noon, and other time series, and the content is elaborately stated in the form of segmented songs from various sides. To meet the requirements of multi-paragraph words, its melodies can express a particular emotion (soft, melancholy, or happy) with a strong melody, smooth melody, twists and turns, rich and varied melody lines, and powerful expressive force.

Labor song - a song that is sung during labor hours. The known as "Yaohaozi" in northern China and "Hanhaozi" in southern China. There may be specific

lyrics to recite, but line words may also exist. It is possible to sing in unison, sing in unison, and sing in unison. The primary locations affected by the epidemic are Chongqing and Sichuan. There are numerous types, such as Boat songs, working songs, hammering songs, and Loading songs. The music is more adaptable, melodic, and rhythmic, with a strong call and structure representing the working process. In "Chinese Folksongs of the Same Origin", Feng (1998) said, Many Chinese folksong ditties have a common origin. This means that folksongs are based on a matrix of folksongs that had emerged as the original went through a process of dissemination from one place to another to produce branches or variants all over the country.

3. Folk Rap

Both a language art and inseparable from music and performance. Tracing its history, actually very early, in the ancient "国语"(Guo yu), "乐记" (the book of music) and other records of the rap art form. The development to the present day, its artistic characteristics are also very characteristic, with very typical local characteristics and mass base (Shanghai normal university ancient books arrangement group, 1978).

2. Classification of Chinese wind instruments

According to records, there are about 70 kinds of musical instruments in Zhou Dynasty in China, and there are as many as 29 kinds recorded in "诗经" (Shijing). In ancient China, musical instruments were classified into eight categories, namely, gold, stone, earth, leather, silk, wood, bamboo, which was called the "eight-tone" classification.

As a wind instrument, it belongs to three categories in the eight-tone classification: bamboo, Lagenaria and earth. The musical instruments made of bamboo are di, chi, xiao, bili, suona and guan; the musical instruments made of materials are sheng, xu, hulusi, etc. The musical instruments made of "Earth" include xun and tao di. According to the classification of H-S (Hornbostel-Sachs) instruments, China wind instruments can be divided into edge vibrating air instruments, spring vibrating air instruments and cavity vibrating air instruments. Edge vibrating air instruments include zhudi and xiao, and spring vibrating air instruments include suona and guanzi.

1. Di (A Chinese bamboo flute)

The history of di can be traced back to 8,000-9,000 years ago. Made of crane ulna were excavated Twenty-one flutes at the Neolithic site in Jiahu Village, Wuyang County, Henan Province, with seven holes in shape, which is the earliest musical instrument ever discovered. For the Chinese di artifacts archaeological and historical documents recorded there are more, Zhejiang Yu yao Hemudu unearthed bone whistle about 7000 years ago, belongs to the Neolithic; Hubei Suixian Zenghouyi tomb unearthed two bamboo cross-blown di; The "Mister Lv's Spring and Autumn Annals" record, the emperor of Huang ordered Ling Lun to make the rhythm. Ling Lun from the west of Daxia, is the yin of Ruan jump, take bamboo in the valley of the valley, to produce empty orifice thick jun, broken between the two sections - its length of three inches and nine minutes - and blow it, as the yellow bell of the Palace, blowing said She shao. The next production of twelve tubes, to the Ruanyu jump under, listen to the sound of Feng Huang, to distinguish the twelve rhythms." (Lv, 2014); these are the earliest archaeological and documented records of the history of flutes made from bamboo. In the development of Di, the ancient name of the flute is "箛"(di), after the Han Dynasty, gradually adopt the shape of Hu flute blow hole and sound hole in the same plane, evolved into today's bamboo flute playing posture, blow hole and sound hole constitute a seven-hole flute, to the Tang Dynasty Liuxi tied flute membrane to help the sound, evolved into eight-hole flute (blow hole, membrane hole and according to the sound hole), there are also playing posture horizontal blowing, vertical blowing changes, as well as 12 rhythm flute, chromatic playing and other literature. Commonly used bamboo flutes mainly include double bass G and A; Bass Bb, C, D; Alto Eb, E, F; High notes G, A, Bb, etc. In modern times, improved flutes, such as key flutes and bend flutes, appeared. A common flute has one membrane hole, one blowing hole, two pitch holes, two auxiliary sound holes, and six or seven sound holes.



Figure 4 Chinese full map

Source: Haibo Shuai, 2022



Figure 5 bamboo flute blowing hole

Source: Haibo Shuai, 2022

2. Xun (A Chinese instrument made of clay)

An ancient Chinese musical instrument with a history of 7000 years, which was included in the "earth" part of the eight tones in the Zhou Dynasty. It was found at the site of Hemudu in Zhejiang Province, Anhuai Village in Nanjing, and Hanpo Village in Xi'an, and is a product of the Neolithic period. There are three shackles unearthed in Wan Rongjing Village, Shanxi Province, one of which has only a blowhole and no finger hole, and can play a sound; The other one has a blowhole and a press hole, which can play two notes, and the pitch relationship is three degrees; The last one has two press holes and can play three notes, and the interval relationship between the notes is three degrees, five degrees and seven degrees. During the Warring States period, the ocarina had one blow hole and five press holes, and its shape was flat-bottomed and egg-shaped; the sound of the Xun was deep, thick, and simple, and the "史记" (Shi ji) Records called the ocarina "the sound of the virtuous". Today, there are ten holes of ocarina, and the sound range has been further expanded. The common tunes are F, G, etc. The materials and techniques of production include clay, bamboo, synthetic resin, etc.



Figure 6 Xun Front

Figure 7 Xun Mouthpiece

Figure 8 Xun Backside

Source: Haibo Shuai, 2022

Source: Haibo Shuai, 2022

Source: Haibo Shuai, 2022

3. Xiao (Traditional Chinese Vertical Flute)

An ancient musical instrument in China. Historical records began in the Han Dynasty. The Xiao in Wang Bao's Ode to "Dong Xiao" refers to the Paixiao, which is a multi-pipe vertical blow, and then evolved into a single pipe and vertical blow. Since the Tang Dynasty, the flute has been called vertical blowing, while the flute has been called horizontal blowing. In the Tang Dynasty, the length of the single-pipe flute was one rule and eight inches, so it was called "尺八"(Chi ba). "晋书" (Jin shu) records the title of the xiao song "San nong", but no score is available. The earliest surviving score is the "Wenlin Jubao Wanshu Xingluo" of the Ming Dynasty, which is a work-ruled score. There are different types of xiao, such as cave xiao (southern xiao), northern xiao, and Qin xiao, which are played in combination with Guqin, because they are all played vertically and have the same principle of pronunciation. There are V-shaped and U-shaped oblique (inner) cuts in the mouthpiece, as well as the outer cut of the shakuhachi. There are also differences in tone classification such as chromatic xiao and full tone xiao. South xiao is mostly single section and has bamboo roots with V-shaped mouthpiece; there are 6 holes according to tone, divided into 5 holes before and 1 whole after. North xiao was developed and popularized in northern China, with single section, double section and three sections, etc. It can be adjusted in pitch and is

easy to carry and has 7 holes and 8 holes according to the hole. Commonly used tunes include F, G, etc.



Figure 9 Xiao Front

Source: Haibo Shuai, 2022



Figure 10 Xiao Mouthpiece

Source: Haibo Shuai, 2022

Figure 11 Xiao Backside

Source: Haibo Shuai, 2022

4. Guan (traditional Chinese wind wood double-reed Instruments)

Ancient Chinese musical instrument, vertically blown, six-hole, consisting of reed and pitch pipe. It has been developed to have C, D, E, Eb, A, Bb; soprano F, G; bass F, G and other common tunes, and the size of the tone pipe is between 16 cm-30 cm. The reed material is made of reeds, etc. The reeds are vibrated by the breath to make a sound, and the air column of different lengths is formed with the opening and closing of the sound hole to produce different pitches of sound. For

example, "说文解字" (Shuowenjiezi)," the etymological writing of Xu (2017), a Chinese calligrapher from the Eastern Han dynasty, described the Guan as the ancient wind instrument. There was a bright sound like flowers blooming in spring in the 12th month of the traditional Chinese calendar. These can fully prove that "Guan" was widely used in ancient China, but there is also a point that needs to be fully explained, that is, "Guan" is the general name of flute, Xiao, Chi and other wind instruments. "论衡" (Wang, n.d.); Wang Chong, a Han Dynasty philosopher, wrote in "Lunheng," a materialist text, "The tube of the flute and Sheng is similar to the mouth and larynx of a human being. The sound of the Guan varies from tune to tune, from high-pitched to low-pitched, such as weeping, loud and penetrating. Originally, bamboo and jade were used as production materials, but later, wood was used as production materials. There are also documents about playing it with two pipes, such as the playing method of Qiangdi.



Figure 12 Guan Front

Source: Haibo Shuai, 2022



Figure 13 Guan Whistle piece

Source: Haibo Shuai, 2022

5. Suona (Traditional Chinese Double Reed Oboe)

Suona is a world-wide wind instrument, which is widely popular in Asia, Africa, Latin America, Europe, and other countries. In the 3rd century A.D., suona was introduced to China from Persia, Iran, Arabia, and other regions. After improvement and development, it evolved into its present style. This is the result of Zhang Qian's mission to the West in the Western Han Dynasty, which promoted cultural exchange and trade. Suona should be widely used in court music, opera music, military music, and folk music. For example, from 1560s to 1580s, Qi (1560), a Chinese military general and writer of the Ming dynasty, wrote in Wu Bei Zhi, a part of "纪效新书·武备志" (JixiaoXinshu wubeizhi) . To the Ming era, his army's soldiers switched from using animal horns to the traditional Chinese suona to signal with fellow soldiers." Suona is popular in more than 20 provinces and cities in China, such as Henan, Hebei, Shanxi, Shandong, Anhui, Northeast China, etc., forming a distinctive suona music and an influential suona genre. In the specific application of suona, there are ensembles with musical instruments, such as suona and drums, suona and sheng, suona and erhu and Hakka suona ensemble. There are those that accompany opera, such as Jing opera and Rap music from Hunan. There are those that are played in ensembles with percussion instruments such as drums and gongs, and those that exist as military music. Suona is composed of whistle, air disk, brass mouth, sound pipe, bowl mouth and so on. The sound pipe is conical in shape, Small upper part, and large lower part. There are eight sound holes, seven in front and one at the back. There are different tunes of suona, such as soprano, alto and bass. If the tone is different, the sound is also different, ranging from high and bright to rough and gentle. At the same time, the size is also different. The small suona has a high pitch and a pole length between 22cm-30cm; the medium suona has a moderate pitch and a pole length between 22-30 cm; the large suona has a low pitch and a pole length between 42cm-57cm. With the development of the keyed suona and the piston suona, the range of the suona has been broadened and the playing techniques have been innovated, making the expression richer and the subjects of the

music more diverse. The representative pieces are "一枝花" (Yi zhi hua) and "抬花轿" (Tai hua jiao).



Figure 14 Full picture of Suona

Source: Haibo Shuai, 2022



Figure 15 Amplify sound of Suona

Source: Haibo Shuai, 2022



Figure 16 Top of Suona

Source: Haibo Shuai, 2022

6. Sheng (A Chinese musical instrument made of bamboo with multiple reeds attached to the base)

Ancient Chinese musical instruments belong to the category of "Lagenaria" in the classification of ancient Chinese musical instruments. Sheng has been produced for a long time and recorded in the poetry collection of the Zhou Dynasty. Sheng was excavated from the tomb of Zeng Houyi in Hubei Province (4th century B.C.) and the Han tomb at Mawangdui in Hunan Province (2nd century B.C.), and the Sheng excavated at Mawangdui already used copper reeds. Sheng is composed of sheng mouth, sheng bucket, sheng Miao, etc. It plays an important role in ancient court music and opera music, which can not only produce harmony, perform ensemble, but also play the lead role in a band or even solo. The pronunciation principle of sheng adopts reed pipe pronunciation, and the breath passes through the mouth of sheng and vibrates the reed, which produces an air column in the sheng pipe and forms a specific pitch. In terms of tone, there are tenor sheng, alto sheng, tenor sheng and bass sheng, and the range has reached 3 octaves. With the continuous innovation of technology, there are now 36-reed sheng, which expands the range and enhances the appeal, and can play semitone and is convenient to tune. Sheng's representative works include the traditional song "Phoenix spreads wings". And the modern song "Beautiful Grassland".



Figure 17 Sheng Front

Source: Haibo Shuai, 2022



Figure 18 Sheng Miao

Source: Haibo Shuai, 2022

7. Lusheng (A Chinese musical instrument with multiple bamboo rods in two rows)

Lusheng has a long history. "隋书·东夷传" (Dongyi), an ancient Chinese manuscript, describes five-stringed instruments, including the Qin, Zheng, Bili, horizontal flute, and drums. Moreover, the traditional mouth organ Lusheng contributes to the instrumentation as a beautiful musical ensemble. From this, Lusheng can truly reflect the needs of society. Lusheng is mainly popular among the Miao, Dong, Yao, Dai, and Shui ethnic groups in Yunnan, Guizhou, Hunan, and Guangxi, and in terms of regional music, Lusheng of the same form but with different rhythms is also found in countries such as Thailand and Myanmar. Whether in China or other countries, Lusheng is mainly used for celebrating festivals and ceremonies such as weddings and funerals. In China, the Miao and Dong ethnic groups have Lusheng festivals, with grand scenes, Lusheng and music, singing and dancing. The structure is composed of sheng Dou, sheng Miao, sheng spring, etc., and pronounced by vibrating the spring tube with breath. Six-tube seedlings are the most used, and there are also 4-tube and 8-tube lusheng seedlings, which have now developed to 18-tube seedlings. In the production of Sheng Miao, some of them have reeds, and some have no reeds, so the range of Lu Sheng's performance varies from place to place. For example: 6 seedlings with 6 tones, 6 seedlings with 7 tones (2 reeds are placed on the 6th seedling), and 8 seedlings with 8 tones or 8 seedlings with 6 tones (2 seedlings without reeds). There are 12 tones in total, and the five tones of China corresponding to Sheng Miao, C, D, E, G and A, have produced different phonological relationships. In addition, there are different appellations among different ethnic groups, such as "Gadou" and "Gajie" in Miao language and "Genglan" and "Genglao" in Dong nationality.

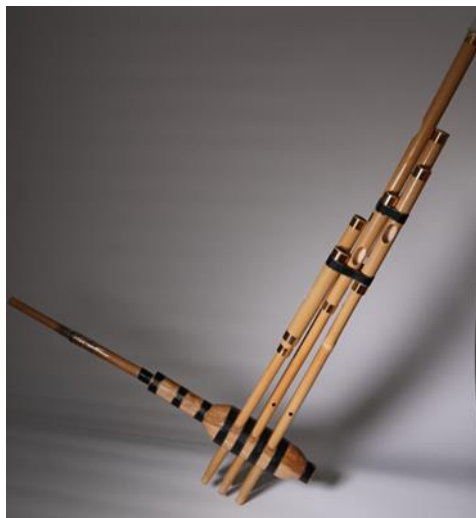


Figure 19 Six-pipe Lu Sheng

Source: Yang Chen, 2023

8 . Hulusi (A gourd is positioned on the three pipes of the reed articulator)

Hulusi also known as hulu xiao, a reed wind instrument, mainly popular in Dehong and Lincang in Yunnan where the Dai, Wa, Achang and De'ang ethnic groups gather. For each ethnic group the goulash is called differently in the national language. The Dai nation are called "筩朗叨"(Bi lang dao); The Deang nation are called "布赖"(Bu lai); The Wa nation are called "拜洪廖"(Bai hong liao); The Bulang nation are called "同格满"(Tong ge man); The A chang nation are called "泼勒翁"(Po le wen). The structure of cucurbit silk is composed of cucurbit and sound tube. In the development of cucurbit silk, it developed from a single sound tube to three sound tubes. Hulusi now consists of a gourd and three sound pipes. The gourd has a mouthpiece on the top and three holes on the bottom to insert the sound pipes. The middle sound tube is the main sound tube with seven sound holes, six in front and one in the back. After improvement and development, there are already over seven-hole cucurbit wires, and the range has been expanded from the original E-a to E-C. A reed is installed at one end of the inserted gourd for playing pronunciation. The sound pipes on

both sides are auxiliary pipes, and there is no sound hole on the sound pipe, but there is also a reed at one end inserted into the gourd, which can only play single notes E and A. Hulusi has soft timbre and beautiful melody and can be played in three tones at the same time, with full sound effect. Commonly used playing techniques include sliding, virtual finger vibrato, beating and spitting, and representative music "Pterocarya in the moonlight" and "Ancient Songs".



Figure 20 Hulusi front

Figure 21 Hulusi breakdown drawing

Source:Haibo Shuai, 2022

Source:Haibo Shuai, 2022

3. Special Characteristics of Chinese Music

China has a vast territory, a wide range of music and diverse musical styles. There are operas such as Beijing Opera, Kunqu Opera, Shanxi Opera, and tea-picking opera. There are Mongolian music, Uygur music, Korean music, flowers, folk songs, and other ethnic folk music; There are bamboo flute, erhu, pipa, guzheng, Morinkhuu, long drum, Dombra, and other national musical instruments. In the musical system of China, which consists of musical instruments, folk songs, dances and operas,

musical culture features such as musical system, notation, melody, rhythm, and beat are distinct.

1. Music law system

Ancient Chinese music rhythm is firstly found in "管子 (Guanzi)" (Guan, 2013), which is said to have been invented by Guan Zhong (? - 645 BC), based on the "three-part loss and gain method" for the unification of music rhythm. said to have been invented by Guan Zhong. The principle is to set the pitch by using different sizes of pipes to produce the "宫" (Gong, C), 商 (Shang, D), 角 (Jue, E), 徵 (Zhi, G) and 羽 (Yu, A). In the Sui and Tang dynasties, due to the fusion of foreign musical cultures, the musical tuning style has changed a lot. Based on the original five-tone tuning style, there gradually arose the Yan music and Ya music which added the F, Bb and F# and B on the basis of the five tones, as well as the C (gong), D(shang), E (jue), F (qing jiao), G (zhi), A (yu,) and B (bian gong) as the base tones of Qing music and other tuning styles, but the disadvantage is that very difficult to transpose. Zhu Zaiyu (Ming Dynasty, 1536-1611) invented and created the twelve mean meters through mathematical precision calculations, which divided the octave into twelve chromatic intervals. The twelve mean meters invented in the West were several decades later than Zhu Zaiyu (Zhu, 1603). The development of traditional Chinese music can be seen in the development of the five-tone tuning system and its influence on neighboring countries.

2. Notation Method

The notation of Chinese music can be traced back to the Warring States Period (5th century BC), and developed to the Sui and Tang Dynasties, resulting in the Gongchi notation. In the Song Dynasty, the folk character spectrum came into being. In modern times, influenced by western notation and staff, China gradually used notation and staff, but there are still some folk artists who use Gongchi notation. For Chinese music notation, the work-shape notation is the one that has been used for the longest time, generally using characters such as "合" (He), "四" (Si), "一" (Yi), "上" (Shang), "尺" (Chi), "工" (Gong), "凡" (Fan), "六" (Liu), "五" (Wu), "乙" (Yi) as the basic symbols to indicate the pitch (and also the singing name), equivalent to G-A-B-C-

D-E-F (or F#), g, a, b. In the development of Chinese notation, there are also many notation methods for specific musical instruments. The earliest surviving Chinese guqin score, "碣石调·幽兰"(He shi diao you lan), is a handwritten copy from the Tang Dynasty and was handed down by Qiu Ming (502-557 AD) in the Northern and Southern Dynasties. This piece is a detailed record of how to play each tone of the guqin in 4954 Chinese characters. In traditional Chinese music, the "music score" is a set score but not a set tone, a set board but not a set cadence, and a thousand variations, but all variations are the same. This is what makes Chinese music notation so special. For example, the Gongchi notation only records the board eyes, while the specific performance of the fine points of music requires the performer to improvise subjectively. On the one hand, like the traditional notation in Thailand. By recording the main melody or tonic, the player can understand the music and play it, so there are many playing methods and notation marks. For traditional notation, the traditional teaching method of oral transmission is followed in terms of teaching. This creates even more diversity in the development of music.

3. Music tune

In a straight or curved melodic direction, the theme and structure of the music are constituted and driven by the intervals and heights of sound, the color of sound, the strength and weakness of sound, the curing and changes of speed, rhythm, and tempo, etc. Chinese music is very rich in tunes, with opera, folk songs, and traditional instrumental pieces each having their own characteristics. Chinese music has a great variety of rhythms and beats. The beat of China music includes from one beat to twelve beats or not. In ancient China, the beat was called Ban yan (The rhythm of percussion), that is the Different Variations of Redo and Slam. As a calibration of the length of bar lines or phrases, as well as the relationship between the strength and weakness of sounds, the beat is very important in the basic elements of music. In Chinese music, music styles such as horn, mountain song, ditty, march, dance, lyric, and instrumental music vary in the use of beats, with single beats, compound beats, and variable or free beats. Labor trumpets are mostly played in two beats, and the

relationship between sound intensity and sound intensity is characterized by "strong and weak"; Folk songs are mostly performed by free beat, and their singing characteristics are improvisation of singing. Chinese music rhythms, as the basic elements constituting melodies, are organically combined from whole notes to thirty-second notes and so on, forming the basis of melodies of different nationalities, regions, and musical categories. The syncopated rhythm of Xinjiang music, the combined rhythm of eighth notes and sixteenth notes of Dai music, etc.

For music speed, different music will control the speed of music according to the thought and emotion of the music. First, the speed should be in line with the theme; second, the speed should be suitable for singing or playing; third, instrumental solo pieces or ensemble pieces will appear different speeds in the music, for example, there are slow speeds, fast speeds, and gradual fast or slow variable speeds. In traditional instrumental music, many pieces of music are composed of intro, theme, allegro, epilogue, etc. The introduction part often appears as a loose board, and its rhythm and speed are relatively free. The theme part is often dominated by Grave, andante and so on; The music in Allegro often varies and changes speed.

4. Performance skills

In the performance or singing of music, the use of musical techniques can better show the ideas of music and enrich the emotions of music. In the performance of musical instruments, different skills can show different musical emotions. For example, the vibrating sound of wind instruments is often manifested as sad and bitter musical feelings, and this kind of technique is often used to play guanzi, Xun and other musical instruments; Cyclic ventilation is often used in Suona's performance; Vomiting skills are often used in the performance of di and lusheng. The playing skills of wind instruments are mainly "breath, fingers, tongue", and according to the characteristics of musical instruments and the needs of music, the unique skills of some musical instruments are unique. For example, zhudi's flying finger skills.

5. Musical instrument composition

Chinese music is rich in genres, types, and genres. Different music, different orchestras, or bands, will have different compositions for instruments. The traditional music orchestra, represented by the Chinese National Orchestra, consists of wind instruments (di, sheng, suona, etc.), drawn string instruments (erhu), plucked instruments (pipa, guzheng, yangqin, etc.), and percussion instruments (drums, cymbals, gongs, etc.). The most representative musical instruments used to accompany Peking Opera are percussion instruments such as the board, single-skin drums, tang drums, gongs, cymbals, etc., which are called "Wuchang". Stringed instruments: Jinghu, Jing erhu; There are plucked instruments: Yueqin and Sanxian, which are called "literary field". The accompaniment instruments of China Kunqu Opera are wind instruments: di, xiao, suona, etc. Plucked instruments: pipa, sanxian, yueqin, etc.; percussion instruments: drum board, big gong, small gong, cymbal, cloud gong, small cymbal, hall drum, etc. There are many kinds of local operas, and the accompanying instruments are different. For example, "越剧" (Yue ju), "黄梅戏" (Huangmei xi), "赣剧" (Gan ju), "采茶戏" (Caicha xi), "花鼓戏" (Huagu xi) and "梆子戏" (Bangzi xi). "苏州评弹" (Suzhou Pingtan) takes pipa and sanxian as accompaniment instruments, and occasionally joins erhu for accompaniment. The accompaniment instruments of Jingyun Drum are shugu, jieban, sanxian, sihu, erhu and pipa, among which sanxian is the main accompaniment instrument. The musical instruments used in drum music in Xi 'an are di, sheng, guan, shuangyun gong and so on. As for the composition of musical instruments, the ancient music of court music, such as bianzhong, bianqin, se, konghou, zhu, zheng, jiegu, sheng, di, xiao, chi, xun, etc., have gradually formed a national orchestra with the current band shape through continuous development and integration.

4. Overview of Thai of Art

Thai literature and art include music, dance, opera, painting, literature, poetry, etc., with various forms of expression and unique features.

1 . Thai traditional drama Thai drama includes Khon, shadow play, puppet show, etc., and has its own characteristics in performance. Khon is the most typical representative of Thai traditional culture, and a classical and elegant performing art form in Thailand. It originated from De nan wan Opera and has been recorded in writing since the kingdom of Sukhothai. Khon performed in the palace, with actors wearing gorgeous masks, narrators carrying out dialogue narration, dancers dancing in gorgeous costumes, masks and headdresses, singers as performers, singing according to the story, and accompanied by Piphat band in the performance, martial arts can be integrated, which is very popular among the public. Later, it was developed out of the court, and from the original form where only male actors performed, it developed into a model where both male and female actors could perform. Nowadays, there are some changes in the wearing of masks, and princes and female characters do not need to wear masks and can be styled by makeup for their tasks. The costumes are exquisite, incorporating a variety of handicrafts such as weaving, dyeing and embroidery, and the pattern design and color matching are extremely important in relation to the characters.

In its development, Thai Khon drew music, dance, art, painting, and other artistic elements from folklore to construct a magnificent masterpiece of Thai theater. Later, it gradually moved from the court to the folklore and had a great influence on folk theater. In 2018, Thai Khon was inscribed on the World Intangible Cultural Heritage List. In addition to Kong opera, shadow play and puppet show, there are also Rei Cai opera, Nyang opera, Marola opera, etc. The performance styles of shadow play, Puppetry and ritual show have certain relations with China and Indonesia, but in the cultural interaction and integration, shadow play and puppet show have formed their own characteristics through circulation and combined with Thai local culture. The representative work of shadow play "Inao"; Puppetry comes from Thai literature, with Rama Kian, Phra Aphai Mani, as the main representative works; The play originated from Thai and Chinese literature and evolved mainly from the glorification of Allah by Islamic believers, with representative works such as "Khun Chang Khun Phaen" and "Three Kingdoms", a translation of the Chinese literary work "Romance of the Three Kingdoms".

Nyang opera is a light and shadow opera and is mainly performed under the title of "Rama Kian" (รามเกียรติ์). At the same time, Chinese operas in Thailand are diverse, widely distributed and developing rapidly, which also constitutes an important part of Thai folk operas. Chaozhou Opera, Qiongnu Opera, Cantonese Opera and Puxian Opera have been transplanted and cultivated by Chinese and have formed a unique cultural phenomenon in Thailand. These operas maintain the essence of Chinese excellent traditional culture, and to meet the needs of survival, they absorb the excellent Thai culture in an eclectic way, and the two can be integrated and developed.

2. The traditional music of Thai

The history of Thai traditional music can be traced back to the Sukhothai period or before. In "On the Humanistic Value of Thai Traditional Musical Instruments", Yu (2013) proposes that the ancient Chinese text "Tong Dian" (Du, You. Tang Dynasty, 801 A.D.) records the musical scene in the country of the Fallen Bowl. Music is blowing calabash drums, death and funeral is a shrine to cry. The "calabash" described in the literature is a scoop-shell object, like a gourd. The country of the Lodossa Tidei was around present-day Phra-Thong Province, Thailand, and existed from the 6th to the 11th century AD. These laid the foundation for the beginnings of Thai traditional music, which developed into a unique musical style influenced by Indian music, Chinese music, Cambodian court music and Indonesian Gamelan music. Thai traditional music consists of both courtly classical music and folk music.

Classical singing. Tracing the history of classical singing in Thailand, the inseparable from court music, religious chanting, opera music, and folk mountain songs. From the harvest celebrations during primitive hunting to the vocal echoes labor, singing seems to be innate. The music theory and techniques, singing is more scientific in temperament, performance, and methods. In the 19th century, classical singing became a flourishing genre in the golden age of royal court music in Bangkok dynasty. mainly used for a cappella songs of dramatic narrations, singing of classical music, and music sung in traditional instrumental ensembles. As a performance form, classical singing is performed with a delicate voice, beautiful tunes, and a singing method that

uses more glissandos and drags, and is lyrical and expressive, not only alone, but also in the performance of an orchestra. Nowadays, Thai classical singing as an art form is widely sung among the people.

Traditional Instrumental Music. It was first used in court music, using natural scales, with euphonious tunes, sharp rhythm, wide range, and rich content. According to the type of music, divided into several categories, such as sad songs, angry songs, entertainment songs and Buddhist songs. Mainly melodic percussion instruments Kong Wong lek, Kong Wong yai, Ranat Ek, Ranat Thum; Khlui, Pi Nai, Saw Duang, Saw Oo, Ching, Glong Kaeg, Glong Song nha. Thai classical music has more than 1,200 tunes and is played in religious ceremonies and traditional rituals. The composition of Thai traditional instrumental music has benefited from the musical soil of neighboring countries as well as from the musical system developed by itself. There is a close relationship between traditional instrumental music and the surrounding countries in terms of form and style of music. For example: Saw Duang and Chinese erhu; Band and Indonesian Gamelan music; Thai and Burmese elephant foot drum, etc. Many traditional instruments have evolved from the initial few monophonic sounds to be suitable for band ensembles, and the band has also evolved through the Ayutthaya Dynasty period with Dontri (an ensemble of string instruments), Duria (a form of wind and percussion ensemble), two ensemble models to the Bangkok Dynasty period, through the fusion of other instruments, Dontri, Duria evolved into Mahori, and Kreung Sai. By now, there are three common traditional instrumental ensemble models in Thailand. One is the Pipat, which consists of melodic percussion instruments, rhythmic percussion instruments, and wind instruments (Pi Nai, Pi Chawa). The second is the Kreung Sai, which consists of string music instruments, rhythmic percussion music instruments. The third is Mahori, which consists of stringed instruments, melodic percussion, rhythmic percussion, and wind instruments (Khlui). These bands played in different occasions and developed from court music, religious ceremonies, opera, singing and dance accompaniment to the present mode of playing alone. The development of traditional instrumental music can be seen from the change of a single

volume to the continuous breakthrough of musical sounds, music pieces and orchestras.

Folk music, folk dance. Influenced by Indian music, Indian opera and the music of neighboring countries, there are many kinds of music forms that exist in and are active in the folk. For example, there are activities such as singing, musical instrument performance, dance performance, opera performance and so on, which are carried out by folk customs such as weddings, funerals, worshipping ancestors, and national festivals. The folk music, dance and opera have a deep mass base in Thailand, mainly because Thailand is a multi-ethnic country dominated by Thai people, and colorful national culture enriches the expression forms of music, dance and opera. The Thai people take Buddhism as their main belief, and the universal value and spiritual world of pursuing peace and great love provide the soil for the cultivation and development of folk music.

Thai folk music is very rich, and its music texture and expression forms are also very diverse. In the singing and performance of folk music, musical instruments have an irreplaceable role and play an important role. This kind of music, which is made of stones, wood and other percussion rhythms or bones, bamboo and so on, is the earliest form of music in human life in primitive society. From the acoustic point of view, the sound reinforcement effect of wind instruments can better meet the needs of people in ancient society for spiritual enjoyment and spiritual world.

With the migration and integration of ethnic groups, music culture also presents a variety of colors. Up to now, ethnic minorities such as Hani, Yao, Karen, Miao, Lisu, and Lahu live in northern Thailand. They are good at singing and dancing and adhere to the tradition in singing. Rural folk songs, pastoral folk songs, folk songs and other different languages, different tunes and different styles make folk songs more vital. Folk songs are beautiful in tune, fresh in style, smooth in melody and widely spread. Representative folk songs "Harvesting Song", "Cutting Rice" and "Song of Farmers"; Shaoge and Paisheng in northern Thailand, and the children's song Lullaby. Southern Thailand is more closely connected with Malaysia and Cambodia, and the

influence of music is also great. The classic folk song "Song of Papaya Salad", "Bat Eats Banana" and "Dance of Flowers"; the mask dance "Hanuman Chase"; and the Southern Thai folk dance "Sentiment". Influenced by Hinduism, Hinayana Buddhism and other religions, Thai music, dance, and opera are also very religious, with slow tempo, simple rhythm, and harmonious sound. Especially in the religious activities where opera is the main form of expression, the music and dance have a strong religious color.

Thai folk dances are diverse, with a wide variety of themes and forms. Nationally, there are seasonal dances that celebrate the harvest, and social dances. Locally, each region has developed a unique dance. For example: candle dance and long-legged dance in northern Thailand; Sheng dance and bamboo dance in northeast China; Randa dance and Teten dance in the central region; Nora dance and wave dance in the southern region. The most representative folk dance is Nanwang Dance, which is not only popular throughout Thailand, but also has a great influence on neighboring countries.

5. Classification of wind instruments in Thailand

The development of Thai wind instruments can be traced back to Sukhothai Dynasty and earlier. As the first dynasty of the Thai nation, Sukhothai Dynasty created characters and recorded them. Before the founding of the Thai nation, Thailand and related areas were composed of many different dynasties. For example, Angkor Wat, Luohu Kingdom, etc., many cultures are intertwined. Before Sukhothai, it was ruled by Funanguo (an ancient Cambodian dynasty), covering the whole of Cambodia, southern Laos, southeastern Thailand, and western Vietnam. According to Hanshu, the Khmer people established Funan Country, which also included a part of the territory of southern Thailand today, and was later replaced by the Zhenla Dynasty, which was also ruled by the Zhenla Dynasty (the ancient Cambodian dynasty). In the process of cultural development in central and southern countries such as Myanmar, Thailand, Cambodia, and Vietnam, a process of mutual integration and influence. In this specific environment, the political, economic, and cultural unity of regionalization has been formed in a certain period. Therefore, the musical instruments of the South and Central countries have

influenced each other in terms of shape and rhythm, and their characteristics are obvious. Thai wind instruments can be categorized in terms of playing style, articulation principle, and form and material, and can be divided into edge-ribbed vibrating pneumophones, reed-ribbed vibrating pneumophones, and tube-body vibrating pneumophones.

1. Khlui (A Thai flute)

Khlui has a long history. According to textual research, it was recorded in Sukhothai period (13th century to 1438), with central Thailand as the main epidemic area, and now also popular in all regions of Thailand. Khlui is mainly divided into three types: treble, alto and bass, and its names are Khlui Lip, Khlui Phiang O and Khlui U respectively. The three kinds of Khlui are the same in structure and pronunciation principle, but they are different in the number and size of sound holes. Khlui Lip has a length of about 36CM and a nozzle diameter of about 1.5cm. Common tones are high-pitched D, Eb, F, and the bE key is used more often, often played with bands or Khlui Phiang O. Khlui Phiang O has a length of about 46cm, a nozzle diameter of about 2.5cm, and common tones are C, Bb and A; Khlui U is about 60cm long, with a nozzle diameter of about 3.5cm. The common tones are bass Eb, F and G. Khlui Lip and Khlui Phiang O press 8 sound holes, the first 7 and the last 1, Khlui U presses 7 sound holes, the first 6 and the last 1. Khlui is cylindrical, with a built-in cork at the front end and an oblique cut, which is used for breath to enter and achieve edge vibration and sound. Made of bamboo or wood as the main material, there are also plastics, resins, and other materials. There are 8 sound pressing holes in total, with the front 7 and the back 1, and there are 4 sound outlet holes under it; There is also an air hole, which is made in different ways, some are placed in front, and some are placed in the back, which is rectangular and has an oblique mouth. Khlui with different tones has different sounds and can play deep, rich, round, and bright. Khlui can not only solo, but also play an important role in the band, and form Kreung Sai Orchestra with Saw Duang, Saw Oo, Jakay and Ton. Mahori band with Ranat, Kong Wong, Ton, Rammana, Ching, etc. Khlui's main skills are staccato, vibrato, sliding sound, cyclic ventilation, etc., and his skills in

music are also very flexible, especially the control of breath. When playing extended sound, he will also express his feelings through fingering transformation. Khlui's representative tracks include Lao Duang Deun and so on.



Figure 22 Thai Khlui with different tones

Source: Haibo Shuai, 2022



Figure 23 Thai Khlui blowing port

Source: Haibo Shuai, 2022

Figure 24 Thai Khlui back

Source: Haibo Shuai, 2022

2. Pi (Traditional Thai Double Reed Oboe)

Pi is divided into three types: Pi Nok (soprano), Pi Glang (alto) and Pi Nai (bass). Pi Nok is high, bright and penetrating, Pi Glang is round and delicate, and Pi Nai is low and mellow, like a sob. The structure and appearance of the three musical instruments are the same, and their sizes are different due to different keys. Pi Nok is

about 31 cm long and its nozzle diameter is about 3.5 cm. Pi Glang is about 37 cm long and its nozzle diameter is about 4 cm. Pi Nai is about 41 cm long and its nozzle diameter is about 3.5 cm. Pi Nai, Pi Glang and Pi Nok are cylinders, but they are different from Khlui. The pipe body is thick, hollow, and thicker at the periphery. The middle part of the pipe body gradually protrudes like a sloping arch, but the slope is not big, and the upper and lower parts of the pipe body are also bigger. The whole pipe is engraved with lines, which is simple and elegant. There are 8 sound pressing holes, 7 in the front and 1 in the back. The lower part of the tube is empty, and the upper part is closed, but there is a round hole for inserting the whistle. The whistle is made of palm leaf material, generally divided into 4 pieces, 6 pieces or 8 pieces, which are folded to form a fan shape. The whistle relates to the whistle tube, and the bottom end of the whistle tube is provided with winding silk thread, to completely contact with the tube body and keep it closed. Playing can be adagio, andante lyrical, or adagio and rapid progress, and the music has strong emotional expression. It can be solo or ensemble, and often plays with Ranat, Kongwong, Glong tad, Ching, and other musical instruments to accompany the drama, forming Nhapat and Pipat orchestras.



Figure 25 Pi Nai front

Source: Haibo Shuai, 202



Figure 26 Pi Nai top



Figure 27 Pi Nai bottom

Source: Haibo Shuai, 2022

Source: Haibo Shuai, 2022

4.1.5.3 Pi Chawa (An oboe instrument popular in central Thailand)

Pi Chawa has a long history, and the representative instrument of court music existed in Sukhothai period in Thailand. Pi Chawa is pronounced by reed vibration, which can be divided into two categories: Pi Chanai (high note) and Pi Mon (low note). There are differences between Pi Chanai and Pi Mon in shape, mainly in size. Its shape is a cylinder, with fine top and thick bottom. The pipe body is connected by a whistle tube, and there is a whistle on the whistle tube and a trumpet-shaped bowl under it to achieve the effect of sound reinforcement. But it can also be separated from the pipe body to achieve the effect of weak sound. Pi Chanai is smaller than Pi Mon, with a length of about 25cm and a bowl mouth diameter of about 5.5cm. Pi Mon is about 40cm long and the diameter of the bowl mouth is about 7.5cm. There are 8 sound pressing holes in the pipe body, 7 in the front and 1 in the back. Picanai's timbre is high and bright, and Pi Mon's timbre is rough and deep. The playing skills mainly include cyclic ventilation, overlapping sound and sliding sound. As an instrument of court music, Picanai is mainly used for funeral music in court, and Pi Mon is also often used in the music performance of Muay Thai to create a tense and exciting atmosphere.



Figure 28 Pi Chawa full Image

Source: Haibo Shuai, 2022



Figure 29 Pi Chawa Disassembly diagram Figure 30 Pi Chawa top Figure 31 Pi Chawa bottom

Source: Haibo Shuai, 2022 Source: Haibo Shuai, 2022 Source: Haibo Shuai, 2022

4.1.5.4 Pi Nae (An oboe instrument popular in north Thailand)

Pi Nae is an air vibrating whistle sounding instrument, mainly popular in northern Thailand, with a long history and very similar in form to the Chinese suona. The large size of Pi Nae luang is about 60cm in length, while the small size of Pi Nae noi is about 40cm-50cm in length. In terms of the shape of the instrument, it consists of a reed, a reed pipe, a sound pipe, and a bell. There are seven sound holes on the sound pipe, directly in front of the pipe, and no sound holes at the back, which is different from Pi Chawa and Chinese suona. The performance will change the pitch according to the size of the breath, and the amount of air consumption is also large, so the player's breath control is very strong. In playing with the orchestra, the player often takes the lead role.

The style of music played varies from occasion to occasion. In funeral ceremonies, there are more traditional music pieces, with a rich repertoire and calm and heavy music. In the ensemble with the orchestra, it forms the main musical line with the melodic percussion, and sometimes different melodies are played according to the needs of the vocal part, and the rhythmic percussion changes the rhythmic pattern at the right time to echo, add timbre, and coordinate with each other. In the accompanying music used for dance, not only performed in ensemble with the orchestra, but also played by two Pi Nae, large and small, to form a vocal effect. The performance has more obvious strong and weak beats, with a combination of quarter notes, etc, reinforcing the beat of the dance rhythm through rhythmic changes, and the music is very flexible.



Figure 32 Pi Nae full Image

Source: Haibo Shuai, 2022



Figure 33 Pi Nae reeds

Source: Haibo Shuai, 2022



Figure 34 Pi Nae horn mouth

Source: Haibo Shuai, 2022

4.1.5.5 Pi Jum (a Thai flute with reed)

Pi Jum is mainly popular in the northeast of Thailand, with a long history, which is basically the same as Bawu, a reed instrument in the southwest of China, in terms of material and pronunciation. Bamboo is the main material, and other materials are being developed for production. Pi Jum has different tones, such as treble, alto and bass. Originally, there were five tones, but now, there are four commonly used tones. The treble is the shortest in size, about 38.5cm, and the nozzle diameter is also the smallest, about 1.6cm. The bass has the longest size, about 78.5cm, and the nozzle diameter is also the largest, about 2.2cm. The alto is in the middle of the treble and bass, and its size and diameter are moderate. There are 7 sound pressing holes in the pipe body of Pi Jum, all of which are placed in front of the pipe body, and the sound range is more than one octave. The principle of pronunciation is that the reed vibrates and produces sound. The reed is placed on the top of the pipe and made of copper. By pressing, the reed is very thin, with a length of about 2-3cm and a width of 0.5-1cm. According to different tones, the reed size varies. Pi Jum has different keys such as soprano, alto and bass, originally there are five keys, but nowadays, four keys are commonly used. Soprano is the shortest in size, about 38.5cm, and the diameter of the mouthpiece is also the smallest, about 1.6cm; bass is the longest in size, about 78.5cm, and the diameter of the mouthpiece is also the largest, about 2.2cm; alto is in the middle of the soprano and bass, the size and diameter of the mouthpiece are more moderate.



Figure 35 Different tones of Pi Jum

Source: Haibo Shuai, 2022



Figure 36 Pi Jum Sound holes



Figure 37 Pi Jum Blow mouth

Source: Haibo Shuai, 2022

Source: Haibo Shuai, 2022

4.1.5.6 Kaen (Thai wind instrument with reeds arranged in rows of bamboos)

Kaen is a Thai reed wind instrument with a long history, which is mainly popular in northeast Thailand. Kaen can be composed of different number of sound tubes, with 4, 6, 14 and 18 tube specifications, forming different musical sounds and rich harmony. The common Kaen with 16 sound tubes is tied in two rows, with 8 sound tubes in each row, and sound tubes of different lengths are formed according to the pitch relationship. The longest sound tube, 100cm, is also a bass tube; The shortest sound tube is 67.8cm, which is a treble sound tube. The length of the sound tube is improved according to the flexibility of fingers and the need of easy use. The original longest tube can reach 1.5m to 2m. There are sound holes on every sound tube. Are they arranged in different positions? The positions will be set according to the flexibility of fingers. The longest hole is pressed by the thumb of the left and right hands, on the inner side of the sound tube, which is about 4.3cm, away from the finger of the side sound hole.

The shortest one is pressed by the pinky left-hand finger and the right-hand finger, on the outer the barrel of side, at about 3.3 cm from the parallel side holes. the inner part of Kaen's barrel is hollow and equipped with reeds. the lower middle part of the 16 barrels is fitted with a resonating chamber, about 16 cm in length and 4.5 cm in height, slightly narrower at the sides and wider in the middle, with a difference of about 0.6 cm. The mouthpiece is on the resonance chamber, and the human airflow enters the chamber through the mouthpiece to vibrate the sound. 16 pipes of the Kaen can play two octaves, 15 tones in total, and two of them play the same tone. the Kaen has a soft tone, beautiful melody, and rich harmonic effect, suitable for playing festive and cheerful music. Used for singing and dancing and can also be played in conjunction with dance rhythms.



Figure 38 Kaen full Image

Source: Haibo Shuai, 2022



Figure 39 Kaen Sound tube

Source: Haibo Shuai, 2022



Figure 40 Kaen Blow mouth

Source: Haibo Shuai, 2022



Figure 41 Kaen bottom

Source: Haibo Shuai, 2022

4.1.5.7 Whode (a Thai flute made of many bamboos in a circle)

Whode is mainly popular in the northeast and north of Thailand, and often plays the lead melody in the band, and sometimes performs Solo and melody dubbing. The timbre is crisp, mellow, ethereal, and transparent. According to different tones, there are also differences in shape. There are 12 sound tubes, which are arranged around the middle tube in turn according to the pitch (tube length) to form a cylinder. The top of the middle tube body is closed, and a rotary cut is formed from top to bottom according to the size of the sound tube. The mouthpiece at the top of each sound tube is inclined, which is convenient for playing. In terms of specific dimensions, the longest sound tube of alto Whode is about 29cm, and the shortest is about 8.5cm; The longest sound tube of the treble Whode is about 25.3, and the shortest is about 6.8cm. No matter Whode of high, middle, or low notes, other pipes are arranged from long to short. In terms of pitch, the pitch depends on the cork in the barrel and is determined by the position of the cork in the barrel. Each barrel represents one tone, and there are 12 tones, from low E to high G, specifically E, G, A, C and D. In terms of playing technique, spit and legato are often used.



Figure 42 Whode full Image

Source: Haibo Shuai, 2022



Figure 43 Whode top

Source: Haibo Shuai, 2022



Figure 44 Whode bottom

Source: Haibo Shuai, 2022

4.1.6 Special Characteristics of Thai Music

As a country in the Southeast Asian subcontinent, Thailand's musical characteristics have formed many different forms. In northern Thailand (Pak nua), there are many highland ethnic groups, which have close contacts with Laos, Myanmar, southwest China and other countries. The floating population and the interactive national culture have a certain influence on the formation and development of music culture in northern Thailand. In terms of musical instruments, based on the Thai Piphat Band, Pi Nae is used as the main instrument to play with Kong Wong, Ranat and other instruments, which can play different tunes and styles of music and often accompany dances. In Pak isam, its history and culture are greatly influenced by Laos. Kaen, Whode, Kawlaw and Pin are the main performing instruments, and the musical color of the spring song is very bright, and it forms a unique musical feature with a cheerful and jumping musical rhythm. Pak glang, as the central plain of Thailand, is the capital of many dynasties. Tracing back to the early active areas of the Mongols and Khmer, under the historical background, the activity track is fluid, but also sustainable. Then, the Thai people in Thailand established Siam, and the development of court music led the trend of music culture. Pi Nai, Pi Chawa and Khlui were the main playing instruments, which were fully developed in the performance forms of Piphat, Mahori and the masked

dance drama Khon, and the music style was calm and atmospheric. In the south of Thailand (Pakdai), influenced by Indonesia's Jawa music, Malaysia's Islam and Hinayana Buddhism, the music tunes are solitary in style. As the four constituent regions of Thailand, the musical features are different and the same.

4.1.6.1 Music Tuning system

The traditional Thai musical system is based on the seventh-means scale, which is a seven-tone scale with equal intervals of 171.4 cent. The formation of the Thai legal system can be traced back to the influence of the legal systems of neighboring countries. Before the unification of Thailand, it was divided and gathered by different sizes of principalities or ethnic groups. Myanmar and Cambodia were divided from time to time; the Lao culture and the spread of Buddhism in India, the influence of China in the ancient period in politics, economy, and culture, especially the application of the five-tone tuning, greatly influenced the musical rhythm system in Thailand.

4.1.6.2 Notation Method

In ancient times, both China and Thailand had a relatively complete set of notation rules for music. The ancient Chinese written notation and the Thai notation basically use words, numbers, or symbols as the main method of notation. In the development of Chinese and Thai music notation, the Chinese gongshang notation, gongchi notation, Qin notation, and rhythmic lute notation are rarely used nowadays, and are replaced by the western pentatonic and simple notation. The traditional notation used in Thailand is still in use today, such as ancient notation, pitch notation, solfege notation, and numerical notation (Luang pradit phairoh). The popular roll-call scale notation can simply show the duration and rhythm of the corresponding music through the music theory modes such as roll-call and bar line, extended beat, etc. The performer or singer can also form a music style with Thai characteristics according to the score and through the understanding of music. However, the study of Western music in terms

of metrical system and notation in Thailand has been applied, although not promoted, pushed, or adapted to traditional music, mainly to learn another set of music theories or techniques. The notation can be traced back to the 9th century, and the development of notation is expounded in *An Introduction to Music Studies* (Harper-Scott & Samson, 2009). After development, before 13th century, France had a great innovation in numeration, and it also had a scientific plan for rhythm. However, the protection, inheritance, and development of traditional music, such as musical rules and notation, has been continuing in ancient Thailand and up to now.

4.1.6.3 Music tune

Thailand is a multi-ethnic country with Buddhism as its main belief. Many ethnic groups are in the highlands of northern and northeastern Thailand. Due to the barrier of mountains and the diversity of national cultures, it has the most primitive musical form and performance form for the formation of music culture. The musical tunes formed among various places, ethnic groups and groups are also very rich. From the regional perspective, there are differences in the music tunes of southern, central, northeastern, and northern Thailand, and there are also many music tunes among regions, such as Lahu, Lisu and Thai in northern Thailand. However, for different regions and different ethnic groups, there is a common musical theme style, for example, when playing traditional instruments to celebrate festivals and courtship, the music tune is cheerful and rhythmically jumpy; in funeral rituals or religious ceremonies, the music tune is solemn and the rhythm is calm; in the instrument pairs, ensemble or duet singing accompaniment, the music tune is gentle, jumpy, highly variable and lyrical. For different themes of music applied to different occasions, there are vocal variations in the style of tunes. In addition, Thai traditional instruments use the seventh mean rhythm, and different musical tunes in a piece of music correspond to different pitches of traditional instruments. For example, the tones of Khloi are bass Eb, F and G; Alto A, Bb, midrange:

D, Eb, F, and other tones. Some instruments can also be tuned by changing the fingering and ensemble with other instruments.

4.1.6.4 Beat rhythm

In Thai traditional music, the beat is predominantly duple. The traditional notation of one beat inside each measure divides each beat into four equal parts, consisting of specific notes or timelines, with each timeline being a quarter beat, and the note of the last timeline being the strong beat, forming a legato or extended beat with the note or timeline of the following measure. There are many musical rhythms in Thailand. There are rhythm patterns composed of different rhythms of binary notes, and there are also weak beats, extended beats, and syncopation. In the melody sound composed of rhythm, decorative sounds are used more. Decorative sounds occupy a certain duration in rhythm. Mainly through playing skills to join the music, occupying the duration of the tonic, but also enriching the melody, making the music fuller. In some traditional music, it will be set to multi-segments, and each segment has an obvious theme, and the rhythm will also change accordingly. In the first part of some music, the rhythm and speed will be relatively free, which can be adjusted appropriately according to the needs of the performer.

4.1.6.5 Performance skills

The performance or singing of Thai music has uniqueness, which is manifested in the fact that the music is performed or sung with variations in melody, technique, and breath control by different performers or singers, which also creates different styles of performance or singing. In terms of performance techniques, the same piece of music, in instrumental and vocal singing, is very rich in performance techniques. In terms of performance techniques, every instrument has a performance technique, and each technique can embellish the music and play a different role. For example, playing Sabat and Graw in melody percussion instruments such as Ranat and

Kong wong; Pi Nai, Khloi and others play Tinio and Phom skills; There are also ways for the band to play Tang peun and Bangkok tang, to fully grasp the emotion of music. Another skill is that some musical instruments in Thailand (xylophone, gong, drum) need to be fixed on the instruments with special materials, to adjust the pitch and make the instruments louder, and the sound will not be so muddy and dull, to achieve the effect of ensemble. The material is made of rice and burnt tamarind, which is quantified according to the pitch, so that the material is bonded to the two ends of copper and bamboo or the middle of the drum. The material can also be cleaned and isn't permanently attached to the instrument.

4.1.6.6 Musical Composition

Musical instrument solo can play single melody music or harmony music. The band can play in unison or in unison with different parts. There are different instruments in the band playing Thai music. For example: Kreung Sai: consisting of Saw Duang, Saw Oo, Jakay, Khloi, Drums and Ching, etc. Mahori: consisting of Khloi, Ranat, Kong Wong, Ton, Rammana and Ching, etc. Piphat: consisting of Pinai, Ranat, Kong Wong, Tapone, Glong Tad and Ching, etc, Ranat, Kong Wong, Tapone, Glong Tad and Ching. In the north, northeast, central and south of Thailand, there are bands with different instruments, some of which are fixed, and some of which are variable. For example, in the Mahori band in central Thailand, the wind instrument is Khloi, while in Piphat the wind instrument is Pi Nai or Pi Chawa, and in the Piphat band in northern Thailand the wind instrument is Pi Nae. The change of musical instruments means the change of musical colors. The Pong Lang Band of northeastern Thailand is composed of Kawlaw, a melodic percussion instrument; Kaen, Whode and Hoon, wind instruments; Pin, a plucked instrument; Chap yai, Glawng seng and Klong hang, rhythm and percussion instruments, which are more varied from those of central and northern Thailand and form a more unique musical tone colour.

The unique musical style is formed by melody, rhythm, beat, musical instruments, skills, performance methods and band composition, which makes Thai music have the homogeneity with that of Myanmar, Laos, Cambodia, and other countries, but it also has obvious characteristics.

4.2 The compare of the wind instruments between “Zhudi” (a Chinese bamboo flute) and “Khlui Piang Au (a Thai flute) in organology and musical aspects

4.2.1 The Technical Characteristics of the Chinese Bamboo Flute

The performance techniques of Chinese bamboo flute mainly involve breath control skills, finger control skills and tongue movement skills. The common breath control skills for daily use include circulation ventilation and tremolo, finger control skills include leading sound, overlapping sound, vibrato, appoggiatura, portamento, stacking sound, progressing sound, etc., while tongue movement skills include staccato (single, double, trinary, broken), fioritura, etc.

4.2.1.1 Leading sound

The leading sound marked by “ㄗ”(a sign of bamboo flute playing skill leading sound) and used as a distinction between parallel sounds (Homophonic sound). Meanwhile, also applied to enhance musical attributes and enrich melodic lines. In terms of the performing method, taking the real sound as the basis, the process to play the lower sound first and then return to the real sound. For example, the leading tone of do will be played with the effect of Ti-Do. And as the grace note, the duration of Ti is very brief. In musical composition, the use of the leading sound will be determined by the needs of the emotions of the composition and there are methodical requirements in the aspects of finger control strength and breadth control.



Figure 45 The mark of leading sound skill in the music clip of “Silent Orchid in Its Spring”

Spectrum making: Haibo Shuai



Figure 46 Performing figure of the leading sound skill in the music clip of “Silent Orchid in Its Spring.”

Spectrum making: Haibo Shuai

4.2.1.2 Overlapping sound.

The overlapping sound marked by “又” (finger dotted) and used while playing ascending sound or parallel sound. In terms of performing method, taking the real sound as the basis, the process to play the upper sound first and return to the real sound. For instance, for the overlapping sound of Do, it will be played with the effect of Re-Do. The overlapping sound skill is used as a grace note and the duration is very short, which, nevertheless, enhance the texture of the music. The overlapping sound skill is commonly applied to the wind instruments like bamboo flute, xiao, pipe, etc. In

long tone, if played, it will make the music more intangible. Meanwhile, if the musical tone of short duration is fused with the skill, it will be flexible.



Figure 47 The mark of the overlapping sound skill in the music clip of
“Feng Yang Flower Drum”.

Spectrum making: Haibo Shuai

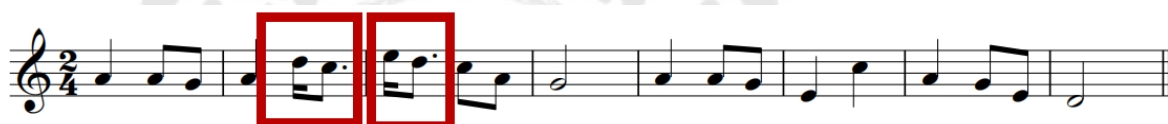


Figure 48 Performing figure of the overlapping sound skill in the music clip of
“Feng Yang Flower Drum”.

Spectrum making: Haibo Shuai

4.2.1.3 Vibrato skill

The vibrato skill is divided into two types, that is, the short vibrato and the long vibrato, which are marked by “tr” and “tr~~~~”(a sign of bamboo flute playing skill vibrato), respectively. They are used while playing descending sound. In terms of the performing method, the process of applying the real sound +upper sound+ real sound where attention should be paid to the frequency and resilience of finger movements. For example, for the vibrato skill of Do, it will be played with the effect of Do-Re-Do, in which the duration of do-re in the front is relatively short. Playing the long

vibrato of do is subject to the duration. That is to say, the vibrato is as long as the specific duration. For instance, the long vibrato of do is played as Do-Re-Do-Re-Do...



Figure 49 The mark of the vibrato skill in the music clip of “Girls Picking Tea

and Chasing Butterflies”

Spectrum making: Haibo Shuai



Figure 50 The performing figure of the vibrato skill in the music clip of “Girls Picking Tea and Chasing Butterflies.”

Spectrum making: Haibo Shuai

4.2.1.4 Appoggiatura skill

The appoggiatura skill is divided into two types, namely, the single appoggiatura and the compound appoggiatura, which are marked by “ ” and “ ” (a sign of bamboo flute playing skill appoggiatura), respectively. The performing method of single appoggiatura is to add a sound in front of the real sound. For example, for the single appoggiatura skill of Do, it can be played with various effects such as Re-Do, Ti-Do, and La-Do. Then considering the performing method of the compound appoggiatura, a group of sounds with two and above will be added before the real

sound. For the compound appoggiatura of Do, to be played with different effects like Mi-Re-Do, La-Ti-Do, and Re-Mi-Do.

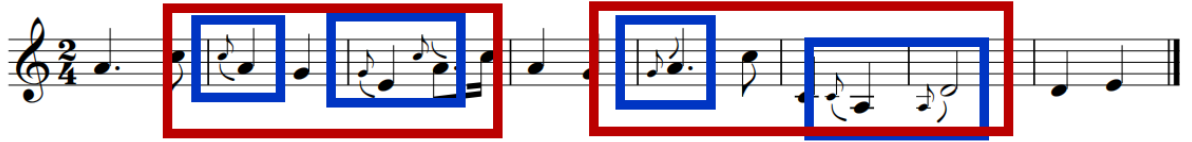


Figure 51 The mark and performing effect of the appoggiatura skill in the music clip of A New Song of the Herdsmen

Spectrum making: Haibo Shuai

4.2.1.5 Stacking sound skill

The stacking sound skill is marked by “↵” (a sign of bamboo flute playing skill stacking). Regarding its performing method, the rapid performance of two sounds, which is often used in the change from high pitch to low pitch. For instance, while using the tune sound of the finger skill for the Chinese bamboo flute as Sol to play from high-pitched Mi to low-pitched La, required that the finger pressing the hole to raise high and rapidly lower at the same time, forming a strong and violent hedging effect. In the use of the stacking sound skill, musical composition “Bangzi Five” is the representative.

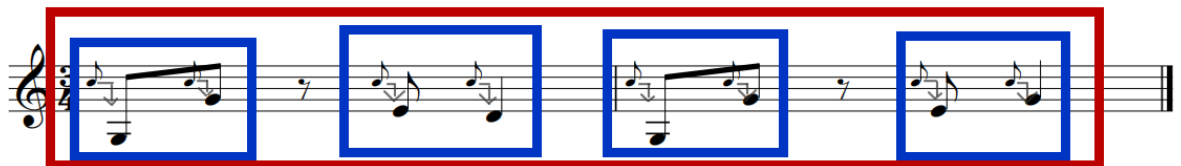


Figure 52 The mark of the adapted music stacking sound skill.

Spectrum making: Haibo Shuai

4.2.1.6 Flying finger skill

The flying finger skill is marked by “飞” (a sign of bamboo flute playing skill flying finger). Its performing method is to use a finger or several fingers, driven by the left arm or the right arm, to rub quickly on the bamboo flute, forming an acciaccatura effect by multiple sounds. The skill is not very much used in musical compositions, but in some specific melodies. For example, in “Flying Partridges”, the flying finger skill is used to depict the sound effect of partridges flying in flocks.

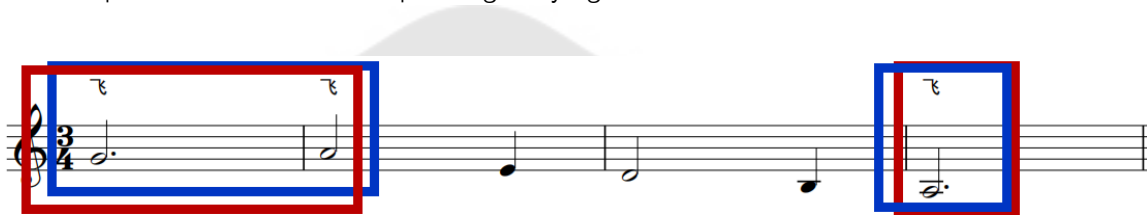


Figure 53 The mark of the flying finger skill in the music clip

Spectrum making: Haibo Shuai

4.2.1.7 Staccato skill

The staccato skill is the technique of tongue movement, which is widely applied. divided into the single staccato (T), double staccato (TK), and trinary (TTK or TKT) staccato. By innovation, there is also broken staccato and other methods available. In terms of the performing method, the tongue movements are utilized to block the breath, so that the breath produces the effect of connecting and broken. In specific performance, different staccato methods can be selected according to the requirements of compositions. For instance, while a melody contains crotchet, quaver and demiquaver at the same time, the performing method of combining the single, double and trinary staccato will be used. “I Am a Solider” is an example. If a melody is dominant by demiquaver, the double staccato is mainly used, such as “Tatar Dance Music”.

However, there are also other situations. Broken staccato is the rapid and repeated playing of double staccato.

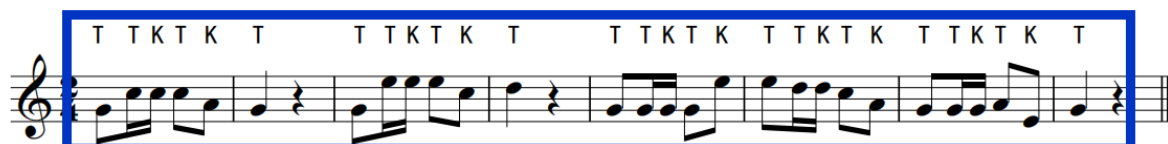


Figure 54 The mark of the staccato skill in the music clip of “I Am a Soldier.”

Spectrum making: Haibo Shuai



Figure 55 The performing figure of the staccato skill (stopped staccato) in the music clip of “I Am a Soldier.”

Spectrum making: Haibo Shuai

4.2.1.8 Fioritura skill

The fioritura skill is marked by “*” (a sign of bamboo flute playing skill fioritura), which is extensively used in the musical compositions of northern China. In terms of the performing method, the rapid and repeated tongue movements are utilized to form high frequency of vibration on the tip of the tongue, generating an acoustic effect of vibration. also often used in some onomatopoeia music, such as birdsong and neigh.

Musical compositions of Chinese bamboo flute “Birds among the Shades”, “A New Song of the Herdsmen” and others use fioritura to mimic birdsong and neigh, which are quite vivid.

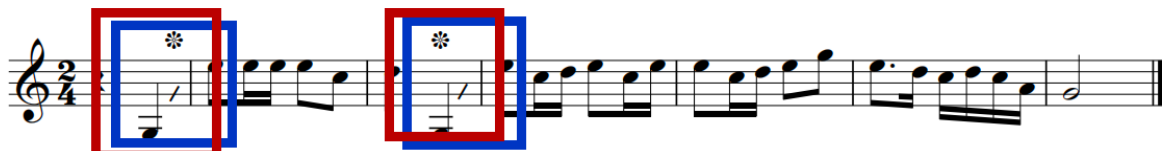


Figure 56 The performing figure of the fioritura skill in the music clip of “I Am a Soldier.”

Spectrum making: Haibo Shuai

4.2.1.9 Circulation ventilation skill

The circulation ventilation skill is marked by “∅” (a sign of bamboo flute playing skill circulation ventilation). In use, to take the external air through the nasal cavity into the chest cavity by human body force while the force of the mouth is blowing the breath of the mouth into the mouthpiece of the bamboo flute. The inspiration and expiration should be carried on at the same time. Meanwhile, in inspiration and expiration, the points of the two acting forces should be different, with one in the oral cavity and the other in the abdominal cavity, thus forming a circulation process of inspiration and expiration and realizing the continuous breadth flow. The skill is sued in some specific compositions such as some with high difficulty.



Figure 57 Performing figure of the circulation ventilation in musical etude

Spectrum making: Haibo Shuai

With the development of music, the performing techniques of the Chinese bamboo flute bring forth the new through the old while some new techniques emerge as the times require, so that Chinese Bamboo flute performance can show more performance characteristics of nature.

4.2.2 The rhythm characteristics of the Chinese bamboo flute

In the development of Chinese bamboo flute, it has changed from vertical flute to horizontal flute playing, from one hole to five holes and the current six or seven holes. Especially for the development needs of modern music, the key bamboo flute appeared to adapt to the performance of changing sounds and expand the needs of sound range. With the changes and development of Chinese bamboo flute develops, the temperament is also constantly changing, which occurs in the number of sound holes, fingering changes, chromatic performance, types of music and so on.

4.2.2.1 Number of sound holes and fingering changes.

The temperament characteristics of Chinese bamboo flute rhythm is observed from the number of sound holes. Its number of sound holes is constantly changing, which also means that the vocal range is constantly broadening, the rhythm is richer, and the emotional requirements can be more fully grasped for the performance of the music. The bone whistle unearthed in Hemudu, Yuyao, Zhejiang province, has one, two or three blow holes on the bone tube, which can be dated back to more than 7,000 years ago. Moreover, the bone flute unearthed in Jiahu, Wuyang, Henan Province, China, has five, 6,7 and 8, which can also blow sound and produce absolute or relative pitch. In the process of the changing number of bamboo flute sound holes, Liu Xi of the Tang Dynasty attached the flute film to help the sound, increasing the number of flute holes, which is a breakthrough in the development of bamboo flute, and the flute film has been used until today. As a commonly used wind instrument, the six-hole flute (according to the sound hole) has also experienced the development process of seven-

sound hole and eight-sound hole. Breakthroughs have also been made in shape, such as curved flute, pan flute and so on. For the development of bamboo flute music, the Chinese music music also further explains the important position of bamboo flute in the development process. recorded in the "Ancient Music, Mister Lv's Spring and Autumn Annals" that "In the past time, emperor Huang ordered Ling Lun to make temperament". With the sound of phoenixes and birds in nature, Ling Lun chose the symmetrical bamboo pipes in the inner cavity and the cavity wall to make the twelve kinds of temperament, which further reflects the common use of bamboo instruments and the standard of temperament at that time. So far, the Chinese bamboo flute has developed to more than two octaves.

The temperament characteristics of Chinese bamboo flute is observed from the fingering changes. The fingering of Chinese bamboo flute can change which allows it to change multiple times in temperament. The common fingering including Tong sound (the sound generated by pressing all the holes of the flute), Sol and Re, as well as Do, La and Mi, but less music. The change of Tong sound means a change in fingering. It also means that there are differences in the composition of the sound. Therefore, it will be more adaptable and more selective. For example, compositions including Tong sound as Sol include "A Song of Joy", and "Birds among the Shades". "Happy Reunion", "Bangzi Five" and "Flying Partridges" involve the Tong sound as Re. Meanwhile, the compositions with Tong sound as Mi include "Silent Orchid in Its Spring" while "Scenery of Wujiang River", "Three, Five and Seven" and "Erfan" include Tong sound as La. Some of the compositions have multiple fingering changes, such as "The Torrent of Spring in the Fishing Harbour", in which the Tong sound of the Qu flute is Re and that of Bang flute is Sol. Moreover, in "The Golden Plaque Shining with Glory", the C of the Tong sound as Sol is transferred to the F of the Tong sound as Re. Meanwhile, some compositions are played by several bamboo flutes like "Water Village Chanty"

where the Tong sound of C, G and F is Sol. The different Tong sounds, multi-tone performance, fingering conversion, etc., greatly enrich the emotion of the music, and enhance the expression of the bamboo flute. Especially, some of the musical compositions contain both the playing style of southern Qu flute and the playing techniques of northern Bang flute, which has broken through the boundary of southern school and northern school of Chinese bamboo flute and adapted to the aesthetic requirements of modern society for bamboo flute in performance.

The temperament characteristics of Chinese bamboo flute is observed from sound changes. In ancient times, Chinese bamboo flute was used to play the pentatonic and diatonic musical compositions. In its development until now, there are sound changes in performance, which is another change and promotion for Chinese bamboo flute in temperament, means to be able to play the whole tone and sound changes in its range according to the requirements of the Equal Temperaments. But there is some difficulty in playing sound changes, mainly for the grasp of the performance method and the requirements of listening of the performer. Chinese bamboo flute is a hole-pressing instrument, for which the pitch is also determined by the opening and closing of the sound hole, and the performance of the sound changes needs to close the part of the sound holes. In addition, there are some sounds can reach sound changes by using fingers to press the hole and release the hole. In the meantime, to solve the problem of intonation in the performance of sound changes, the key bamboo flute (similar to the western flute) was created. In general, the performance of sound changes improves the performance of Chinese bamboo flute and brings new changes to the temperament of Chinese bamboo flute. At the same time, it can also be used to play a lot of foreign music, and ensemble with western instruments. For example, skylark, wild bees flying and so on. For composers, the performance of sound changes of Chinese bamboo flute plays a great role in promoting Chinese folk music.

For example, Xinjiang music in China often uses Bb, C#, D#, F#, G# and other sound changes, which is the style characteristic of Xinjiang music. Playing with bamboo flute can also achieve the artistic effect of Xinjiang style.

4.2.2.2 Music type and rhythm beat.

The temperament characteristics of Chinese bamboo flute is observed from the type of music. Chinese bamboo flute has many kinds of music types. In ancient time, Chinese bamboo flute was mainly used for ensemble. It was also used as the major musical instrument of the court music. As the musical product of the development of The Times, it developed with ancient music, dance, and poetry. It was used to ensemble with other instruments to accompany or play. With the prosperity of Zaju (poetic drama set to music, flourishing in the Yuan Dynasty) in the Yuan Dynasty period, and the flourishing traditional Chinese opera in the Ming and Qing Dynasty, Chinese bamboo flute had also been further developed. Many local operas involve Chinese bamboo flute performance. However, due to the different opera performances, the temperaments of Chinese bamboo flute are also different. For example, the Wooden Clappers Opera and Qinqiang Opera in northern China, etc., are featured by loud and strong sounds. The temperament performance of bamboo flute also needs to be matched with the opera story, melody, singing, action performance, etc. Therefore, the Bang flute with high tones is mainly used and the techniques are dominant by staccato, stacking sound, fioritura, etc. Moreover, operas in southern China are presented with delicate sentiments as well as long and thin sound ray. Taking Kun Opera of Jiangsu Province as an example, called "Shuimo Tone" (which is mild, sweet, tuneful, and melodious). In the performance requirements of Chinese bamboo flute, the Qu flute is the main accompaniment instrument, and the skills are mainly the leading sound, overlapping sound, and vibrato. In modern times, in the 1950s, Chinese bamboo flute masters of the north were represented by Feng Zicun, Liu Guanyue, while the southern

representatives were Lu Chunling, Zhao Songting, etc. While bamboo flute was booming, the musical compositions also brought forth the new. There are compositions of different ethnic styles, such as the “Pamir Spring” of Xinjiang music, “A New Song of the Herdsmen” of Mongolian music, etc. There are compositions of different themes, such as “Little Soldier of the Eighth Route Army Bravely Passed Blockade” and “I Am a Soldier” of the war theme, “Yishui Song” and “Arrive at Xiangjiang River in Spring” of scenery and expression theme, “Delivering Public Grain with Horse Carts” of the theme of happy harvest and “Cang” with modern techniques. The ancient bamboo flute was mainly accompanied by opera and singing, which also formed a variety of bamboo flute compositions. For instance, the Wooden Clappers Opera and Qinqiang Opera in northern China, etc., are featured by loud and strong sounds. The temperament performance of bamboo flute also needs to be matched with the opera story, melody, singing, action performance, etc. Moreover, operas in southern China are presented with delicate sentiments as well as long and thin sound ray. The Kun Opera of Jiangsu Province is an example. In terms of rhythm beats, changes are varied, from 1 to 12, such as 1 / 8,2 / 4,3 / 8,4 / 4,6 / 8,7 / 8,12 / 8. The rhythm is also more complex, dominant by crotchet, quaver, demiquaver and dotted note.

4.2.2.3 Breath control and playing skills.

The breath control of the bamboo flute should be stable and solid. For the strength control of the sound, it can be strong, powerful, graceful, and delicate. The playing skills of bamboo flute are very rich. There are more than 20 kinds of common playing skills, which can be used according to different musical emotions. The Bang flute used in the north is in high tone, and the skills are mainly staccato, stacking sound, and fioritura while the tone of the Qu flute used in the south is soothing, mostly using the leading sound, overlapping sound, and vibrato.

4.2.3 The technical characteristics of Khlui Piang Au

The music expressive force of Khlui Piang Au is very powerful, which mainly lies in that the timbre is very mellow and full, the sound is quite transparent, and the melody is extensively elegant. This is not only due to the performance of the instrument itself, but also the ability to integrate the performance skills into the music, making the melody more expressive. The performing technique of Khlui Piang Au are diverse, mainly the comprehensive use of "breath, finger, and tongue", including Tinio, Pom, Proy, Prip, Khuang, Rabailom, Khran, Tot, etc. Each skill has its performance effect. They can make the music full of dynamic, become aesthetic, and accurate express music emotions. Common techniques and emotional expressions of Khlui Piang Au are as follows.

4.2.3.1 Tinio (The skill marking of overlapping sound)

The technique of overlapping sound is the performing skill of finger control. In specific performance, the process of playing the upper sound first and then to the real sound. The upper sound hereby refers to the neighbouring real sound, which is of higher pitch than the real sound. For example, to play the overlapping sound of Mi, we need to play Faor Sol first and then rapidly reach Mi. In performance, if we want to reach the actual sound effect, we need to pay attention to the control of the duration of the upper sound. Meanwhile, we also need to consider the requirements of the speed in using fingers and the height of the fingers controlled. The overlapping technique is widely used, which is applied mostly to muffled music. Combing with breadth, the sound effect will be more prominent.



Figure 58 The mark of the Tinio skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai

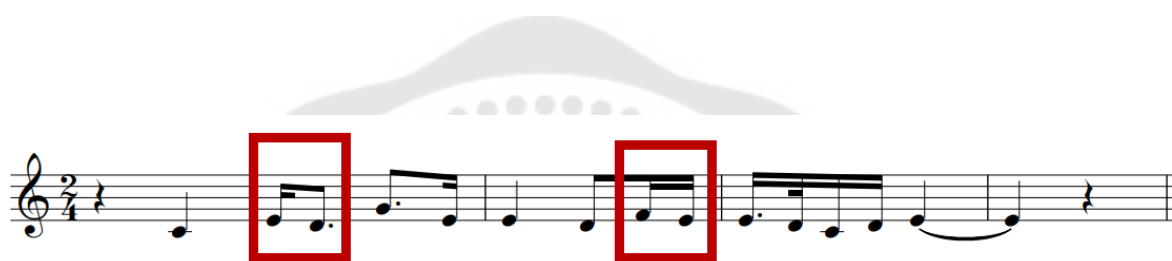


Figure 59 The performing figure of the Tinio skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai

4.2.3.2 Phom (The skill marking of vibrato sound)

The vibrato skill is the performing technique of finger control. In specific performance, the performing method that plays the real sound, and the upper sound alternately and then returns to the real sound. For instance, for the vibrato of Mi, in performance, the individual or multiple combinations of Re-Mi-Re. It hence involves the specific use of vibrato skills, which can be determined according to the duration of the music or the performance needs, the number of the real sound and the upper sound. In the performance, its sound effect is very flexible and vivid. also very jumping, and mostly used in cheerful or lyrical compositions.



Figure 60 The mark of the Phom skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai



Figure 61 The performing figure of the Phom skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai

4.2.3.3 Proy (The skill marking of progressing sound)

The progressing sound refers to the effect of the rapid performance of several sounds in a short duration by the quick progress of the ascending scale or the descending scale. For instance, in the rhythm of Do and La, as the process sound of the phrase, the progressing sound is available. And the performing method is the quick performance of Do-Re-Mi-Fa-Sol-La. In the performance of the progressing skill, required to pay attention to raising height of the finger, the performing speed, etc., so that the skill can reach the effect of string.

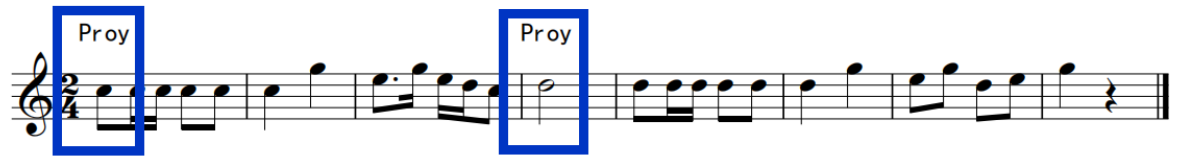


Figure 62 The mark of the Proy skill in the music clip of Chin Geb Buppha

Spectrum making: Haibo Shuai

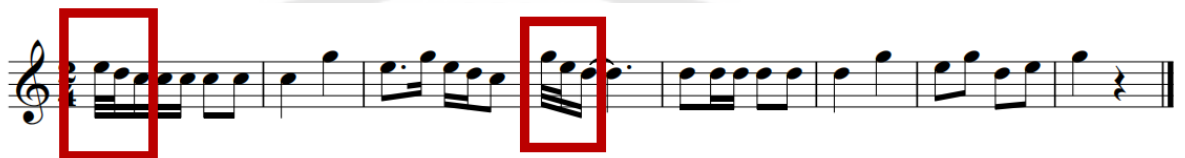


Figure 63 The performing figure of the Proy skill in the music clip of Chin Geb Buppha

Spectrum making: Haibo Shuai

4.2.3.4 Prip (The skill marking of echoing sound)

The echoing skill is the effect of reaching rich rhythms by finger control. based on monophonic sound and adds sounds above and below the monophonic sound. For example, in terms of the echoing skill, the effect is Re-Do-Ti-Do or Ti-Do-Re-Do. In Khlui's performance, the commonly used echoing skills are fixed on a few sounds, which is because the fingers are conveniently controlled, while some sounds are more difficult to control when playing the echoing skill.



Figure 64 The mark of the Prip skill in the music clip of Kamehn Pee Koew

Spectrum making: Haibo Shuai

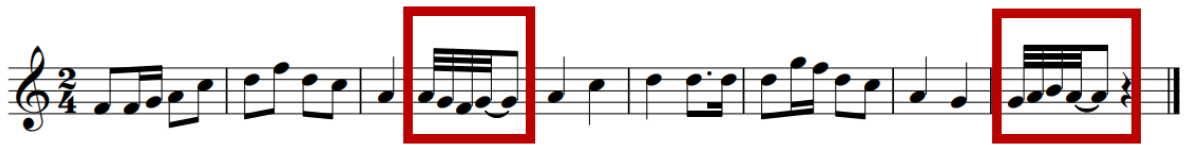


Figure 65 The performing figure of the Prip skill in the music clip of Kamehn Pee Koew

Spectrum making: Haibo Shuai

4.2.3.5 Khuang (Same sound with different fingering markings)

The transform of unisonant fingering refers to use different fingering to play the same sound. Taking the fingering of using the Tong sound of the Khlui Do as the example, the fingering of Do can be pressing all the fingers in the performance. also available to press the sound holes of the upper fingers while the other holes are free, thus forming a sound. Then alternate with different fingering to achieve the effect of performance. Similarly, in Khlui performance, Khuang is often used in Sol performance.



Figure 66 The mark of Khuang skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai



Figure 67 The performing figure of the Khuang skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai

4.2.3.6 Rabailom (Breath Cycle skill Marker)

The circulation ventilation is a performing skill of high difficulty in breath control. The performance method is to circulate the air between the body and the body through the force of the human body, to achieve the continuous flow of breath. widely used in wind instruments. In some music compositions, long-duration music and long phrases require a large flow of breath, and some need to be played through the skills of circulation ventilation. Through the circulation performance, it can well reflect the musical emotion, ad express the musical thought.

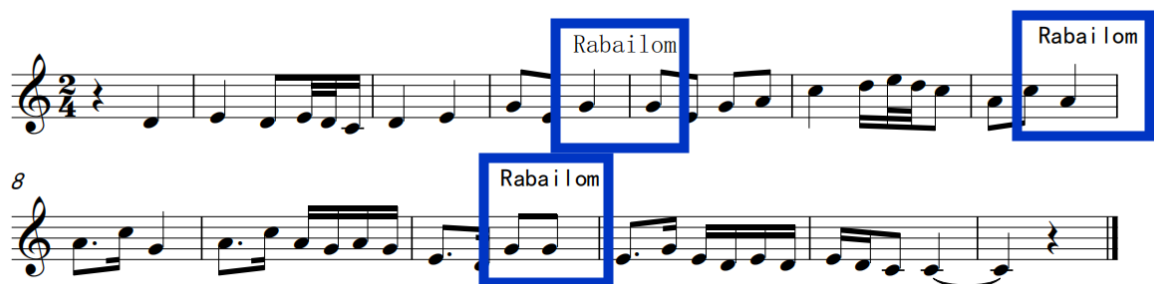


Figure 68 The mark of the Rabailom skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai

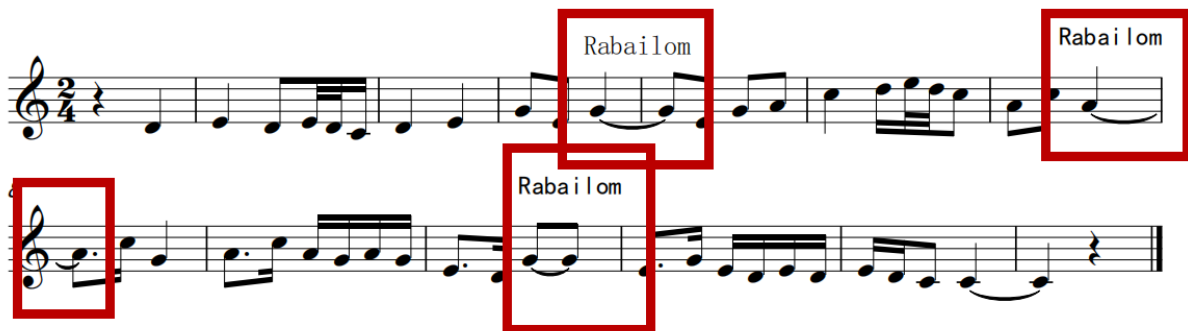


Figure 69 The performing figure of the Rabailom skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai

4.2.3.7 Khran (Aura vibration skill maker)

Trembolo is a technique in breath control. It mainly relies on the control of breath. It controls the breath to achieve the characteristics of distinct sound. The performance of the trembolo is most common in playing monophonic sound with long duration, which can be either at the beginning, middle or at the end of a phrase. At the same time, for the compositions of slow speed or lyrical melody, used extensively.



Figure 70 The mark of the Khran skill in the music clip of Khaeg Sai

Spectrum making: Haibo Shuai

Note: Trembolo makes use of the force to promote the breath so that the
breath
has a wavy effect.

4.2.3.8 Tot (Tongue movement skill marks)

Staccato is a technique of oral cavity and tongue movement. It mainly relies on the movement of the tongue, to achieve the breath connection and broken performance. strong in granular sense, and jumping, making it suitable for playing a cheerful melody, or the unisonant performance, forming a distinct performance characteristic. In the performance, the pronunciation of "T" is taken as the key point of action, so that the tongue in the mouth is effectively continuous and block the flow of breath, producing the effect of staccato.

Figure 71 The performing figure of the Tot skill in the music slip of the Kamehn Pee
Koew

Spectrum making: Haibo Shuai

Note: In the performance, the action of the tongue reaches the granular effect in articulation, partially changing the duration of the tone.

4.2.4 The rhythm characteristics of Khloi Piang Au.

As the most widely used wind instrument in Thailand, Khloi Piang Au has its own advantages and characteristics. One is the beautiful timbre. Khloi Piang Au's timbre is very mellow and transparent, which can purify the mood, direct coming to the heart. With the other instruments of the band, it also has a very strong fusion nature. Second, the vocal range is wide. Khloi Piang Au's vocal range reaches two octaves, which can meet the needs of vocal singing or music performance. Third, rich in skills. In Khloi Piang Au, there are many kinds of playing skills. In the melody performance, it can carefully express the emotion of the music. Fourth, there are various methods. Khloi Piang Au's common fingering is Do and Sol, and there are other different fingerings. According to the different fingerings, the corresponding lowest sound and the highest sound are different, the composition of the sound is also different. In terms of the advantage performance of Khloi Piang Au, the musical characteristics shown are very prominent. In performing Thai music, whether in piphat, kreung sai or mahori ensembles, each musician plays according to his own view of appropriateness without interfering other musicians' role. For this reason, there can be many possibilities in rendition of any kind of musical melody. But no matter how much these possible renditions can be, every musician must hold firmly to one principle as a guideline, a performance the principle of the "basic melody". When every musician in an ensemble is synchronized with the same basic melody, the performance will sound harmonious and well blended although each musician performs in different instrument and with differing approach of playing.

4.2.4.1 Khloi Piang Au's breath use and music color.

Khloi Piang Au is a wind-blowing instrument. In the use of breath, it can fully express the emotion of compositions, and the control and use of breath is very important. Lightness, heaviness, slowness, and urgency can add color to the

compositions. For example, soothing music needs slow blowing, low melody, fast marching, etc., which can be played more freely. In the performance of these, the soothing melody in the control of the breath is subject to a finer breath. When playing various melodies, you can better show your own excellent performance.

4.2.4.2 Khlui Piang Au's use of skills and musical emotion.

In terms of techniques, mainly the combination of Phom, Proy, Khuang, Tot, Prip, Rabailom, Tinio, Khran and other skills. For Khlui Piang Au, the very frequently used techniques are Rabailom and Khran. In the specific performance, among a lot of musical composition, we can clearly hear the effect of Khran playing. This sound effect is characterized by controlling the size of the breath flow to achieve the strong and weak sound. For Rabailom, it can be used in almost every piece of music, which more reflects the characteristics of Thai music, while revealing the style of Khlui Piang Au in the music performance.

4.2.4.3 Khlui Piang Au's rhythm, beat and musical style.

The different types of music, such as festive, lyric, sadness, or different themes, are varied in rhythm and speed. Not only reflected in the speed of the music, but also reflected in the composition of the rhythm. The musical melody of fast speed and long duration or the musical melody of slow speed and short duration, as well as the musical melody of different rhythm types and speed combinations will form a specific musical style. In the performance of traditional music Khlui Piang Au, the direction of the melody is very gentle, and the span between sound and sound is not too large. For example, in the melody of the traditional music "Duang Pen", the sound is basically changed within five degrees. But there are also some melodies with a relatively large span, forming a certain big jump relationship like the melodic phrases from the "Phya kruan".

4.2.5 Analysis of Chinese wind instruments songs.

There are many kinds of wind instruments in China, and each one has its representative music. Like bamboo flute, it includes "Travel in Gusu", "Happy Song" and "Happy Reunion". Suona's representative compositions are "Birds paying homage to the phoenix", "Carrying the Sedan Chair", "Six Words Opening Door", etc. Sun's representative compositions are "Song of Chu", "The Thivats of Autumn", "Wind Bamboo" and so on. guanzi, xiao, lusheng and other instruments also have their representative music. For each instrument, in the process of analyzing the representative music, there are the culture, value and significance of The Times of playing the instrument and music. Taking Chinese bamboo flute as an example, through the analysis of "Travel in Gusu", we can analyze the cultural concept and development of bamboo flute and the music.

4.2.5.1 Creative background and style characteristics of the representative of Chinese Bamboo flute "Travel in Gusu"

According to the performance method and melody characteristics, Chinese bamboo flute is divided into bang di (bamboo flute to accompany Bangzi opera) and Qu di (bamboo flute to accompany Kunqu opera). In ancient times, Chinese bamboo flute mainly served as an instrument of court music and opera accompaniment. As the representative of southern Chinese opera, Chinese Kunqu Opera (with Kunshan, Suzhou, Jiangsu province as the main popular place), qudi, sanxian, drum and plank are the main accompaniment instruments. With the prosperity and development of Kunqu Opera, the accompaniment instrument flute also ushered in the development opportunity. The biggest characteristic of Kunqu Opera is its strong lyricism, exquisite movements, and the clever and harmonious combination of singing and dance figure, which is called the "mother of all operas". In 2001, Kunqu Opera was listed as the "Representative Works of Human Oral and Intangible Cultural Heritage" by UNESCO. Kunqu Opera, enjoying the echo of traditional stringed and woodwind instruments, is

fresh and graceful. The performance of the music flute has also formed a unique style. The Qu di is long, with rich sound and mellow timbre. Qu flute music pays attention to one tone and three rhymes, with full, soothing, and uniform breath. The skills used are "leading sound", "overlapping sound", "vibrato", "sending sound" and so on.

"Travel in Gusu" was composed by flute player and composer Xianwei Jiang in 1962. a typical flute style music played by Sol in C or D of Tong sound. The composition background of this music is that shortly after the founding of the People's Republic of China and just after three years of natural disasters, the Chinese people, active and optimistic, had the courage to fight, and overcame all difficulties to devote themselves to national construction. In this cultural background, Mr. Xianwei Jiang, the composer of "Travel in Gusu", used the Qupai (the names of the tunes to which qu are composed) of Kunqu Opera to create and complete it. The music takes the ancient city of Suzhou as the main line to express the praise of the beautiful scenery. The music is soothing, with complete structure and beautiful melody. one of the most representative music of the music flute.

The whole music highlights the characteristics of flute flute from the aspects of style, breath, speed, and skill. With a very delicate technique, it interprets the inner world. The expression of this emotion is also the influence of opera, music, literati, and other cultures reflected by different cultures as the carrier. In terms of breath, it pays attention to the combination of the artistic conception and the romantic charm, and the breath is very demanding in the whole music. Slow blowing, fine blowing, urgent blowing and so on are the specific requirements in the use of breath. Different themes and different melodies require different breaths, which is the rich embodiment of music emotion.

The rendering of the introduction to the musical environment and the shaping of the musical temperament gradually unfolds in the rich music, at the speed from slow to fast, with the breath from weak to strong, and in the promotion from low to high, endowing the whole music with a thick color. The theme music is distinct, the melody lines are clear, and the whole music is like a shadow pleasing to the eye. Allegro music is like flowing water, driving the whole music to the climax, expressing the most comfortable mood situation. Finally, as the end gradually comes, the sound gradually weakens, bringing the mood back to the inner peace.

4.2.5.2 Music analysis of the representative composition of Chinese Bamboo flute "Travel in Gusu".

In the music structure, it consists of introduction-A-B-A1. The speed moves from "free-slow-fast-slow", and the change in speed fully shows the changes in the mood and in the travel, from expectation to surprise, from surprise to yearning, from yearning to calm. The introduction is in Sanban (A free beat with a slow pace and an irregular pace¹). The long and short notes are staggered, and the music is slow. Although the score has a fixed rhythm, the introduction of Sanban can be independently grasped according to the rhythm, beat, speed and other performance. The introduction starts from a slow speed, and then accelerates from slow to fast, and the pitch area is also constantly promoted to the high pitch area. The introduction is the first part of the music, and the keynote C is the starting sound of the starting phrase. The elastic and weak vibrato skills are added to push the volume of the sound slowly, like the sun rising slowly in the morning, with the warm wind, making people refreshed. The use of the Shanzhi technique in the sound hole of the bamboo flute makes the sound lines look ethereal like the fog of the lake. The Sol of the third phrase freely extends the rhythm with the overlapping technique to make the music more flexible. The slow rhythm and speed shape the emotional tension of music, the continuous promotion of the high part C², to

the slow-fast-slow performance technique of the semiquaver, and finally to the C¹ tonic, create a good musical atmosphere, so that people can be on the scene.

The second part of the music is the exposition, the theme melody speed is adagio, like visitors walking in Suzhou, among gardens, rockeries, and pavilions with all beautiful scenery of the ancient city of Suzhou seen. The first phrase has the same starting C² as in the second, and at the ending sound E¹-G¹ of the phrase with different tones, it makes the development of music rise up with emotion and boost the development of emotion. The flexible use of leading sound, overlapping sound and vibrato skills makes the music plumper. Throughout the first bar to the fifteenth bar of the exposition, the music is soothing and compact. The end of the fifteenth bar is C¹, which connects to the keynote C². The pure octave jump maintains the musical thought of the keynote C¹ and further sublime the emotion of the music. In the application of breath, the main breath requirements are "slow, fine and delicate". The slow bass part, and the fine pitch part makes the music fluctuate. The rhythm is slow and orderly, the theme is prominent, and the emotion is delicate.

Composer: Jiang Xianwei

Spectrum making: Haibo Shuai



Figure 72 “Travel in Gusu” melody fragment

The third part of the composition is the development section, and the speed is allegro. Taking the demiquaver as the continuous rhythm, integrating the quaver and resting notes, it makes the emotion of the music more energetic and vivid in the flowing lines. Meanwhile, it also serves as the adjustment of breathing, the buffer of music and the stretch of emotion, to promote the development of music, which is very infectious. The repetition of the music from the first to the fifth bar of the allegro part is the superposition of good mood, the fullness of emotion, the highest sublimation of emotion after the allegro, and this phrase is also the turning phrase, which makes the emotional line begin to drop slowly. The sixth and seventh bars, as the phrases after the preparation, echo the eighth and ninth bars. The same starting sound of the weak beat and the entry of the second half beat make the dialogue and emotion of the music more distinct. For the performance requirements of the whole paragraph, the speed of fingers,

the use of breath, the grasp of breath, the contrast of repeated phrases, all require careful processing.

Composer: Jiang Xianwei

Spectrum making: Haibo Shuai



Figure 73 "Travel in Gusu" melody fragment

The last part of the composition is reproduced as the theme of the exposition. The theme is maintained in the keynote of the melody, but the rhythm and melody are changed, and the speed is gradually slowed down from allegro to adagio, while the whole music segment comes to an end. Finally, the infinite extension of the end sound C¹ and the gradual weakening of the sound ends in the seemingly delicate silence. The emotional grasp of the segment not only lies in the strength of the skills, but also in the flow control of the sound, meticulous, the beauty of music into the emotional interpretation of more.

4.2.5.3 Cultural interpretation of the representative composition of Chinese Bamboo flute, "Travel in Gusu"

"Travel in Gusu" was created in the 1960s. For China, it had just experienced the baptism of war, and the founding of new China, with a thousand things wait to be done. The Chinese people of all ethnic groups, under the leadership of the Communist Party of China, devoted themselves to the construction of new China, full of energy. In 1960s ago, the three years of natural disasters (drought and flood) from 1959 to 1961 seriously affected national construction and people's lives. In the face of difficulties, the people of the whole country carried forward the spirit of hard struggle, unswervingly grasped the production, so that the production and life could be finally improved. In 1962, Mr. Jiang Xianwei composed "Travel in Gusu". from the cultural point of view analysis, IT mainly reflects the following points.

The proposal of a literary and artistic policy. In the 1950s, China put forward the "double hundred policy", namely, "let a hundred flowers bloom" on artistic issues and "let a hundred schools of thoughts contend" on academic issues. In the creation of literature and art, the works of different styles, different schools, different themes, and different techniques should exist simultaneously and develop freely. The proposal of "double hundred policies" has provided a broad space for the development of literature and art and stimulated the enthusiasm of most literary and art workers. With the support of the policy and the relaxed environment, a new situation has emerged. Kunqu Opera has ushered in a new stage of great development. At a new height, many creative talents and a large number of thoughtful and thoughtful works have come into being, such as "Huan Sha Ji", "Ming Feng Ji", "Peony Pavilion' and other works. In 1956, the drama, adapted from the legendary story "Shuang Xiong Ji", was highly praised by the party and state leaders, and changed the status of Kunqu Opera, providing favorable conditions for the creation of "Travel in Gusu" and other musical works.

The influence of traditional Chinese opera culture. With a history of more than 600 years, Kunqu Opera is an ancient Chinese opera, including southern opera and northern opera. Kunqu Opera has more than 4,000 southern opera songs, 1,000 northern opera songs, and more than 200 commonly used southern and northern opera songs. Representative Qupai include "Rouged Lips", "Cassia Twigs" and so on. In Kunqu Opera and other operas, there are also instrumental music (wind and percussion instruments) songs. Qupai of wind and percussion instruments is a rendering of certain drama scenes in traditional opera, such as festival, banquet, sending army, holding a court trial, and beginning to discuss military business in the tent, or the foil of some specific figure performance. As often, the band plays the corresponding traditional opera, and it has its own mechanism in the development. Kunqu Opera is not only popular in Jiangsu, Shanghai, and Zhejiang in the Yangtze River Delta region of China, but also in Beijing, Hunan, Taiwan and other places, and even the United States, Japan and other countries. They have Kunqu opera clubs, with a wide range and great influence. With the language as the main way of expression, in the music of traditional stringed and woodwind instruments, soft, graceful, lingering, and very lyrical. The emotional expression of opera promotes the development of the music of traditional stringed and woodwind instruments. under this background that the "Travel in Gusu" was created in the opera culture. Similarly, in this cultural background, drama, tea-picking opera, film and other literature and art began too "live" up.

The influence of the local culture. Jiangsu, Zhejiang, Shanghai, and other places in the Yangtze River Delta are the ancient states of Wu and Yue, which belong to the Wu language family and is famous for its "soft", and "glutinous" characteristics. The pronunciation of Wu language is gentle and moving, the tone is intimate and easy-going, the voice is sweet and beautiful, the speed is slow, the mutual communication is not fast or slow, neither arrogant nor impetuous, making people intoxicated. The Yangtze River

Delta is in the south of the Yangtze River, close to the Yellow Sea, with pleasant climate, rich in sericulture, bamboo, rice, etc., showing different characteristics in language, clothing, music, dance, and other cultural aspects. The softness and delicacy of the music of Jiangnan music of traditional stringed and woodwind instruments is inseparable from the local language, opera, and other culture.

4.2.6 Analysis of Thai wind instruments songs.

Thai wind instruments are most represented by Khlui, Pi Nai, Pi Chawa and Kaen, Pi Nai and Pi Chawa in Thai Piphat band and khlui play an important role in Mahori and Kreung sai band. Khlui has smooth timbre, soft melody, and rich tunes. Taking the Khlui representative music, that is, "Lao Duang Deun" as an example, the background, style, musical structure, and other aspects of Khlui are analyzed as a typical case of exploring the development of wind instruments.

4.2.6.1 Historical background of the Thai wind instrument Khlui representative piece "Lao Duang Deun".

"Lao Duang Deun", created by royal family member Prince Benbadhanabongse, has been constantly adjusted and improved by monks and musicians, and is widely known in Thailand. The Thai translation as the carriage song of Laos and the title translated as "Moon", enjoys a high reputation in Thailand. Song writer Prince Benbadhanabongse (13 September 13, 1882–November 11, 1909) was a prince of Siam and a member of the royal family. From September to December 2022, the author interviewed Pro. Dr. Somsak Ketkaenchan and Master Banchong Udommadan respectively, which said that "Lao Duang Deun" is a very classic traditional music, and the preparation of melody lines reflects the emptiness, elegance, and softness of Khlui, Kong wong, Ranat and other instruments, and each instrument inspires the potential and spirituality. Because of this, the song has sweet lyrics and smooth melody, which begins with a way of singing. Singing in Thai can better express the delicate emotion of the

song. Thai language belongs to the Zhuang and Tibetan language branch of the Zhuang and Dong language group. The Thai language system is composed of 42 consonant letters, 30 vowels and 5 tones. The intonation is gentle and gentle, and these languages have an easier phonetic advantage to express emotions for singing lyric songs. For the wind instrument Khlui, the emotional expression of Lao Duang Deun can also be realized using breath and skills.

4.2.6.2 Musical analysis of “Lao Duang Deun”, the Thai wind instrument Khlui.

From the perspective of musical structure, this music has three paragraphs, which consists of A-B-C segments, and the speed is from slow to fast. The melodic phrases are composed of five notes, namely Do, Re, Mi, Sol and La, from the lowest tone C¹ to the highest tone G². The instrument performance takes the long notes as the excessive part of the phrase, and the melodic lines rise one after another. The first paragraph consists of 18 bars, repeated twice, and eventually enters the second part in C². In terms of rhythmic composition, the sound of the second half, the appearance of the strong beat, the pitch trend of the ascending and descending melody, the maximum span interval from D¹ to C², fit the requirements of Thai song singing very much. Lined with lyrics and controlled breath, the music is very rich in charm. For the performance of khlui, to achieve the charm of singing, we must use good breath and skills. Do-Re-Mi, using the Proy technique, makes the whole track open the music in the rising gradient, like the rising moon, hanging in the sky. The extended tone C² uses Rabailom and Khuang playing skills, so that the music melody continues. The interaction of the continuous direction of the demiquaver and the long duration of the two notes, through the continuous superposition of the continuous line and demiquaver in the second beat, makes the music lines both reflect the ups and downs, while reflecting the musical emotion of singing in a kind of "beginning and turning". The

emotional push of the first period starts from the third phrase (bar 5, as the musical foreshadowing, the ending phrase D¹'s Pm technique performance, more fluid expression. The fourth phrase (bar 9-bar 11) reaches the climax of the first paragraph and forms the highest point in the music in G². In the music paragraph, the use of various skills, make the whole music fuller. The second time repeatedly in the control of breath highlights the contrast of strength and weakness, refine the music emotion.

Composer: Prince

Benbadhanabongse

Spectrum making: Haibo Shuai



Figure 74 The first period of "Lao Duang Deun."

The melody of the second period uses the singing / performance techniques of Kanon. Through the singing of the melody, the regular repeats in the end sound with regular pattern, so that the theme of the second periodn has an obvious chorus or accompaniment effect.

Composer: Prince Benbadhanabongse

Spectrum making: Haibo Shuai

The image shows a musical score for the second period of "Lao Duang Deun". It consists of four staves of music in a single system. The first staff begins with a treble clef and a key signature of one sharp (F#). It features a first ending bracketed with "1." and a second ending bracketed with "2.". The subsequent three staves continue the melodic line with various rhythmic patterns, including eighth and sixteenth notes, and rests. The entire score is enclosed in a red rectangular border.

Figure 75 Second period of "Lao Duang Deun"

The image shows a musical score for the Kanon music mode of the second period of "Lao Duang Deun". It consists of two staves of music in a single system, both with a treble clef and a 2/4 time signature. The music features a rhythmic pattern of eighth notes and rests, characteristic of a canon. The score is enclosed in a black rectangular border.

Figure 76 Kanon music mode of the second period of "Lao Duang Deun"

Spectrum making: Haibo Shuai

In this period, in addition to Kanon in chorus, ensemble or accompaniment using more music processing methods, there are large-span jumps between sounds. Although the switch of phrases, the sound effect shows the stronger ups and downs of emotional lines. The skills used in this period and the skills of the first period take Tinio,

Pom, Rabailom, etc. as the main technical performance methods. When playing long duration or extended beats, the use of Khuang skills makes the whole music simpler.

Composer: Prince

Benbadhanabongse

Spectrum making: Haibo Shuai



Figure 77 “Lao Duang Deun” melody fragment

The music in the third part of the composition is composed of small-span sounds, performed in a smooth row. Meanwhile, in terms of the speed of the music, different from the first and second periods, the overall speed will be faster. For the whole piece of music, it constantly pushes the music into the climax, so that the music emotion is released.

Composer: Prince

Benbadhanabongse

Spectrum making: Haibo Shuai

Figure 78 Third section of “Lao Duang Deun”

The whole piece of music is beautiful in melody, and gentle in speed. It expresses the deep feelings in the way of singing. Especially in the way of Thai pronunciation, the music melody and rhythm are integrated with the mode of Buddhist music chanting to make the mind quieter. And the lyrics of the song part are poetic.

From the perspective of musical style, the music of "Lao Duang Deun" is the folk melody, which is the most representative repertoire of Khlui and other instruments. From the melody analysis of music, it presents the characteristics of "linear multi-direction". The performance is that the lines of music do not change much, while the whole is relatively stable, with less complex rhythm and large span of sound. However, for the diversity of Thai music singing techniques, as well as the portamento and free tone of Thai language singing, which is more common to achieve the effect of slippery cavity, forming the distinctive characteristics of Thai songs and musical instrument performance. When Khlui plays "Lao Duang Deun", breath regulation and technique are crucial. According to the characteristics of melody, the music processing method of "telling" and "mellow" is used to promote the emotion of music, which also forms the single principle of horizontal line and vertical multi-sound texture of Thai music. The main tone of the theme has become the multi-sound theme mode, which has become the main characteristics of Thai national instruments and bands. The main reason for the problem depends on the seven average of Thai traditional music. In the change of musical harmony, different from the requirements of musical harmony and music in the twelve average rhythm. Thus, the style and characteristics of Thai music are also formed, which is also embodied in the music of "Lao Duang Deun". Therefore, the traditional Thai instruments play music, with the leading instruments as the main line and integrating the joint performance of other instruments. The sound change is not the rich harmony, but the line change of the main melody, building a "linear multi-directional" sound characteristic. For example, for the Thai Khong Wong Yai's basic form of melody,

the left and right melody changes are also repeated in the music. For the Thai wind instrument, Khlui, when the band plays the main melody, it can not only play the main melody, but also change the melody when the extended shoot or other instruments play the main melody, and the changing format is also varied. Therefore, different bands, different players, have different musical effects, and this personalized playing style is very common in Thailand.

4.2.6.3 Cultural interpretation of “Lao Duang Deun” (a Thai wind music khlui)

"Lao Duang Deun" is a singing music, played with Khlui and other musical instruments. As a cultural phenomenon, it has witnessed the development process of musical instruments. From the control of breath, and technical performance, it shows the performance of the instrument, and the interpretation of music emotion, shaping the musical style, which is also the development process of Thai musical form. Language art of wind instruments. For Chinese and Thai wind instruments, they have experienced the development process of derivatives to complex and then to single integration. In fact, derivatives are created attached to people's social activities, through labor, listening, vision and other ways, found and evolved to form a part of social activities. With the development of affairs to a certain stage, it develops into a process of relative independence and joint promotion with other cultural bodies. With the development and the continuous maturity of the performance mode, it has formed its own unique system. In the development of wind instruments, ancient times were used for opera, singing accompaniment or band ensemble, and there was also the development process of solo performance, but the development of wind instruments is still effective in the stage in the form of ensemble. In the 21st century, with solo roles on the stage of history and shine, can also better show the performance of the instrument. For the relationship between the gestation and development of vocal music, instrumental music, dance or other artistic

embryos, start with non-verbal performance art, and lead by body movements in practical dance or ritual, such as witchcraft, hunting, labor, etc. In this process, the instrument forms a single to polyphonic acoustic chamber, which integrates with sound and shape. In the beginnings of art, Grosser (1894) said: "The first human instrument was undoubtedly the voice." Poetry, vocal music, dance, instrumental music and other promote each other, is the decisive factor of the continuous development of wind instruments in different environmental changes and aesthetic needs. Throughout the development of wind instruments, the accompaniment for vocal music, dance and opera has become an important link in the development process of wind instruments, which has lasted for a long time. In the 13th century, Thai wind instruments played an important role as a part of court music. Wind instruments of this period were mainly used for singing, dancing, accompaniment instruments of theatre or ensemble instruments of traditional bands. Therefore, the recording way of oral instruction has lasted for a long time, and even today, this way of learning and inheritance still exists in Thailand. For wind instruments, wind music with singing, dance and drama accompaniment occupies a very large proportion. At the same time, Thai ethnic folk music also presents a diversity. The development of folk music in Thai, Karen and Lisu, the prosperity of shadow play, puppet, and the integration of music and instruments in neighboring countries have greatly influenced the development of wind instruments. In modern times, as a social demand and cultural development requirement, wind instruments have changed from accompaniment, ensemble and solo roles, which is a common cultural phenomenon in the development of wind instruments in China and Thailand. This also shows that when the culture develops to a certain extent, the aesthetic demand, music rhythm system and integrated development enter into the double process of upgrading and circulation. For Chinese and Thai traditional instruments, facing the same problem. That is, how to innovate and develop in the development of

The Times, not only retain the traditional style of national instruments, but also be on the same track with world music, use the world stage to stimulate the performance of wind instruments, expand the development space of wind instruments, and show the characteristics of wind instruments to the outside world. In recent years, many Chinese performers and composers have spoken with the world, and UN foreign composers have jointly created works of Chinese national Musical Instruments. For example, in "Chinese Yiyun Works of Five Western Composers in the 21st Century" (Gao, 2022) talking about, "red, Orange, Yellow, Blue and White" composed by American composer Joel Hoffman for eight bamboo flute, xiao, pipa, guzheng, erhu, viola and vibraphone; Wildfire by German composer Fredrik Schwenk for bamboo flute, pipa, guzheng and percussion music; " Guohua" by Russian composer Paiberdin, Through differential sound technology and equipment, The flute, clarinet, violin and other Western instruments to simulate bamboo flute, pipa, erhu, etc., Conduct the "timbre grafting", It plays a positive role in the development of bamboo flute and other wind instruments. This shows not only the excellent traditional Chinese culture, but also through the western composition techniques, to explore the performance of bamboo flute and other ethnic Musical Instruments, to show the elegant demeanor of bamboo flute and other ethnic Musical Instruments. For the Chinese and Thai language art of wind instruments, Thailand is also trying and improving musical instruments. For example, Khlui is made based on both the traditional Thai rhythm and the twelve average laws. It can play together either with other traditional Thai instruments or with Western instruments. This way of inheritance and development also conforms to the needs of the development of The Times.

The explicit audio and video aspects of Buddhist music. The development of wind instruments in Thailand is greatly influenced by Buddhist music. The development of Thai Buddhism has experienced different processes, including Hindu

Buddhism, Shangshibu Buddhism, Mahayana Buddhism, Theravada Buddhism, etc. After integration and development, the Theravada Buddhism system with Thai cultural characteristics is finally formed. As a traditional Buddhism in Thailand, Theravada Buddhism is divided into great sect and French sect, and the two schools are different in precepts, ritual dress and so on. For example, in music, the Dharma sect does not allow the use of singing and dancing in Buddhist rituals, while the great sect actively advocates singing and dancing in Buddhist ceremonies. In the development of the two factions, the great sect occupied an absolute proportion in the scale of monks and believers, which boosted the development of music to a certain extent. At the same time, the influence of Buddhism on wind instruments is also reflected in the "self-tolerance" proposition advocated, and the emotional influence on the believers and the society, which also plays a decisive role in the music of wind instruments. Therefore, Thai traditional music is characterized by flat melody, steady rhythm and delicate lining of language. This also has an impact on the breath control of the wind instrument, the use of techniques, and the emotional grasp of the musical melody. Songs, dances, plays and other music are all influenced by Buddhism. Under the influence of Buddhist culture, the wind instrument, with accompaniment and ensemble, has formed a musical style with Buddhist music elements and full of national characteristics.

4.2.7 Comparison of common characteristics and musical differences between Chinese and Thai music

The musical characteristics of traditional Chinese and Thai instrumental music are seen from the representative music of Chinese wind instrument bamboo flute "Travel in Gusu" and "Lao Duang Deun", the representative music of Thai wind instrument. They are mainly used from the rhythm, emotion, atmosphere and skill of wind instruments, and there are similarities and differences.

4.2.7.1 Music theme

The two pieces, "Travel in Gusu" and "Lao Duang Deun" are not only representative works of Chinese and Thai wind instruments bamboo flute and Khlui, but also typical representatives of lyric music. The former one describes the tour in Gusu (in ancient times, it was called Gusu), which is a bamboo flute work taking advantage of a scene to express one's emotion. "Lao Duang Deun" describes the beauty of the moon, which is a lyric vocal music works. The musical elements of the former are taken from Kunqu Opera, which belongs to the representative work of the Southern School of Chinese bamboo flute, with exquisite music and sincere emotion. "Lao Duang Deun" has a long history, with five voices as the composition of the sound and simpleness music.

4.2.7.2 Music style

From the perspective of music tune, the main tone of "Travel in Gusu" is C. When played with Chinese bamboo flute, the drum sound is G, the music ranges from G-to-G², and the music range span is two octaves, forming this professional bamboo flute music. "Lao Duang Deun"'s main tone is C. While playing with Thai Khlui, the Tong sound is C¹. The music ranges from C¹ to G², and the range span is smaller than "Travel in Gusu", which mainly lines in that "Lao Duang Deun" is a very widely sung folk song, and wide range will bring the singer with higher difficulty coefficient in singing, naturally forming a certain resistance in spreading. Besides, describing the "moon" from the lyrical perspective, the music is softer. But G² appears less in the melody, with 1-2 times in both pieces. Therefore, the difficulty coefficient in singing and playing is also reduced.

From the composition of the two pieces, both "Travel in Gusu" and "Lao Duang Deun" take with C as the keynote. Based on the traditional pentatonic performance, the heptonal performance integrates Fa and Ti. Compared with the pentatonic performance, the music style of the pentatonic music is more volatile,

specifically compared to the two pieces of music. From the perspective of musical structure, the music structure of "Travel in Gusu" is the introduction + A + B + A1, while the music structure of Lao Duang Deun is A + B + C, with the melody sounds C, D, E, G, A as the main basic sounds. In the melody of "Travel in Gusu", the melody of Fa and Ti does not appear frequently. Fa appears at a small number of long duration or dotted quavers in the introduction and Allegro parts, but Ti appears at most short duration such as demiquaver and demisemiquaver in the main melody of the whole piece. The use of Fa and Ti will make the music more diverse, and the emotional ups and downs of the music will be greater. Compared with the melody of "Lao Duang Deun", the music structure is composed of three sections, which has a close connection between each other. For example, in the transition of each period, in terms of the end of the last phrase or the connection with the opening of the phrase in the latter period, the E²-D²-C²-E² melody conversion appears between the first period and the second period, enabling E² and C² to enter the second period in the direction of the melody line. Similarly, the end of the second period and the beginning of the third period are C². This technique of musical processing is also reflected in "Travel in Gusu". The introduction starts with C¹ and ends also in C¹. The exposition takes C² as the starting sound, and C with different pitch is the continuation of the theme and the stimulation of emotions.

From the point of view of rhythm beat, the beat of the two pieces of music is 2 / 4 beats, and the rhythm composition is mainly crotchet and quaver, etc. Complex or changeable rhythm patterns and syncopated notes exist less. As a phrase, this is mainly related to the theme of the musical compositions, which are all lyrical. In terms of musical structure, basic sound composition, rhythm and beat, the melody trend is mainly gentle and small amplitude. There are a small number of large-span sounds, which is related to the emotional processing of the music. Large-span sounds will also have greater emotional fluctuations. The speed is the simple changes of adagio, panel

or allegro, in line with the psychological demands and emotional requirements of the audience.

To sum up, the vocal range and the melody of the two instruments and the fingering are both the same and different. The biggest difference is that China and Thailand have different standards in the use of wind instruments, so the color and charm of music are also different.

4.2.7.3 Music Playing Method

A comparative analysis conducted from the control of breath and the comprehensive use of performance skills.

Comparative analysis of breath control. Chinese bamboo flute "Travel in Gusu " and Thai Khlui "Lao Duang Deun" have relatively large differences in breath control, which are mainly reflected in the airflow adaptability of the instrument itself and the overall breath control requirements of the music. Chinese bamboo flute's strength of the air flow can be adjusted by the volume of the sound or the strength of the sound, and the strength or the sound volume formed by the breath control methods such as slow blowing, rapid blowing, and overblowing changes significantly. However, when playing Thai Khlui, the strength of the airflow does not change significantly to the sound volume and strength, but the phenomenon is easy to jump because of the strength of the airflow. This is mainly because Chinese bamboo flute and Thai Khlui are both vocal instruments. Although the articulation principle is the same, the actual effect of the articulation is different. Chinese bamboo flute and Thai Khlui are different in the structure, the position and diameter of the mouthpiece, and the vibration of the instrument, which will directly lead to the different control of the airflow of the instrument. Chinese bamboo flute's cut surface of the mouthpiece is relatively large, the airflow obstruction force in the process of movement is small, the position of the airflow hitting the edge is very close, and the formation of the sound strength and the airflow flow can

be flexibly controlled, which can effectively control the strength of the sound. Thai Khlui's mouthpiece is relatively small, the air flow into the pipe is small, and the distance between the position of the edge vibration and the mouthpiece is relatively long. In the process of small diameter and long distance, the size and strength of the airflow control are limited, which also forms the characteristics of Thai Khlui in delicate and soft sound color. Thai Khlui, on the other hand, as the strength of the airflow control can't affect the size of the sound, in the expressive force of the overall music emotion, more soothing. Instead, when Thai Khlui adjusts the strength of the sound through the size and strength of the airflow, very easy to sound as jumping. For example, when playing E^2 , with the weakening of the air flow strength and the size of the air flow, E^1 is relatively easy to appear. This point in the Chinese bamboo flute can be effectively avoided. It is precisely because of this situation that the strength of the sound of the melody does not change significantly when playing, which means that it is difficult to meet the emotional requirements of the music by controlling the strength of the sound in the emotional processing of each paragraph and sentence. However, Chinese bamboo flute has a very strong plasticity in this aspect. From phrases to music, the sound can be strengthened and weakened through the strength control of the air flow. This processing method makes the emotion of the music can be further expressed through breath control. The strong and weak processing of the introduction, presentation, unfolding and the end part is obvious, which requires the requirements of breath control in the aspects of describing the environment, depicting the artistic conception, and shaping the situation.

Comparative analysis of performing skills. In the analysis process of the two pieces of "Travel in Gusu" and "Lao Duang Deun", the use of playing skills is analyzed. From the comparison of the skills of the two-music analysis, mainly through the skills to strengthen the charm of music. Chinese bamboo flute and Thai Khlui, in the

use of skills, the more prominent place is the use of bamboo flute skills according to the music theme, music style, more fixed performance form and system, with added skills. For example, the performing skills of Chinese bamboo flute (Qu di) are mainly leading tone, overlapping sound and vibrato, while the skills of Bang flute are mainly staccato, fioritura and stacking sound. In different musical styles, the use of skills is also different. In the music, the use of skills is stricter, which can't be added at will. For Chinese bamboo flute, in the performance of the music, because of the different regional cultures, the music styles are different, and the use of skills are also different. Zhao (1985) representative of Chinese bamboo flute's southern school, said in his book "Flute Arts Spring and Autumn": "Northern songs are good at staccato, portamento, stacking sound, and fioritura while southern songs are adept in vibrato, overlapping sound, giving sound and leading sound" (Zhao, 1985. p.10). For the use of skills of Chinese bamboo flute, due to different music styles, the specific use of skills is also different, which should be able to express the emotion of the music. Meanwhile, to the expression of the performance of some emotions, skills can't be used at will, which will lead to failure to reach or wrong expression of music emotion. Therefore, Chinese bamboo flute has relatively strict requirements in the use of skills. With the integration of creative music, and standardizing the use of Chinese techniques, modern creative techniques are more flexible. Because the original music creation is built based on opera music, folk music, music styles are different, requiring different skills. Contemporary creation will integrate more musical elements, so the use of skills will be more flexible, but influenced by the size of Chinese bamboo flute, pitch level, the strength of the use of breath control, the use of skills is also closely related to the traditional performance skills. From the perspective of Chinese bamboo flute's skills application, Thai Khlui's skills are both similar and different. Simillies in the use of similar techniques, such as vibrato, overlapping sound and circulation ventilation. There are also differences in

music culture, and the use of skills also produces different effects. Popular in Thai Khlui in central Thailand, music culture is influenced by court music and opera music, so the music style is simple, honest, and expressive, which puts forward specific requirements for Thai Khlui skill performance. Meanwhile, in the performing style of Musical Instruments, influenced by language and culture, the articulation and charm of Thai language are graceful, soft, and delicate, which makes Thai music very soft, because music comes from life, and the communication of discourse forms a part of life. In "The Range and Diversity of Vocalic Systems in Asian Languages" said, the closest relatives to the Austronesian language family are a group of some 50 languages, the largest and most well-know of which is the Thai family of languages, which extend from Guizhou Province in China to halfway down the Malay Peninsula. As described by Edmondson and Solnit, there are remnants of Shan settlers from Myanmar still found in Assam and surrounding areas of India. In the east, song Zhuang speakers are found in Guangdong province in Southern China, but the majority of speakers are the Thai of Thailand, the Zhuang of Guizhou and Yunnan Provinces in China, the Shan of Myanmar, the Bouyei of Guizhou Provinces in China, Vietnam and Laos, the Lao and Thai groups of Laos, the Tay and Nung groups of northern Vietnam, the Thai Dam and Thai Don (the Black and White Thai) of northwestern Vietnam and China, and the Khamti and others living in Myanmar, Assam, and nearby areas on India.

Therefore, Thai Khlui's performing skills are very flexible. It can freely add the skills to play according to the playing habits or the emotional thinking of the music. This makes a variety of different versions in the performance and inheritance of traditional music.

4.3 The Chinese and Thai socio - cultural interaction contexts through the dimension of the wind instrument song

4.3.1 Comparative Analysis of Technique and Rhythm of Chinese bamboo flute and Khlui Piang Au

All kinds of wind-blowing instruments in the world share high the similarity in the use of skills and breath, and the formation of different styles of wind music also comes from the breath, skills, rhythm, beat and other special places. Therefore, from the perspective of music form, different countries, different nationalities, music rhythm, music style, rhythm and so on, they are different, so the musical effect is also different. Chinese bamboo flute's timbre is very special and very recognizable. mainly used as a horizontally blowing instrument supported by flute film, with mellow and high timbre, various playing skills, and rich performance of music. Thai Khlui Piang Au's timbre is thick and transparent. I the theme of Khuang, Rabailom, adding Prip and other skills, traditional Qupai can more reflect the national style in performing. Both Chinese bamboo flute and Thai Khlui Piang Au are part of the world's wind instruments.

4.3.1.1 Comparison of the shape and appearance of musical instruments

Instrument size. The size of Chinese bamboo flute and Thai Khlui is determined according to the pitch. The higher the pitch, the shorter the pipe body, and the smaller the inner diameter. Conversely, the lower the pitch, the longer the pipe body, the thicker the inner diameter. For example: Chinese bamboo flute's bass Bb and high pitch Bb have large size difference. For Thai Khlui, the size and tone relationship are the same. Chinese bamboo flute's common tones are C, D, E, F and G, and the size is 49cm-68cm. Thai Khlui tones have high pitch D, Eb, F; medium C, Bb, A; bass Eb, F, G, size is 36cm-60cm, common pitch is medium C, Bb, A.

Musical instrument sound hole. Chinese bamboo flute has 6 sound holes. Those with 1 blowing hole and 1 flute film hole are the most widely used. There are also

7-hole bamboo flute, which is common in the bass flute. The sound, flute film and blowing holes are all on the bamboo flute. Thai Khlui has 8 sound holes. Those with 1 blowing hole and 1 incentive hole is the most widely used. 7 holes are on the top, and 1 hole at the body back, while the incentive hole is ether on the top or at the back.

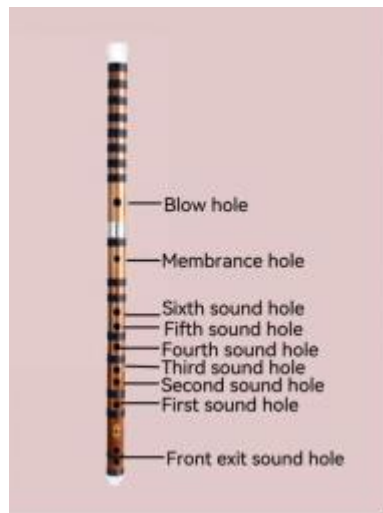


Figure 79 Chinese Bamboo flute Hole Bitmap

Source: Haibo Shuai, 2022

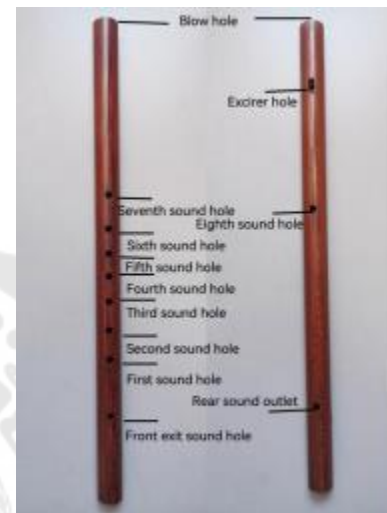


Figure 80 Thai Khlui Hole Bitmap

Source: Haibo Shuai, 2022

Holding posture. Chinese bamboo flute is horizontal blowing while Thai Khlui is vertical blowing, with the left and right hands alternately holding the flute. according to the sound hole corresponding to the finger to press the hole. The contact point of the mouthpiece is different from the performer. The bamboo flute is the lip flat state, with air gap, blowing to the mouthpiece, and vibrating the edge of the bamboo flute. Thai Khlui is the lip half package state, with air gap, blowing while surrounding the mouthpiece, vibrating the edge of the incentive body to generate sounds.



Figure 81 Performing Position on the Thai Khlui Figure 82 Performing Position on the Chinese bamboo flute

Source: Linxiang Xi, 2022

Source: Linxiang Xi, 2022

4.3.1.2 Comparison of the shape and appearance of musical instruments

Comparison of performing skills. For Chinese bamboo flute and Thai Khlui Piang Au's performance, it mainly includes breath control skills, fingering skills, tongue movement skills and other aspects. The skill categories of Chinese bamboo flute and Thai Khlui playing skills are basically consistent, but Chinese bamboo flute plays more skills than Thai Khlui. For the frequency of skill use, some of the techniques are used in Chinese bamboo flute, but not in Thai Khlui performance. For example, Chinese bamboo flute playing skills, leading skills, stacking skills, flying finger skills and so on. There are also some techniques often used on Thai Khlui, but not used used on Chinese bamboo flute. For example, the homchange method (Khuang) is often used in Thai Khlui, but not in Chinese bamboo flute. Cyclic ventilation (Rabailom) is frequently used in Thai Khlui performance, and cyclic ventilation is used in any music, but Chinese bamboo flute uses less cyclic ventilation. Trembolo (Khran) is also often used in Thai Khlui, and in Chinese bamboo flute, but forms a certain difference in the performance methods of Chinese bamboo flute and Thai Khlui. Thai Khlui. The Trembolo (Khran) sound band is more

obvious, and the strong and weak sound is more prominent. Chinese bamboo flute's Tremolo (~~~~~) is relatively soft, with more continuity.

Table 1 The Contrast of the Skills of Chinese bamboo flute and Thai Khlui

Skill name / Chinese/Thai	Used situation of Chinese bamboo flute skills	Used situation of Thai Khlui	Remarks
叠音 (Tinio)	√	√	
颤音 (Phom)	√	√	
吐音 (Tot)	√	√	
波音 (Prip)	√	√	
历音 (Proy)	√	√	
循环换气 (Rabailom)	√	√	
同音换指 (Khuang)	×	√	
气震音 (Khran)	√	√	
倚音 (appoggiatura)	√	√	
滑音 (Portamento)	√	√	
赠音 (Giving sound)	√	√	
花舌 (Fioritura)	√	√	
打音 (Leading sound)	√	×	
飞指 (Flying finger)	√	×	
碎吐 (Broken staccato)	√	×	
刹音 (Stacking sound)	√	×	

Source: Haibo Shuai, 2022

In general, the use of skills is to better achieve musical emotion and show the performance of the instrument. As an ensemble, ensemble and accompaniment instrument, role playing has different themes and levels, and the use of skills is different. For example, in the court music, the music is calm, atmospheric, and solemn, and the music lines are thick, slow and slow. Feast, festival music is cheerful, jumping, fast, slow, and orderly, scattered ups and downs. In addition, in opera music, according to the plot development of the story, the theme department, the development department, the end and so on will be different, which is also in the specific performance, according to the music theme and requirements of the flexible use of skills.

4.3.1.3 Breath use comparison

In terms of the use of breath, Chinese bamboo flute is more stable than Thai Khlui, the performance is more stable, and the strength of breath control will be more obvious. In many music, the expression of breath is stronger. This is mainly due to the different construction of exciators in the sound principle. The same edge vibration, but the actuator of Chinese bamboo flute lies in the edge of the mouthpiece, and the actuator of Thai Khlui lies in the air mouth below the mouthpiece, due to the distance of the breath, resulting in the weakening of strength control. Therefore, Chinese bamboo flute has a lot of music styles, which can play strong music as well as soft and elegant music. For Thai Khlui, the regulation of breath strength is due by the structure of the instrument, which also reflects the delicate and soft Thai music. Therefore, Thai Khlui is also better adapted to the style and aesthetic requirements of Thai music. For both Chinese bamboo flute and Thai Khlui, there are also different pieces of music requiring breath. Fierce, high, slow, tactful, low, etc., not only requires the player's basic skills to be solid, but also requires in the method of scientific treatment. The control method of breath needs Dantian as a fulcrum. In the performance of inspiration, blowing, breaking, stealing and other requirements, in the adjustment of timbre and pitch, we must pay

attention to the transverse section angle of airport and flute body. Should do just with strong, soft in the fine, full of breath, thick sound.

4.3.1.4 Comparison of band roles

Chinese bamboo flute And Thai Khlui have a long history of playing with the band. As the main instrument of the band, they also take the part of rhythm percussion instruments, building a complete band organization system.

Different types of performance have different configurations of instruments, which fully shows the emotion of music by integrating the timbre of the instrument and stimulating the performance of the instrument through playing to achieve the effect of music. In the Chinese and Thai bands, there are also different types of bands, mainly depending on the fusion of timbre. For example, the silk and bamboo music in the south of China has gradually evolved into a form of chamber music band composed of flute, sheng, xiao, erhu, pipa, dulcimer, three strings, plate drum and other Musical Instruments, with rich colors and full sound effects. The number of people can be more or less, at least two or three people, as many as ten or twenty people. Bamboo flute, an important instrument in the band, has clear treble, melodious tenor, deep bass, and strong skill. Through breath control and skill performance, it can play the role of embellishment in the band, in the leading position of the band. In the specific performance, the performance of the bamboo flute sound should be "strong but not dry, weak but not empty", and the use of skills should be "simple but not complex, many but not flower". For other instruments, bamboo flute not only plays a positive role as an instrument played by the main melody, but also as an undertaking or harmonious part of other instruments. For example, the combination of xiao and di. In terms of timbre, xiao's voice is relatively clear in the high pitch part, but milder than di. As the tenor character, the middle bass is lower, often complementary to the bamboo flute. For silk string instruments such as Erhu, Pipa and Sanxian, they are not only different from timbre, but

also different instruments in the band. For example, the playing instrument of the main melody can be adjusted according to the player's experience and ability. Erhu's timbre is soft and elegant, which sets off the height and brightness of the bamboo flute. Erhu's kneading strings and sliding skills can also play a role of "harmony" in the sound of rough instruments.

In the ensemble of the representative music "Happy Song", the role playing between instruments can be analyzed through music examples.

Figure 83 Ensemble score of "Happy Song"

Spectrum making: Haibo Shuai

Through the score, we can clearly see that the tone of the box marked part is basically the same, and the melody direction is mainly played, and the melody of Pipa and Erhu is expanded, which can be set as the main melody. While the rhythmic type of the circular mark changes more, but the tonic in the melody remains the same, and the rhythm and melody are changed on Sol, Do, La and other sounds, which is also the melodic expansion in the instrumental ensemble.

Compared with the melodies of another part of the “Happy Song”, the melody lines of Chinese bamboo flute and Shen are the same and compared with those of pipa, sanxian and yangqin. The same part is that the melody of each instrument has a clear thread, such as Re, Sol, and Do in the first section. In addition, the structure of the theme is changed. In the first section and the third beat, the bamboo flute and sheng are the composition of Do and Mi, which are expanded on pipa and sanxian. pipa is composed of Do, Re, Mi and Sol; four-six notes composed of Do and Mi, so that the texture of the theme is fuller. In the musical composition, the octave performance of the dulcimer and the performance of different sound intervals of the middle constitute the spatial dimension of the high and low parts.

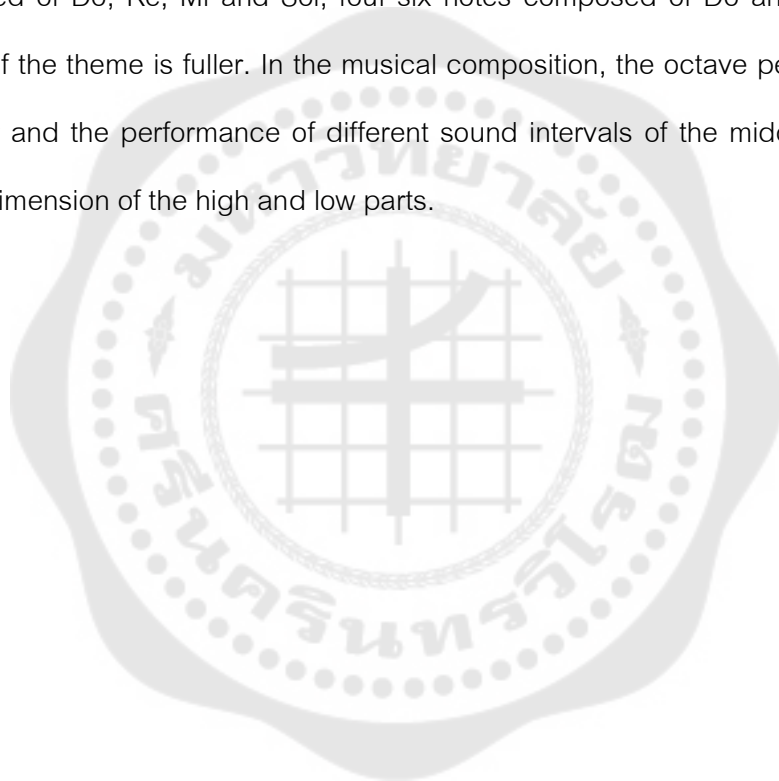


Figure 84 Ensemble score of “Happy Song”

Spectrum making: Haibo Shuai

In addition, in the Chinese bamboo flute and Sheng theme performance in the legend, the G^2 of the first and second beat Chinese bamboo flute in the first bar and the G^1 of shen constitute a pure octave, enhancing the sound effect. The third and fourth beat in the sound composition is basically the same. The melody in the first row of the second section is the same, and the second beat is the upward trend of the third tone; the third bar also follows the pattern of simultaneous and rhythmic performance.

Similarly, Thai Khlui is basically consistent with Chinese bamboo flute's role-playing in the band. There are many kinds of traditional instruments in Thailand, and Thai Khlui plays important roles in Kuronsay (Kreung Sai), Maholi (Mahori) and other bands. Compared with the composition of the band, Kurangsai Band (Kreung Sai) is like Chinese Jiangnan Silk and Bamboo, with wind instruments, string instruments and rhythm percussion instruments. In the space composition of The Band (Kreung Sai),

Khloi, as the instrument played by the main melody, matches the string instruments Saw Duang, Saw Oo, and Jakay to form the melody playing part. Rammana and Ching, as rhythmic percussion instruments, have become the control part of speed, rhythm and musical atmosphere. From the horizontal composition paradigm of the band, there are different pitch relations, such as treble instruments, medium instruments, and bass instruments. From a vertical perspective, very important for the "undertaking, circulation and integration" of the range of music. Compared with Thai Mahori, for traditional bands in Jiangnan, Guangdong music or other places, except for the common components of wind and string instruments, the melodic percussion instruments of Mahori are relatively rare among traditional Chinese bands.

In the example of the band melody of Timse Edrriions's ThaiLand Seven Days in the Kingdom, we can also clearly see the direction of the melody lines and spatial structure.

Composer: Timse Edrriions

Spectrum making: Haibo

Shuai

The image shows a musical score for an ensemble. The score is written in 2/4 time and consists of seven staves. The instruments are labeled on the left: Khloi, Ranat Ek, Kong Wong Yai, Kong Wong Lek, Rannt Thume, Thume Lek, and Ching. The Khloi staff is the top staff and contains the main melody. The other staves contain accompaniment for the respective instruments. The score is written in a standard musical notation with treble clefs for the upper instruments and a bass clef for the Ching instrument.

Figure 85 Ensemble score of "ThaiLand Seven Days in the Kingdom"

In the score of this ensemble, both the wind instrument Khlui nor the melody percussion instruments Kongwong and Rannat, play the main melody, and the difference lies in the combination of the sound interval in the march. In the two-tone interval relationship, the seven average laws of Thailand are all pure music performance. For sound effects, the relationship between sound and sound is relatively clear, which not only expands the space of music, but also enhances the effect of sound. In the final section, the melodies of Khlui, Rannat Ek, Kongwong Lek, Kongwong Yai, Rannat Thume and Thume Lek are played in reverse to construct the high and low positions of different tone areas. In the last beat, the same sounds in different tone areas are played together. The rhythm and specific composition are partially changed, but the lines of the main melody are clear.

In playing, Chinese bamboo flute and Thai Khlui have something in common, which is the flexible use of skills when playing the melody. For the use of skills, for the music, although there are certain requirements, but there are also different subtle processing methods, reflecting the impromptu effect of music performance. For example, the player will timely add the melody according to the melody. This melody is the melody based on the main tone. When other instruments play a long time, other instruments will fill it to form a simple and complex, fast and scattered musical effect. This fully reflects the player's understanding of music, the mastery of the ability of playing, playing habits, playing methods and other issues, but also reflects the Chinese bamboo flute and Thai Khlui, as the connecting part of the band and other instruments, are able to polish the melody with skills, and the role of other instruments playing.

4.3.2 Thai and Chinese social and cultural interactions through the dimension of the wind instrument song

China and Thailand belong to both Asian countries, with close languages, clothing, customs, food, architecture and other regions and eastern China, southern

China and northern Thailand have frequent population flow and many immigrants, forming cultural integration to some extent. As a regional cultural symbol, the national characteristics are obvious. For example, the Dai nationality in China and the Thai nationality in Thailand belong to cross-border ethnic groups and have very similar production and lifestyle. Customs such as water-sprinkling Festival and Lusheng dance have been preserved today, with various forms and rich contents.

In the long history of China and Thailand, the two countries have had frequent political, economic, cultural, and far-reaching exchanges. They have experienced both similar and different processes in their national development, which have also laid the foundation and injected vitality into the development of China, Thailand and its neighboring countries. After five thousand years of Chinese history, from the three emperors and five Emperors to Xia, Shang and Zhou, Qin, Han, Three Kingdoms, Three Kingdoms, Jin, Southern and Northern Dynasties to Sui, Tang, Song, Yuan, Ming and Qing Dynasties, after the change of dynasties, the Chinese civilization flourished and became one of the four ancient civilizations in the world. Chinese culture has a long history, profound, extensive, and profound. Bronze culture, theories of schools, grotto murals, subsets of classics and history, poems, court music and so on are enduring. Throughout the history of thousands of years in China, it has gone through several stages of primitive society, slave society, feudal society, democratic society, and socialist society. Today, there are 56 ethnic groups, covering an area of 9.6 million square kilometers and with a population of 1.4 billion. Through the ages, the thoughts of Confucianism, Buddhism and Taoism have cultivated the fertile soil of Chinese civilization, which are rooted in the value system of the Chinese nation and have far-reaching influence.

As the Chinese civilization occupies a very important role in the world history, it has made great contribution and influence on the world. The four great inventions of China, "gunpowder, compass, papermaking and printing", played a great role in promoting the development of politics, economy, and culture in ancient China, and were spread to the West through various ways, and had a great influence on the development history of world civilization. In 202 BC-8 years, China han emperor sent Zhang Qian envoy to the western regions, open the silk road, the land to central Asia, west Asia, after development, land, maritime silk road through different lines will civilization spread to the Arab, southeast Asia, Europe, and other countries, developed the political, economic and cultural exchanges between China and other countries.

Thailand not only has a long history, but also has a very close cooperation with China in the political, economic, and cultural fields. In the century of 13th, the Kingdom of Lanna in the north of Thailand and the Kingdom of Sukhothai in the south became the beginning of the founding of Thailand. In 1292, the Orchid kingdom was established in Chiang Mai city by King Meng Lai (Phaya Mengrai). In 1802, Kawila was conferred the title of King of Chiang Mai and became a vassal state of Siam (formerly known as Thailand). By 1892, it was formally incorporated into the territory of Siam. Meanwhile, in 1238, the Kingdom of Sukhoai was founded in the Central Plain of Thailand, 427 kilometers north of Bangkok. The third king of Ramkhamhaeng created the Thai alphabet based on the Khmer and Mons (Mon). At the same time, it actively handled the relations between neighboring countries, concluded non-aggression treaties with the Kingdom of Lanna (Lan Na) and Pao (Phayao); sent envoys to the Yuan Dynasty of China; introduced Ceylon culture and art, which made the national strength become strong and was regarded as the golden age. In 1351, the Kingdom in the south of Thailand, which formed the coexistence of the Sukhotai Kingdom, the Kingdom of Great City and the Kingdom of Chiang Mai in Thailand. In 1438, Thailand also entered

from the Kingdom of Sukhothai to the Kingdom of Ayudoya. In this period, China will strengthen its ties with China, India, and Europe, carry out communication and integration, vigorously develop the economy, and become the economic and trade center of Southeast Asia and a power in Southeast Asia. In 1767, the kingdom of Ayudoya was destroyed by the Gongbang Dynasty of Burma. The Kingdom of Ayudoya has experienced 32 generations of Kings and 236 years, greatly influenced by Chinese culture and Indian culture. When the Gongbang Dynasty in Burma invaded the Kingdom of Ayudoyea, Daxin (Zheng Zhao) organized troops in the southeast coast to resist the rule of Burma. Due to the war between the Qing Dynasty and the Gongbang Dynasty, most of the troops in Burma withdrew, and Daxin took the opportunity to recover Ayudoyea. In 1767, the Tunwuli dynasty was established. During this period, he destroyed the separatist regime, recovered the lost territory such as Chiang Mai, conquered Lanna and Vientiane, and actively developed the economy and trade with China, the Netherlands, and other countries. In 1782, the Kerry dynasty was established today. In 1932, Thailand became a constitutional monarchy. In 1939, Siam changed its name to Thailand, or to the Kingdom of Thailand. Thailand is in the central part of the Indochina Peninsula, adjacent to Cambodia, Laos, Myanmar, Malaysia, and other countries. Thailand covers an area of 513,000 square kilometers, has a population of more than 70 million, and has 77 administrative divisions, including the Bangkok municipality and 76 prefectures. Thailand is a founding member of ASEAN and a country along China's Belt and Road routes.

In the process of the integration of China and Thailand, there are historical reasons and background conditions to see the cultural development of China and Thailand from a historical dimension.

4.3.2.1 Population circulation to expand communication channels.

As a regional cross-border and trans-border ethnic branch, the Dai Ruan people in northern Thailand and people in Xishuangbanna have the same ethnic branch. Their ancestors originally lived in Meng Le, now Xishuangbanna Dai Autonomous Prefecture, Yunnan, Mengyong, Shan State, Myanmar, and Fengshari, Laos. In the long-term interaction, a cross-border nation was formed. In Thailand called the Lanatai nationality, while in China called the Xishuangbanna Dai. Cross-border ethnic groups are more common in the world. For example, the Dai Yi and Nong ethnic groups in Vietnam and the Zhuang people in China belong to the cross-border ethnic groups. The production and life of the same ethnic group in different regions, influenced by local politics and culture, in the process of inheritance, protection and innovation, through the reflection, exploration and adjustment of the cultural level, presents the national cultural characteristics of identity and diversity. For example, Hulu sheng and Wu, popular ethnic instruments in Xishuangbanna, Yunnan, and Lusheng and Pi Jum in northern Thailand are characterized by similar in appearance, different rhythm and playing posture. The same belongs to the pipe blowing reed instrument, with bamboo, gourd and reed as the main materials, and the pronunciation of the sound rhythm is based on the aesthetic needs of the place, while the pitch relationship, melody characteristics and playing posture are different.

Escape due to war, leading to population migration formed by population circulation, and to a certain extent, also promoted cultural integration. According to historical records, the period of the Sukhotai Dynasty in Thailand (1257-1377), at the end of the Southern Song Dynasty (1282), Prime Minister Chen Yizhong was defeated in Cham Pa (the ancient country Cham Pa in today's central Vietnam), and then avoided Siam and died in Siam. Similarly, between 1547 and 1568, the war between the Dongxu Dynasty of Myanmar and the Ayutthaya Dynasty of Thailand occurred to varying degrees, leading to the collapse of the Ayutthaya dynasty, the destruction of the city, and the spread of many refugees. In the war with other dynasties, Lincheng (today's

Vientiane, Laos), Manipur (part of today's Assam state of India), Jingmai (today's Chiang Mai, Thailand) and Che Che (Jinghong, Yunnan, China) surrendered to the Dongsu Dynasty of Myanmar, with a wide range of influence. And Burma, Siam, the wealth, and prisoners taken from the war, to administer the defeated party locally, to elephants and Musical Instruments, this is documented in the THE AIMS OF WAR chapter of the book "In the light of History" (Hizen, & Nozaki, 2015). Records After the capture of Lamphun in the 14th century, the Chiang Mai king gave his son a more splendid title along with "four wives, four male and four female war elephants, four war horses and mares, each with gold trappings, as well as a golden bowl, a golden ewer, a golden betel-nut set, and an orchestra with victory gongs, Ho flutes, oboes and ceremonial conch shells". "Music in Mainland Southeast Asia" (Douglas, 2010) Records that the rise of Sukhothai and Ayutthaya in 1238 led to many wars with the Khmer kingdom, resulting in the destruction of much of Angkor in 1431, with 90,000 captives, many of whom were musicians and dancers. In 1776, Burma fought a war with Siam, and the victory of Burma in the war caused thousands of Thai musicians and craftsmen to be brought to Burma. As the result of the war, it directly led to casualties, the destruction of the city, and barren farming. On another level, it strengthened the centralized rule, promoted the integration of political, military, cultural and other aspects, and played a certain role in spreading music, dance, drama, sculpture, and other cultures.

According to "Thai or Siam?" (Juntanamalaga, 1988) record, Chinese records of the Yuan Dynasty talk about a journey to Xian (perhaps pronounced something like "shiem" at that time) by a Chinese traveler, Chen Yi Zhong, who fled from Chinese political troubles and sought refuge there in 1282. Chinese potters, for example, are known to have been living in Sukhothai currently. In ancient China and modern China, another scene of Chinese people in Nanyang is that with the continuous economic and trade exchanges, many Chinese people went to Southeast Asian

countries to seek development and engage in commercial trade. In addition, some Chinese people were forced to flee to Thailand, Malaysia, and other countries because of the war. In the late Ming and early Qing dynasties and the Republic of China, the British, Dutch, and other colonial countries needed many labor force in Southeast Asian countries. At this time, China had gradually opened its door, followed by many Chinese labor force was imported to Southeast Asian countries.

4.3.2.2 Political communication promotes cultural development.

Historical books clearly record the good relations between China and Thailand in different historical periods from the Han Dynasty to the modern times. The Chinese envoy of the Han Dynasty sent Zhang Qian to visit the Western Regions, which opened the door to cultural exchanges between Central Asia and West Asia and formed an important transportation route of the Land Silk Road. With the maritime Silk Road developed by merchant ships along the southeast coast of China, southeast Asia, Africa, and Europe are closely united, and commerce and trade are flourishing, driving economic development and cultural exchanges. Before the 13th century, the music culture of the Indochina Peninsula and its surrounding countries and tribes laid the foundation for the music development of the Sukhatai dynasty and Ayutthaya dynasty in Thailand. From 277 to 115 BC, the Yunnan State, established in the central and eastern regions of Yunnan centered on Dianchi Lake in Yunnan, China, had the political, economic, trade and cultural influence with the rice production mode in the dam area and the "dry column" construction mode. At the same time, also common for Chinese or Chinese to participate in politics and economy in Thailand. Zheng Xin, who established the Thonburi Kingdom, is a typical representative of Chinese. In modern times, during the national rebellion or the participation in the social development of Thailand, the Chinese people also actively participated in stabilizing the social order and vigorously developing the local economy. " In the light of History" (Hizen & Akria, 2015.) recorded that " The also had privileged access to land. With these opportunities, the Chinese

became economically dominant. After the political change from absolute monarchy to democracy in 1932, Chinese traders also took on political roles."

The ancient Chinese Maritime Silk Road started from Guangzhou and Quanzhou, China, centered on the South China Sea, and traded Chinese copper, iron, lacquer ware, ceramics, silk, and other countries with Southeast Asian countries through shipping, and at the same time, it also carried out cultural exchanges. This route, which was opened in the pre-Qin period of China (before the unification of China in 221 BC), reached the Ming Dynasty (1368-1644), when "Zheng He's voyages to the Western Seas" reached its peak, greatly promoting the political, commercial, and cultural exchanges between Thailand and China in various periods. The Lan Na Kingdom in northern Thailand in the 13-15th century, and the 18th century. The land and sea connectivity of ancient China promoted the political, economic, and cultural prosperity of the two countries.

Tracing back to the source of historical development, the context of the development of wind instrument culture is gradually clear. The cultural attributes formed by this result can not only find the common ground of history and cultural development, but also see their different cultural attributes. From the historical development and the replacement of generations, don't difficult to find that China and Thailand have established positive relations in political, economic, cultural, and other aspects.

4.3.2.3 Cultural exchanges will boost development and integration.

Music existed probably long before the emergence of tonal systems. It was, however, through tonal systems that melodic structure in music flourished. The integration of melodic structure with rhythmic structure in movement and with counterpoint in rhyme singing significantly enhanced the art of music. The evolution of tonal systems and their utilization in music reveal fascinating culture influence that enriched, in complementing ways, human experiences. Ancient China and Thailand had

relatively frequent cultural exchanges. In Pongsat Ayarat's book *Introduction to Thai Music*, in the 9th century AD, the Thai mission went to Xi'an, China (the capital of the Tang Dynasty) for literary and artistic exchanges, displaying the musical culture of Thailand. David R. M. Irving the article "Lully in Siam: music and diplomacy in French-Siamese cultural exchanges 1680-1690" (Irving, 2012) discusses French cultural, commercial, religious, and political contacts with Thailand (Siam) in the 1680s. The Siamese received the French missions with ceremonial music, and the French organized the Siamese visitors to watch the operas and other performances. The two countries conducted cultural explanation and reflection after observation through the performance. At the same time, similar patterns can also be found from the unearthed cultural relics. For example, in "The Study of Naga's Art Performance among the Northeast Region of Thailand Traditional" (Supinda, 2018) talk about, in the mid-1970s, archaeologists in Panqing Village, Nongjin County, Wulong Prefecture, Thailand, unearthed bronzes and pottery dating more than 4,000 years ago, carved with patterns, which have many similarities with the patterns of utensils unearthed from the Hongshan Culture of China. Thus, the development and integration of culture had a certain correlation in ancient times.

At the same time, there are many kinds of religious beliefs among Southeast Asian countries. Christianity, Catholicism, Islam, Buddhism, etc., but Buddhism has a very high share of believers in Southeast Asian countries. Thailand, Myanmar, Cambodia, and other countries believe in Buddhism, and Buddhism is mainly Theravada Buddhism. Vietnam is influenced by China, and the believers are mainly Mahayana Buddhism. In the Buddhist meditation and other rituals, music, as an auxiliary tool, has also boosted the development of music to some extent. Although in Theravada Buddhism, singing and dancing are forbidden, only singing exists. But the larger, larger

number of Theravada Buddhism, singing and dancing are actively advocated. The great sect uses music to explain the spirit, create an atmosphere, and learn and promote the Dharma in the world of music.

The social attributes and humanistic attributes of music have homogeneity in terms of its value and significance. Whether is cultural communication, migration and communication, group clustering, deep work and other mutual influences, music has its own characteristics and mutual commonness in the specific process of generation, dissemination, and development. Especially for the cross-border ethnic groups in neighboring countries, the cultural temperament presented in the process of integration is a cultural landscape of multi-element mixed development.

4.3.3 Comparison of common characteristics and musical differences between Chinese and Thai music

From the historical perspective, the development of wind instruments has played different roles in different periods. In the primitive society, the tube music and the rhythm of wood or stone to celebrate the pleasure; the court music to consolidate the throne with feast; the opera music and religious music to meet different social and spiritual needs, present the functional attributes of music culture, and reflect the integration and development of music and diverse cultures from different angles. At the same time, in the performance of wind instruments, beautiful timbre, loud sound, strong penetration, good at expressing the emotions and thoughts of music, direct to the soul and other characteristics, creating conditions for the development of diverse cultures.

4.3.3.1 See the context of the development of music culture in China and Thailand from the system of rites and music.

For ancient China and Thailand, rites, and music, as a symbol of the ancient royal power, had a profound influence. China is one of the four ancient civilizations and has promoted the development of neighboring countries in political,

economic, and cultural aspects. See the intersection of China and Thai rites and music systems from the historical process and music evolution. First, China initiated the Maritime Silk Road and spread civilization to the Indo-china Peninsula and Siam. Second, as a cultural exchange, Thailand sent missions to China to carry out cultural exchanges, dance, and musical performances, and learn Chinese musical skills. As an important way of communication, an important embodiment of China and Thailand in the process of civilization.

In the process of music development, we can see the evolution and difference of musical instrument materials. Gold, copper, iron and other metal materials, as valuable objects, in the use of Musical Instruments, is the most powerful symbol of the ancient royal power. In terms of the correspondence between rites and music and the royal power, metal instruments are not only used as Musical Instruments, but also used as ritual vessels in the symbol of the royal power. In the interrelationship between the royal power and the ritual instrument, the intersection and influence of rites and music have also become the characteristics of The Times. Looking for common ground, you can see the following aspects. First, the rites and music systems exist in China and Thailand; second, the system of rites and music promotes the social civilization and progress; third, rites and music, as a means of cultural exchange, jointly build a stable political and economic relations and promote the development of music and culture; Fourth, the rites and music system have a positive influence on the neighboring countries. Whether in China or Thailand, rites and music play a positive role in stabilizing the government, educating the people, flourishing the culture, and promoting exchanges. Therefore, rites and music spread civilization and promote civilization, which is an important witness in the process of civilized society.

4.3.3.2 The influence of the cultural development of China and Thailand from the musical thought

The Chinese music thought presents the characteristics of jujube nucleus in the development state. Mainly manifested in the development of court music, literati music and folk music. The development of court music reached a peak in the Sui and Tang Dynasties, and gradually shrank in the Song and Yuan Dynasties, and was gradually replaced by the prosperous folk music. Many institutions of court music were reduced and merged, and even some Musical Instruments, such as chikuhachi in the Tang Dynasty. However, with the idea of "harmony", China is good at absorbing excellent foreign culture. Many foreign Musical Instruments have evolved into unique Chinese national instruments. Such as suona, erhu, dulcimer and so on. Located in the center of the Indochina Peninsula, Thailand is influenced by the music thoughts and systems of China, India, Indonesia, Myanmar, Laos, and other neighboring countries. Thailand has embraced the excellent music culture, formed independent music ideas, and fully embodied the music proposition of "harmony without difference". From this point of view, China and Thailand have the same path for the formation of musical ideas and the establishment of the music system, and both have carried out the process of re-creation and re-development.

Traditional music from China and Thailand can be better preserved and passed down. As the mutual influence of eastern and Western civilizations, the spread of western musical thought began with the spread of western religions. In the process of spreading religions, missionaries also advocated western musical culture. For both China and Thailand, they are influenced by western musical ideas and musical systems, but with different results. In the late Ming dynasty and early Qing dynasties and the late Qing Dynasty and the early Republic of China, western cultures and thoughts were constantly exported to China, and China gradually integrated into the historical process of western learning to the east. In modern times, Chinese traditional music is influenced

by the western music system, and the theory, notation and Musical Instruments of Chinese traditional music are greatly impacted. In the process, there are many widely circulated songs are also based on foreign music melody, filling in the lyrics. The music theory such as simplified music and staff, and the use and promotion of western instruments such as piano and violin made Chinese traditional music impacted in this background. In particular of Zhang Zhidong, the representative of the westernization School, put forward the idea that "middle school is the body and the western learning is the western science and technology, culture and education. At the same time, the actual role of "middle school is the body " was relatively small, which also led to the weakening of the rhythm and notation of the Chinese traditional music. Compared with Thailand, the cognition and measures of western music ideas and music system are different from that of China. Thailand adheres to the tradition, adhere to the Thai music, music, and performance. However, for the western music system, it also adopts an eclectic attitude. As well as another music system, western music exists with the traditional Thai traditional music system and does not interfere with each other. However, the inheritance and protection efforts are very strong, with proper measures and extensive application, which effectively guarantee the inheritance and development of Thai traditional music.

4.3.3.3 See the form changes of traditional music in China and Thailand from the music law system.

The reform of ancient Chinese music are advancing, the Zhou dynasty ritual music system, to the Ming dynasty Zhu Zaiyu twelve average law (Zhu, 1603), and music, music development, Chinese court ceremony music from Zhou dynasty to the Qing dynasty has experienced at least 35 rhythm reform, is the traditional Chinese music from music theory to music techniques, and then to the music music creation, playing, and coexist with music culture of poetry, art, and other literature and art, created the glory of Chinese traditional music. The change of Chinese music rhythm has a great

connection with wind instruments. From Xun Xu and pipe mouth correction to the tube law to the string law. In "The Seven Equal Temperaments--An Introduction to the Making and Tuning of Old-Style Equal-Hole Recorder", Chen (2001) said that "the traditional Chinese uniform kong flute is gradually replaced by the twelve average flute, and one flute is freely played in seven tones" For the seven average laws that have been used in Thailand, Thai Khlui, Pi Nai and other wind instruments will play freely, which is the same music method as the traditional Chinese junkong flute, realizing the similarities in the music culture module. In the comparison of the western twelve-average music system, the traditional music system in China and the traditional music system in Thailand, we can clearly see the changes among them.

Table 2 Twelve equal Rhythm、 Ancient Chinese Rhythm、 Mordern Chinese Rhythm, and Thai Rhythm to compare

Twelve equal Rhythm	Ancient Chinese Rhythm	Mordern Chinese Rhythm	Thai Rhythm
C	Huangzhong	Wuyi	ด
C#	Dalv	Yingzhong	
D	Taicu	Huangzhong	ริ
D#	Jiazhong	Dalv	
E	Guxian	Taicu	ม
F	Zhonglv	Jiazhong	ฟ
F#	Ruibin	Guxian	
G	Linzhong	Zhonglv	บ
G#	Yize	Ruibin	
A	Nanlv	Linzhong	ล
A#	Wuyi	Yize	

B	Yingzhong	Nanlv	๗
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Table making: Haibo Shuai

4.3.3.4 Consider the basic characteristics of Thai traditional music.

The basic composition of Chinese and Thai traditional music is diverse, in various forms, and has undergone multi-level development and change. The melody with five tones as the main composition tone forms a distinctive musical melody in the combination and arrangement of Chinese and Thai music. China has developed and spread the application of "Do, Re, Mi, Sol and La" in music. In this paradigm, the seven average laws adopted by Thai traditional music can be arranged in the corresponding five tone for the relationship between the five tones, and the corresponding pitch and composition changes are more diverse, which can be Do, Re, Mi, Sol, La, or Fa, Sol, La, Do, Re, Re, La, Ti, Re, Mi, etc. In the integration and development of foreign cultures, the music color is more diverse. The addition of Fa, Ti and varied melodies also provides different styles for the development of music. As the basic melody composition paradigm, the five tones can exist in the music system of China and Thailand. Although the rhythm adopted by Thailand is the seven average rhythm, which is different from the Chinese twelve average law in terms of specific rhythm, it also reflects the characteristics of Chinese and Thai music.

♩=76 เพลงสองนมปี่

The musical score is written in treble clef with a 4/4 time signature. It begins with a tempo marking of ♩=76 and the title 'เพลงสองนมปี่'. The first staff contains the initial melody, followed by a repeat sign. The second staff continues the melodic line. The third staff includes a first ending (1.) and a second ending (2.) that concludes the piece with a final cadence.

Figure 86 Thai Folk Song 1

Spectrum making: Haibo Shuai



Figure 87 Thai Folk Song 2

Spectrum making: Haibo Shuai



Figure 88 Chinese Folk song 1

Spectrum making: Haibo Shuai



Figure 89 Chinese Folk song 2

Spectrum making: Haibo Shuai

The development of music begins with the most direct reflection of material life and spiritual life in the natural environment, while different environment and culture on music reflect different musical characteristics. With the intensive exchanges and cultural exchanges of human activities with the region or from distance, the frequent and interactive influences of musical activities are also more far-reaching. From the historical environment, the development of music culture mainly includes the ritual and music system under the social system, the music color, music tone, the influence and fusion of music thought.

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system under the social system, the music color, music tone, the influence and fusion of music thought.

Since ancient times to the present, music culture a positive role in social development. As the most representative wind instrument in the world music culture, it has the longest history and the most extensive distribution range. In many countries in the world, you can see the shape and timbre are basically the same, and the rhythm has other wind instruments. Suona in China and Pi Chawa and Pi Nai yai in Thailand; Bau and Pai Sheng in southwest China and PiJum and Kaen in northeast Thailand; bamboo flute in China and Korea, etc. As a "flute" alone, there are Chinese "bamboo flute", Thai Khlui, Turk Ney, Korean Daegum, Japaese Ryuteki and so on. The "flute" in the world has its own characteristics in shape, system, and rhythm, but the social and artistic functions of "flute" are universal, and the question has research value and practical significance. Not only a comparison of music theory, but also a kind of music concept.

4.3.3.5 From the principle of pronunciation to see the power source of Thai wind instruments.

China and Thailand wind instruments have different vocal bodies and different power sources, which leads to different pronunciation principles. The power source is blowing, pulling, playing, and hitting. The vibration of the pronunciation body is divided into air song, body song, string song, and reed sound instrument. The so-called blowing musical instrument is the principle of shaking the sound of the edges, which is mainly manifested in the sound produced by the gas when the gas blows into the cylinder through the force. Such as Chinese bamboo flute, Xiao (Paixiao), and Thai Khlui. Although they are playing musical instruments, there are differences between Chinese bamboo flute and Thai Khlui. It mainly lies in the difference between direct pipe, open pipe and closed pipe, and the position of pronunciation vibration. Chinese bamboo flutes an open wind instrument with cork at one end and open state on the

other. Thai Khlui For the direct pipe, vertical blowing, the top of the cork, a mouthpiece, and the pipe body in the cork incision, air flow through the incision hit the pipe body to produce vibration sound. Although they are wind instruments, there are still differences between the wind instruments. For other wind instruments, there are also reed sounds and whistle sounds. For example, copper reed makes Chinese wind instruments hulusi, bawu, paisheng, Shen, Thai Kaen, Pi Jum, Whode, etc. There are also instruments made of reed and palm leaves, Chinese suona, guanzi, Thai Pi Nai, Pi Nae, etc. Although the pronunciation method is the air sound and the spring vibration, which belongs to the excitation device, but the material is different, the sound is also different. The excitation device material of Chinese suona and pipe is reed, and the excitation device material of Thai Pi Nai and Pi Nae is palm leaves. After comparing the shape of the reed, the shape has the same width on the top and narrow at the bottom, mainly the relationship between the airflow excitation trigger and the vibration surface. The airflow and the material contact surface is wide, the larger the vibration surface, the more sensitive the pronunciation. At the same time, the volume of the thimble connecting the tube body is not large, and the reed forms a small envelope, which forms a closed circle when the input airflow enters the thimble pipe, which also forms a narrow shape of the lower and the upper width. From the perspective of the pronunciation system of the tube, there are different cases of single tone and single tone. Chinese sheng, paixiao and Thai Kaen belong to single-tube monotone, while Chinese bamboo flute, xiao, suona and Thai Khlui and Pi Nai belong to one-tube polytone. Wind instruments, powered by blowing and playing, are widely used in India, Sri Lanka, Afghanistan, Thailand, Myanmar, Cambodia, and other countries, which forms a distribution and regional integration of culture in various countries.

4.3.3.6 See the artistic treatment of Chinese and Thai wind instruments from the use of breath.

The use of breath has a direct relationship with the pronunciation. Wind instruments all sound through the vibration of the airflow, but the vocal body has different tubes, different sounds, and different power sources. In terms of the application and regulation of breath, the size of breath has the most direct impact on the effect of sound. The spring whistle vibration pronunciation of guanzi, suona, Pi Nai, Pi Nae, the size of the air flow affects the specific pitch and volume, and the pitch needs to be controlled by the strength of the airflow. This pitch is a kind of sliding or sliding type, using different intensity of breath in the single tone hole, a number of different pitches can be played. But for single tones, the intensity of the airflow can only determine the size of the sound and cannot play other sounds. For the single-tube polyphonic bamboo flute, xiao and Khlui, the breath intensity can adjust the homophone of the homophone hole, and the difference lies in the different pitch relationship of the homophone. Therefore, in the aspect of airflow determination, the spring whistle instrument is more difficult to play than other wind instruments, which is the difference between edge vibration and spring whistle vibration.

The intensity of the airflow produces a significant change in the volume. The blowing instrument controls the size of the volume through the breath intensity and regulates the sound line between the strength and weakness, to meet the processing requirements of musical emotion. For most wind instruments, this can be achieved, but for Thai Khlui, controlling the volume through the intensity of the airflow is not effective, but low. For example, when playing G^2 , if the intensity of the airflow is weaker, the volume of G^2 will be lower, but not obvious. If the volume is weaker, it will play the effect of G^1 . This is played on Chinese bamboo flute, xiao, Thai Pi Nai, Kaen and other instruments, which will not happen, and the volume can achieve the weak sound effect. According to the analysis, concluded that Khlui cannot control the volume effectively

through the force control of the air flow, and there will also be a low degree of homology, which is related to the principle of pronunciation. Both Chinese bamboo flute and Thai Khlui are blowing instruments, while Chinese bamboo flute is the pronunciation of the airflow directly hitting the edge of the blowing hole. The strength of the airflow can effectively adjust the size and pitch of the sound. And Thai Khlui is airflow through the narrow cork gap hit the position of the incision edge pronunciation, in the process of slow airflow and control, lead to the strength of the airflow in the process of adjusting the volume size, weak binding, difficult to control, airflow strength and volume in the specific processing, there are certain difficulty, difficult to achieve the airflow strength and volume control.

4.3.3.7 See the historical track of Chinese and Thai music culture from the general picture of Musical Instruments

The general appearance of Zhongtai wind instruments is very similar, and some instruments can be traced to the generation process and the consistency of the origin. The general appearance of the Thai instruments is classified, which is divided into single-tube (body) and multi-tube instruments, such as bamboo flute, xiao, suona, Khlui, Pi Nai, Pi Nae, etc.; single Xin, Bei, etc.; multi-tube shen, paixiao, wind, kaen, etc. Materials are divided into wood and bamboo types, such as wooden Khlui, Pinai, suona, pipe, etc., and bamboo flute, xiao, Kaen, Wind, etc. To shape the tube, container shape. Tubular bamboo flute, Khlui, etc., container-like Sun, horn, conch, etc. Play the air directly and indirectly, such as bamboo flute, Xiao, Khlui, etc. Indirect blowing is divided into reed and sentinel wind instruments, shen, hulusi, bawu, Kaen, Pijum, etc.; guanzi, suona, PiNai, PiChawa, PiNae, etc. In the refinement and classification of the general appearance of Chinese and Thai wind instruments, similar instruments will appear, and many instruments are highly similar in shape and system and pronunciation methods. For example, in Mengla County, Xishuangbanna Prefecture, Yunnan Province, China,

sheng is similar to Kaen in terms of material and shape, but also in terms of performance. Moreover, there are also similar instruments in Laos. Tracing back to the source, the southwest of China borders Myanmar and Laos, and Myanmar and Laos borders Thailand, adjacent or similar to the land, with frequent personnel flow. In the region, the Dai people in Yunnan, China are basically the same as the Thai people in Thailand and can understand each other. In addition, the Lisu, Jing and Lahu nationalities are concentrated in the adjacent or similar areas of various countries and integrate with local cultures. The terrain of high mountains and hills has few contact opportunities with the outside world, resulting in similar shapes and different laws, highlighting the unique cultural qualities of different countries and ethnic groups. There are also the Chinese suona and Thailand Pinae, similar in shape, but also different. The vibrator of indirect pronunciation is made of reed and palm leaves. The amplification effect of the bowl is different by the number and location of the sound holes. Tracing back to its source, after the Chinese suona is a foreign instrument, the suona is also different in different places in China. The same phenomenon also exists in Thailand. In the southern, central, and northern parts of Thailand, there are different shapes of sentinel els made of palm leaves, and wind instruments with the same function of sound tubes and bowls, sound hole positions, bowl shapes and similar wind instruments of different sizes.

4.3.4 Cultural Interaction between Thai and Chinese Music in Historical and Musicological Contexts

The functions and functions of music are often used for a harmonious society, spiritual shaping and emotional resonance, and the music of different countries and different nationalities has national characteristics, which is also a very effective means for national political construction.

4.3.4.1 Political function of a wind instrument.

Wind instrument and the ritual culture of the temple. The scale, system and category of the ancient bands were the most prominent features of the feudal royalty, such as the centralization of power, the implementation of political means and entertainment. As an important part of Chinese and Thai music, wind instruments have played an important role since ancient times. Wind instruments are greatly reflected in many works, documents and murals of the country, clan and temple. The representative music and dance “Wu” and “Xiang” of Chinese Zhou Dynasty and Ramayana, representative music and dance in Thailand are very representative in the cultural development of wind instruments.

In terms of the ritual culture of Zongtemple, the use of ritual music such as sacrificial ceremony, banquet ceremony and court tour are the best embodiment. The ritual music of sacrifice mainly includes the worship of Confucius, ancestor worship, harvest celebration, praying for rain and other ritual ceremonies of the gods of heaven and earth. A feast is a musical event for a grand banquet. The music has various forms and rich themes. There are many ceremonies, many tastes, including guide to welcome music, front big music, triumphal music and so on. In ancient China, there was advocacy music for court, army and road formation. In the use of Musical Instruments, metal instruments such as chimes, weaving, Bonang Penerus, Kenong, Ketuk, etc., as royal ritual vessels, are enjoyed by the royal and noble. Music on different occasions, different forms of music in the performance of the strict regulations. These are the national classic music, to praise the song, stable rule, highlight the prestige, with a strong political attribute. In addition, traditional bands such as Thai Mahoir, Piphat and khon accompaniment all show the important role of wind instruments in the whole band. The size of the musical instrument system, the dance team, the amount of music in the performance, its scale is quite grand. Most of the music and dance works performed are

also magnificent and complex structures. For example, in these documents and works, Musical Instruments play an extremely important role in the reign of the rulers. In the construction of court bands and the performance of music, both China and Thailand highlight the material attributes of the band as a symbol of status and imperial power, reflecting the power symbols of different rites and ritual vessels. In the process of human development, the political attributes of music also objectively reflect that music is rooted in the social organization system, and is closely connected with the political, economic, cultural and other systems. Under the birth of this political soil, wind instruments have been better developed, which makes them have the political attribute of unifying the symbol of royal power and centralized rule.

The hierarchical culture of wind musical instrument and official product system. In ancient China, there was also a system of implementing rites and music according to the hierarchical relations. "Zhou Li" 周礼 (Zhou, 2018) records the Western Zhou period (1046 BC-771) on the ritual system, that is, the king, vassal three sides, both sides, one side; the dance team of the "emperor with eight Yi, vassal with six Yi, doctor four Yi, two Yi" provisions, and Yi is a group of 8 people. The application of music also has clear provisions, such as "Yong" can only be used when the sacrifice of the sacrifice; "Three Xia" is "the music of the Yuan Hou"; "King Wen" is "the joy of the two Kings meet", etc. These rules are "overbearing" or "rude" if violated. In 1978, the tomb unearthed in the tomb of Marquis Yi in Sui County, Hubei Province, China, included nine tripod and eight Gui (簋) and ritual instruments mainly chime bells and rock weaving, which followed the status of the Zhou Dynasty. Nine tripod and eight Gui (簋) should be used by the emperor, and the vassal should use seven ding and six Gui (簋). These fully illustrate the hierarchical relationship of the use of musical instruments, and further strengthen the role of politics.

The management culture of the wind instrument and the governance. "Lv Shi Spring and Autumn Annals " in Ji chun ji points out the relationship between music and governing the country: palace, zheng, commerce, feather, horn, everywhere, the tone is equal, cannot be contrary, so all suffer. The establishment of a good Lord seems like this. There is no trouble to govern the country, and to govern the Lord. Chinese Confucian music theory monograph Music Ji emphasizes the close relationship between music and politics, music, and society. Record: " Make the sound of the world peace to music, its politics; the voice of the troubled times with anger, its politics is good; the voice of the country, its people trapped. The way of voice relates to politics ". Put forward the relationship between music and governing the country, the king and ministers listen to music together, will respect each other, the relatives listen to music together, will be more harmonious; and the neighbors listen together, will be more friendly. Therefore, the role of music in the politics of the temple is to use the harmonious sound, the harmony, the rhythm and the written, so the harmony and sons and ministers, close to the people, is the party of the first king."Tune harmony, then the country harmony, also under the whole world is peaceful and peaceful. The performance of ancient music pays attention to the harmony between Musical Instruments and Musical Instruments. A set of chime bells unearthed from the tomb of Marquis Yi of Zeng contains 65 pieces, the largest number unearthed, with a wide range, reaching five octave degrees. The production is exquisite, the materials are high purity copper, tin, lead smelting in a certain proportion, beautiful timbre, pure sound quality, the tone is the same as the modern C major. Similarly, Thai traditional Musical Instruments Gong Wong Lek, Gong Mon, Meng are also made of copper, tin, lead and other materials in a certain proportion, with pure timbre, bright treble and deep bass. The rhythm characteristics of its average rhythm also further indicate that Thailand has the characteristics of balance in the concept and relationship of the rhythm, as a symbol of sound harmony. As a

representative of Thai traditional music, in the performance of the music, playing music, percussion music, plucked music, pull strings. Percussion forms another layer of relationship with the various instruments. The instruments also cooperate with each other, and the ensemble will be solo, which will maximize the performance of the instruments. In fact, in addition to the music combined with the ritual system, there is also the concept of governing the country by "music". In ancient China, the six arts proposed "ritual, music, archery, imperial, calligraphy, number" to the aristocracy; the Han Dynasty set up "Yuefu"; the Tang Dynasty large music institution, advocacy, teaching, and pear garden as part of the governance. Wind instruments and the military culture of ancient wars. In "In the Light of History" (Hizen, & Nozaki, 2015), in 1474-1475, the orchestra of gongs, flute, Pi Nai and other instruments as awards to princes and generals who made contributions to the war or the country, an orchestra accompanied the army and elephants to enter the battlefield. In China, there is also such a form, that is, the Han Dynasty advocacy music is mainly used for the court, roads, and the army, quite like today's military band, with the nature of honor. In "On the Classification of Dunhuang Mural Musical Instruments", Zheng (1988) recorded in the Classification of Musical Instruments in the late Tang Dynasty in Grottoes 156 of Mogao Grottoes, with four knights and drummer. After four knights played the big corner. The corner pattern is clear, and the military band is magnificent and powerful.

After the military victory, the band as a reward and the music of the army and the military."In and out of hunting, banners advocacy, with wealth "short xiao took song" and so on are the vivid portrayal of the ancient advocacy. Chinese bamboo flute, shen, guan, drums, gongs, cymbals and other components of music, Thailand to Pi Nai, Pi Chawa, Khlui, Klong, Meng, Ching, and other components, as a part of the ancient military composition, blowing has a unique advantage. The representative work of ancient Chinese military music, General Order has been translated into various versions,

which can see the importance of military music for the construction of the army, the country, and the governance of the country.

The development of wind instrument culture and the relationship are inseparable from social demand. In the three-dimensional relationship with social needs, we can see that there are wind instrument activities in hunting pictures, ancestral temple sacrifices, folk festivals, weddings, and funerals, etc. The existence of this phenomenon is also the relationship between human beings and other things' demand for music in social activities. As the origin of music development, ancient human beings hunted with pipe sound and celebrate, which all show that the development of wind instruments has existed since the beginning of human life. The development of culture needs the environment and soil, and different environment and soil breed different wind instrument music culture.

4.3.4.2 Social function of a wind instrument

The developing relationship between wind musical instrument and drama culture. Chinese classical opera, Greek tragicomedy and Indian Sanskrit opera are also known as the world's three major ancient dramas, which are inseparable from literature, poetry, painting, dance, and music. Chinese classical opera originated from primitive songs and dances. After a long development, it has gradually become representative of Peking Opera, totaling more than 360 kinds (categories). Thai representative dramas include Kong Opera (khon), shadow play, puppet show, etc., which have formed their own characteristics through integrated development. As an important part of drama, music has a profound significance to the development of drama. Music promotes the development of drama, and drama also makes the development of music. The two complement and complement each other. As the accompaniment instruments of drama, Chinese Peking Opera, Pingju Opera, Hebei Wooden Clappers, and Kunqu Opera are mainly composed of percussion instruments, wind instruments, drawn string instruments

and plucked instruments. In Kunqu Opera, Hebei Wooden Clappers and other operas, Bamboo flute plays as the main musical instrument. In Henan Opera, Yue Opera, Pingju Opera, Sichuan Opera, Hunan Huagu Opera, bamboo flute, shen, suona and other wind instruments as accompaniment instruments. The Thai Kong Opera accompaniment band is Nha phat, with Pinai, Ranard EK, Ranard Toom, Gong Wong Yai, Gong Wong Lek, Ta Pon, Klong Tad, Chen and others as the main accompaniment instruments. In other theatrical performances in Thailand, these instruments are also mainly composed of these instruments. According to the needs, Saw Duang, Saw Oo and other instruments will be added. This also includes the use of musical accompaniment, mainly with traditional Chinese instruments, and creatively integrated into the traditional Thai instruments. This innovative development model is also relatively common in Thailand.

As an integral part of dramatic music, the development process of wind instrument accompaniment has also experienced a long process. The diversity of Chinese opera also endows the diversity of musical instrument accompaniment. The different accompaniment instruments between different operas highlight the styles of different operas. The Wooden Clappers Opera in northern China and the Kunqu Opera in southern China have formed a more obvious feature in the use of the wind instrument and flute. Bamboo flute, as the main accompaniment instrument of Bangzi opera music, often uses chopping, flower tongue, sliding and other skills in the processing of music to meet the requirements of Bangzi opera. Compared with Kunqu Opera, which is called "water mill tune", the musical style is delicate and graceful. Bamboo flute, as the main accompaniment instrument of Kunqu music, uses skills such as playing, folding and trill. The sound of Thai drama is deep and long lines to express the characters or stories. The music is low and long, and the wind and string instruments can express the delicate musical emotion. In this process, with the development of opera, the accompaniment instruments are constantly adapting to the changing requirements of opera music, and

constantly optimize, improve and breakthrough in the aspects of skill performance and expression, which promotes the development of instruments. Throughout the development of wind instruments, the opera music accompaniment has become the main task of wind instruments in a certain historical period. In sorting out the accompaniment instrument composition of Chinese and Thai opera music, after analysis, percussion instruments are the necessary rhythm instruments in each kind of opera, which plays an important role in controlling the speed of music, regulating the musical atmosphere, and organizing the musical instrument ensemble. Wind instrument flute, string instrument erhu and melody percussion instruments kong wong, ranat, etc., as melodic playing instruments, have different role playing in the band. Compared with Suona, Guanzi, Xiao, Sheng and other wind instruments, flute is more widely used in opera music (see chart), which mainly depends on the timbre and sound characteristics of bamboo flute instruments. Chinese bamboo flute, Thai Khlui soft timbre, sound compatibility, is the connecting part of percussion instruments, plucked instruments and drawn string instruments, and plays an important role in harmony. Therefore, the development of wind instruments cannot be separated from opera, and the development of opera cannot be separated from wind instruments. In the process of the continuous development of opera, the connotation development of wind instruments is also constantly enhanced.

Table 3 Composition of Chinese and Thai opera music Table making: Haibo Shuai

Name of traditional Chinese opera	Accompaniment instrument composition
Beijing opera	Board, single skin drum, big gong, cymbals, cymbals; Jinghu, Jingerhu, Yueqin, three strings, bamboo flute , etc

Yue opera	Drum board, yuehu, zhonghu, dulcimer, three strings, bamboo flute , etc
Huangmeixi	Tang drum, cymbals, small gong, big gong, high hu, bamboo flute and so on
Pingju	Board drum, Bangzi, gong, cymbals, banhu, erhu, middle hu, low hu, pipa, bamboo flute , sheng, etc
Kunqu opera	Drums and boards control the singing rhythm, with bamboo flute and three strings as the main accompaniment instruments
Khon Thailand Khon	PiNai , Ranard EK, Ranard Toom, Gong Wong Yai, Gong WongLek, Ta Pon, Klong Tad, Ching
Thai shadow play	PaiNai , Ranard EK, Ranard Toom, GongWong Lek, GongWong Yai, Ta pon, ching
Thai puppet show	Khloi Piang Au , Ranard EK, Ranard Toom, Gong Wong Yai, Gong Wong Lek, Saw au, Ta Pon, Klong Tad, Klong Khak, Ching

The integration of wind instrument and religious culture. Buddhist beliefs in China and Thailand are very wide audience, has a strong representative. Influenced by Indian Buddhism, Mahayana Buddhism in China and Theravada Buddhism in Thailand have their own characteristics and have common place in the process of dissemination and development of Buddhism. For example, to promote the use of music, the use of music in the context of Buddhist culture; and the group singing of Theravada Buddhism, the participants follow the same text, melody, and rhythm, which is quite different from the traditional music at that time, which, to some extent, shows the relationship between

religion and music. Buddhist music is specifically divided into legal music, instrumental music, and miscellaneous music. In the development of Buddhist music, court music and folk music are inseparable. Buddhist music was introduced into China and Thailand from India, constantly absorbing the nutrients of local culture, and has developed into a Buddhist music with Chinese and Thai characteristics. Court music and folk music also absorb the cultural essence from the religious music, making the court music and folk music innovate in the music card, color, and form. Buddhist rituals include practice, celebration, and general on. In the ceremony, wooden fish, big drum, big fish and other instruments are commonly used, and tunes such as chanting and chanting are used to carry out religious activities. Teach the people, enlightenment in the line. It can be said that in the process of religion and development, the educational function of Buddhist music plays a very important role in national politics, culture, and education. In particular, the rise of Mahayana Buddhism has developed rapidly in singing and dancing in religious rituals. The description of Buddhist music: " Song bai ode to Buddha de, and even a small sound, have become the sound of Buddha."These are the integration of Buddhist music and Chinese traditional culture, advocating the music of nature, advocacy, and abstinence.

Chinese Buddhist instrumental music began in the Northern and Northern Dynasties, and the Silk Road continuously introduced the music of the Western Regions to China and applied it to Buddhism. Instrumental music Buddhist chanting and singing was added, used for accompaniment, or specialized in playing Buddhist music. At that time, there were Buddhist bands and other organizations. In the reign of Emperor Yuan of the Liang Dynasty (552-554), due to the prosperity of Buddhism, the accompaniment instruments also added "Xun", "Chi" and other wind instruments. With the prosperity of Buddhism and the continuous development of music, the instruments of Buddhist music in the Northern and Southern Dynasties included drums, drums, cymbals, xun, panxiao, gas and so on. Court music in the Sui and Tang dynasties merged with Buddhist music.

In the process of the development of the seven pieces of music in the Sui Dynasty and the nine pieces and ten pieces in the Tang Dynasty, Musical Instruments were constantly enriched, and wind instruments such as hardships, sheng, xiao and flute were added. With the development and prosperity of Buddhism, Buddhist music, court music, folk music and opera music have built a traditional music system, which has a certain representative. Buddhist music is characterized by simple, solemn, slow, and continuous, and religion is constantly integrated into the political, cultural, social, and other levels, which has a great influence. The relationship between social needs and religion is also constantly presented by means of music. For example, the Dharma music for offering sacrifices, worshipping heaven, praying for rain and praying for blessings can have different environments and different music styles. Buddhist music reflects the different characteristics of society, culture, and customs from different levels, objectively reflects the status quo of social development, strengthens the characteristics of the secularization of Buddhist music, and promotes the exploration, innovation, and development of Buddhist music in the field of traditional culture.

In addition to Buddhism, Chinese Taoism has also boosted the development of music, and music also plays an important role in Taoist rituals or rituals. For example, the suona in Gannan, Jiangxi province is "played by in-laws", which plays music and religious colors of wind instruments as the function of Buddhism in China and Thailand, and the use of wind instruments is also very common in religious ceremonies. On August 7, 2022, as an observer, I attended the god greeting ceremony held in Wujia Village, Ji'an, Jiangxi Province, China. According to the requirements of Taoism to meet the god, a Taoist priest dressed in a Taoist robe completed the ritual process of inviting the god, greeting the god, and sending the god, by playing the suona, drums, gongs and cymbals. Each family in the village in each link, all take the initiative to participate in, set off firecrackers, carrying "tribute", "wine" and other supplies to worship god. In addition to the Taoist priest, the playing musicians and the village households assume different roles in the ceremony, but the purpose is the same thing, which is to show respect to the gods. As music, the musicians play an important role in creating the ritual

atmosphere and praying for a better life. The whole process is carried out with the fusion of Chinese music style blowing and ceremony. The music played by the two suona pieces is mainly traditional pieces, with the marching of the same melody and the performance of different parts. In the accompaniment of percussion music, the music is full of tension, the sound is transparent and loud, and the music color of the lyrical part is extended and soothing.

In Thailand with a strong religious color, festivals and customs are greatly related to Buddhism. Many of the Thai court music, traditional songs and dances, folk music tunes and lyrics are derived from Buddhist music. Every year, spring ploughing ceremony, clothing ceremony (kathina) and other celebrations, ten thousand Buddha Festival, Song Gan Festival and other festivals, Buddha birthday, Buddha opening, water lantern Festival and other anniversaries, will pray, wish, celebrate, commemorate through musical performance or other ways. Every year on December 15, the Thai traditional festival "Water Lantern Festival", which carries out a variety of commemorative activities throughout the country. Sky lanterns (called sky lantern in China), river lamps and floating water lanterns, and in the music of the traditional instruments, the folk song "Water lamp" and "White Lotus" dance the southern dance. On November 8, 2022, Sina Kaniningello University in Thailand held a water Lantern festival commemoration at the school. The activity site, the flow of people surging, all kinds of garden activities appear particularly lively. worth mentioning that the school also organized a performance activity with high professional level, various program forms and distinctive features. The program includes folk songs and dances, modern songs and dances, traditional dramas, and traditional orchestra performances. Piphat The orchestra accompanied the drama performance, and played the special music of Northeast Thailand together, making the traditional music shine in the blessing of the Water Lantern Festival. The Thai traditional festival has a long history. It began in the Sukhotai period and has been more than 700 years now. Its generation is related to Buddhism and fairy tales. As the most representative traditional festival in Thailand, traditional music is constantly developing along with the prosperity of traditional festivals. Traditional music integrates religious

elements and has a religious color. In addition to the Water Lantern Festival, Buddhist-related festivals such as Buddha's Birthday Festival, 10,000 Buddha Festival will hold commemorative, blessing and wish activities, and express respect and psychological demands through traditional music, worship, and flowers. The strong festive atmosphere promotes the taste of traditional music, play a role, and display its characteristics, which provides a broader space for traditional Musical Instruments, and is also the most effective way to inherit and develop traditional music culture.

As an observer, he went through the process from program rehearsal, rehearsal to performance. The rehearsal of the drama performance and the traditional band accompaniment, the selection of the band location, the setting of the stage and the interaction and arrangement of the musical and dance programs, and the stage.



Figure 90 Srinakharinwirot University of Thailand commemorating the traditional festival "Water Lantern Festival" performance.

Source: Haibo, Shuai. 2022

The three-dimensional relationship between wind instrument and social needs. The social needs of music are reflected in every aspect of social life. In China and Thailand, the worship and blessing are the spiritual demands of the society; the folk festivals are the emotional demands of the society. In all aspects of social needs, music plays an important role in creating an atmosphere, purifying the mind, sublimating emotions, and arousing resonance, and promotes the development and progress of the

society. As an integral part of music, wind instruments play the role of sound music, resonance, and dialogue. They can "reach the will of heaven" and "reach the gods", influence people, educate people, improve people's aesthetic taste, and enrich people's spiritual emotion. The role of wind instruments comes from the cultural convergence of various periods, and it has been a unique cultural phenomenon formed after long-term development. And the profound cultural heritage of wind instruments expands the social demand for music.

In November 2022 and December 2022,2022. On November 3,2022, at a funeral in Phra Nakhon Si Ayutthaya, the live band was very rich, including singing and traditional bands, Khlui and electric vocal groups, and Pinai, Pichawa and traditional bands. The music played in various forms, both the band and singing, but also the cheerful band ensemble. On December 7, 2022, at a funeral observed by Chiang Mai, the live band played Pinae, a representative wind blowing instrument of northern Thailand, one large and one small, and the traditional Thai instruments, gong, xylophone, Ching, and drums. There is high Pinae noi with the band, but also bass Pinae Luang and high Pinae noi with the band. In religious ceremonies, there are more suites, such as: Suite Solennelle, the playing time is about one hour, and the performance time can be adjusted according to the occasion.



Figure 91 At the Phra Nakhon Si Ayutthaya funeral San Pa Band performs live



Figure 92 At the ChiangMai Ban Lan funeral Band performs live.

Source: Haibo,Shuai. 2022

Source: Haibo,Shuai. 2022

Through the above two cases, we can see the wide use of sacrificial music for social needs, and the cultural meaning of folk playing music is the compliance of rites and music, and the sustenance of the spirit. These manifestations lie in the fact that the deified instruments play music instead of human language and talk with the ancestors and the gods through the way of music. This is the profound philosophy contained in the ancient thought of animism, and the social demand of blowing music is evolving into the specific form of its social and practical functions. The reality of this case is also reflected in the wind instrument Hulusi above. In Yunnan, the spread of hulusi has a lot to do with national customs. As a medium of courtship, young men perform courtship by performing hulusi, which is also one of the reasons for its enduring popularity. Suona is also the most widely used representative instrument of wind instruments. Suona is widely used in China and Thailand, with various performance forms. It can be a single solo, two ensemble, band ensemble, multiple ensembles or play together. The suona is vibrated with whistles, and the amplification effect of the bowl mouth at the bottom of the sound tube makes the suona sound magnificent and penetrating. a common wind instrument in sacrificial or celebration ceremonies in China and Thailand.

China and Thailand rites and music have a long history, after thousands of years of development and inheritance, whether in ancient times or in modern times, the social needs and social values of wind instruments have always existed. This is the continuous breakthrough of human cultural consciousness, which reflects the different relations between man and nature, man and religion, and man and rites and music. In ancient witchcraft, the main purpose of singing and dancing is to entertain God. The

music behind the witch culture is the way for people to seek spiritual comfort and the good desire for the things of heaven and earth. Manchu manan sacrifice ceremony, for example, including heaven, jump God, please God, also process, hand single ring drum, waist bell, with hand section chanting, singing song, God dance, demands and spiritual comfort, ritual song, dance, music, word play the role of heaven, dialogue with God, drive the role of the evil spirits.

Association between wind instruments and other instruments. The ancient Chinese Musical Instruments are classified into eight categories: "stone, earth, silk and bamboo". From the classification method, divided according to the production materials. Nowadays, musical instruments are classified in pronunciation mode. No matter what way the instruments are classified, wind-blowing instruments play a very important role in the instrument category. At present, the earliest recorded musical instrument is the wind musical instrument. Wind instruments play an extremely important role in both band ensemble and opera accompaniment. In the band ensemble, wind instruments, string instruments and percussion instruments form the most basic playing paradigm of national instruments. In the composition, due to the scale of the band and the balance of musical instruments, different band structures and performance forms will occur. For example, Chinese Jiangnan silk and bamboo is composed of erhu, dulcimer, pipa, three strings, Qin qin, di, xiao and other silk and bamboo instruments. The Mahori band in Thailand consists of Khlui, Ranat, Kongwong, Ton, Rammana, Ching and other instruments. In terms of instrument composition, Chinese and Thai ethnic bands have wind instruments and percussion instruments, and the size of the band can increase the corresponding number of instruments to achieve a balance. In the "Empirical Study of" Point, Line and Face "acoustics of National Orchestra String Group", written by Huang (2021): when the point, line and surface are interrelated with music, the "point" corresponds to the sound and rhythmic sound of percussion instrument and plucked

instrument can be collectively referred to as point notes, while the "line" corresponds to the sound, melody or polyphonic sound of pulling string instrument and blowing instrument, which can be collectively referred to as linear melody; the "surface" corresponds to the combination between the same or different instruments and superposition and harmony sound, which can be collectively referred to as vertical harmony. This shows that the sound produced in the performance of different instruments will form a dotted and linear interwoven harmony. In specific practice, there should be a whole and local separation and integration. For the band, the harmony of different Musical Instruments on the sound system should not only regulate the frequency, resonance, and volume of the sound, but also reasonably connect in the specific direction and position (Huang, 2021). In the role positioning of the band, the wind instrument can be used both as the playing instrument of the main melody, and as the accompaniment instrument and harmony instrument of the musical texture.

4.3.4.3 The educational function of wind instruments

Educational concept of ancient wind musical instrument culture. From the perspective of the development of traditional music, the ancient emperors and sages attached great importance to the educational role of music. In the pre-Qin period, the Rites of Zhou regarded music as the educational content of the six arts (rites, music, archery, imperial, book, and number). Clarified the views of music and established a unique system of "ritual and music". For example: Confucius put forward the "change customs, not be good at music; on the people, not be good at etiquette." Confucius' thought of "benevolence "is constantly extended from the perspective of" music "and" ritual ", guided by ethics, cultivated by music, and paid attention to the cultivation of emotion and quality. Thus, music carries the relationship with society, aesthetic standard, and ideological education. In the cultural development of music, the pursuit of personalized development path and the diversified concept of music development

present the development situation of "harmony without uniformity" and "a hundred flowers bloom". In the development of "personalized" and "diversified" music, Confucius dialectically analyzed the educational functions and social functions of music from different types, different themes, and different forms of music. For example, Confucius deeply analyzed the relationship between rites and music from the "bad rites and music" and put forward musical standards at different levels such as moral, artistic, and social relations. In the treatment of music, Confucius also put forward the specific requirements of "music but not prostitution, sorrow but not hurt", and put forward the view of "the sound of music" and required "positive" and "peace" from different levels of processing methods such as music and emotion. However, in his views on music, Confucius was extremely opposed to "Zheng Wei's Voice". The serious consequences of his indulgence in music are opposite to the cultivation of one's morality and character. Confucianism represented by Confucius, Mencius and Xunzi represents that in the methodology of music, the goal orientation is clear, that is, to improve people's aesthetic taste, aesthetic standards, and aesthetic ability, and to cultivate people's thoughts of "authenticity" and "kindness" through beauty. Xunzi reflects the relationship between music and society from the different tones of music and puts forward the proposition of "the palace is the king, the merchant is the minister, the horn is for the people, the levy is the service, and the feather is the object", expressing the problem of music and social atmosphere. Le Ji also summarizes the Confucian music aesthetic thought in the pre-Qin period, and deeply expounds the political function and educational function of music from the influence of music on people's will, emotion, and character. These advocates of music, the method of dealing with music, and the idea of "benevolence" and "propriety" of music in Confucianism play a positive role in promoting the rule by virtue and implementing benevolent government. As a concrete way and means, "ritual" and "music" have been developed in the process of implementation and have expanded the social function and

value orientation of "ritual" and "music". The Analects of Confucius of Qin records the view of "prosperity in poetry, standing in rites, and becoming in music", which explains the relationship between poetry, ethics, and music. Since the Han Dynasty put forward the idea of "deposing other schools of thought and respecting Confucianism alone", Confucianism has penetrated all aspects. Since then, it has also deeply influenced the Chinese culture for thousands of years.

Similarly, after thousands of years of development, music also has different ideas and opinions. Taoist school represented by Lao tzu, Zhuangzi, also advocate the enlightenment of music, advocated "big sound", "harmony between man and nature, to music" music thought, that the highest level of the music is "music", need natural music, abandon human music, think ritual and secular music are at the end of the "music". Compared with the Chinese Confucian and Taoist schools, there are very different to a large extent, with different musical views and propositions, but the mention of music is consistent in the coordination of social relations and value function, which has become the cornerstone of the development of Chinese traditional music. Ji Kang of the Wei and Jin dynasties (224-263 AD, or 223-262 AD) dialectically analyzed the value and significance of music in the Theory of Sound without sorrow and Music, discussed the relationship between music, society, and social phenomena in the pre-Qin period, and explained the meaning of the existence of music from different perspectives. For example, the relationship between music and changing customs; the difference between noumenon music and specific music. Ji Kang thought from the reality, knew the music of the music, and the music, speculated the value and the function of music, and promoted the development of music culture. Looking at the function of music from different angles, no matter what kind of musical ideas and propositions are, they are the product of social development and cultural prosperity, and the understanding and opinions on music will also change due to the changes of The Times (Ji, n.d.).

"Music" enduring, from the pre-qin period of China to the two-jin period and the Chinese tang, song, yuan, Ming and qing music theory, music works, from "tube", "zhou Li spring officer big Sile", Cai yong "month made sentence" to the Ming dynasty zhu in the twelve law, etc., as well as the classification of Musical Instruments, tube, notation, are in favorable exploration. As for the wind instruments, since ancient times, many performers and musicians have explored and improved the wind instruments and are constantly adapting to the needs of cultural development. For example, in the period of the Jin Dynasty, Xun Xu calculated the correction of the mouth of the canal. In the capital of the Han Dynasty, the tone was not precise, and the length of the string produced the sixty laws and formed the "rotary palace rotation theory". All these can show the characteristics and attributes of ancient Chinese music clearly and distinctive, forming the map of Chinese music.

Educational thinking of modern wind and musical instrument culture. The development of music culture in China and Thailand has been well protected and inherited from ancient times. Chunguan, a court music institution established in the Zhou Dynasty, implemented systematic music education. Yuefu, a music institution established during the Han Dynasty, collected, and compiled local folk music, arranged, adapted, and created music. Tang dynasty music institutions "too often temple" has "advocate" big music department ", and" pear "" fang "music institutions, song, yuan, Ming, qing period social and economic development," tile hook bar "" book "" social "and other music activities and industry organizations gradually formed, in the folk" day rhyme club "" great pleasure "" qing club " national instrumental music performance of group organization. In this period, the focus of music development shifted from the court to the common development of the court and the folk, which promoted the prosperity and progress of court music, literati music and folk music. In modern times, with the development and spread of western music, China and Thailand were influenced to

varying degrees. To better deal with the problems of China and the West in music, music and performance, China has carried out music reform and improvement of Musical Instruments, realizing the identity with the western music and music. For the spread of western music, Thailand adheres to the development idea of western music and traditional music going together. Thai traditional music adheres to the tradition in terms of music and music and has strengthened the protection and inheritance. Although China and Thailand take different ways for the dissemination of western music, but the main goal is integration, protection, and inheritance. The development and cognition of the protection and inheritance of wind instruments is also similar. China and Thailand have formulated relevant policies and measures for the protection and inheritance of wind instruments. For example, the Chinese government actively promotes the protection policy of intangible cultural heritage; inherits and develops excellent traditional culture through the cultural and art Fund project; the inheritance and protection of Thai Khon Opera; and the inheritance of intangible cultural heritage in China and Thailand, which are actively promoting the development of culture and art. In practice, found that not only the government departments are making efforts, but also the relevant schools, social groups and individuals are inheriting and developing wind instruments through different ways. The following are the real cases taken the survey period.

In September 2022, a Thai traditional music performance was held on the second floor of the activity Center of the High School affiliated to Srinakharinwirot University in Thailand. The show starts at 16:30 PM and ends until 21:00 PM. Through observation, recording and analysis, the performance has several characteristics. One is the large scale of the performance. It involves teachers and students at the School of Fine Arts and Applied Arts of The University, teachers, and students at the High School affiliated to the University, and performers of the external orchestra. Second, the

performance of many forms. The performances include both traditional music bands and western orchestras. Third, there are many highlights in the performance. During the performance, teachers from professional fields were invited to have a dialogue to discuss the development of traditional Musical Instruments. At the same time, there are not only Western orchestras and Thai traditional instruments, but also a "contest" between traditional orchestras. On the stage, the two bands performed different or the same music successively. In the form of competition, the difficulty of playing the music was increasing, which pushed the whole performance to a climax.



Figure 93 Traditional band performance by Srinakharinwirot University in Thailand

Source: Haibo Shuai, 2022

On December 13, 2022, in Thephwithya School, Bangkok, Thailand, the colorful music class came the sound of musical instruments. This is the music interest group class opened by the school, and the students rehearsed the program under the guidance of the Banchong Udommadan teacher. According to the introduction of Teacher Banchong Udommadan, their school has set up Thai traditional musical instrument band, electric vocal team, dance team and other interest groups, integrating traditional Thai and Chinese instruments into the classroom, and improving students' musical literacy through music lessons, daily rehearsals, program performances and

other forms. Banchong Udommadan As a student sent to Tianjin Normal University of China for exchange, I learned bamboo flute, gourd flute, xiao, erhu and other Musical Instruments in China, and have a certain understanding of traditional Chinese Musical Instruments. After returning to Thailand, he actively promoted the traditional instruments from China and Thailand in the school, and his deeds were also reported by the Chinese CCTV. In Thailand, the integration of traditional instruments into the classroom form is very common. understood that many primary and secondary schools in Thailand will open musical instrument classes in schools, and the most widely promoted one is Khlui.



Figure 94 Interview with Banchong Udommadan teacher at Thephwithya School in Bangkok, Thailand, and communicate with Kaen fans in Thailand.

Source: Haibo Shuai, 2022

In China, many local government authorities will combine local characteristics and integrate the protection and inheritance of local intangible cultural heritage into music classes or interest groups in primary and secondary schools. For example, in Ganzhou City, Jiangxi Province, China, local education authorities, cultural departments and schools have taken Gannan tea picking opera, hulusi and bamboo

flute as characteristic courses to inherit and develop excellent traditional Chinese culture and improve students' aesthetic ability. In addition, universities for the aged, piano shops and training centers all take learning traditional Musical Instruments as the main course to promote the development of traditional culture. In recent years, international organizations and all sectors of society have paid more and more attention to the cognition of the inheritance and development of traditional culture and made more and more efforts to protect the inheritance and protection of intangible cultural heritage. The application and selection of world intangible cultural heritage sites and the selection and training of inheritors of intangible cultural heritage have greatly promoted the protection of intangible cultural heritage in all countries in the world and played an important role in excavating and saving the endangered music, opera, dance, fine arts, and other arts. These cases fully show that government departments and schools (universities, primary and secondary schools) in China and Thailand are exploring the development of traditional music culture, and these measures are of far-reaching significance to the development and inheritance of wind instrument culture.

4.3.4.4 Aesthetic function of a wind instrument

Silk bamboo and music, as the acoustic complementary to other instruments, when playing, the player can regulate the texture of the sound through the strength and length of the breath, complementary to the sound of other instruments. From metal instruments to nylon silk wire pulling instruments, loud and hard metal sound to weakened and soft silk string sound effect, wind instruments, as a combination of rigid and flexible connection part, is particularly prominent. As the oldest musical instrument, the wind instrument can be traced at the source of its generation. Bamboo, reeds, animal bones, etc., are many animals and plants stored in nature, and hollow pipes through the airflow, will produce sound, which also provides convenient conditions for bamboo, reeds and animal bones to become Musical Instruments. Human

civilization begins with music and dance, and the oral instruction is not until the emergence of words that civilization is recorded. From primitive hunting to production and work, simple dance movements, single to compound rhythm changes, single to polyphonic syllables changes, are the process of constant change and development of wind instrument culture. At the same time, we can also see that the shape of wind instruments has changed in the change of the rhythm, which comes from the understanding of music, the understanding of society, and the understanding of aesthetic appreciation. Chinese bamboo flute from the initial bone flute, bone whistle, to the vertical Xiao, horizontal Chi(簫) and Di, the Thai Khlui experience in the development process of its formation process, is also basically consistent. The instrument materials also vary from the animal bones, bamboo, jade, clay, trees, and other changing processes. To this end, with exquisite appearance, beautiful sound effect as the starting point, highlighting the continuous improvement of aesthetic ability and level.

Cultural implication of the wind instrument material. Ancient Chinese compared bamboo, plum blossom, orchid and chrysanthemum to the "four gentlemen", because bamboo is straight, not crossed, pressed and flexible, implying the good quality of high spirit and perseverance. At the same time, the bamboo festival of bamboo means high, which is the Chinese people's expectations and good wishes for good things. In China, there are many documents and poems praising bamboo. For example, Liang Dynasty Liu Xiaoxian's "bamboo", bamboo born in the wild, the clouds. No one rewards the high festival, the acts to embrace the faithful heart. Qing Dynasty Zheng Banqiao's "Bamboo stone", insisted that the castle peak does not relax, the root in the broken rock. Thousands of mills strike also strong, ren Er southwest north wind. These poems are the best praise and interpretation of bamboo.

Physical science of the material properties of wind instruments. The timbre of Chinese bamboo flute is very characteristic, through the way of flute film auxiliary

sound, is also the most magical side of Chinese bamboo flute in the world Flute ranks. Chinese bamboo flute in terms of material selection, bamboo has been used for thousands of years. Throughout the historical development of Chinese bamboo flute, xiao, paixiao, lusheng, hulusi, shen, bawu, and Thai Kaen, Pi Jum, Wind, today are bamboo as the main material, even if there are other materials instead, cannot achieve the instrument made of bamboo as the material. The selection of bamboo materials not only lies in the characteristics of bamboo material density, the dense arrangement of vertical fibers, the vibration and refraction strength of airflow, sound adsorption and emission strength, and is more unique than animal bones, jade, clay, rubber wood, wood, and other materials. Khlui with Pi Nai, Pi Chawa, suona, guanzi and sentinel pronunciation are mainly wood, which is due to the loud volume and strong strength of sentinel pronunciation, which requires thick texture and high-density materials to strengthen the strong sound. The material of a wind instrument determines the quality of the sound of the instrument, even if the wood, there are a variety of materials to choose from. In the choice of materials for making wind instruments, high-density, thick hardwood is the first choice. For example, East Africa black sandalwood, South American serpentine wood (*Piratinera guianensis*), their density reached 1.3 grams / square centimeter grams / square centimeter, Indonesia ebony also reached 1.14 grams / square centimeter. But because lumber is imported, the value is expensive, so when making material, can choose a few lower density mahogany or jujube wood. In addition, the Thai wind instruments Kaen, Pijum and the Chinese hulusi and Lusheng clarinet instruments are also featured in the selection of reed materials. The current reed is thin copper, elastic. The traditional reed instrument is made of bamboo, reed, and mountain grass. The traditional reed materials are replaced because of the bamboo, reed, mountain grass and other materials rough, simple production process, cross performance, insensitive pronunciation, unstable pitch, and other characteristics, is

replaced by copper with good texture. There are also many kinds of copper, too. In the specific application, the new alloy copper is better in both the maximum tensile strength and the maximum tensile force than the cymbal bronze.

Aesthetic implication on the three-dimensional image of wind instrument body. Wind instruments in China and Thailand are made of balls or cylinders, mainly made of bamboo, wood and clay. After the design, production, and other links of the musical instrument maker, in addition to the sound quality to sound rhythm, pure sound color, the appearance of the design is also very important. For different countries, societies and individuals, the aesthetic needs are also different. Take Chinese bamboo flute as an example, Chinese bamboo flute is carved with exquisite words or patterns, and the text part is mainly composed of ancient Chinese aesthetic poems praising bamboo flute or related to di. For example, "whose jade flute dark flying sound, scattered into the spring breeze full lu city", "Qiangdi why complain willow, spring breeze does not spend Yumen Pass" and so on. The pattern is dominated by the Chinese totem "dragon". In the wind instrument "xun" pattern accessories, mainly in the ancient Chinese decoration or auspicious beast "Kirin" format. The decoration of hulusi is more exquisite, in the gourd carving lifelike figures, or bamboo leaves, or poems, a variety of formats. These not only reflect the aesthetic expression, aesthetic standards, and aesthetic taste of the Chinese people, but also achieve the unity of the musical artistic conception and the aesthetic taste through the form of containing words and patterns. The words, patterns and patterns of Thai wind instruments also exist on the pipes. For example, in Thailand PiNai's production process of carving concave and convex lines on the tube body, the delicate appearance not only has a visual three-dimensional sense, but also is conducive to the stability of the fingers in the performance. Part of the Thai Khlui is also engraved with patterns on the tube body, and both ends are inlaid with copper sets and other processes. Thai Pi Chawa Fine and thick

tube body, horn mouth, sound tube, sentinel and other production technology are very fine. For Chinese and Thai wind instruments, Chinese bamboo flute, xiao, xun, hulusi, Thai Pi Nai, Khlui, Pi Chawa and other instruments' images and patterns are designed.



Figure 95 Thai Khlui Tube body decoration

Source: Haibo Shuai, 2023



Figure 96 Resonator decoration of Thai Ranat Ek

Source: Le Dai 2023

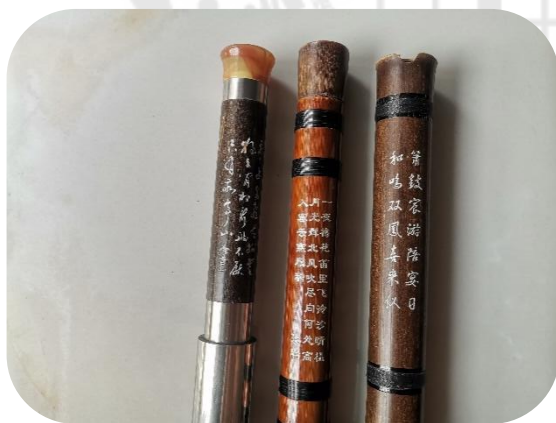


Figure 97 The body decoration of Chinese

Bawu, Zhudi, Xiao

Source: Haibo Shuai, 2023



Figure 98 the body decoration of Chinese

Guzheng

Source: Haibo Shuai, 2023

Chapter 5

Summary

Taking historical marking as the research dimension, throughout the historical development process of Chinese and Thai wind instruments, the artistic characteristics of wind instruments represented by Chinese "flute" and Thai "Khloi" in playing method, technique, and music style; from the perspective of "cultural comparison", the similarities and differences of wind instruments, faults, and iterations in the development of Chinese-Thai wind instrument culture. The discourse statement of the national attributes of Chinese and Thai traditional culture is clearer, the value function and role positioning of national wind instruments is more accurate, and the development and inheritance of wind instrument culture under a multicultural background are more active.

5.1 Research conclusion

5.1.1 Under the background of multicultural, the objects of Chinese and Thai wind instruments shape each other

The development of music in China and Thailand is diversified, integrating different theoretical viewpoints such as ethnology, anthropology, and sociology, and forming a relatively independent and distinctive music paradigm. From the development path of "single-change- -system-pluralism", it has realized the change and unity of the object of culture and the object of music.

5.1.1.1 Expound the image change of the object cultural symbol of the wind instrument with the musical instrument body.

As the successor of the Russian semiotics and master, as the world contemporary semiotics in the field of "tartu-Moscow school" recognized leader, rowman inherited and developed the tradition of Russian semiotics in the 20th century, the history, art text, poetry, folk oral creation of semiotics analysis strictly in Russian history and culture development language to examine. He first put forward that the

development of culture should be realized in two ways: "gradual" and "explosive", believing that "gradual" is a process of "continuous movement" and "predictable", while explosion is opposite and "unpredictable". Human development is the history of "mutual movement and transformation between" gradual "and" outbreak ". From the historical development of music and Musical Instruments in China and Thailand, they have experienced the combination of foreign culture and local culture. The process of experience is that the organizations or individuals in China and Thailand are the main objects. In the evolution of "social migration- -object evolution- -cultural collaboration- -symbol marking", cultural symbols with national characteristics are formed. Their symbol images are abstract, while the images of Musical Instruments are concrete. For wind instruments in China and Thailand, the shape and rhythm of the instrument have changed from object to the culture, spirit, aesthetic, and concept in line with the noumenon country, and built the ultimate image of the instrument itself. The typical representatives of the object image change are Chinese national instruments suona, dulcimer and shakuhachi. The suona and the dulcimer are both foreign instruments in china. In the 3rd century, the suona was introduced to China from Persia and Arabia. The dulcimer was introduced from Persia in the late Ming Dynasty, with the increasingly close friendly exchanges between China and West Asia, by sea. Combined with Chinese culture, it has evolved into traditional Chinese instruments. Relatively speaking, from the noumenon to the object, and then by the object of the pipa, shakuhachi, and other instruments. In the Southern and Northern Dynasties, the pipa had cultural exchanges with the Western Regions through the Silk Road, and the pipa was introduced to China from Persia through today's Xinjiang. After improvement and development, in the late Tang Dynasty, the Chinese pipa was spread to other parts of East Asia and developed into the current Japanese pipa, Korean pipa and Vietnamese pipa. Shakuhachi, a Chinese musical instrument, was the peak of its development in the

Tang Dynasty and was named after its length. Through the Tang Dynasty, it was brought to China by Japan. After development, its shape, pipe diameter, incision, wall thickness and sound effect were improved and scientifically tested and became the typical representative of wind instruments in the world. For Japan, the most significant change from the object to the body of the wind instrument (figure98-99).



Figure 99 Tang Shakuhachi

Source: Hanshanmaoshe. (2015, September 18). Masakura: The historical site of ancient Nara. 360doc. Retrieved from http://www.360doc.com/content/15/0918/21/17976275_499977907.shtml



Figure 100 Modern Japanese Shakuhachi

Source: Hwmc (n.d.). Edge-blown Flutes - Japan 'Shakuhachi

Yuu' with 7-Holes. Retrieved from <https://wmic.net/japan-shakuhachi-yuu-7holes/>

Tang Shakuhachi has six holes, the first five and the second one. After the introduction to Japan, after improvement, Japan Shakuhachi for five holes, the first four and the last one. In addition, there are changes in shape, pipe diameter, rhythm, and other aspects.

This development from object to ontology, for Thailand, has also experienced the same situation. Its musical instrument circulation, cultural innovation, music spread the ontology to the object rheological situation is present, the Thai traditional instrument in the ontology between the object circulation phenomenon is relatively common, this is mainly due to the history of Thailand in the process of development, has experienced the rule of several different dynasties, its changing geographical environment, cultural environment, caused the multicultural structure in Thailand. Thailand's history has experienced the south (Cambodia ancient dynasty, established in the 1st century), True La (for the south, Ming wanli said Cambodia), fall

bowl body kingdom (the second half of the 6th century), Angkor dynasty (established in 802 AD), but Tai dynasty, big city dynasty rule, territory area changing, promote the cultural integration and evolution. In addition, Southeast Asia, as the undertaking part of East Asia and South Asia, has absorbed the Indian civilization and the Chinese civilization, and has a great influence on the Thai civilization. From the changes within the region, Thai culture, which integrates various cultures such as China, India, Cambodia, Laos, Myanmar and so on, with rich cultural elements. In terms of national culture, Thailand has formed the mutual shaping of the original and object culture. Therefore, the music culture of Thailand and the music culture of the neighboring countries are very similar, and there is a certain correlation. For example, the use of the seven-fold average law. Not only in Thailand, in Myanmar, Laos, Cambodia and other countries, southwest Guangxi, and other ethnic minority musical instruments, and in ancient China, all use the seven average law. At the same time, China's five-tone music and Thailand's five-tone music convey the same symbolic message. Even in terms of the composition of the band and the shape of the instruments, Thailand, Cambodia, Myanmar, China, and other countries are basically the same. For example: Kong wong, Ranat, Pinai, Ching, Glong, etc. (as shown in the picture), Saw duang, Saw oo and China Huqin, etc.



Figure 101 Kong Von Thom of Cambodia Full Image

Source: Ksblack99. (2011, April 9). Kong Von Thom of Cambodia.

Wikipedia. Retrieved from

https://en.wikipedia.org/wiki/Kong_von_thom#/media/File:Kong_Von_Thom.jpg



Figure 102 Javanese Gamelan musical instrument Full Image

Source: Grinnel-Wilson, L. (2022, August 3). Instruments of the Central

Javanese Gamelan: An Introduction. Center for World Music. Centerforworldmusic.

Retrieved from [https://centerforworldmusic.org/2022/08/instruments-of-the-central-](https://centerforworldmusic.org/2022/08/instruments-of-the-central-javanese-gamelan-1/)

[javanese-gamelan-1/](https://centerforworldmusic.org/2022/08/instruments-of-the-central-javanese-gamelan-1/)



Figure 103 Thai Khong Wong Lek Full Image

Source: Harris, H. J. (1986). Thai Khong Wong Lek. The metropolitan museum of art. Retrieved from <https://www.metmuseum.org/art/collection/search/503305>

Pictures shown in the southeast Asian countries in Cambodia, Indonesia, Thailand and other countries part of the traditional instrument image, the instrument in the shape, material, playing method is basically the same, these are from the object between the object and shape, mainly rooted in the country, national cultural soil, after long-term development, become synonymous with national cultural symbol. In this way, we can further explain that the music culture of Southeast Asian countries has the same source. In contrast, the mutual relationship between the cultural subjects and objects of China and Thailand is weaker through the passage of time and the development of Chinese traditional Musical Instruments.

5.1.1.2 The structural correlation of the sound space of the wind instrument is explained by the object phenomenon.

The so-called object phenomenon is the sound shape shaping inspired by the structure and pronunciation of the musical instrument itself. For instruments, different

instruments reflect different attributes of instruments and social and cultural phenomena in different periods. As the sound of the pipe body, the oldest bone whistle and bone flute, the air fluid of nature collide with the tree holes and bamboo holes, producing the sound effect of "purring". The primitive society, with hunting as the main food source, started with acoustic hunting, and signaling to attract animals into the chirping of birds and animals. The various causes of the emergence of wind instruments are closely related to social life. The acoustic development of wind instruments started from the original eagle bone and crane bone, bone whistle, from single hole to porous, single to polytone, from single to multiple tube. There are many kinds of ancient Chinese wind instruments, including sheng, xiao, guan, chi, yu, xun, etc., who all experience or are still using bamboo as materials. For wind instruments with different sound colors, sheng, tube and yu are coupled with the clarinet. From the perspective of social phenomena, in ancient times, the design of reeds began with the inspiration of the ancestors to sound the wind leaves. The wind blowing leaves, bamboo leaves and other thin objects emit a "rustling" sound effect, which provides a reference for the creation and development of wind instruments from the edge of the edge vibration to the clarinet coupling. They fixed thin pieces of reed to the bamboo tube and making a sound. Blowing leaves, bamboo leaves and other most primitive, primitive performances, in China, Thailand and other places. From the bones of birds and animals to bamboo, wood, soil, and other materials, to bamboo and copper pieces like "bamboo leaves" on bamboo pipes, or reeds, palm leaves and other materials to help make the sound. Similarly, in the development of single to multiple, China's flute, the ancient said " 簫 " (yue), from single vertical blow evolution into multiple, China's sheng and Thailand Kaen also experienced more four tubes, six to 16 tube quantity, the changes of the music harmony effect, rich texture, more rhythm, reached the role of "harmony", also embodies the human in the

improvement and development of Musical Instruments, the instrument sound effect, instrument structure in terms of aesthetic and emotional demand.

From the perspective of acoustic system, the spatial structure of wind instruments in China and Thailand has both similarities and different points. Both Chinese bamboo flute and Thai Khlui are wind instruments with edge edges as the source of shock. From the category of excitation devices, Chinese bamboo flute, xiao, and Thai Khlui; Chinese Suona and Thai Pi Nai, Pinae; Chinese Paisheng and Thai Kaen, Chinese Bawu and Thai Pi Jum excitation, vibrator, and tube structures. From the perspective of the tube structure, the edge, reed, sentinel, and tube structure of the excitation device are different, and the production process is different. The diameter, diameter and inner diameter of the tube mouth will be different, and the length of the tube body will be different, hence the characteristics of Chinese bamboo flute and Thai Khlui.

After the comparison and analysis of different sound incentive systems in China and Thailand, very clear that the vocal system of wind instruments in China and Thailand is similar (see Table 4). guanzi, suona, Pi Nai, Pi Chawa, Pi Nae; hulusi, shen, lusheng, Pi Jum, Kaen, bamboo flute, xun, Xiao, Khlui, and Whode. For Wind, the pronunciation principle is the same as Chinese paixiao, both are edge vibration pronunciation, and both are closed tube instruments, but the shape has changed, in the different shape of circle and arc, the actual performance is basically the same. For other wind instruments, the shape and structure are also basically the same. This point is introduced in the first subsection of chapter IV.

Table 4 Chinese and Thai Wind Instruments

Country / Musical Instruments	The air singing reed vibrates the musical instrument.					The air noise edge vibrates the instrument.		
China	Guanzi	Suona	Hulusi	Sheng	Lusheng	Zhudi	Xun	Xiao
Thailand	Pinai	Pichawa	Pinae	Pijum	Kaen	Khloi	Whode	

Table making: Haibo Shuai, 2022

From the perspective of the timbre change of the wind instrument, it will also mean the change in the structure or material of the wind instrument, or the change of the pronunciation principle, which affects the three-dimensional structure of the spatial structure of the wind instrument, such as material, power, temperature, humidity and other different media and acoustic learning. In terms of materials, different materials have different acoustic effects. Bamboo, wood and clay all form personalized differences, which mainly depends on the vibration mechanism of the material. In terms of humidity, both the treatment of the moisture of the material and the change of temperature and humidity affects the pitch and timbre of the moisture of the material will affect the density of the material. In terms of the power source, the rapid and slow strength of the air flow will change the contact points and vibration points in the process of performance and pronunciation. Some of the changes are subtle, such as pitch, pitch, timbre, volume, etc.

The process of development is also the process of subject change, which is the mutual process from the subject to the object. The constant change of Musical Instruments as the main body lies in the spiritual and emotional needs of human objects.

The need for human subject is converted to the object instrument, and its changes and sources will be more diverse. For example, in the acoustic personalization of wind instruments, it comes from multi-level adaptability. For example: deterrence, celebration, lament, demand and so on, etc. This adaptability has a lot to do with politics, culture, spirit, and other aspects. For example, in ancient China and Thailand, there were instruments made of metal materials in the court, with a symbol of royal authority. And Chinese Suona, Thai Pi Chawa, Pi Nae, etc., often used in the military or opera accompaniment, with the effect of shaking the earth, the gods. The bowl mouth at the bottom end is conducive to the expansion of the volume and has a strong ductility, showing the characteristics of small cavity and size in the structure and sound intensity of the instrument. There is also multi-acoustic acoustic clarinet instruments paisheng, Kaen, etc., which show the characteristics of musical acoustics through harmony. The soft and warm sound effect of Thai Khlui has a great deal to do with the length of the position of the intake inlet to the point of the vibration edge, while Chinese bamboo flute is just opposite to the point of the acoustics and edge vibration of Thai Khlui. As can be seen from the above, the interaction between wind and wind instrument acoustics and structure forms a mutual relationship and forms a unique sound system. From the spatial dimension of the musical instrument structure, this sound system mainly includes excitation, vibrator, transmission and resonant. As a stereo space, from the air inlet to the base sound hole, formed a set of dynamic acoustic circulation cavity.

The formation and circulation of the above cultural objects fully shows that Rotman expounds the mutual movement and mutual transformation of "gradual" and "explosive", and China, Thailand and other countries in Southeast Asia and East Asia develop and transform in the mutual process of "gradual" and "explosive". For China, in the Han Dynasty, Zhang Qian's trips to the Western Regions, the Maritime Silk Road, and Zheng He's voyages to the Western seas during the Ming Dynasty promoted the

connection between China and the other parts of the world. The Third king of Ramkhamhaeng of Thailand, sent envoys to the Yuan Dynasty in China, Introduction of the Ceylon culture and art. The Uxertain Musical Evidence in Thailand's Temple Murals (Miller, 2007), French, British and other missionaries, or emissaries in Thailand (called Siam in ancient times), Records of temple murals and social phenomena, In Britain, there are also manuscripts of 17th-20th century Thai music activities or mural patterns. All the above are in the process of promoting political, cultural, and economic development. All countries use different ways and different means to promote national construction, promote economic development and maintain social stability. At the same time, to a certain extent, these measures provide a guarantee for the interaction between cultural ontology and object and breed a fertile soil for development.

5.1.2 The iterative change of the development of Chinese and Thai wind instrument culture under the historical dimension

Culture was first proposed by the ancient Roman philosopher Cicero. Culture, instead of an "existence", is itself an "evolution". This process of "evolution" promotes the progress and development of the society and is also reflected in the cultural inheritance and innovation. The development and change of China and Thailand in the shape, rhythm and music of instruments and instruments are also the epitome and representation of social development. The development of wind instruments in China can be traced back to the Spring and Autumn Ancient Music. It took the music as the earliest record of the music in China. The earliest wind instruments in Thailand can be traced back to the Sukhotai period. The development of musical instruments in the two countries also flourished with the prosperity of music. The increasing types of musical instruments, expanding sound range, and the improvement of foreign instruments and cultural interaction are very important links in the development process of Musical Instruments. Wind instruments represented by di, xun, guan, etc., can also trace the

cultural development process through scientific research and classical books in the aspects of shape and structure, score recording and music style. For some wind instruments, in a certain historical period, in a certain environment, the trajectory of development appears a fault cultural phenomenon.

Southeast Asian countries are closely connected, especially in music. Research have revealed that wind instruments are dying or changing in shape and structure. In terms of instrument form, kong wong, ranat and other instruments have the same attribute, same shape, and same material, which are the result of mutual influence and mutual fusion. The band structure is composed of the idiophones, aerophones, membranophones, chordophones, and other sound instruments. These instruments, whether according to the material, or according to the sounding way, or with religion or celestial operation, belong to the same series of the musical instruments of various countries in the world. But the shape and structure of instruments of the same series and they're almost the same rhythm in the region are basically consistent. Chinese paixiao, different from Danguanxiao (single-pipe flute), is a wind instrument. There are many kinds of Paixiao in the world, with footprints in Persia, India, and other countries, while Chinese paixiao has a long history. The murals in the Mogao Grottoes in Dunhuang, Gansu province record more than 300 paixiao from the 5th to the 14th century. In 8th and 14th centuries ago, paixiao was of the pipe with the same length, but then it gradually disappeared, and later developed into the form of long side on one end to short side. Paixiao has an important position in the ancient bands. There is also an ancient wind instrument called "Chi", with 5 sound holes, and the performing posture slightly different from the current bamboo flute. The major difference mainly lies in that the left and right hands are not alternating back and forth, but in the same direction, with the palm of the left and right hands inward, the back of the hands outward. They are placed in parallel, while the blowing hole is in the top or middle of the sound pipe. There

are two kinds of performing methods. One has the mouthpiece in the middle and the sound hole at the two ends of the sound pipe. The other is the sound hole at one end, and the sound holes corresponding to the left and right are at the other end. In southwest China, there is also an instrument called paisheng, however, which is very rare in southwest China now. But the Kaen of the same style is widely popular in Thailand. Jew's harp, also known as "Huang", is the first instrument created by Nuwa, the ancestor of the legendary creation, with primitive "embryo" significance. The Han Dynasty once built the "Drum and Spring Palace" dedicated to playing the Jew's harp, from which it gradually became popular in China. Jew's harp gradually disappeared in the Central Plains but was widely passed down by the surrounding ethnic groups, so that it finally developed into a musical instrument with a very high degree of sharing among Chinese ethnic groups—There are more than 30 ethnic groups using Jew's harp, with more than 50 kinds of names alone (Liang, 2023). There is also the Hezhe musical instrument "Dujige", which changes the original appearance of the instrument from different angles.

From the perspective of the demise of musical instruments or the change of shape and system, mainly manifested in the cultural differences. Chinese suona, guanzi, Thai Pi Chawa, Pi Nai and other instruments have the same articulation principle. Their material shapes are also basically the same, but the difference lies in the characteristics of cultures, such as Chinese Confucian culture, Taoist culture, and the Buddhist culture in Thailand. also connected with the influence of the country in the cultural direction and folk preferences such as Chinese panxiao and shakuhachi. In the historical development of Musical Instruments, Chinese national instruments xiao, di, huqin and pipa are favored by aristocrats, literati, and the public. In the long-term development, paixiao and shakuhachi have gradually weakened. In the south of

Thailand, the clarinet singing instrument, like Pi Chawa, has gradually weakened in the long-term development and is on the verge of extinction.

Regarding the traditional musical compositions and performing art forms. The music of China and that of Thai have own characteristics, while being related. They present the same and different characteristics in terms of the composition of the basic melody, the method of musical instrument performance, the notation, and the shape. In ancient times, Chinese wind instruments were mainly accompanied by opera, singing or other performances, or played with other wind and percussion instruments. Nowadays, few of the ancient songs of Chinese wind instruments are preserved, and the music materials in the form of opera or other performances are also very scarce. This is mainly because there is more music recorded scores than those folk. However, with the economic development, the teams concerned by the inheritance method of oral teaching that inspires true understanding within are very unstable, leading to the demise of the music scores. In modern times, wind instruments appeared on the stage for solos, with many professional solos emerging. The traditional music of Thailand follows the inheritance method of oral teaching that inspires true understanding within, and its development lines are relatively clear. However, in the process of inheritance, it will also be influenced by the relevant policies and importance of the state and the government on music culture, especially the unstable factors brought about by the war, which will bring a serious blow to the development and inheritance of traditional music.

5.1.3 The reorganization and review of the cultural core of Chinese and Thai wind instruments.

The British mathematician and philosopher Alfred North Whitehead put forward the view of "finding complexity and making it orderly", which is an effective way to solve the multicultural problems in social activities. In the cultural attributes of China and Thailand, they both have their own "halo" and unique cultural characteristics.

Compared them with in-depth analysis, the cultural attributes of China and Thailand have commonalities in the cultural support points, which is the cultural concept, cultural core, cultural atmosphere and so on under the cultural hedging.

5.1.3.1 Find the cultural commonalities of Chinese and Thai culture hedging. The Taylor-style mixed bag (Pau-au-feu) in the Realm of Humanity by Clyde Kluckhohn defines the cultural concept, comparing culture to a map, a filter, and a matrix theoretical thinking, which is the methodology of cultural concepts, cultural categories, cultural values, and cultural functions. Personally speaking, Chinese culture and Thai culture have cultural diversity. By classifying and comparing the cultures of the two countries, the cultural interpretation lies in the simplest moral concepts such as "harmony" and "goodness". Thus, the cultural unity is formed from the cultural concept. "Harmony" lies in thought and spirit, and "goodness" lies in moral character and practice. The most direct expression of "harmony" and "goodness" lies in the relationship processing between people, and the sublimation of emotion, to jointly create the cultural ideal of relative independence and unity together. In the specific cultural behavior, there are also cultural barriers. If things have no cultural conflict, then there is no cultural progress. To solve the cultural conflict is to produce the greatest cultural benefits. This cultural benefit is the cultural function and the cultural value. Taking the guiding approach to cultural function and cultural value, reflecting on the concrete practice of cultural behavior is the most effective way to break through cultural barriers. Finding the commonality of culture and seeing the barriers of culture, we also put forward the specific ideas and methods of cultural interpretation, which is an effective way for the integration and development of Chinese and Thai culture. Therefore, to fully solve the conflict of music in the cultural barriers is the most effective "propellant" in cultural development.

While the cultural concept is independent, the cultural trend under the cultural concept framework system is diverse. What is the connotation of wind instrument culture in China and Thailand? the unity of tradition, nation, and culture. Tradition is the continuation of culture, and the nation is the carrier of culture, which also confirms the proposition that "culture is compared to a map, a filter screen and a matrix of theoretical thinking". The theoretical thinking proposed is a vision of culture, which specifically needs to be practiced and verified by cultural actions. To continue and integrate the cultural tradition, necessary to examine the national character of the culture, establish the framework system of the national music culture, and achieve the unity of the national cultural concept with the interpretation of the national culture (Theory: the concept of the national culture; Practice: the national music analysis, etc.). The above thinking, as the re-structure and review of the core of Chinese and Thai culture, should not only take the theories as the support, but also fully apply them to practice.

5.1.3.2 The specific path to break down the cultural barriers between China and Thailand.

Cultural relativism proposed by Franz Boas, the father of American anthropology, holds the view that different cultures have different ethical practices. And Melville Jean Herskovits, the core figure of the cultural relativism theory, pointed out that "The core of cultural relativism is to respect differences and mutual respect. It emphasizes the value of a variety of ways of life, which targets at seeking understanding and harmonious coexistence, instead of criticizing or even destroy those that do not coincide with their original culture." The views of Franz Bous and Melville Jean Herskovits provide a theoretical basis for breaking down the cultural barriers between China and Thailand. In the cultural concept, the two countries share similar points, thus forming the most basic cultural applicability and cultural commonness. From the

reasonable explanation of nationalization to the cultural reconciliation of breaking through cultural barriers, the mitigation of conceptual conflict and the creation of the common atmosphere of culture and culture, and the solution of cultural problems under cultural conflict is regarded as the most direct and effective way.

Construction principles. China and Thailand are adjacent to each other, and have a long history of politics, economy, trade, and cultural exchanges. In forming a unique cultural system, they have the same cultural concepts and different cultural propositions. Respecting each other's respective cultural beliefs is the most important thing for the cultural development of China and Thailand, the two multi-ethnic countries. Many ethnic groups are distributed in both countries such as the Thai and Chinese Dai nationalities, and the Yao, Lisu and Lahu ethnic groups in China and Thailand. In a multi-ethnic country, the national cultural beliefs are diverse, while the cultural beliefs of the country are unified, which is extremely important for the construction of the cultural core of the multiple systems of the country, nation, and society. Therefore, the construction of a multi-level cultural system of "country-nation-society-belief" is the key to reshape the culture of China and Thailand.

Target requirements. Malinowski, a representative of the British functionalist theory, said that every social system has its own functional unity, and the whole parts of the system work together with some internal consistency. Taking "country-nation-society-belief" as the goal of cultural system construction, the most important thing is to fully understand the value of culture and the true connotation of function. Starting from the function value of Chinese and Thai music culture, the internal structure and internal relationship of society are connected to examine the functional value of culture. The inner structure of the society is like a net and a matrix. In the process of decomposition structure and restructuring structure, the folk festivals, religious ceremonies, and other social activities can be decomposed into independent cultural

behaviors. Meanwhile, the music and culture commonness of different countries and different nationalities can be unified, to achieve the goal of common integration of music culture.

Methods and measures. British social anthropologist Radcliffe Brown in the specific method of "comparative sociology" temporal and historical research ideas, think comparative method should have two ways of use, is " associated with the temporal research of culture, we should be a certain period of different cultures compare each other, rather than considering the change of culture itself. "For Brown's view of " comparative sociology ", in the research of Chinese and Thai music culture, the strategy of temporal research follows the time node, as well as the goals, ideas and methods in the problems now solved. The research on the music history, music theory, musical instrument performance, and the social activities and national culture reflected in China and Thailand is comprehensive and three-dimensional. For the establishment of the cultural concept of "harmony and uniformity", "harmony and uniformity" and "harmony and uniformity" in China and Thailand, there is not only temporal, but also diachronic. Finally, it maximizes the value of the cultural core and constructs the value system of the music culture system in China and Thailand.

5.2 Existing problems

5.2.1 Insufficient research

Research on the cultural development of wind instruments in China and Thailand are insufficient, and the research trend has not been effectively formed in the theoretical, systematic, and comprehensive research, while the research on wind instruments as the main content in China and Thailand is basically blank. So far, the world is paying more and more attention to Thai music culture, the scope of research extends from cultural research to music research and then to related research, and the research results are relatively rich. These include the research works of western

scholars represented by Morton (1976), Douglas (2010) and Sucharithanarugse (2015), as well as the research achievements of Chinese scholars such as Li (2017), Rao (2015) and Zheng (2018) plus scholars from Thailand and neighboring countries in Southeast Asia, forming a good research atmosphere. However, the research channels of Thai culture research, from individuals to groups, and to the community, have not been fully opened, and the research results of common problems with other countries are also scarce. Therefore, a series of policies are needed to strengthen the research, to conduct further in-depth research.

5.2.2 Incomplete construction of music theory system

China has completed the internationalization of the music system docking, as well as the unity of the identification of instrument name, performing skills, and other. On the composition of national instruments and western orchestra of the band, it has realized the mutual complementation of the band in sound lines. Besides, it has also built a relatively complete international music theory system. Nonetheless, as for the mode, tonality, harmony, texture and other aspects of Chinese folk music and western music, there is still room for constant exploration. The method adopted by Thailand for traditional music and western music is a two-way development mode, which is not only conducive to the inheritance and development of traditional Thai music, but also to absorbing the theoretical knowledge and performance techniques of Western music. For the construction of a complete music theory system, considering that Thailand fails to reach a uniform identification of language, sound, the transliteration of the instrument names, performing skills and related theoretical knowledge, it has an impact on the internationalization of Thai traditional music.

5.2.3 The performance of wind instruments fails to match well with the performance of music in modern society.

As an integral part of the traditional culture, wind instruments in China and Thailand play an important role in the development of traditional music and can express the emotion of the music. In modern times, the aesthetic level and demand of the society are constantly improving. Although the performance and performing techniques of Musical Instruments are constantly being optimized, and the improvement and innovation of Musical Instruments are also proceeding in an orderly manner, for modern music, there are still difficulties in the wide range, sound changes and modulation, thus requiring both China and Thailand to optimize the instruments' performance in the performance of modern music.

5.2.4 The promotion in the construction of wind instrument pedigree is insufficient.

Wind instruments have the characteristics of their own development. As a single individual musical instrument, they are strong in "language expression". Meanwhile, there are also theoretical and practical results. However, the construction of all-round score system regarding wind instruments is inadequate, and the overall performance is that the results are not ideal. There are few platforms, works and teams that can be displayed in individual form and whole integration, while the efforts to promote the pedigree construction run short.

5.3 Research advice

5.3.1 Strengthen the protection of traditional music.

Traditional music is the language of culture and the different reflection of human beings to the real life in different times and at different stages. We can perceive the past world and explore the value of traditional music through traditional music. In terms of protection measures, we should promote the effective construction of

organizational institutions, increase the investment in protection projects, establish effective protection systems, broaden the channels of exchanges and cooperation, and strengthen multilateral dialogue and discussion. For example, we can develop corresponding education courses or get through the traditional learning practice of music in primary and secondary schools. We can also carry out academic exchanges and continue to hold academic seminars of the Asia-Pacific Ethnic Music Society and music education seminars in the Asia-Pacific region. also suggested to strengthen cultural and artistic exchanges between countries, assign scholars to make academic visits to state institutions and institutions of higher learning, and hold Asia-Pacific traditional music and art festivals to consolidate the construction of traditional music.

5.3.2 Construct a complete music theory system.

The music theory research system of China and Thailand includes the construction of the music theory system of Thailand and the construction of the common music theory between Thailand and China. For the construction of the Thai music theory system, the primary task is to unify the names of the traditional Thai instruments, and then to mark the performing skills of the instruments. For the construction of common music theory in Thailand and China, the focus is on the study of music theory of Chinese wind instruments such as suona, guanzi, paisheng, and Thai wind instruments such as Pi Nai, Pi Chawa, and Kaen, which share similar musical structures and the same articulation principle. Meanwhile, necessary to stimulate the utility of "activated carbon" hidden in traditional instruments and achieve "release" and "adsorption" simultaneously, to make in-depth study on the folk music theories in China and Thailand and establish the fulcrum of traditional culture and modern culture. Besides, also recommended to strengthen the research, teaching, and practice of Chinese and Thai traditional music, and actively integrate it into the school classroom teaching so that they can promote each other and improve together.

5.3.3 Probe deep into the performance of wind instruments.

The necessary to target at the disadvantages of wind instruments, promote them according to conditions with methods and plans, while taking solving the problem of as the first task. In terms of new capabilities of wind instruments, needed to combine experts in acoustics, physics, materials science and musicology, to solve the difficult problems according to different temperament mechanisms of Thailand such as Seven Equal Temperaments and Twelve Equal Temperaments as well as various notation techniques such as staff and numbered musical notation, the accuracy of sound changes, and the grasp of incentive materials and timbre of musical instruments.

5.3.4 Comprehensively promote the construction of static and living lineage.

"Static" refers to the target, the object, and "living" refers to the method. In the forms of national, government projects, funds, subject, and by virtue of field investigation, expert interviews, literature analysis, practice experiment, taking the traditional instruments, traditional music, representative performers, inheritors as the subject object, set up a comprehensive, systematic, and complete pipe culture development pedigree through the approach of project, fragmentation, and team.

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Appendix

Appendix details

1. On September 27th, 2022, the author visited the ancient buildings in Ayutthaya, Thailand, and got a deep understanding of the history and culture of Thailand.



Figure 60 Inspection of the ancient building complex in Ayutthaya

Source: Cai Siying, 2022

2. Collect documents in universities and cultural centers in China and Thailand.

2.1 By August 2022, relevant research materials will be collected at the library of Gannan Normal University in China. China Southeast Asia-A Study of Cross-border Ethnic Development (Ethnic Publishing House; 2007) China Music Heritage Series (Jiangxi Volume) (Elephant Press; 2009), China Music Cultural Relics Department (Guangdong Volume) (Elephant Publishing House; 2010), "China Music Cultural Relics Department (Fujian Volume)" (Elephant Press; 2011), Interpretation of Culture (Yilin Press; 2014) and so on for data sorting and analysis.

2.2 From September to December 2022, the documents "Equiheptatonic" Tuning in Thai Classical Music: Strict Propriety and Step Sizes", "A Musical of Khlui - Pieng - Or Solo: A Case Study of Kru Jumniean Srithaiphon's Kraw - Nai Song Chan" and

other documents were collected and analyzed in the central library of Srinakharinwirot University.

2.3 October 19 and December 15, 2022, respectively, to collect materials at Chulalongkorn University Library (Thailand Information Center), Thailand. A Musical analysis of Thai Music", "The Garland Handbook of Southeast Asia Music" (Miller & Williams, 2008), "Austronesian Soundscapes Performing Arts in Oceania and Southeast Asia", "A Musical analysis of Thai Woodwind Counterpoint for Khlui trio ensemble Khru Peeb Khonglaithong". or Solo: A Case Study of Krawnai by Krujumniean Srithaipan" and other literature were compiled and analyzed.

2.4 On October 30, 2022, the documentary material "A Brief History of Lan Na" was collected at the bookstore in Bangkok; on November 22, 2022, the documentary material "Thailand A Short History" "Jinakalamali Index" "The Peoples of Chiang Mai" and other documents on the history of Thailand and Chiang Mai.

2.5 On November 2 and November 19, 2022, a visit was made to the Chiang Mai University (CMU) Art Library to locate literature and to analyze the materials such as "Musical journeys in Northern Thailand: adventures in ethnomusicology and other miscellaneous music making /Gerald (2009)", "The Tradaton Music of Thailand", and other materials for analysis.

2.6 December 8-9, 2022, at Chiang Mai Royal University (CMRU) to collect literature on Thai Music Introduction, History of Thai Music, and Creative Research in Music.

2.7 On December 19, 2022, the documents such as "Harmonics of Thai Music" and "Traditional Music of the Lao" were collected in the library of the University of the Arts in Thailand.

3. Research on the production process of Thai wind instruments Khlui and Pi Chawa and Chinese wind instruments Di and Xiao, as well as the culture of music and dance in Northern Thailand.

3.1 On October 25, 2022, under the guidance and assistance of Assist. Prof. Dr. Veera Phansue and Assist. Prof. Dr. Surasak Jamnongsarn, a research trip was conducted to a wind instrument making workshop in Bangkok, Thailand.

Before leaving, the author prepared a camera, tripod, notebook, and a list of questions to think about in advance. With everything in place, prof.Surasak Jamnongsarn, Mrs.PromptPay Topup and the author drove to Thonburi, Bangkok to conduct an examination with a Thai wind instrument maker. On the way out, prof.Surasak Jamnongsarn introduced some of the flute-making experts interviewed.

Khlui producer originally served in the Thai navy and played wind instruments in the naval art troupe. After retiring in 1989, he produced and sold wind instruments in Bangkok. He has great influence in the production of wind instruments in Thailand, and his wind instruments are well known and widely praised.After more than an hour's drive, we arrived at our destination without any problems. We were warmly greeted by the maker and after greeting each other, we were guided by the maker to the workshop, where we saw various machines for making wind instruments, punching machines, polishing machines, cutting machines; as well as files, sandpaper, and other instruments. The maker introduced us to the workshop and demonstrated the process of making Khlui and Pi Chawa very skillfully and professionally.

The process of making Khlui and Pi Chawa. Step 1: Selecting the wood. Purchase wood suitable for making Khlui and Pi Chawa, either domestically or abroad. Step 2: Drying. The wood is cut into pieces or sections in the largest and smallest sizes of Khlui and Pi Chawa and placed in a cool place to dry. The wood is checked periodically to see how drying. After about three months, the wood meets the

requirements for making wind instruments and can be moved to the next step. Step 3: Cutting. Depending on the size of the Khlui and Pi Chawa, the wood is cut by machine into multiple rectangular pieces. Step 4: Mold making. The Khlui and Pi Chawa are cut according to the shape of the Khlui and Pi Chawa appearance. At the same time, the inner diameter of the wood is drilled through according to the tone relationship and the timber system. Step 5: Hole setting. According to the tone, the hole is marked according to the tone hole and the outgoing hole. Step 6: drilling. Drill the holes according to the hole markings. Step 7: Place the cork (Khlui); place the thimble and reed (Pi Chawa). Step 8: Tuning. Precise tuning of the pitch of each note.

After the demonstration, the process of making Khlui and Pi Chawa and their history and culture were exchanged and discussed, and after summarizing, the main parts were as follows:

Q: What are the wind instruments in Thailand? Can you make them all?

A: The main wind instruments in Thailand are Khlui Piang Au, Pi Nai, Pi Jum, Pi Chawa, etc. I mainly make Khlui Piang Au and Pi Nai, and I do not make Pi Jum, which is popular in the north-eastern part of Thailand.

Q: What is the process of making Thai wind instruments?

A: A musical instrument can be played from the most primitive materials after processing. There are many steps in the middle, and each step is very important. For example: in terms of materials, there are water filtration, cutting and selection; In the aspect of drilling and fixing holes, there are drilling holes (drilling through the inner diameter of materials), taking the center line, fixing holes, etc. In pitch tone, there are cork debugging, tone correction, polishing and so on.

Q: Methodological requirements for wind instruments in terms of material selection and production

A: The main materials for making wind instruments are bamboo, solid wood and plastic, but the choice of different materials for wind instruments will be different. Pi Jum is dominated by bamboo; Khloi Piang Au has bamboo, solid wood, plastic and other materials, but solid wood is used more; Pi Nai is mainly made of solid wood. Among the materials, solid wood can also be divided into cork and hardwood, such as ebony and mahogany.

In the selection and manufacture of materials, there are many steps and high requirements. At the beginning, you should cut large pieces of material into small pieces. After cutting, you should put it in a cool place to drain the water inside the material. At this time, you must not expose it to the sun to prevent cracking and deformation. It will take about three months for the water to drain away. Determine whether the material is drained by means of eye observation and hand tapping. After that, according to the difference between materials (solid wood and cork, etc.), different methods are adopted to enter the next process. For example, to hollow out the inner diameter of wood, you need to use a small-sized drill needle first, and then use a large-sized one. You can't use a large-sized one at the beginning, otherwise it will be easy to drill and skew.

Q: What are the technical changes in the production of modern wind instruments?

A: When it comes to change, still mainly manual, but as an auxiliary tool, there are some changes, which will also be more mature in technology and more efficient. For example, the machine tools used here are cutting machines, drilling machines, grinding machines, etc. The use of these machines has shortened the production time and greatly improved the efficiency compared with the original pure manual production.

In addition, in the aspect of tuning and tuning, the original focus was on listening to the ears, and now the tuning and tuning APP:Thai tuner developed by

Mahidol University in Thailand is adopted, which is very helpful and makes the musical instrument sound more accurate. As an innovative development of technology, we have also improved Khloi Piang Au, and added a key at the end, which is like the flute of western wind instruments. The function of the key is to increase the bass and play it very flexibly.

Q: What are the most important steps in making wind instruments?

A: Every step of wind instrument production is very important, but there is one part that must not be wrong, one mistake will be useless and can't be changed, that is, the "center line". What is the "center line"? the vertical line in the middle of the material, and this line is the line that determines the position of the sound hole in the production. If this line is crooked or slanted, then the finger press hole and pitch will be affected. If you want to change it, not possible to change over. Other than that, if the pitch of the sound hole is a little wider or narrower, which affects the pitch, we can still solve it well in other ways, but if the centering line is not set correctly, then this material is useless.

Q: What kind of wind instruments are widely spread in Thailand?

A: The wind instruments in Thailand are mainly distributed in the northern, central, and southern parts of the country, and each of them has a certain representativeness. For example, Pi Jum in Northern Thailand, Khloi Piang Au in Central Thailand, etc. However, each wind instrument is more common in other places, but not so much in other places.

In addition, Khloi Piang Au is not only popular in Thailand, but also popular in other parts of Thailand. The main reason is that the difficulty coefficient of performance is not so great, the timbre is softer, and suitable for a wide range of people. Most schools in Thailand have arranged Khloi Piang Au's learning courses, which can also better promote and publicize Thailand's national culture and traditional culture.

Q: What are the tones of Thai wind instruments?

A: Thailand's wind instruments are most used in the key of C, and there are also high notes and low notes. For example, Khlui Piang Au has C, D, B and so on. In addition, there are 21 tones in the range, and some have reached 24 tones.

Q: Is the Khlui Piang Au, a wind instrument, like the European harp in terms of articulation principle and construction, an exotic product?

A: The Thai wind instrument Khlui Piang Au does have some similarities with the European clarinet, such as the pronunciation principle and clarinet structure. But there are also some differences, such as the sound hole design of the mouthpiece part and the end of the clarinet. I don't think the wind instrument Khlui Piang Au is an exotic product. Because Khlui Piang Au, a wind instrument, was one of the instruments of court music, it existed in Thailand's Ayutthaya Dynasty. But to trace the history of wind instruments, we can do some understanding and communication with experts who study wind instruments.

Q: Regarding the musical system in Thailand, based on the standard of the seven mean meters, but some experts in China have conducted sound measurements and pointed out that some of the tones are not purely mean meters, and there are differences in the tones. Does this mean that Thailand does not follow the principle of the seven mean meters in its musical system?

A: Thailand's music system has always followed its own music legal system and has been passed down to this day. At a specific pitch, the distance between notes is equal.

Attachment: Thai Khlui production process (part)



Figure 62 Choose material

Source: Haibo Shuai, 2022



Figure 63 Drill

Source: Haibo Shuai, 2022



Figure 64 Place a cork

Source: Haibo Shuai, 2022



Figure 65 Grind

Source: Haibo Shuai, 2022



Figure 66 Polish

Source: Haibo Shuai, 2022



Figure 67 Extended inner diameter

Source: Haibo Shuai, 2022



Figure 68 audition

Source: Haibo Shuai, 2022



Figure 69 Take a group photo

Source: Haibo Shuai, 2022

3.2 Overview of Chinese bBamboo flute and xiao production and development. On February 2, 2023, the author came to Zhongtai Township, Yuhang District, Hangzhou City, Zhejiang Province, the hometown of bamboo flute in China, and made an investigation on the production and cultural development of Chinese Bamboo flute and Xiao. The interview object is Xie Wenzheng, the production expert of "Mr. Guanzi" flute studio, and visits the flute drilling and lettering producers in Zhongtai Township. Xie Wen majored in normal music. After graduating in 2003, he worked as a teacher in Ningbo, Zhejiang. Because of his strong interest in flute production, he often studied the production skills after work, and then resigned as a teacher, specializing in the production and sales of bamboo flute and Xiao, and moved from Ningbo, Zhejiang Province to Zhongtai Tongling qiao in Hangzhou, Zhejiang Province, the production base of Chinese bamboo flute. After nearly 20 years' efforts, bamboo flute and Xiao produced by Xie Wenzheng have been fully affirmed in the industry. In an exclusive interview with Xie Wenzheng, the production process of Chinese Bamboo flute and Xiao, as well as the details that should be paid attention to, were mainly discussed.

The production process of Chinese bamboo flute and Xiao wind instruments mainly includes the following parts: Step 1: material selection. Select and purchase raw materials such as bamboos, bamboos, and purple bamboos suitable for making flutes and flutes. Step 2: dry. Cut the bamboo into sections and put it in a cool place to dry, to avoid direct sunlight or high temperature indoors and prevent the bamboo from bursting. After three to five years, bamboo can meet the requirements of making flute and flute. Step 3: cutting. According to the size corresponding to the tone of flute and flute, bamboo is cut by machine. Step 4: Roast bamboo. Bake the bent bamboo and press it straight. Step 5: go to the festival. Remove the bamboo joints and open the inner pipe.

Step 6: Determine the hole. According to the tone, mark the holes by blowing holes, flute holes, sound holes and sound holes. Step 7: Open holes. Drill holes according to the marking of the tuning holes. Step 8: Place the cork (bamboo flute). A plug made of soft wood is installed in the upper pipe of the blowhole. Step 9: Tune. Accurately debug the pitch of each tone. Step 10: lettering. Carve group plans or poems on flutes and flutes. Step 11: Winding silk. According to the production needs, the flute tube is wound to strengthen the tube body and achieve the beautiful effect. Step 12: Inlet. Cow bones, horns, etc. are embedded at both ends of the bamboo flute or at the end of the flute to protect the pipe body and decorate it.

After the demonstration, the production process, history and culture of flute and Xiao were discussed, after summing up, there are mainly the following parts:

Q: What are the wind instruments in China? Can you make it?

A: There are many kinds of wind instruments in China, including bamboo flute, Xiao, and Xun; Sheng, Hulusi, Bawu; with reed vibration and sound, there are also Suona and Guanzi who whistle and vibrate. I mainly make bamboo flute and Xiao. Flutes

mainly include Bangdi and Qu Di, and Xiao mainly includes Dong Xiao, Qin Xiao, and Nan Xiao.

Q: Requirements on material selection of wind instruments.

A: China wind instruments, bamboo flute and flute, are very strict in the selection of materials. To make a flute and flute with pure timbre and sensitive pronunciation not only tests the production technology, but also tests the raw materials. Chinese bamboo flute and Xiao are all made of bamboo, but there are many kinds of bamboo in China, which are very tough, growing in different environments and with different textures. For example: *Phyllostachys pubescens* in Yuping, Guizhou, *Phyllostachys xiangfei* in Yueyang, Hunan, and *Phyllostachys angustifolia* in Hangzhou, Zhejiang. Qu di, Bangdi, Nanxiao and Dongxiao have different requirements in the selection of materials, such as the thickness and hardness of bamboo walls and the length of bamboo joints. Bamboo that is very suitable for making Bangdi is in Zhongtai Township, Hangzhou, Zhejiang Province, where there are abundant yellow bitter bamboos.

Yellow bitter bamboo is characterized by thick bamboo material, clear sound and good resonance. However, the disadvantage is that easy to bake and crack and requires a very high level of production. White bamboo, with long knots, good quality, relatively uniform inner diameter, thicker walls and a calm and heavy tone, is very suitable for making a flute. The best bamboo for bass recorders is the Xiangfei bamboo from Yueyang, Hunan Province, which has a thick inner wall and a thick sound. Again, very difficult to make.

Q: What are the technological changes in modern wind instrument making?

A: At present, wind instruments are basically made by hand and by machine, so the efficiency and quality will be higher. For example, the traditional manual drilling is not only slow, but also requires a very high level of production. The blowhole has been improved on the original basis. The traditional blowhole has a small inward inclined

plane, and most of them are directly vertical openings. However, at present, the blowing hole of bamboo flute can be opened through instruments and equipment, which is also helpful to make sound on the formed inclined plane, and the efficiency is also very high. Baking bamboo is still a traditional manual baking method, because the baking position of bamboo should be constantly adjusted according to the situation of baking bamboo, and the bent parts should be straightened with different forces. In addition, in the process of tuning and tuning, necessary to combine manpower with instruments and equipment to complete it.

Q: What are the most important steps in making bamboo flutes and xiao?

A: In the process of making bamboo flute and flute, every step is very important, but extremely important in material selection, bamboo roasting, tuning, hole opening and tuning.

Q: Which Chinese wind instruments are more widely spread?

A: Chinese wind instruments are different in different periods and regions, but bamboo flute, Suona, Sheng, etc. have been widely played and appreciated by a large audience since ancient times. For me, the bamboo flute and the Xiao are the most popular flutes in the south, and the Bang flute is popular in the north. In the southwest minority gathering area, minority wind instruments such as Wa nation "Hengdi", "Hulusheng", "Wo"; Yi nation "Dilu" and "Bilingduan" and "Bitiyou" of the Dai nation. In modern times, there are bamboo flutes, suona, sheng, xiao, hulusi and other wind instruments in wide circulation.

Q: What are the criteria for the production method of Chinese bamboo flute?

A: For me, the method of making bamboo flute is mainly based on the book "Flute Art of Spring and Autumn" written by Chinese bamboo flute master Zhao (1983). The calculation and application of the frequency of the flute in the book is in cooperation with Zhao Songling, a professor of physics at Tongji University. After years of experiments

and exploration, the sound velocity, pipe length, frequency, blowing hole radius, sound hole radius, pipe inner diameter and pipe wall thickness of bamboo flutes with different tones are measured, and detailed data are obtained, which has a strong guiding role in the production of bamboo flutes.

In the specific operation process, the related problems are answered in detail. For example, the pipe length of bamboo flute is calculated by the length from the center of blowing hole to the center of sound hole; The relationship between temperature and pipe length; The relationship between the radius of the sound hole and the whole tone and semitone. For example, taking the bass C-tone flute as an example, the blowing end of the inner radius of the pipe is 0.85cm/0.9cm/0.95cm/1.0cm, and the end of the inner radius of the museum is 0.8cm/0.85cm/0.9cm. In the specific correspondence, the blowing end is 0.9cm, the end is 0.9cm, the sound hole radius is 0.5cm, and the wall thickness is 0.4cm. The actual pipe length is 37.58cm, the first sound hole is 31.49cm, the second sound hole is 27.35cm, the third sound hole is 25.96cm, the fourth sound hole is 22.02cm, and the fifth sound hole is 18.93cm. This is just one of the style standards. There are 42 different series relationships in the bass C-tone flute, which also provides a scientific basis for bamboo flute making. To the specific data and production problems, the book has detailed records and answers.

3.3 Comparative analysis of the production process of Chinese bamboo flute and Thai Khlui

3.3.1 From the production process of Chinese bamboo flute and Thai Khlui, the steps of material selection, drilling and tuning are basically the same, but due to the differences in sound and appearance, the production process, production technology and so on are also different. For example, because of the different musical systems, there will be differences in the spacing, location and diameter of holes.

3.3.2 From the scientific level of production, the production of Chinese bamboo flute has specific data as a reference and can be standardized and quality oriented. To produce Thai Khlui, there are few studies on the length and caliber of wind instruments by specific literature or data.

Although "Harmonics of Thai Music" written by Thayarnyong (1973) has analyzed the tones and frequencies of traditional Thai musical instruments and the harmonics and amplitudes of Khlui and Saw Duang, it has formed a set of scientific data. However, this set of data is about the acoustic test of Thai Khlui, Saw Duang and other traditional musical instruments, and analyzes the acoustic effect of traditional Thai musical instruments from the acoustic point of view. The producers of Thai Khlui obtained the relevant data by way of apprenticeship or through practice and experience accumulation. From the perspective of standardized and scientific production, there is a lack of unified standards, but it also provides a broad space for the personalized development of production.

In general, both the making of Chinese bamboo flute and Thai Khlui are the process of continuous analysis, and refinement by the makers, and the conclusions drawn are used in the practical process of making and playing. Especially nowadays, with the aid of instruments and equipment, the problems of efficiency and quality in production are effectively solved, which is the progress of Chinese bamboo flute and Thai Khlui in their development.

3.3.3 Survey of Chinese bamboo flute and Thai Khlui: From the difficulties in the production of Chinese bamboo flute and Thai Khlui, there are several important parts in the production of Chinese bamboo Flute and Thai Khlui, such as material selection, drilling and tuning. For the production after selecting materials, Thai Khlui used bamboo for a long time, and now wood is the main raw material.

Compared with bamboo, wood is more malleable. The structure of bamboo is hollow and knobby, and the bamboo poles have different curvatures, and the thickness of bamboo walls is different. According to the shape of Klhui in Thailand, the unified Klhui in Thailand can be made by cutting, grinding and other processes.

For opening, alignment is a very important step in the production. Only by setting the alignment first can the fixed point be fixed, which is more accurate for manual or machine opening. In the tuning process, there are many ways to adjust the pitch. For example, adjusting the size of the sound hole and adjusting the position of the opening can be fine-tuned.

3.3.4 Chinese bamboo flute production flow chart (part)



Figure70 Dry water



Figure71 Bamboo baking

equipment

Source: Haibo Shuai, 2023

Source: Haibo Shuai, 2023



Figure74 Plate type fixed hole distance

Source: Haibo Shuai, 2023



Figure75 Corrected hole space

Source: Haibo Shuai, 2023



Figure76 Machine perforation

Source: Haibo Shuai, 2023



Figure77 Machine engraving

Source: Haibo Shuai, 2023



Figure 78 Winding paint

Source: Haibo Shuai, 2023



Figure 79 Tun and rang

Source: Haibo Shuai, 2023



Figure 80 Live interview

Source: Xiaoyang Shuai, 2023



Figure 81 Group photo with
Chinese flute maker Xie
Wenzheng

Source: Xiaoyang Shuai, 2023

3.3 Go to Goung Meng Ta, Thailand to inspect Karen music and dance culture.

On December 3 -5, 2022, Srinakharinwirot University in Thailand organized teachers and students to go to Amphoe Sangkhla Buri in Thailand for a field trip of Karen music and dance. Before departure, the college made careful arrangements, including vehicles, lighting, meals, musical instrument handling, daily teaching, rehearsals, interviews and so on.

At 05: 00 on the morning of the 3rd, all the teachers and students were under the school's Faculty of Fine Arts. Assisted. Professor. Dr. Metere Punvararton, Professor Prof. Dr. Manop Wisuttipat and Professor Prof. Dr. Arthorn Thanawat put forward specific requirements for all the teachers and students. At 05:30, the author, master students and more than 40 undergraduates, under the leadership of several teachers, made 50 requests.

The trip is far away, the whole journey is about 355 kilometers, and six cars are arranged. After an 11-hour drive (including breakfast, lunch, and rest time), we arrive at the destinations of Goung Meng Ta, Aphichart Setapan, Jeewee and Maoso around 16: 20 in the afternoon. Professor.dr. Meteore Punvararton introduced Karen nationality, villages, and householders Long and Aphichart Setapan to all teachers and students and got to know each other. Professor.dr. Manop Wisuttipat also emphasized the requirements for the arrangement of several days. The next step is to rest, carry the necessary equipment, and allocate the living space for teachers and students. At dinner, Prof. Dr. Manop Wisuttipat led the whole group to pray. After dinner, the students were divided into two groups and practiced Kaling people's music with Cha u Cha pru band. At 22: 00, the rehearsal is over, and all the teachers and students have a rest.

After breakfast at 8: 00 a.m. on the 4th, Karen's music and dance were rehearsed. In the afternoon, under the leadership of Long and Aphichart Setapan, we went hiking in the mountains where dry rice was planted, and introduced the landform

and planting, so that teachers and students could fully understand the production and living conditions of Karen nationality. After dinner, teachers and students rehearsed the music and dance.

At 9: 00 a.m. on the 5th, the village head, and the person in charge of forestry were invited to the scene to assess Karen's music and dance. After playing and performing, they were commented respectively, and the students expressed their affirmation and put forward some suggestions. At 10: 30, all teachers and students return.

The music is called "Ke Yo Wei Jo", which is an instrumental piece, a melody for singing, and a music for dance performance, typical of Karen's "song and dance music". The music is performed in the form of percussion, with melodic and rhythmic percussion. The music has three sections, each with its own melody. From the form of music, Karen's music rhythm is mainly composed of the first eight, the last sixteen and the sixteenth notes, and there are divisions and weak beats in the rhythm, which is very rhythmic. In terms of sound composition, according to the notation, there are more "Fa" in the melody, which forms a special feature of music with "Do, Re, Mi, Sol and La" in Thai traditional music.

Not only that, but there are also forms of rotation or rotation in the progress of music, which makes music more performative. During the performance of the band, rhythm percussion, as the conductor of the band, regulates the overall music speed and strong beat, which is very prominent in phrases and festivals. slow and urgent and can cooperate with the rhythm points of percussion music such as drums and cymbals, including strong beat points and weak beat points. The rhythm pattern also makes the music more dynamic through the changes of quarter notes, eighth notes and sixteenth notes. Melody percussion should be very well controlled for music, including octave double-tone percussion, single-tone continuous percussion, and the rapid trend of

ascending scale and descending scale. The main melody and voice melody are distinct. Accompanied by music, the words in the singing part are also very appropriate and simple. The dance is mainly based on the hip twisting, the left and right palms are open, and the four fingers are combined, with the hip twisting and the foot and toe movements of the legs. The range of activities is not large, and all the movements can be completed in a space of 1 -2 meters, which is representative to some extent.



Figure 82 Group photo



Figure 83 Group photo of teachers and students

Source: Metee Punvaratorn, 2022

Source: Metee Punvaratorn, 2022

4. In-depth interview. Method Interview with representative performers, music creators, producers, and folk artists of bamboo flute and Khlui, and collect and sort out data materials about "Bamboo flute and Khlui"; Collect the problems, opinions, and suggestions of school educators in the process of music education to form real and effective data.

Therefore, with structured interviews and participatory observation as the main methods, the history and artistic characteristics of Chinese and Thai wind instruments were interviewed and observed respectively. The content of the examination was designed, and the related issues were demonstrated and reviewed by experts and scholars.

4.1 List of Structured examination Contents of Chinese and Thai Wind Instruments

4.1.1 About the historical tracing of wind instruments

4.1.1.1 Where did wind instruments come from? Please tell the development history?

4.1.1.2 What are the changes in the modified wind instruments?

4.1.2 Similarities and differences about the development of wind instrument culture

4.1.2.1 What are the differences between wind instruments of Thailand and those of China, Myanmar, Cambodia, etc. in terms of shape and appearance?

4.1.2.2 Is there any correlation between the development of wind instrument culture among countries?

4.1.3 About the music system of China and Thailand

4.1.3.1 In Thailand, a country where Buddhism is the main religion, did the music borrow and learn from the Indian music system during the spread of Buddhism?

4.1.3.2 Since ancient times, Thailand and China have had frequent exchanges. Is there any connection between the musical systems of Thailand and China wind instruments?

4.1.4 About the production materials and technology of wind instruments

4.1.4.1 Chinese Guanzi, Suona, Thai Khlui, Pi Nai, Pi Chawa are mainly made of wood, Chinese bamboo flute, Xiao, Hulusi, Thai Kaen, Pi Jum, Whode are mainly made of bamboo, does the choice of instrument material affect tone or performance?

4.1.4.2 Wood and bamboo have their own characteristics in terms of material density, which also determines the sound effect of the instrument in the process

of articulation and amplification, as well as the production level of the process, is there any other material that can replace and form a good playing effect?

4.1.4.3 Is the original reed of the reed instrument made of bamboo or other materials?

4.1.5 About Chinese and Thai traditional bands

4.1.5.1 What is the name of the band composed of traditional musical instruments in each of the four regions of Thailand: North, Northeast, Central and South?

4.1.5.2 Are there any connections or similarities between the bands in the composition of musical instruments?

4.1.6 About the ancient court orchestra

4.1.6.1 How many types of bands were used to play court music in ancient times? Was the composition of the band the same as today?

4.1.6.2 Did the size of the ancient court orchestra follow a hierarchy to specify the number of band members, types of instruments, and number of musical pieces?

4.1.6.3 wind instruments appear in court music, but also in folk music? If they appear, do they have any influence on each other?

4.1.7 About performance skills

4.1.7.1 How are the playing techniques of wind instruments identified in their names?

4.1.7.2 How can the performance skills of wind instruments be used in music to better show their characteristics?

4.1.8 About music style

4.1.8.1 What are the characteristics of each of the musical styles of the Chinese region, northern, northeastern, central, and southern Thailand, and how are they related to each other?

4.1.8.2 In the performance of wind instruments, what is the difference in musical style between Khlui and clarinets from other countries?

4.1.8.3 What is the most representative repertoire of the wind instruments you are familiar with? Can you play or hum the melody?

4.1.9 Regarding the transmission of wind instrument education

4.1.9.1 Is there many groups learning or playing wind instruments today?

4.1.9.2 Are there any measures or methods for the transmission and development of wind instruments?

4.1.10 Music culture regarding folklore festivals

4.1.10.1 Do Chinese and Thai folklore or festivals perform band performances? Is there any choice or requirement in the performance of the music?

4.1.10.2 Are there many performing bands for folk customs or festivals? What is the scale?

4.1.10.3 What is the value and significance of wind instrument playing in the context of folk festivals?

Description: The wind instruments designed in the structured examination content refer to Thai Khlui, Pi Nai, Pi Chawa, Kaen, Pi Jum, Whode, etc., and targeted interviews are conducted according to the instruments played by the interviewees.

4.2 Interview with Assoc. Prof. Dr. Somsak Ketkaenchan, Thai Khlui virtuoso, on November 7, 2022, at FOFA, Sinakanenvelo University, Thailand. Prof. Somsak Ketkaenchan is a famous Khlui and Pi Nai player in Thailand, and a teacher of Khlui during the author's study in Thailand.

In the course, Professor Somsak Ketkaenchan not only teaches Khlui's playing skills, but also explains the history and culture of Thai wind instruments in class time, which greatly improves the author's skills in learning musical instruments and has a further understanding of related knowledge. To master the knowledge about Khlui more comprehensively and carefully, the author made an appointment with Professor Somsak Ketkaenchan and the translation teacher in advance. At that time, the author prepared all the prepared video equipment, notebooks, and interview questions list, and conducted an interview dialogue.

Q: Historical trace of Thai Khlui

A: Thai Khlui has relevant literature records, which appeared in court music in Ayutthaya period, and this is also recorded in murals of royal temples. At the same time, related cultural relics were unearthed in tombs in Thailand, with a history of 3000 years.

Q: What are the documents about Khlui?

A: At that time, there were relevant laws and regulations that folk musicians could not go near the palace courtyard, so as not to affect or interfere with the band performance in the palace courtyard, including Khlui. In addition, recorded that there were French people in Thailand of Ayutthaya period, and Khlui was brought to France, and the name, shape and legal system of Thai Khlui were recorded by writing books.

Q: Thai court music is for princes and nobles to enjoy, which represents a kind of power and status. Is there a band or music playing at the same time among the people?

A: Thai court and folk can play, but folk bands and musicians are required not to play outside the palace.

Q: Is Thai Khlui different from flute in Southeast Asian countries such as Myanmar and Cambodia in shape and melody?

A: Before Thailand formed a unified country, tribes separated and gathered, and some also formed small countries with their own cultures and influenced each other.

Now there is a sculpture in a temple in Laos showing the shape of musical instruments, and there are flutes in Cambodia. The shapes are basically the same, but there are some differences. The only difference is that some improvements or adjustments have been made locally. The music system is the same. Every country has its own cultural attributes, and the music it expresses is also related to the national politics and culture. In the folk, it has its own characteristics because of the living customs, but overall, because of the great mutual influence, there are both similarities and differences in music laws.

Q: Thailand is a country with Buddhist belief as its main religious belief. The spread of Indian Buddhism in Thailand, was Thai music influenced by Buddhist culture?

A: Buddhism was introduced to South India and then to Thailand and other countries. In fact, when Buddhism was introduced, there was no music, because music was contrary to the purpose of Buddhism, and Buddhism demanded smooth and moderate. If there was music, it would be disturbed. Later, after music was gradually applied to court music, it related to some rituals in Buddhism. It was not that music entered Thailand with Buddhism at the beginning. However, it should be noted that Thai Khloi was inspired by the Indian flute and took materials or samples from India. The artistic features of Thai Khloi's music are gentle and long, and there are adjacent sounds with big jumps in the melody, and there are very few inflections. The skill of playing musical instruments makes the music fuller, which has a lot to do with the pursuit of nature and beauty advocated by the Thai people.

4.3 Interview with Associate Professor Gao Bi, a Chinese bamboo flute performer. Associate Professor Gao Bi, formerly known as Zhong Zhenxiong, is a distinguished associate professor in the School of Music and the College of Science and Technology of Gannan Normal University, the executive director of the Wind Music Professional Committee of Jiangxi Musicians Association, and the vice chairman of the bamboo Flute

Professional Committee of Jiangxi National Orchestral Society. On February 9, 2023, an exclusive interview was conducted with Associate Professor Gao Bi.

Q: The historical origin of Chinese bamboo flute

A: Chinese bamboo flute has a very long history, which can be traced back at least 7800-9000 years ago to the bone flute and bone whistle unearthed at Tomb M282 of Jiahu Site in Wuyang, Henan, China. After improvement and development, it evolved into a wind instrument with "bamboo" as the material, and the number of sound holes, flute holding posture and range were constantly changing. Chinese bamboo flute is obviously different from flutes in other countries in the world, that is, the flute membrane is attached to help the sound, which forms a unique Chinese bamboo flute. However, the history of the world's wind instruments can be traced back. In Baden-Württemberg, southern Germany, wind instruments in the late Paleolithic period were unearthed at the archaeological site of Hohlefelds near the town of Scheer Klängen, which was determined to be 42,000 years ago. As a wind instrument, the historical trace is still going on, and there may be earlier wind instruments that have not been discovered.

Q: What changes have been made to the improved wind instruments?

A: There are many kinds of wind instruments. In China, there are Guanzi, Sheng, Xiao, Di, Suona, etc. All of them have different changes in their development process. For Chinese bamboo flute, there are several important changes. From the material point of view, the change from bone to bamboo material. From the perspective of melody, China's earliest melody was regulated by the length of wind instruments. From the playing posture or name, there are horizontal and vertical blows, as well as different titles such as "Long Yin", "Fengming", "Qi" and "Di", as well as artistic names in different documents or poems. For example: Frosted Bamboo, Yu Di, Dragon Flute, Yulong, etc. In modern times, Chinese bamboo flute has been improved, such as bent bass flute, fluted flute, and keyed flute.

Q: Similarities and differences between Chinese bamboo flute and Thai Khlui.

A: No matter in China or Thailand, its temperament has a lot to do with language, and language is highlighted in tone and pronunciation. There are many ethnic groups and dialects in China, so the styles and characteristics of music are basically the same in places where the same dialects are gathered.

For example, in northern China, Henan Falling Songs, Hebei Bangzi, Shandong Express, etc., their speech is characterized by positive language cadences and powerful intonation; while in southern China, Jiangsu Kunqu, Zhejiang Yueju, Guangdong Cantonese opera, etc., the language is delicate, and the intonation is soft and beautiful. This also "sets the tone" for Chinese bamboo flute and other wind instruments, stringed instruments, and percussion instruments in the style of music performance. However, Thailand's phonetic features, language intimacy and euphemistic intonation have a certain influence on the melody of the two countries. Therefore, the melodies of the two countries are close to their own lives and come from life.

Q: Thai Khlui and Whode have just been brought to the teacher. What are the differences between China and Thailand in pronunciation and shape?

A: Why the pronunciation of Thai Khlui is not so bright and high-pitched, and the volume control of the sound cannot be handled flexibly, mainly because the air inlet is related to the vibrating body. There is still a certain distance between the air inlet of Thai Khlui and the edge of the vibrating pipe, which affects the pronunciation and leads to problems in the control of sound intensity. And why Thai Khlui can spread in the local area, this is ultimately influenced by Thai culture, Thai Buddhist culture, language culture, music culture and so on. Thai Khlui is obviously different from Chinese bamboo flute and Xiao in shape, but basically like western flute in pronunciation principle and shape, but there are also obvious differences in manipulation and sound, which is still

from the structure of musical instruments. For example, the diameter of the air inlet and the distance between the edges of the vibrating body are the most critical places that affect the pronunciation of musical instruments. As shown in figure:



Figure 87 Comparison between European flute and Thai Khlui mouthpiece

Source: Haibo Shuai, 2023



Figure 88 Comparison between European flute and Thai Khlui exciter

Source: Haibo Shuai, 2023

There are obvious differences between European flute and Thai Khlui's mouthpiece, and the whole flute has a larger caliber. Including the air outlet, that is, the vibrating edge. There is also the position where the air inlet vibrates with the edge, and the Thai Khlui is obviously longer, which also has an impact on pronunciation and

volume. Comparatively speaking, in China, the pitches and positions of flutes and flutes are different, and their pronunciations are also different. For example, these two nanxiao and dongxiao, you will find that the blowholes are different. The left Nanxiao has a deep incision, while the right Dongxiao has a shallow incision. When the deep mouth plays, it lengthens the length of the airflow and reduces the intensity of the airflow, which is even worse in the sensitivity and strength control of pronunciation.



Figure89 Comparison of Blowing Mouth between Nanxiao and Dongxiao in China

Source: Haibo Shuai, 2023

As can be seen from the above, wind instruments in each country have their own characteristics, but in fact, they can be improved according to ergonomics, acoustics, materials science and so on, to improve the performance of wind instruments, to play better.

Q: Are there any differences in the materials and techniques for making wind instruments?

A: There are both differences and similarities in the materials and techniques of making wind instruments in China and Thailand. For example, there are differences in reed making between Sheng of China reed instrument, Hulusi and Bawu. The reed of Sheng is a free reed, which means that blowing can make a sound and inhaling can

also make a sound, which means that when playing, blowing can also inhale, so that the reed can make a concrete sound. This should be like the production materials and techniques of wind instruments in Thailand.

Q: Chinese Guanzi, Suona, Thai Khlui, Pi Nai, Pi Chawa are mainly made of wood, while Chinese bamboo flute, Xiao, Hulusi, Thai Kaen, Pi Jum, Whode are mainly made of bamboo, does the choice of instrument material affect the sound or performance?

A: Every musical instrument has undergone numerous improvements in its development up to now. Therefore, the development and improvement of musical instrument performance has never stopped and is always on the way. Up to now, using the existing technology, or materials, can highlight the current stage of musical instrument manufacturing level.

Since ancient times, Chinese bamboo flute, Xiao, Thai Kaen, Pi Jum, Whode and other musical instruments have been made of bamboo for thousands of years, and the materials and techniques have become very mature. This is also because bamboo, as a woody plant of the bamboo subfamily of the family Gramineae, has a tough texture, and the tube fibers are highly absorbent, making the sound bright and transparent when played. Many domestic producers have replaced bamboo flute, Xiao, Hulusi and other materials with wood, and new materials such as bakelite, plastic, etc. After the test, the sound is not comparable to that of wind instruments made of bamboo. In fact, there are other aspects that will also affect the timbre, such as the reed or whistle performance of reed instruments. Paisheng, Lusheng, Sheng, Hulusi, Thai Kaen and Pi Jum in China all belong to reed vibration pronunciation, and the quality of reed material directly affects the timbre of musical instruments. There are also Chinese Suona, Guanzi, Thai Pi Chawa, Pi Nai, etc., and the quality of pronunciation materials directly affects the pronunciation quality.

The material performance of wind instruments is still improving, and also a difficult problem to find materials that are more conducive to the performance of wind instruments at this stage.

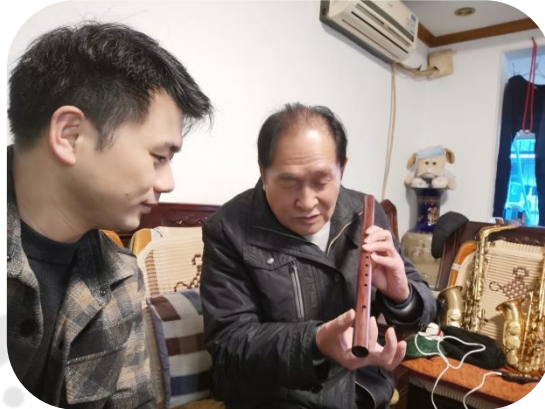


Figure90 Associate Professor Gao Bi is analyzing Thai Khlui.

Source: Xiaoyang Shuai, 2023



Figure91 Take a photo with Associate Professor Gao Bi.

Source: Xiaoyang Shuai, 2023

3.4.3 Interview with Chiang Mai Band Wat Koh Klang/Kong Fha LanNa

On November 24th, 2022, we arrived Chiang Mai at the appointed interview place: Wat Koh Klang Pa Daet in Chiang Mai on time, and met the interviewee Master Satchakron KaewsaiKaen, whom my tutor Professor Surasak Jamnongsarn had contacted in advance. After the meeting, he led us to visit a workshop to produce props

for folk activities run by them. More than ten workers made props for folk activities in an orderly manner in the relaxed atmosphere of Thai music. Walking into the musical instrument showroom, Ranat thumlek, Klong Aew, leather drum and so on are placed neatly.

After the visit, Master Satchakron Kaewsaikaen introduced us to musical instruments, bands, and production workshops. They are a local manufacturer of folk cultural props. They not only produce props, but also have their own band to play music for folk activities or ceremonies. The band has two names, one is Wat Koh Klang, and the other is Kong Fha Lanna. composed of 12-14 people, mainly playing in unison, but also with different melodies.

Musical instruments include Kong wong lek, Ranat ek, Klong Bucha, Chawa, ching, Saw, Gong Ui, etc. For example, music from folk activities or music from weddings and funerals. The music played will also depend on the scene. If funeral music, it will play a slow or steady melody, and sometimes it will be played by Pi Nae. If a festival day, some cheerful or jumping melodies will be chosen, and other musical instruments will be added, which will be more enthusiastic and grander.

Sometimes singing and dancing are performed at the same time. In the change of music, mass dancing and singing are integrated into the music atmosphere of the scene. The above performances are all part of folk music in northern Thailand, which are used for daily festivals or leisure and entertainment. In the development of music performance and inheritance, oral instruction is the main way. At present, music is also recorded, but the number is small. In the production of musical instruments, local folk artists are the main ones. The producer not only has rich musical instrument production experience and experience, but also has a very high level and ability to play. After the introduction, Master Satchakron Kaewsaikaen gave a live performance. Considering that other members of the band have business arrangements, Master

Satchakron Kaewsaikean and his apprentice played three pieces of music respectively. The first song is played by two different sizes of Pi Nae, the small one (treble) plays the first part and the big one (bass) plays the second part.

This piece of music has been converted in speed, and the melody moves from slow to fast, which not only reflects the level of the performer, but also makes the whole music more tense through difficult and fast performance. The third song is also played by tenors Pi Chawa and Ranat ek, but the difference is that this piece of music can be played and danced. Soprano Pi Nae plays the main melody, Ranat ek strikes the rhythmic rhythm, the strength and weakness are clearly distinguished, and the musical feeling of one singing and one harmony makes people move and dance with the music.

Master Satchakron Kaewsaikean talked about the Pi Jum, which has five types of instruments from big to small, but now basically at four. When playing, plucked or percussion instruments are often used instead. They can sit or stand, and can also dance while playing, but most of them are mainly sitting.

For the follow-up of the investigation, the author also searched the videos performed by the band and related audio-visual materials in northern Thailand through the internet search, to deeply understand and master the morphological characteristics of music and the artistic characteristics of musical instruments in northern Thailand.

Through observation, and analysis of online music video data, found that the music mode in northern Thailand is dominated by five-tone mode, with clear speed, relatively single rhythm, and relatively fixed beat. In melody, La and Mi are used as tonic, which is like China's minor form. At the same time, Do and Sol often appear in the melody as the tonic, forming a broad and magnificent musical image. used in northern Thailand, and very similar to the long drums used by ethnic minorities in Yunnan, China in terms of appearance and playing style. From the analysis of these aspects, there is a certain connection between northern Thailand (Chiang Mai, Chiang Rai, etc.) and

southwestern China (Yunnan, Guizhou, etc.) in terms of personnel turnover and cultural integration.



Figure 92 Chiang Mai Wat Koh Klang band
KaewsaiKaen

Source: Haibo Shuai, 2022



Figure 93 Master Satchakron

Introduce musical instruments.

Source: Haibo Shuai, 2022



Figure 94 PiNae and Ranat ek ensemble

Source: Haibo Shuai, 2022



Figure 95 Pinae noi and Pinae Luang
ensemble

Source: Haibo Shuai, 2022



Figure 96 Drum in Northern Thailand

Source: Haibo Shuai, 2022



Figure 97 group photo

Source: Pichayatida Phamornsawangkun, 2022



Pictures related to literature collection, field trips, classroom learning, art practice, thesis guidance, interviews, etc.



Figure 98 Mid-term defense of the thesis

Source: Metee Punvaratorn, 2022



Figure99 Tutor guides thesis writing

Source: Pan pan, 2022



Figure100 Thai Khlui Class

Source: Pan pan, 2022



Figure101 Professor Guided Learning

Source: Min Yan, 2022



Figure102 Professor Guided Learning

Source: Le, Dai, 2022



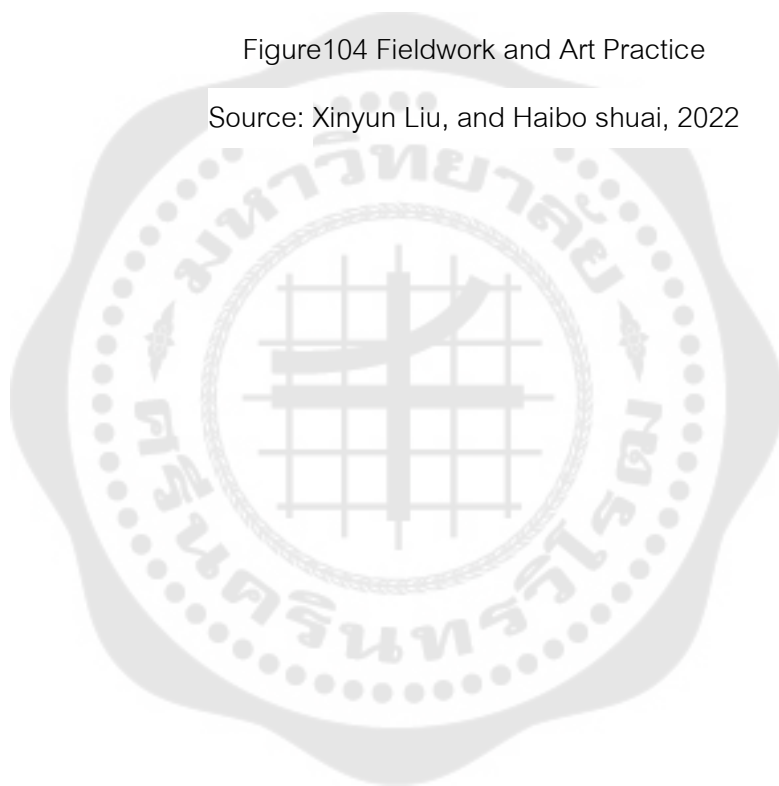
Figure103 Fieldwork

Source: Metee Punvaratorn, 2022



Figure104 Fieldwork and Art Practice

Source: Xinyun Liu, and Haibo shuai, 2022



VITA

