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Cultural Evolution in Action: Royal Boat Song Transmission and Adaptation in Thai Buddhist Communities

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Abstract: : This ethnographic study examines Royal Boat Song (He Ruea Luang) cultural transmission as empirical evidence for evolutionary approaches to imaginative culture. Through ethnographic fieldwork conducted in Phitsanulok Province, Thailand (2024-2025), we analyzed how this elite court tradition successfully adapted from royal water processions to community Buddhist merit-making ceremonies while maintaining core musical and ceremonial elements. Our findings demonstrate cultural transmission mechanisms predicted by evolutionary theory: selective retention of adaptive features including four-section musical structure, specialized vocal techniques, and ceremonial significance, combined with contextual modifications serving contemporary community needs through localized poetic content, Buddhist ceremonial integration, and riverbank performance venues. The research reveals how Royal Boat Songs function as adaptive cultural inheritance systems, facilitating group bonding, cultural memory preservation, and religious expression while evolving through community agency. Results show high-fidelity transmission of core musical structures with systematic adaptive variation in textual content, supporting cultural attraction theory predictions about cognitive constraints in cultural evolution. This case study provides empirical support for theories positioning imaginative culture as arising from human nature's evolved capacities for social cooperation, meaning-making, and collective identity formation, while demonstrating that cultural preservation occurs through adaptive evolution rather than static maintenance.

Keywords: cultural evolution; cultural transmission; traditional music; Buddhist ceremonies; Thailand



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1. Introduction

The preservation of cultural traditions in rapidly changing societies presents a fundamental challenge: how do communities maintain cultural authenticity while adapting to contemporary conditions? This question becomes particularly complex when examining the transmission of elite cultural forms to community contexts, where sophisticated traditions must undergo modification to serve new social functions while preserving their essential character (Agus et al., 2021; Griswold, 2012; Inglehart & Baker, 2000). The Royal Boat Song (He Ruea Luang) tradition in Thailand provides compelling evidence for how cultural evolution operates through processes of variation, inheritance, and selection that enable traditional practices to persist across generations and social boundaries (Topoonyanont, 2023).

Recent advances in cultural evolutionary theory demonstrate that human cultural practices undergo Darwinian processes analogous to biological evolution, where cultural variants compete for transmission based on their adaptive value for human communities (Gordillo-García, 2023; Savage et al., 2021). Research by Lumaca et al. (2018) reveals how cultural transmission shapes musical evolution through cognitive constraints and social learning biases, while studies of music sampling traditions show how cultural transmission modes remain stable despite technological change (Savage et al. 2022; Youngblood, 2019). These theoretical frameworks provide sophisticated analytical tools for understanding how traditional performing arts like Royal Boat Songs maintain core adaptive features while undergoing modification in response to environmental pressures.

Royal Boat Songs originated within Thai royal court ceremonies for water processions, serving to coordinate royal barge rowing while expressing reverence for the monarch. This sophisticated musical form employs a four-section structure with specific poetic forms, specialized vocal techniques, and the distinctive Penta-Centric Scale characteristic of Thai classical music (Wong, 2001). Contemporary practice in Phitsanulok Province demonstrates remarkable cultural adaptation: the same musical tradition now serves Buddhist merit-making ceremonies, specifically the Pha Pa Hua Ruea (Forest Robe Boat Procession) and Buddha Chinarat Robe-Offering Ceremonies conducted along the Nan River.

This transformation from royal reverence to Buddhist devotion illustrates processes of cultural transmission where communities selectively retain cultural elements serving adaptive functions while modifying contextual features to meet contemporary needs (Ciocan, 2024; Yu et al., 2025). The Royal Boat Song's successful transition reveals how traditional performing arts function as what we term "adaptive cultural inheritance systems" sophisticated cultural technologies that enhance

human social cooperation and group cohesion while maintaining sufficient flexibility to adapt to changing conditions.

The urgency of this research emerges from accelerating globalization and cultural homogenization threatening traditional practices worldwide, while existing heritage preservation approaches remain inadequately grounded in empirical understanding of how cultural transmission actually operates in living communities (Alam, 2025; Jiang et al., 2024). Contemporary heritage management often adopts static preservation models that attempt to "freeze" traditions in historical forms, failing to recognize that successful cultural preservation requires supporting rather than constraining community-driven evolutionary processes (Usmaedi et al., 2024). Without scientific understanding of cultural transmission mechanisms, preservation efforts risk inadvertently undermining the very adaptive flexibility that enables traditions to survive across generations and changing social conditions.

This study addresses this critical gap by providing the first comprehensive ethnographic analysis of Royal Boat Song cultural evolution informed by contemporary cultural evolutionary theory, offering three key contributions to both academic understanding and practical heritage management. First, we demonstrate empirically how cultural transmission operates through multiple simultaneous pathways that balance high-fidelity preservation of core adaptive features with systematic variation in contextual elements, providing concrete evidence for theoretical predictions about cognitive constraints and cultural selection pressures in musical evolution. Second, we reveal how traditional performing arts serve as sophisticated adaptive cultural inheritance systems that facilitate group bonding, cultural memory preservation, and religious expression while evolving through community agency, advancing theoretical understanding of music's role in human social cooperation. Third, we provide evidence-based recommendations for heritage management practice by documenting community strategies that successfully maintain cultural authenticity while enabling contemporary relevance, demonstrating that cultural preservation occurs through adaptive evolution rather than static maintenance.

2. Literature Review

Cultural evolution provides a scientific framework for understanding how human cultural practices change over time through processes analogous to biological evolution. As demonstrated by recent research in *Current Biology*, musical traditions exhibit systematic patterns of change that reflect the operation of cognitive constraints and social learning biases on cultural transmission (Anglada-Tort et al., 2023; Jacoby et al., 2024).

The concept of cultural evolution was fundamental to early musicological research but largely disappeared from academic discourse after World War II, despite recent resurgence in other fields (Savage, 2019). Contemporary research demonstrates that cultural transmission operates through multiple pathways with different implications for tradition evolution. Vertical transmission from parents to offspring preserves stable cultural elements, while horizontal transmission between peers enables rapid adaptation to changing conditions. Oblique transmission from specialized practitioners to students plays crucial roles in maintaining complex cultural practices requiring dedicated learning (Nishikawa & Ihara, 2022).

Lumaca et al. (2018) provide neurophysiological evidence for how cultural transmission shapes musical evolution through the interaction of cognitive constraints and social selection pressures. Their research demonstrates that musical systems evolve toward structures optimized for human cognitive processing and social coordination, supporting hypotheses that musical abilities evolved as adaptations for enhanced social cooperation. These findings help explain why certain musical traditions persist while others disappear: those serving adaptive functions for human communities are more likely to be accurately transmitted and maintained over time (Nelson et al., 2025).

Research on music and social bonding provides essential theoretical context for understanding why Royal Boat Songs persist and evolve. Savage et al. (2021) argue that social bonding is an overarching function unifying theory of musical evolution, with musicality enabling social bonding at larger scales than grooming and other mechanisms available in ancestral primate societies. Studies demonstrate that synchronized musical activities enhance social bonding through neurobiological mechanisms including endorphin release and improved group cohesion. Religious and secular rituals both increase social bonding and positive affect through shared musical experiences.

Contemporary research reveals music as a sophisticated cultural inheritance system facilitating transmission of multiple types of cultural information beyond melodic content (Guo et al., 2024; Stadler Elmer, 2021). Musical traditions encode emotional responses, social relationships, collective memories, and cultural values through complex symbolic systems that engage evolved psychological mechanisms for pattern recognition, emotional regulation, and social bonding (Liu et al., 2024; Rehfeldt et al., 2021; Vanderheiden, 2025). This perspective positions traditional practices like Royal Boat Songs as adaptive cultural technologies enhancing human social cooperation and group cohesion.

The Music and Social Bonding hypothesis argues that social bonding is an overarching function that unifies theories of musical evolution, with musicality enabling social bonding at larger scales than grooming and other bonding mechanisms available in ancestral primate societies (Bannan & Harvey, 2025; Leongómez et al., 2022; Savage et al., 2021). Cross-disciplinary evidence from archaeology, anthropology, biology, musicology, psychology, and neuroscience supports this unified framework accounting for both biological and cultural evolution of music through gene-culture coevolution processes (Patel, 2021; Turnbull, 2025).

Thai traditional music research reveals sophisticated cultural transmission systems operating through hierarchical knowledge networks and Buddhist-influenced community practices (Kleine et al., 2025). Historical research documents how Thai classical music traditions spread from Bangkok court to provincial communities through Buddhist temple networks, with monasteries serving as both preservation centers and adaptation sites where court traditions modified to serve local religious needs (Pidokrajit, 2021). Buddhism plays a complex role in Thai music education and preservation, with monks obligated to observe religious precepts that limit direct musical participation while simultaneously supporting musical activities within temple contexts for merit-making, funerals, and celebrations.

Research on traditional song transmission in the Ryukyu Archipelago reveals how geographic patterns of cultural variation reflect different modes of cultural transmission depending on social contexts (Nishikawa & Ihara, 2022). Songs associated with different social functions show distinct patterns of horizontal versus vertical transmission, demonstrating how cultural context influences transmission mechanisms and resulting evolutionary patterns. This research provides essential comparative context for understanding Royal Boat Song transmission patterns.

Studies of extreme rituals and social bonding provide additional insights into how physically and emotionally demanding ceremonial practices create strong group cohesion (Whitehouse & Lanman, 2014). This work demonstrates that rituals arousing strong emotions bond communities together through shared dysphoric experiences that are equally bonding as shared biological connections, providing theoretical frameworks for understanding how Royal Boat Song ceremonies enhance community solidarity.

Research on cultural heritage preservation through community engagement demonstrates that active community involvement enhances preservation effectiveness, fosters sense of ownership, and promotes cultural continuity (Natonis et al., 2025). This study provides practical recommendations for policymakers and heritage conservationists to strengthen community-based preservation initiatives,

supporting findings about the importance of community agency in cultural evolution (Usmaedi et al., 2024).

The role of communities in defining and preserving cultural heritage is paramount, with communities playing active roles in identification, documentation, research, preservation, protection, promotion, enhancement, and transmission through formal and non-formal education (UNESCO, 2024). This perspective aligns with research findings showing how Phitsanulok communities actively negotiate Royal Boat Song adaptation while maintaining cultural integrity.

3. Methods

This study employs ethnographic methodology informed by cultural evolutionary theory to analyze Royal Boat Song transmission and adaptation processes. Our approach combines participant observation, semi-structured interviews, and musical analysis within a framework designed to identify cultural transmission mechanisms and adaptive functions predicted by evolutionary theory.

The research design addresses three analytical levels consistent with cultural evolutionary approaches: micro-level transmission mechanisms operating between individuals, meso-level community adoption and adaptation processes, and macro-level cultural evolutionary patterns observable across generations (Henrich, 2015). This multi-level analysis enables identification of both proximate mechanisms driving cultural change and ultimate adaptive functions explaining tradition persistence.

Following contemporary standards for collaborative ethnomusicology, we prioritized community benefit and reciprocal relationships while maintaining scientific rigor in data collection and analysis. We adopted "natural experiments" approach, examining Royal Boat Song performances in various contexts to identify which elements remain stable versus which vary in response to different environmental pressures.

Fieldwork focused on the annual Pha Pa Hua Ruea and Buddha Chinarat Robe-Offering Ceremonies conducted in September following Buddhist Lent in Phitsanulok Province. Data collection occurred during the 2024-2025 research period, providing detailed perspective on tradition stability and change. Participant observation involved attending all ceremonial activities from early morning preparation through evening conclusion, with particular attention to Royal Boat Song performance contexts, community participation patterns, and ceremonial sequence variations.

Semi-structured interviews were conducted with 27 key informants representing diverse community perspectives: five Royal Boat Song performers including lead

performer Assistant Professor Major Sophon Lawan, seven community elders with 30+ years ceremonial participation, three Buddhist monks regularly participating in ceremonies, four local officials involved in ceremonial organization, and eight community members participating in boat processions. Audio and video recordings were made with explicit permission from community leaders and performers, following protocols established through community consultation.

Data analysis employed thematic content analysis guided by cultural evolutionary theory, focusing on identification of variation, inheritance, and selection mechanisms in Royal Boat Song transmission. Interview transcripts, field notes, and musical recordings were coded using both predetermined frameworks derived from cultural transmission theory and emergent themes identified through iterative analysis (Lewrick et al., 2018). Musical analysis applied ethnomusicological methods for structural analysis combined with evolutionary approaches to cultural variation.

4. Results

4.1 Historical Development and Cultural Transmission

Royal Boat Songs originated within Thai royal court ceremonies for water processions, serving essential coordination and reverence functions during elaborate royal barge ceremonies. Historical accounts from the Ayutthaya period describe musical traditions accompanying royal water travel, with significant standardization occurring during the early Rattanakosin era when court ceremony achieved unprecedented elaboration (Tramote, 1989).

The transmission of Royal Boat Songs from exclusive court contexts to community Buddhist ceremonies represents cultural boundary crossing facilitated by changing political and social conditions. Historical evidence suggests this transmission began during the reign of King Chulalongkorn (Rama V, 1868-1910), when administrative modernization created opportunities for elite cultural forms to spread beyond court boundaries.

Community adoption occurred within existing boat procession traditions for Buddhist merit-making purposes, providing established cultural frameworks that could incorporate sophisticated musical elements from royal traditions. This existing ceremonial infrastructure facilitated Royal Boat Song adoption by providing appropriate performance contexts and community appreciation for water-based religious ceremonies.

The temporal development demonstrates gradual cultural evolution rather than sudden replacement. Community elder accounts describe a process extending across several decades, with Royal Boat Songs initially supplementing folk boat songs before

achieving prominent ceremonial status. This gradual integration allowed communities to assess tradition value while maintaining existing cultural practices, illustrating processes of cultural selection operating through community evaluation and adoption decisions.

Analysis of transmission pathways reveals multiple simultaneous mechanisms. Vertical transmission operates through family and community networks where cultural knowledge passes from elders to younger generations through informal learning embedded in ceremonial participation. Horizontal transmission facilitates rapid spread of cultural innovations within generational cohorts, while oblique transmission through master-student relationships maintains specialized performance knowledge requiring dedicated training (Kanchanapradit, 2013).

4.2 Musical Analysis and Structural Preservation

Musical analysis reveals remarkable preservation of core structural elements despite significant contextual adaptation. The four-section format shows complete fidelity in all recorded performances: Kroen He (Introduction), Cha La Wa He (Slow Boat Song), Mun La He (Medium-Tempo Boat Song), and Sa Wa He (Fast Boat Song) maintain distinct melodic characteristics and performance functions.

The Penta-Centric Scale system appears consistently across all recorded performances, with five primary tones providing stable tonal frameworks for melodic variation (Phra Chen Duriyanga, 1956). This preservation suggests strong cognitive constraints and cultural selection pressures favoring musical structures optimized for human auditory processing and memory.

Performance technique analysis reveals high-fidelity transmission of specialized vocal ornamentations and inflections that distinguish Royal Boat Songs from folk boat songs and other regional musical traditions. Melismatic elaborations on the characteristic "he" vocalization demonstrate complex motor patterns requiring dedicated learning and practice, supporting hypotheses about oblique transmission through intensive teacher-student relationships.

Notation 1: Melodic Pattern of 'He'
Vocalization in Royal Boat Song
Adaptations for Buddhist Ceremonies
(Transcribed by Vich Boonrod, 2025)

The image displays a musical score for the 'He' vocalization. It consists of three staves of music in 2/4 time. The first staff begins with a treble clef, a key signature of one sharp (F#), and a 2/4 time signature. The melody starts with a half rest, followed by a quarter note G4, a quarter rest, a quarter note A4, a quarter note B4, a quarter note C5, a quarter note D5, and a quarter note E5. The second staff continues the melody with a quarter note F#5, a quarter note G5, a quarter note A5, a quarter note B5, a quarter note C6, a quarter note D6, and a quarter note E6. The third staff concludes the phrase with a quarter note F#6, a quarter note G6, a quarter note A6, a quarter note B6, a quarter note C7, a quarter note D7, and a quarter note E7, followed by a double bar line. Above the first staff, the word 'He' is written above each note of the first staff. Above the second staff, the word 'He' is written above each note of the second staff. Above the third staff, the word 'He' is written above each note of the third staff.

This transcription demonstrates how the Penta-Centric Scale system operates within the traditional four-section structure, showing the melodic framework that remains consistent across performances while allowing for textual adaptation to Buddhist ceremonial contexts.

The melodic pattern employs what Phra Chen Duriyanga described as the distinctive Thai tonal system: "...it is neither pentatonic nor derived from the Chinese or the Javanese system as is usually supposed, but it is diatonic with seven difference tonic-steps to its scale, avoids the use of the fourth degree of the scale, and because of the occasional use of seventh degree, this music appears to be in the pentatonic scale" (Phra Chen Duriyanga, 1956, pp. 38-39). This theoretical framework aligns with contemporary Thai musical practice, where certain traditional songs employ only five primary tones to achieve specific regional characteristics, such as the Lao accent songs (เพลงสำเนียงลาว) that utilize five core tones within specific modal frameworks.

In the Buddhist ceremonial adaptation, the core "He" vocalization maintains its traditional melismatic ornamentation while the textual content transforms to incorporate Buddhist devotional elements. The musical structure preserves the ancient Chinese and Javanese-influenced five-tone system that historically characterized Thai music, which evolved from the original five-tone framework to the contemporary seven-tone system while retaining the fundamental pentatonic character in specific traditional contexts like Royal Boat Songs. This preservation of the Penta-Centric Scale demonstrates the selective retention of cognitively optimal musical structures that facilitate memory transmission and community participation, supporting cultural evolutionary predictions about the persistence of culturally adaptive musical features.

While core structural elements show remarkable fidelity, systematic variations in textual content demonstrate adaptive cultural evolution responding to contemporary community needs. Textual adaptations incorporate local cultural references including Buddha Chinarat descriptions, Nan River mentions, and King Naresuan historical associations while maintaining traditional verse forms. This pattern supports cultural attraction theory, where cognitive biases shape transmission direction by favoring content that resonates with local cultural knowledge while maintaining formal structures facilitating memory and transmission.

Comparative analysis of performances by different practitioners reveals differential transmission fidelity across musical elements. Melodic intervals and rhythmic patterns show highest fidelity with minimal variation across performers and contexts, while textual elements show intermediate fidelity with core structures preserved but content varying systematically. Performance gesture and ceremonial

interaction patterns show lowest transmission fidelity with considerable individual variation, suggesting that social performance aspects undergo continuous cultural negotiation while musical content maintains greater stability.

4.3 Community Functions and Adaptive Benefits

Royal Boat Song performances create powerful opportunities for community social bonding through shared participation in meaningful cultural activities. Participant observation reveals multiple levels of community engagement: active performers develop intensive social relationships through shared learning, while community audiences experience collective emotional engagement through musical participation and ceremonial witnessing, consistent with research on music's social bonding functions (Savage et al., 2021).

The intergenerational character provides particularly important social bonding benefits. Elderly community members serve as cultural knowledge holders and ceremonial authorities, while younger participants gain cultural identity and specialized knowledge through ceremonial involvement (Kalyanamitra, 2022). This creates cross-cutting social ties that enhance community stability and cultural transmission while providing meaningful social roles across age cohorts.

The integration into Buddhist merit-making ceremonies provides enhanced religious significance through sophisticated cultural elements that elevate ceremonial importance and community participation. The musical sophistication and cultural prestige associated with royal traditions provide what Boyer (2001) terms "cognitive optimality" for religious transmission—cultural elements that engage attention and memory systems while supporting religious meaning-making.

The tradition generates multiple forms of economic and social capital benefiting both individual participants and broader community development. Cultural tourism provides direct economic benefits while cultural prestige enhances community social capital by positioning Phitsanulok as a center for authentic Thai cultural preservation (Laoakka, 2019). Individual practitioners gain specialized cultural knowledge and performance skills that provide social recognition and economic opportunities.

Analysis reveals that Royal Boat Song practice serves what Putnam (2000) identifies as social capital functions including enhanced civic participation, institutional trust, and economic cooperation. The collaborative networks required for tradition maintenance generate social capital through enhanced community organization and cooperation, creating institutional relationships and social trust benefiting broader community development initiatives beyond cultural preservation.

4.4 Cultural Evolution Mechanisms

Analysis reveals cultural evolution mechanisms operating through differential selection pressures on tradition components. High-fidelity transmission of core musical elements occurs through specialized master-student relationships ensuring preservation of complex musical knowledge, while adaptive modifications spread through horizontal community networks that evaluate and selectively adopt innovations serving contemporary needs.

Table 1: Cultural Evolution Mechanisms in Royal Boat Song Transmission

Component	How It's Transmitted	Change Pattern	Why It Persists	
Musical Structure	Master to student	Stable (no change)	Cognitive optimization	
	Four-section format	Specialized training	Fixed structure	Memory and coordination
	Penta-Centric Scale	Intensive practice	Complete preservation	Cultural identity
	Vocal techniques	Direct instruction	High fidelity	Performance quality
Song Content	Community networks	Adaptive change	Contemporary relevance	
	Poetic themes	Peer evaluation	Buddhist adaptation	Religious meaning
	Local references	Social learning	Continuous innovation	Cultural ownership
Ceremonial Context	Family tradition	Directed evolution	Community needs	
	Buddhist integration	Intergenerational	Systematic adoption	Merit-making practice
	Performance venues	Cultural inheritance	Environmental adaptation	Community access

Analysis reveals differential evolution patterns: musical structures remain stable through master-student transmission while content and context adapt through community networks. This demonstrates how cultural evolution preserves cognitively optimal elements (musical structures) while enabling adaptive innovation (textual content and ceremonial integration) that serves contemporary Buddhist ceremonial needs. The pattern supports evolutionary predictions about cognitive constraints in cultural transmission—complex musical knowledge requiring intensive learning shows minimal variation, while socially relevant content undergoes systematic community-driven adaptation.

The research provides empirical evidence for cultural transmission mechanisms predicted by evolutionary theory. Short-term variations between annual ceremonies demonstrate cultural drift and individual innovation, while longer-term patterns across decades reveal systematic cultural adaptation in response to changing social conditions and community needs (Nirattisai, 2018).

The preservation of complex musical structures requiring intensive learning supports hypotheses about cultural selection favoring traditions serving important adaptive functions for human communities. Royal Boat Songs demonstrate cumulative cultural evolution—the gradual accumulation of beneficial cultural modifications that enhance tradition value for community participants while maintaining essential functional characteristics (Henrich, 2015).

Comparative analysis with historical practices reveals directional cultural change toward enhanced community accessibility and participation without loss of musical sophistication or ceremonial significance. This pattern suggests cultural evolution operating to optimize tradition-community fit while maintaining cultural elements providing distinctive identity and specialized knowledge preservation benefits.

5. Discussions

5.1 Theoretical Implications for Cultural Evolution Research

This research advances cultural evolution theory by providing detailed empirical documentation of how cultural transmission operates in natural community contexts through complex networks of social relationships and cultural practices. The multi-level analysis reveals how individual learning, community adoption, and institutional support interact to produce cultural evolution patterns that balance preservation with adaptation, extending laboratory-based findings to real-world cultural transmission scenarios.

The demonstration that adaptive cultural modification enhances rather than threatens tradition preservation challenges static conservation approaches and supports dynamic models recognizing cultural evolution as preservation strategy. This finding has significant implications for heritage management theory and practice, suggesting that successful cultural preservation requires supporting rather than constraining community-driven cultural evolution processes (Usmaedi et al., 2024).

The analysis provides empirical support for cultural attraction theory by demonstrating how cognitive biases and cultural preferences systematically shape cultural transmission direction. The selective preservation of musical structures while modification of textual content illustrates how cultural evolution operates through differential attraction of cultural variants that optimize cognitive processing and social

utility, supporting theoretical predictions about the role of psychological constraints in cultural change.

The research contributes to understanding imaginative culture by demonstrating how traditional performing arts engage evolved psychological mechanisms including pattern recognition, emotional regulation, and social bonding systems while serving adaptive functions including stress reduction, enhanced cooperation, and cultural learning (Carroll et al., 2017). These findings bridge evolutionary psychology and cultural studies by showing how cultural products serve adaptive functions while evolving through community agency.

5.2 Practical Applications for Cultural Heritage Management

The research provides practical guidance for cultural preservation programs worldwide by demonstrating how communities can successfully balance cultural authenticity with adaptive flexibility through sophisticated decision-making processes that evaluate proposed changes against multiple criteria including tradition integrity, community benefit, and cultural sustainability. These findings align with and advance UNESCO's evolving frameworks for intangible cultural heritage management while addressing critical gaps in conventional preservation approaches.

UNESCO Framework Evolution and Community-Driven Preservation

UNESCO's approach to cultural heritage management has undergone significant transformation over the past four decades, expanding from static monument preservation to dynamic community-centered approaches that recognize cultural heritage as living systems requiring adaptive management (Unakul, 2019). The 2003 Convention for the Safeguarding of Intangible Cultural Heritage represents a paradigm shift toward recognizing communities as primary stakeholders in heritage preservation, emphasizing that "communities, groups and, in some cases, individuals that recognize such heritage as part of their cultural heritage" should be central to safeguarding processes (UNESCO, 2003).

This framework recognizes five key domains of intangible cultural heritage: oral traditions and expressions, performing arts, social practices and rituals, traditional craftsmanship, and knowledge concerning nature. Royal Boat Songs exemplify performing arts that integrate multiple domains through their combination of musical expression, ceremonial practice, and traditional ecological knowledge related to riverine environments. The UNESCO framework's emphasis on community participation, intergenerational transmission, and contemporary relevance directly aligns with the cultural evolutionary processes documented in Phitsanulok Province.

Community-Driven Approaches: Evidence-Based Strategies

Contemporary research demonstrates that community-driven cultural preservation achieves optimal outcomes through five interconnected mechanisms. Active community participation ensures local agency in all preservation stages—planning, implementation, and evaluation—creating ownership and sustainability that top-down approaches cannot achieve (Ibrahim et al., 2025; Nam & Thanh, 2024). The Royal Boat Song case exemplifies this principle through community-controlled adaptation processes that maintain musical authenticity while serving contemporary Buddhist ceremonial needs.

Intergenerational knowledge transfer facilitates continuity of complex cultural practices requiring specialized learning, as documented in traditional crafts preservation and musical transmission systems (Radzuan et al., 2024; Feng, 2025). Our ethnographic analysis reveals how Royal Boat Songs employ multiple transmission pathways—vertical family networks, horizontal peer learning, and oblique master-student relationships—to ensure comprehensive knowledge preservation across generations.

Economic integration through community-based tourism and craft industries provides sustainable livelihoods while strengthening cultural transmission, particularly benefiting youth who might otherwise migrate away from traditional communities (Wani et al., 2025; Ariffin et al., 2023). The Phitsanulok case demonstrates how cultural tourism generates economic capital that incentivizes tradition maintenance while creating opportunities for cultural education and exchange.

Collaborative governance structures that recognize community agency while providing institutional support create enabling environments for adaptive cultural evolution (Saputra, 2024; Li & Tang, 2023). The Royal Boat Song tradition benefits from such collaboration through government recognition, temple institutional support, and community organization that collectively facilitate both preservation and adaptation.

Addressing Heritage Management Challenges

The research findings directly address critical challenges identified in World Heritage management, where many sites struggle with expanding "boundaries of practice" and mounting pressures from globalization, climate change, and sustainable development demands (Unakul, 2019). Traditional heritage institutions often remain constrained by conventional mandates that emphasize static preservation over adaptive management, resulting in decreased cultural vitality and community engagement.

The Royal Boat Song case provides empirical evidence for adaptive capacity factors essential for heritage resilience: cognitive frames that recognize cultural evolution as preservation strategy, learning capacity through multiple transmission pathways, flexible governance structures supporting community agency, organizational relations bridging traditional and contemporary institutions, community agency in cultural decision-making, and diversified resources including cultural, social, and economic capital.

Policy Implications and Implementation Strategies

The findings contribute to heritage management practice through evidence-based recommendations that operationalize UNESCO frameworks while addressing contemporary challenges. Policy development should prioritize frameworks that recognize cultural evolution as preservation mechanism rather than threat, supporting community-driven adaptation processes through institutional flexibility and resource allocation (Kiarie, 2024; Hiswara et al., 2023).

Implementation strategies should emphasize participatory planning methodologies that center community knowledge and decision-making authority, as demonstrated by successful preservation initiatives across Southeast Asia and Central Asia (Yang et al., 2021; Yoshida et al., 2024). The Royal Boat Song model illustrates how communities can maintain cultural authenticity while adapting to contemporary conditions through systematic evaluation of proposed changes against cultural integrity, community benefit, and sustainability criteria.

Educational integration represents a critical implementation component, requiring formal and informal learning systems that facilitate intergenerational transmission while connecting traditional knowledge with contemporary educational frameworks (Cabeça, 2020; Frullo & Mattone, 2024). The Phitsanulok case reveals how ceremonial participation creates powerful educational contexts that engage multiple generations in cultural learning while strengthening community bonds.

Global Applications and Cultural Resilience

The research demonstrates that successful cultural preservation requires balancing preservation with adaptation through community agency, supporting UNESCO's recognition that intangible cultural heritage "is constantly recreated by communities and groups in response to their environment, their interaction with nature and their history" (UNESCO, 2003). This dynamic approach enhances cultural resilience by maintaining essential adaptive characteristics that enable traditions to respond to changing conditions while preserving distinctive cultural features.

The Royal Boat Song case provides a replicable model for heritage management that integrates traditional knowledge systems with contemporary needs, demonstrating how communities can successfully navigate globalization pressures while maintaining cultural distinctiveness (Harbiankova et al., 2023; Cárdenas, 2024). This approach supports sustainable development goals by linking cultural preservation with economic opportunity, social cohesion, and environmental stewardship through integrated community-based management systems.

6. Conclusions

This ethnographic analysis of Royal Boat Song cultural transmission demonstrates how sophisticated cultural traditions successfully navigate the tension between preservation and adaptation through community-driven evolutionary processes. The study provides empirical evidence for understanding how imaginative culture serves human nature's evolved capacities for social cooperation, meaning-making, and collective identity formation.

Our research reveals that Royal Boat Songs function as sophisticated cultural inheritance systems operating through multiple simultaneous transmission pathways: vertical transmission through community knowledge, horizontal transmission of contemporary adaptations, and oblique transmission of specialized musical skills through master-student relationships. These mechanisms enable high-fidelity preservation of core elements while facilitating adaptive innovation that enhances both tradition relevance and community engagement.

Musical analysis demonstrates how cultural evolution operates through differential selection pressures on tradition components. Core melodic structures and performance techniques remain stable through strong cultural selection, while textual content and ceremonial integration adapt flexibly, reflecting community agency in cultural evolution. These performances serve essential adaptive functions by strengthening social bonds, preserving cultural knowledge across generations, enhancing religious practice, and providing economic and social capital benefits.

Community-driven adaptation strategies in Phitsanulok—including educational integration, innovation within tradition, organizational strengthening, and external collaboration—enable communities to maintain cultural authenticity while adapting to contemporary conditions. This challenges static preservation models that attempt to freeze traditions in historical forms.

The Royal Boat Song case ultimately demonstrates that traditional performing arts represent sophisticated adaptive cultural systems serving essential human needs while maintaining flexibility to evolve with changing conditions. This research

advances the understanding of cultural evolution mechanisms and offers practical strategies for supporting cultural diversity and community resilience in rapidly changing global contexts.

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