



THE STEPPE SCHOOL OF KAZAKH SINGING WITHIN THE PARADIGM OF IMMERSIVE INSTALLATIONS AND PERFORMATIVE ETHNOMUSICOLOGY

Aibike Tanatarova¹, Zhaidargul Kazybekova²

^{1,2}Temirbek Zhurgenov Kazakh National Academy of Arts
(Almaty, Kazakhstan)

Abstract. This article proposes an aesthetic and technical reconstruction of the so-called “Steppe Vocal School” – the traditional performative paradigm of Kazakh singing – through modern immersive methodologies, including sound installation, acoustic-physiological analysis, and AI-based performative practices. Based on the analysis of ethnographic sources, literary memoirs, and oral testimonies (specifically the works of Akhmet Zhubanov, Saken Zhunissov, and Zeinur Kospakov), the study identifies pedagogical and stylistic principles inherent in the traditional vocal culture of Kazakhstan’s nomads. An interdisciplinary approach is applied, integrating ethnomusicology, phonology, sound anthropology, and performance studies. The *methodological framework* is grounded in an integrative literature review aimed at systematizing modern vocal techniques (Boaventura). A critical analysis and synthesis of academic works indexed in the Web of Science database and leading Kazakhstani musicological sources in Kazakh, English, and Portuguese were conducted. This method enabled the identification of existing theoretical gaps, the determination of promising directions for addressing current issues in vocal pedagogy, and the formulation of innovative approaches to the modernization of singing practices. The central proposal is the development of an immersive sound installation that not only documents but also recreates the acoustic, spatial, and emotional atmosphere of steppe singing, transforming traditional vocal practice into performative digital data. This approach aims both to preserve intangible heritage and to integrate it into contemporary cultural and educational ecosystems. The interdisciplinary scientific and methodological significance of the *findings* lies in the theoretical comparison and critical evaluation of traditional and innovative approaches to vocal pedagogy. The practical value of the study lies in the potential integration of its findings into the educational process of higher education institutions specializing in the arts and in their application by practicing performers to optimize the technical and technological aspects of vocal

production. The conclusions may inform professional training programs for traditional singers and provide a theoretical foundation for subsequent empirical research in vocal performance.

Keywords: Steppe school; traditional Kazakh singing; immersive sound installation; intangible heritage; performative ethnomusicology.

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Introduction

The traditional vocal art of the Kazakh people, historically rooted in the vast expanses of the Eurasian steppe, has never been merely a system of sound production; rather, it represents a distinct mode of being in the world:

— *a form of collective memory.*

Contemporary machine-learning technologies are transforming the very ontology of *postmemory* (Khirsch), shifting it from a mode of representing lost experience to one of digital materialization. In the context of Kazakh folklore, AI functions simultaneously as an instrument of restitution and an ethical challenge. Audio-restoration algorithms (e.g., diffusion-based models or GANs) facilitate the reconstruction of historical recordings characterized by significant noise and degradation, restoring audibility to voices no longer available through live transmission. Furthermore, vocal-pattern analysis systems (pitch contour, timbre embedding) may be capable of uncovering latent structures of traditional techniques — such as throat singing — thereby rendering visible acoustic markers of memory that elude non-instrumental perception.

However, generative models capable of synthesizing “new” vocal variations based

on archival training datasets raise a fundamental question: where does the boundary lie between the continuation of a tradition and its digital simulation? In this sense, AI becomes not merely a technical mediator but an active agent of postmemory — it does not simply store the past but rehearses it, creating conditions for intergenerational dialogue through sonic artifacts that are simultaneously authentic (trained on real voices, as Kazakh traditional song culture is transmitted orally) and hypothetical (never having existed in such a form before).

This duality necessitates an *ethical framework* (a conceptual model or methodological scheme of analysis) in which technology serves not to replace *the live performer* but to *expand the possibilities for conceptualizing tradition as a dynamic process*. This aligns with the Kazakh understanding of music as the “voice of ancestors within the landscape,” now augmented by a digital layer (Khirsch);

— *ritual communication.* In his fundamental work *Ritual and Religion in the Making of Humanity* (1999), American anthropologist Roy Rappaport developed the concept of ritual as a self-referential communicative system that transforms information into action. According to Rappaport, ritual utterances (including song formulas) possess a unique status: they do

not merely describe reality but actively shape it through a performative act (Robbins). In the context of ritual singing, this implies that the performance of a ritual song — such as the *Zhar-zhar* (a traditional wedding genre based on a dialogic form that ritually formalizes the bride's transition from her paternal kin to her husband's community), the *Besik zhyry* (a cradle song combining lulling, educational, and protective-magical functions aimed at primary socialization), or the *Synsu* (a lyrical wedding lament performed by the bride upon departing her childhood home, reflecting the psychological aspects of transitioning to a new social role) — does not simply transmit information about an event; it constitutes the event itself and thereby helps construct social reality (Robbins).

— a form of aesthetic expression deeply integrated into the natural and social environment. “One of the vital properties of nomadic culture is anthropocentricity. It emphasizes the socialization of the individual. The upbringing of the human being is the primary value of society; thus, many art forms are subordinated to the task of preparing the individual for social life, which is strictly regulated according to age, gender, and socio-cultural roles” (Yelemanova).

Within the framework of the state cultural initiative of the Republic of Kazakhstan, “*Uly Dala*” (“The Great Steppe”) — articulated in the cultural program “*Seven Facets of the Great Steppe*” (published on 21 November 2018 on the official website of the President of the Republic of Kazakhstan, Akorda.kz) — an approach was proposed for conceptualizing national history as a continuous cultural flow. In this paradigm, traditional song art serves as a key repository of collective memory: “To understand one's origins, and indeed the entire national history in all its depth and complexity” (Nazarbayev).

In this context, the Kazakh song tradition is viewed not as an isolated aesthetic phenomenon but as a practice of ritual communication organically integrated into the

natural, landscape, and social environment of nomadic culture.

As Saida Yelemanova demonstrates in her seminal monograph “*Kazakh Traditional Song Art: Genesis and Semantics*” (2000), the voice in the Kazakh tradition is formed in dialogue with the steppe landscape: the extended melodic lines of song (än) reflect the vastness of the steppe (Yelemanova).

In the article “Sound as a Sign of Culture”, Yelemanova develops a concept of the semantic genesis of sound: sonic matter is fundamentally linked to the ontology of nature (wind, water, animal cries) and is subsequently transformed into a cultural code through ritual utility (Yelemanova).

Thus, song in the Kazakh tradition functions as a *performative act of ritual communication* (in Rappaport's terms): it does not describe the event but constitutes it through sonic matter. In this capacity, traditional singing becomes an acoustic mediator between humans and landscape, between generations, and between social and cosmological orders — aligning with the Kazakh understanding of music as the “voice of ancestors in the steppe.” It is this ontological connection between sound and environment that allows traditional song art to function as “aural memory,” facilitating an understanding of historical heritage “in all its depth and complexity,” as envisioned by the “Uly Dala” concept.

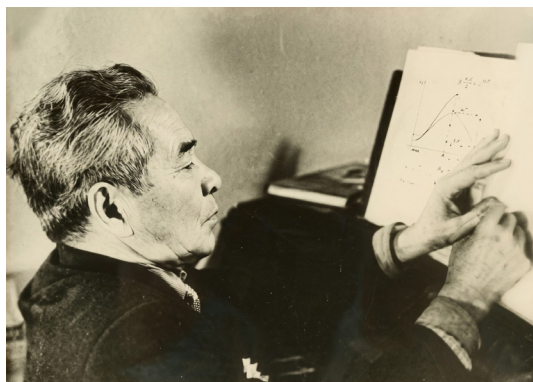
Within the professional community of traditional Kazakh musicians and among the general public, the idea of a “*Steppe School*” (and the imagery of “Uly Dala Mektebi”) is widespread as a description of this profound musical tradition. However, in academic ethnomusicological and musicological literature, these concepts *do not function as formal terms*. Scholarship instead analyzes traditional Kazakh music through *regional performance schools of oral art* (e.g., the Arka, Jetysu, Batys, Altay, and Syr traditions) and through the category of *oral-musical professionalism* as an object of socio-cultural and musicological analysis, *without employing the “Steppe School” as a distinct taxonomic unit*.

Scholars such as Akhmet Zhubanov (Zhubanov, 2001) and Zeinur Qospaqov (Qospaqov, 1999): have previously identified and described an informal complex of technical and aesthetic principles governing traditional vocal performance within regional singing schools — a system characterized by acoustic power, respiratory freedom, and emotional depth. However, due to the oral transmission of knowledge and the absence of systemic notation, this cultural layer remains vulnerable to historical erosion and requires scholarly conceptualization through cutting-edge research methods.

Methods

The analytical phase of the study was implemented through a three-stage procedure combining descriptive and systemic analysis:

Stage of Substantive Interpretation and Critical Analysis: A comprehensive review and in-depth analysis of specialized literature and professional publications were conducted. The research focused on the theoretical and empirical development of approaches to vocal techniques in traditional



Rice. 1 «A. Zhūbanov»

Akhmet Kuanovich Zhubanov (1906-1968) was a distinguished Kazakh composer, conductor, musicologist, educator, and public figure who made a monumental contribution to the development of professional Kazakh music. He founded and directed the first Kazakh national ensemble, the Kurmangazy Orchestra of Folk Instruments. As a scholar, Zhubanov conducted extensive research into the history of Kazakh music through its prominent figures and authored foundational textbooks on music theory and the history of Kazakh musical heritage.

Kazakh performance over a period spanning more than half a century. This made it possible to trace the genesis and transformation of performance canons in historical retrospect: *“Pode-se concluir que a inter-relação entre conhecimentos anatômicos, estratégias pedagógicas e práticas culturais é fundamental para um ensino consciente e saudável do canto popular”* (Correa).

Stage of Conceptual Modeling: Key definitions, empirical data, and theoretical propositions determining the specific features of traditional Kazakh vocal techniques were explicated. To strengthen the substantiation of the conclusions and minimize subjectivity in



Rice. 2 «Z. Qospaqov»

Zeinur (Zaynaqul) Qospaqov (1932) is a prominent musicologist and Candidate of Art Criticism (1969). He defended his doctoral dissertation on the topic "The Life and Musical Oeuvre of Zhayau Musa Baizhanov". Qospaqov is the author of numerous scholarly articles focusing on Kazakh musical folklore and the works of contemporary Kazakh composers. Furthermore, he has compiled several folkloric and pedagogical collections and has authored a variety of educational radio and television broadcasts dedicated to musical heritage. on Kazakh musical folklore and the works of contemporary Kazakh composers. Furthermore, he has compiled several folkloric and pedagogical collections and has authored a variety of educational radio and television broadcasts dedicated to musical heritage.

the interpretation of authorial concepts, theoretical comparison, critical evaluation, and direct quotation were employed, thereby ensuring a high degree of conceptual precision and fidelity to the sources.

Stage of Systematization and Technological Synthesis: The findings were classified into thematic domains encompassing theoretical substantiation and conceptual modeling. Particular attention was devoted to interdisciplinary synthesis, including the transformation of traditional vocal material into digital formats through generative neural-network models (AI). The final stage of the synthesis involved the visualization of audio data and the development of a conceptual model for a sound-art installation in which media technologies function as instruments for the contemporary actualization of intangible cultural heritage.

In the context of this problem, the research proceeds from the following thesis: traditional Kazakh vocal practice cannot be understood merely as an object of analysis; it constitutes performative data — a phenomenon actualized in the act of performance and open to reinterpretation through modern artistic languages. In this framework, the acoustic analysis of historical recordings is used as a basis for a performative reconstruction of the Steppe School, with digital technologies and immersive performative practices serving as tools for both investigation and preservation.

This approach engages in a dialogue with the latest directions in sound studies, which emphasize immersion as a space for cognition (Voegelin, 2010), and the methods of “*applied ethnomusicology*” (Seeger, 2008), aimed at involving communities in the revitalization of their sonic heritage.

Discussion

1: The Steppe Singing School: Between Oral Tradition and Vocal Theory

In an era where musical traditions are increasingly becoming subjects of scientific rather than merely artistic inquiry, the de-

velopment of critical thinking skills is paramount. It is critical analysis that allows one to distinguish authentic tradition from myth, identify logical contradictions in argumentation, and avoid common pitfalls — ranging from terminological substitution to false analogies. Kazakh traditional vocal culture, transmitted for centuries “*auyzsha madeniet dasturi ayasynda urpaqtan-urpaqqa*” (“within the framework of the oral tradition from generation to generation”), provides a unique field for demonstrating these methodological approaches, positioning it on equal footing with global musical systems.

On the one hand, we encounter *a problem of terminological substitution*: why a “school” is not always a “school.” One of the most prevalent issues in Kazakhstani publications is the application of the term “school” to Kazakh traditional singing culture. It is frequently asserted that “Kazakhstan possessed its own vocal school — the *Dala Mektebi* (Steppe School).” *To local practitioners, this may sound convincing*:

Yerlan Ryskali: “In the old days, there was a methodology in the *Steppe School*. My late father used to say: ‘In our childhood, teachers training young singers would have them shout while holding a wooden strut inside [the clothes/chest area] to provide resistance.’ This was a method for teaching proper breath control” (Nurgalymuly).

“There are no written records regarding the *Dala Mektebi*; it is only spoken of orally. Some would go to the headwaters of a spring and shout over the roar of the water. Others would shout while lifting a log or a lamb. Logically, this was work intended to develop sonic power. People of that time said voices could be heard ‘beyond six hills’; they likely had their own methods for developing such powerful sound production, much like the methodologies discussed today” (Tanatarova). Nevertheless, from a methodological standpoint, this usage requires qualification.

In Western and Russian traditions, a “school” is an institutionalized system based on notation, standardized methodol-

ogies, and the written codification of theory. The Italian “*bel canto*” or the German “*Lied*”-tradition are systems where knowledge is transmitted through educational institutions, textbooks, and explicit pedagogical models (Garcia).

In contrast, the Kazakh tradition evolved without written codes, formal curricula, classrooms, or examinations. As Akhmet Zhubanov noted, knowledge was transmitted not through records, but through live imitation, observation, and personal example (Zhubanov). This does not render it less sophisticated; rather, it serves as evidence of a different organizational type of knowledge — one that is not abstract, but *embodied* in the physique, the breath, the voice, and the performer’s conduct.

Applying the term “school” to this phenomenon risks imposing criteria derived from institutionalized Western models on a cultural tradition organized according to different mechanisms of knowledge transmission. This is not merely a matter of comparison but a potential terminological substitution that may obscure the specific character of the tradition. Critical analysis therefore requires a clear distinction: in the present context, it is more precise to speak of a “*steppe singing tradition*” shaped under conditions of oral transmission.

Although the “Steppe School” was never codified in pedagogical manuals, its presence is vividly manifested in 20th-century literary and musicological sources. In S. Zhunisov’s novel “*Akan Seri*”, singing is described as an acoustic-spiritual phenomenon: “he tuned his voice to the sound of the dombra, opening his throat wide” (Zhunisov). Here, the voice is not an isolated instrument but part of a *sonic ecosystem* encompassing the body, the instrument, and the landscape.

Zeinur Qospaqov (1999) reinforces this vision by comparing the tenor Idiris to Europe’s finest opera singers: “Idiris could have been the pride of any opera house” (Qospaqov, 1999, p. 9). This comparison does not obscure the tradition; instead, it highlights its high technical complexity —

mastery of *legato*, diaphragmatic breathing, and the seamless registration between the chest (*grudnoy*) and head (*golovnoy*) registers.

Discussion 2: Generalization Based on Singular Examples: The Myth of the “Highest Voice”

Claims regarding the superiority of traditional voices often cite Zeinur Qospaqov: “*Idiris, as a tenor, could have been the pride of any European opera house*” (Qospaqov, 1999). While emotionally resonant, this remains a subjective rather than a scientific judgment. It lacks acoustic verification, fails to provide direct comparisons with specific European vocalists, and overlooks a fundamental distinction: a high-pitched voice in the steppe was a “*functional necessity*”, whereas in opera, it is an “*aesthetic choice*”.

In the steppe environment, the voice was required to overcome vast distances — during livestock herding, at *aitys* (song competitions), or for military summons. This represents an *evolutionary adaptation*. Conversely, the Italian operatic *tenor di grazia* is the result of a sophisticated technique prioritized for melodic beauty rather than sheer volume.

Consequently, juxtaposing the “high voice of Idiris” with the “high voice of Caruso” constitutes a “*false analogy*”, as these phenomena belong to different cultural systems and serve divergent purposes. Critical analysis demands comparable parameters: frequency range in Hertz, spectral density, phrase duration, and type of glottal attack. Only through such a framework can we avoid mythologization and recognize the true intrinsic value of the tradition.

From a physiological perspective, the *Steppe School* is characterized by:

- *deep diaphragmatic breathing*, frequently conditioned in extra-musical contexts (such as horseback riding and the “voice of the steppe”);

- a neutral and stable laryngeal position, ensuring natural projection without strain or abrupt register shifts: “*Nesse sentido*,



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recomenda-se iniciar o trabalho vocal a partir da ressonância natural da voz, preparando-a gradualmente para as demandas de alta energia” (Correa, 2025). Furthermore, the objective is to develop a “mixed voice” (*voce mista*) in a comfortable manner; in this regard, Pacheco, Marçal, and Pinho (2004) state that “in an attempt to make the transition from one register to another imperceptible, some singing schools adopted the technique of *copertura* (covering), which originates from the Italian school of singing known as *Bel Canto*” (Pacheco, Marçal, and Pinho, 2004, p. 430).

– phonetic adaptation to the Kazakh language, with a specific emphasis on open vowels and nasal consonants.

– performative intentionality, whereby the voice conveys social, ritual, and ethical meanings. (The initial stage of the research was conducted in 2025 by the article’s co-author, Aibike Tanatarova, under the academic supervision of Zhaidargul Kazybekova, and was presented for scholarly and educational evaluation at the International Olympiad in Music-Theoretical Disciplines for university students specializing in Music and Performance, where the author was awarded Second-Degree Laureate status.)

These principles were transmitted implicitly – through imitation and practice – which explains the stylistic homogeneity

between teacher and student (*ustaz-shakirt*). In the Kazakh tradition, this principle is characterized by an oral form of implementation that ensures the continuity of cultural and professional succession, serving as the fundamental mechanism for the transmission of experience, repertoire, and aesthetic norms through direct intergenerational communication. A notable example is Sultanmurat, a student of Akan Seri, whose voice “rang like a bell” in perfect unison with his mentor (Zhunisov 107).

Conceptual Reconstruction 1. Drawing on the testimonies of Akhmet Zhubanov (*Zamana Bulbuldary*) and Sabit Mukanov (*Omir Mektebi*), the study analyzes the vocal nature of the traditional performer, focusing on acoustic power, range, timbral characteristics, and intonational-rhythmic flexibility. Metaphorical descriptions in literary and publicistic discourse are correlated with professional vocal-performance categories in order to systematize the aesthetic and performative meanings of such notions as “silvery purity of timbre”, “a voice reaching across six mountain passes”, and “soaring into the high register”. Within the context of traditional Kazakh singing culture, these descriptions are subsequently translated, with the assistance of AI, into a conceptual sound-art representation:

«Қырдың ар жағына барып, әдетінше айқайлап, алты қырдан асатын дауыстың



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әлі де күші кетпегеніне риза болып, іштегі шерін шығарып алды», «Оның дауысы күмістей таза қалпында қалады» (“Having gone beyond the ridge, he cried out as was his custom and, pleased that his voice-capable of carrying across six ridges-had lost none of its power, gave vent to the sorrow pent up within him.” “His voice retained its silvery purity”)(Zhubanov 51, 53).

«As for the power of his voice, it was extraordinary: when he launched into full-throated singing, the ears of those sitting nearby would ring. His voice would soar upward, as if striving toward the heights, and then cascade downward; both its ascent and descent were harmonious, rhythmic, and graceful» (Mukanov).

“Furthermore, the acoustic power is immense – when he breaks into a full-throated cry, the ears of those sitting beside him ring. His ability to soar into the high register as if ascending a peak, followed by a rhythmic and graceful descent in a cascading melodic contour, is executed with exquisite harmony and style” (Mukanov 221).

Conceptual Reconstruction 2. Based on the description of Akan Sultanmurat’s performance manner, a comprehensive analytical model was formulated to examine the interrelationship among physiological, acoustic, and artistic-performative parameters of singing within the *ustaz-shakirt* (mentor-disciple) relationship. This relationship is considered as a context for understanding appropriate vocal production and signs of excessive cervical muscular tension. The conceptual reconstruction addresses the following analytical tasks:

1. Identify how external physiognomic and somatic signs (muscular tension, respiratory changes, vascular reaction, diaphoresis) correlate with the quality of phonation, timbral coloration, and the stability of the vocal apparatus.

2. Analyze signs of vocal forcing (laryngeal tension, “weight shifting” to the throat, the appearance of hoarseness, tempo acceleration, and the shortening of cantilena phrasing) as indicators of technical vocal impairment.

3. Determine the influence of the psycho-emotional state on register balance, breath support (*appoggio*), and timbral stability.

4. Systematize the identified markers within the context of traditional Kazakh vocal culture, correlating the artistic description with AI-driven visualization.

“Akan listened to some of Sultanmurat’s songs with a furrowed brow and a strained expression. When the singer opened his mouth, his entire being seemed to dissolve into the sound; his throat would swell, and his jugular veins would stand out prominently. Yet, normally, there was not a trace of strain on his face. This time, however, his swarthy face flushed a deep crimson, and before he had even reached full fervor, beads of sweat appeared on his brow. He seemed breathless, as if trying to rid himself of the song quickly – cutting phrases short instead of sustaining them with the proper poise (*bab*). There was a slight rasp in his voice. Despite his youthful vigor, his vocal conditioning had been neglected; the entire weight and strain of the performance had fallen squarely upon his larynx” (Zhunisov).

Conceptual Reconstruction 3. This reconstruction brings the physiological and performative effects of horseback riding into dialogue with the musical-rhythmic characteristics of vocal performance, considering how physical conditioning may be integrated into traditional singing practice. On this



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basis, AI is used to conceptually model a spatial-sonic composition informed by ethnographic, physiological, and performative data:

“What a harmonious and exquisite song; what a sublime voice, perfectly suited to the melody. There is neither strain nor breathlessness; the sound sways like the tassels of feather grass, resonating across the entire landscape. The singer performs as if on horseback; the vocal rhythm sways gently, in perfect synchrony with the rhythmic gait of the horse” (Zhunisov).

Conceptual Reconstruction 4. This stage proposes the integration of empirical descriptions of the vocal-acoustic characteristics of high male voices into the conceptual structure of audio materials and a sound-art installation:

Yerlan Ryskali: Aset used to say: ‘If you do not understand the noble nature of this art, you will only force the dombra into a galloping rhythm.’ It was noted that when Aset reached the highest notes, the physical weight [resonance/strain] descended into the sacral region (*segiz koz*)” (Interview with Yerlan Ryskali, February, 2025).

“The elasticity (*sozylgaqtygy*) of this high voice is remarkable. His vocal range allows him to ascend and descend repeatedly within the upper register without interruption. Beyond this elasticity and height, Amre’s songs are exceptionally expressive,

stylish, and possess a resonant quality that is highly pleasing to the ear” (Mukanov, 1964, p. 1001).

“A tenor of Idiris’s caliber could have served as the pride and glory of any European opera house” (Qospaqov).

Consequently, these principles were transmitted *implicitly* through imitation and practice. This helps explain the stylistic continuity observed between mentor and apprentice (*ustaz-shakirt*). In the Kazakh tradition, this principle operates through an oral mode of transmission that ensures cultural and professional continuity, serving as a fundamental mechanism for passing on experience, repertoire, and aesthetic norms through direct intergenerational communication. A notable example is Sultanmurat – the apprentice of Akan Seri – whose voice “rang like a bell” in perfect unison with his mentor (Zhunisov 107).

Results

As a result of the study, a conceptual model of an immersive sound installation has been developed for the experimental representation of selected acoustic, spatial, and embodied-performative characteristics of Kazakh traditional vocal culture.

For the initial prototyping of the model, audio recordings representing the Kazakh oral-professional singing tradition were se-



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lected, including recorded performances by Zhusupbek Yelebekov and Yerlan Rysqali. On this basis, demonstration audiovisual prototypes were produced by combining the original audio material with AI-generated visual sequences. These materials are accessible via QR codes and are used exclusively as research-oriented visualizations of proposed components of the future installation.

During the development of the model, a basic scheme for the spatial distribution of audio material was defined: the performer's voice is localized within the central acoustic field, while peripheral sound points are intended for the distribution of reflected sound and additional environmental acoustic components. The model further proposes the implementation of this structure through multichannel sound reproduction, which may enable experimental investigation of how vocal perception changes depending on the listener's spatial position relative to the sound source.

A principle of audio-reactive visualization was also developed, according to which changes in the visual environment are intended to correspond to quantitatively measurable characteristics of the vocal signal. Potential parameters include sound intensity, dynamic variation, and spectral characteristics; with the subsequent integration of sensor-based devices, respiratory parameters may also be incorporated. This

establishes a methodological transition from the illustrative AI-generated visualization employed at the prototyping stage to a prospective visualization system driven by empirically recorded data.

A further result of the study is the conceptualization of a safe experimental reconstruction of a traditional method of developing breath support described by Yerlan Rysqali: "a stick was pressed against the abdomen in order to feel diaphragmatic breathing." Rather than reproducing this technique literally, the proposed model retains its functional and pedagogical principle through the use of an interactive sensor-based module.

A prospective version of such a module may incorporate breathing and/or pressure sensors capable of recording changes in breathing patterns and synchronously correlating them with parameters of the vocal signal. This would make it possible to experimentally investigate the relationship between body posture, breathing patterns, and the acoustic characteristics of the voice without reproducing potentially unsafe forms of physical intervention.

Thus, the principal outcome of the current stage is not the creation of a completed immersive installation, but the development of its scientifically grounded conceptual model and a set of individual digital prototypes. The study defines the functions of artificial intelligence, establishes the principles



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governing the spatial organization of audio material, identifies parameters for audio-reactive visualization, and proposes a potential structure for an interactive module designed to investigate breathing practices.

The findings make it possible to conceptualize the immersive installation as a prospective experimental environment integrating source-critical work with audio recordings, acoustic analysis, digital prototyping, and performative research. At the same time, the proposed model remains at the project-based research stage and requires subsequent technical implementation and empirical validation involving both performers and listeners. Only after such validation can conclusions be drawn regarding the effectiveness of the proposed methods for the spatial and multimodal representation of traditional vocal performance.

Basic Provisions

A Conceptual Model for Immersive Reconstruction as a Sound Installation

The study is based on the premise that the preservation of traditional vocal performance culture cannot be limited to the static accumulation of audio materials. Although archival sound recordings capture the acoustic outcome of a performance, they convey its spatial, embodied-performative, and communicative dimensions only partially. In this regard, the study proposes a conceptual model of an immersive sound installation, conceived not as a completed artistic product but as a prospective experimental environment for the investigation and multimodal representation of traditional performance practices.

The first provision concerns the understanding of the immersive installation as a form of performative research. Its structure integrates archival and contemporary audio materials, spatial sound organization, visualization of acoustic parameters, and interactive elements. This approach makes it possible to move beyond the mere presentation of recorded material toward modeling

specific conditions of perception and the performance context.

The second provision defines the scope and limitations of artificial intelligence within the proposed model. AI performs an auxiliary analytical and representational function and is not regarded as a substitute for historical sources or as a means of producing a reconstruction with documentary status. In the present study, its application is primarily associated with the creation of visual prototypes for the proposed multimodal environment.

Accordingly, AI-generated images and video materials presented via QR codes are not interpreted as documentary representations of specific historical performers or as historically authentic reconstructions of performance events. Rather, they function as visual prototypes designed to demonstrate individual components of the proposed concept. Any discrepancies between the lip movements of the depicted performer and the accompanying audio recording result from the technological limitations of the generative model employed and indicate areas for further refinement of the prototype. Subsequent experimental implementation may therefore involve either synchronizing the depicted articulation with the audio track or replacing simulated singing with abstract audio-reactive visualization.

The third provision concerns the spatial organization of sound. The conceptual model is structured according to the principle of an expanded acoustic field that conditionally recreates the spatial characteristics of an open steppe landscape. The central zone is intended to localize the performer's voice, while peripheral channels may be used to spatially distribute reflected sound, environmental sonic elements, and additional acoustic layers.

The fourth provision involves a critical reconsideration of historically documented performance and pedagogical practices. Traditional methods of developing breath support should not be mechanically reproduced in a contemporary experimental

environment if they involve potentially unsafe physical intervention. Instead, their functional principles may be reconstructed through safe sensor-based technologies capable of recording breathing, pressure, body posture, and corresponding changes in the vocal signal.

Thus, the conceptual model is based on the interaction of four components: historical and contemporary audio sources — acoustic analysis — spatial modeling — multimodal visualization and interaction. Within this system, artificial intelligence serves as a tool for analysis, interpretation, and prototyping; it neither replaces the primary source nor assumes the function of producing historically authentic documentary evidence.

Conclusion

The Steppe School is not a relic of the past but a living — yet endangered — system of knowledge. By translating it into the language of modern technology — through sound installations, artificial intelligence, and performative ethnomusicology — we do not devalue the tradition; rather, we recontextualize it within new frameworks of meaning.

The theoretical comparison undertaken in this study indicates the potential for productive dialogue between traditional Kazakh singing and digital humanities approaches. The proposed immersive model is treated as a research hypothesis whose practical effectiveness should be examined at a subsequent empirical stage through acoustic measure-

ments, observation of participants' interactions with the installation, and analysis of their perceptual responses.

The Kazakh vocal tradition is inherently robust: its voice carries the “wind of the steppe,” its rhythm reflects the “gait of the camel,” and its intonations encapsulate the “lament and laughter of an entire nation.” However, to transmit this heritage to future generations — and to communicate it to broader audiences — we must employ a language that synthesizes “reverence for tradition” with “intellectual rigor.”

As Sabit Mukanov wrote: “*Änshi — mädeniетting deldaly*” (“The singer is a mediator of culture”) (Mukanov 1193). A mediator must be honest, precise, and — above all — critically minded. Only through such an approach is it possible not merely to “preserve” a tradition, but to “revitalize” it in dialogue with modernity, science, and global culture.

The Kazakh singing tradition, transmitted “*auyzsha madeniet dasturi ayasynda urpaqtan-urpaqqa*” (within the framework of the oral tradition from generation to generation), should not be measured solely by European criteria; it requires a methodology suited to its own cultural and historical conditions. Yet this methodology must be no less rigorous than its Western counterparts. The “*Steppe Singing School*” is a living system of sonic expression that merits not only respect but also rigorous scholarly conceptualization. This is precisely the task of the contemporary researcher who seeks to honor both cultural heritage and scientific rigor.

Authors' contributions:

A.S. Tanatarova – conducted the systematic collection and analysis of archival materials and scholarly sources within the selected research topic and developed an immersive installation grounded in the principles of performative ethnomusicology for the representation and reinterpretation of ethnomusical practices.

Zh.A. Kazybekova – linked the article's conclusions to the factual evidence and documented findings contained in the primary sources. The authors jointly analyzed and systematized the collected material.

Авторлардың үлесі:

А.С. Танатарова – таңдалған зерттеу тақырыбы аясында архивтік материалдар мен әдеби дереккөздерді жүйелі түрде жинақтау және талдау жұмыстары жүргізілді; сонымен қатар этномузыкалық тәжірибелерді репрезентациялау мен қайта пайымдауға бағытталған, перформативті этномузыкадану қағидаттарына негізделген иммерсивті инсталляция әзірленді.

Ж.А. Қазыбекова – мақала қорытындыларын ғылыми фактілермен дәлелдеп, дереккөздермен байланыстырды. Авторлардың бірлесуі жинақталған материалды талдау және жүйелеу арқылы жүзеге асырылды.

Вклад авторов:

А.С. Танатарова – в рамках выбранной темы исследования осуществляла систематический сбор и анализ архивных материалов, литературных источников, разработала иммерсивную инсталляцию, основанную на принципах перформативного этномузыкаведения, для репрезентации и переосмысления этномузыкальных практик.

Ж.А. Казыбекова – соединила выводы статьи с фактической доказательной базой и документированными данными, содержащимися в первоисточниках. Авторы совместно осуществили анализ и систематизацию собранного материала.

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Танатарова Айбике, Қазыбекова Жайдаргүл

Темірбек Жүргенов атындағы Қазақ Ұлттық өнер академиясы (Алматы, Қазақстан)

ИММЕРСИВТІ ИНСТАЛЛЯЦИЯЛАР ЖӘНЕ ПЕРФОРМАТИВТІ ЭТНОМУЗЫКАТАНУ ПАРАДИГМАСЫНДАҒЫ ҚАЗАҚТЫҢ ДАЛАЛЫҚ ӘНШІЛІК МЕКТЕБІ

Аңдатпа. Бұл мақалада қазақтың дәстүрлі әншілік өнеріне тән «Далалық вокалдық мектеп» атты перформативті парадигманы заманауи иммерсивті методологиялар (дыбыстық инсталляция, акустикалық-физиологиялық талдау және жасанды интеллект негізіндегі перформативті практикалар) арқылы эстетикалық және техникалық тұрғыдан реконструкциялау мәселесі қарастырылады. Этнографиялық дереккөздерді, әдеби мемуарлар мен ауызша мәліметтерді (атап айтқанда, Ахмет Жұбанов, Сәкен Жүнісов және Зейнұр Қоспақовтың еңбектерін) талдау негізінде Қазақстан көшпенділерінің дәстүрлі әншілік мәдениетіне тән педагогикалық және стилистикалық принциптер айқындалады. Зерттеу барысында этномузыкатану, фонология, дыбыс антропологиясы және перформативті зерттеулерді біріктіретін пәнаралық тәсіл қолданылды. Зерттеудің *методологиялық негізін* заманауи вокалдық техникаларды жүйелеуге бағытталған әдебиеттерге интегративті шолу жасау әдісі (Boaventura 2012) құрайды. Web of Science базасындағы академиялық еңбектер мен қазақстандық музыкадану саласындағы қазақ, ағылшын, португал тілдеріндегі жетекші дереккөздерге сыни талдау мен синтез жүргізілді. Бұл әдісті қолдану қолданыстағы теориялық олқылықтарды анықтауға, вокалдық педагогиканың өзекті мәселелерін шешудің келешегі бар бағыттарын белгілеуге және әншілік практиканы жаңғырту бойынша инновациялық идеяларды тұжырымдауға мүмкіндік берді. Зерттеудің негізгі *ұсынысы* – далалық ән айту мәнерінің акустикалық, кеңістіктік және эмоционалдық атмосферасын құжаттандырып қана қоймай, оны қайта жаңғыртатын, дәстүрлі әншілік практиканы перформативті цифрлық деректерге айналдыратын иммерсивті дыбыстық инсталляцияны әзірлеу. Мұндай тәсіл материалдық емес мұраны сақтауға ғана емес, оны заманауи мәдени және білім беру экожүйелеріне біріктіруге бағытталған. Пәнаралық қызығушылық тудыратын зерттеу нәтижелерінің ғылыми-әдіснамалық әлеуеті ән айтуды оқытудың дәстүрлі және инновациялық әдістерін теориялық тұрғыдан салыстыруға және сыни бағалауға бағытталған. Жұмыстың практикалық құндылығы алынған мәліметтерді өнер саласындағы жоғары оқу орындарының білім беру процесіне енгізу мүмкіндігімен, сондай-ақ орындаушылардың ән айту процесінің техникалық-технологиялық аспектілерін оңтайландыруымен айқындалады. Жұмыс қорытындылары дәстүрлі әншілерді кәсіби даярлау бағдарламаларында іске асырылуы мүмкін, сондай-ақ әншілік өнер саласындағы кейінгі эмпирикалық зерттеулер үшін теориялық негіз бола алады.

Түйін сөздер: Далалық мектеп, дәстүрлі қазақ әні, иммерсивті дыбыстық инсталляция, материалдық емес мұра, перформативті этномузыкадану.

Дәйексөз үшін: Айбике, Танатарова және Қазыбекова Жайдаргүл. «Иммерсивті инсталляциялар және перформативті этномузыкадану парадигмасындағы қазақтың далалық әншілік мектебі». *Central Asian Journal of Art Studies*, т. 11, №3, 2026, 115–132 б., DOI: 10.47940/cajas.v11i3.1224

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Танатарова Айбике, Казыбекова Жайдаргуль

Казахская национальная академия искусств имени Темирбека Жургенова (Алматы, Казахстан)

СТЕПНАЯ ШКОЛА КАЗАХСКОГО ПЕНИЯ В ПАРАДИГМЕ ИММЕРСИВНЫХ ИНСТАЛЛЯЦИЙ И ПЕРФОРМАТИВНОГО ЭТНОМУЗЫКОВЕДЕНИЯ

Аннотация. Настоящая статья предлагает эстетическую и техническую реконструкцию так называемой «Степной вокальной школы» – традиционной перформативной парадигмы казахского пения – посредством современных иммерсивных методологий, включая звуковую инсталляцию, акустико-физиологический анализ и перформативные практики на основе искусственного интеллекта. На основе анализа этнографических источников, литературных мемуаров и устных свидетельств (в частности, работ Ахмета Жубанова, Сакена Жунисова и Зейнура Коспакова) в исследовании выявляются педагогические и стилистические принципы, присущие традиционной вокальной культуре кочевников Казахстана. Применяется междисциплинарный подход, объединяющий этномузыкологию, фонологию, антропологию звука и перформативные исследования. *Методологическую основу* исследования составляет интегративный обзор литературы (Voaventura, 2012), направленный на систематизацию современных вокальных техник. Проведен критический анализ и синтез академических работ из базы Web of Science и ведущих источников казахстанского музыковедения на казахском, английском и португальском языках. Применение данного метода позволило выявить существующие теоретические лакуны, определить перспективные направления для решения актуальных проблем вокальной педагогики и сформулировать инновационные идеи по модернизации певческих практик. Центральным предложением является разработка иммерсивной звуковой инсталляции, которая не только документирует, но и воссоздаёт акустическую, пространственную и эмоциональную атмосферу степного пения, превращая традиционную вокальную практику в перформативные цифровые данные. Подобный подход направлен не только на сохранение нематериального наследия, но и на его интеграцию в современные культурные и образовательные экосистемы. Научно-методологический *потенциал* результатов исследования имеющий междисциплинарный интерес, ориентирован на теоретическое сопоставление и критическую оценку традиционных и инновационных методов обучения пению. Практическая ценность работы определяется возможностью интеграции полученных данных в образовательный процесс высших учебных заведений искусств, а также их применением практикующими исполнителями для оптимизации технико-технологических аспектов певческого процесса. Выводы работы могут быть имплементированы в программы профессиональной подготовки традиционных певцов, а также использованы в качестве теоретического фундамента для последующих эмпирических исследований в области певческого искусства.

Ключевые слова: Степная школа; традиционное казахское пение; иммерсивная звуковая инсталляция; нематериальное наследие; перформативное этномузыковедение.

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Авторлар туралы мәлімет:**Сведения об авторах:****Information about the authors:**

Танатарова Айбике Сапаровна
— «Дәстүрлі музыкалық өнер» кафедрасының 2 курс магистранты, Темірбек Жүргенов атындағы Қазақ Ұлттық өнер академиясы (Алматы қ., Қазақстан)

Танатарова Айбике Сапаровна
— магистрант 2 курса кафедры «Традиционное музыкальное искусство», Казахская национальная академия искусств имени Темирбека Жургенова (г.Алматы, Казахстан)

Tanatarova Aibike Saparovna
— 2nd-Master's student at the Department of «Traditional Musical Art», Temirbek Zhurgenov Kazakh National Academy of Arts, (Almaty, Kazakhstan)

ORCID ID: 0009-0007-3769-0710
E-mail: aibiketanatarova@gmail.com

Қазыбекова Жайдаргүл Алмасқызы — өнертану кандидаты, «Дәстүрлі музыкалық өнер» кафедрасының доценті, Темірбек Жүргенов атындағы Қазақ ұлттық өнер академиясы (Алматы қ., Қазақстан)

Қазыбекова Жайдаргуль Алмасовна — кандидат искусствоведения, доцент кафедры «Традиционное музыкальное искусство» Казахской национальной академии искусств имени Темирбека Жургенова (Алматы г., Казахстан)

Kazybekova Zhaidargul Almasovna — Candidate of art history, Associate Professor of the Department of «Traditional Musical Art», Temirbek Zhurgenov Kazakh National Academy of Arts (Almaty, Kazakhstan)

ORCID ID: 0000-0002-1838-1142
E-mail: kazybekovajaidargul@gmail.com