



**This electronic thesis or dissertation has been  
downloaded from Explore Bristol Research,  
<http://research-information.bristol.ac.uk>**

*Author:*

**Lee, Taekkyu**

*Title:*

**Timbre-based composition**

*exploration of drone-overtone singing with reference to Tuvan and Mongolian sonorities and its integration into Western contemporary compositions.*

**General rights**

Access to the thesis is subject to the Creative Commons Attribution - NonCommercial-No Derivatives 4.0 International Public License. A copy of this may be found at <https://creativecommons.org/licenses/by-nc-nd/4.0/legalcode>. This license sets out your rights and the restrictions that apply to your access to the thesis so it is important you read this before proceeding.

**Take down policy**

Some pages of this thesis may have been removed for copyright restrictions prior to having it been deposited in Explore Bristol Research. However, if you have discovered material within the thesis that you consider to be unlawful e.g. breaches of copyright (either yours or that of a third party) or any other law, including but not limited to those relating to patent, trademark, confidentiality, data protection, obscenity, defamation, libel, then please contact [collections-metadata@bristol.ac.uk](mailto:collections-metadata@bristol.ac.uk) and include the following information in your message:

- Your contact details
- Bibliographic details for the item, including a URL
- An outline nature of the complaint

Your claim will be investigated and, where appropriate, the item in question will be removed from public view as soon as possible.

**Commentary on the Portfolio of  
Compositions**

***Timbre-based  
composition***

***: Exploration of drone-overtone singing  
with reference to Tuvan and Mongolian  
sonorities and its integration into Western  
contemporary compositions.***

**Taekkyu Lee**

**University of Bristol  
Department of Music  
2022**

A dissertation submitted to the University of Bristol  
in accordance with the requirements for the award  
of the degree of PhD in the Faculty of Arts

## Abstract

This doctoral research in composition focuses on investigating Tuvan throat singing (*khöömei*), in comparison with Mongolian throat singing (*khöömi*) and its application in Western contemporary classical composition. This has been achieved through a survey of ethnomusicology and the inclusion of timbre-centrism in my compositions.

The ethnomusicological angle aims to discover exemplary research methods for *khöömei* bridging the oppositions of outsider (etic) and insider (emic) perspectives. Based on this goal, this research explores two examples of research approaches: an etic approach by A. N. Aksenov and the combination of etic and emic approach by Theodore Levin with Valentina Süzükei. Ultimately, this exploration underlines the importance of combining etic and emic approaches giving priority to emic perspective in the research of *khöömei* and its integration into experimental compositional practices. Additionally, this research finds that the political changes in Inner Asia have influenced the cultural maintenance transforming the art form and practice of *khöömei*. This ends up with developing *khöömei* as state or national art in each state that practises *khöömei*. This actuality is investigated not only by noticing the dispute over the ownership of *khöömei* among its holders but also by looking into the stylistic difference between Tuva Republic and Mongolia. However, this research concentrates more on intrinsic personal diversity and creativity of *khöömei* performance supporting this idea with graphic analyses, which have become an influential vehicle in my music-making process. Finally, an in-depth study of Tuvan aesthetic in music “timbre-centred listening” is undertaken, and then methods of imbuing the sounds of nature into European-style composition are minutely traced.

On the compositional side, Tuvan ethnomusicologist Valentina Süzükei’s theory “timbre-centralism” has been tested as a valid musical system for contemporary classical music looking at the potential that hybrid music surmounts cultural appropriation. Various musical experiments with *khöömei* have been conducted in practical ways based on Tuvan musical aesthetics, new notation and technique applications, interdisciplinary approaches, and becoming a *khöömei* practitioner myself. Additionally, other ethnic and extended vocal techniques such as the Inuit vocal game *katajjaq*, vocal fry and "drone-partials vocal technique" (see Pegg 2024 forthcoming for the latter), as Stockhausen demands in his piece *Stimmung*, have been experimented with by myself and versatile vocalists within my compositions. This practical research is demonstrated in the concert recordings that accompany and should be considered as a part of this portfolio.

## **Author's declaration**

I declare that the work in this dissertation was carried out in accordance with the requirements of the University's *Regulations and Code of Practice for Research Degree Programmes* and that it has not been submitted for any other academic award. Except where indicated by specific references in the text, the work is the candidate's own work. Work done in collaboration with, or with the assistance of, others, is indicated as such. Any views expressed in the dissertation are those of the author.

SIGNED:.....Taekkyu Lee..... DATE:.....14.September.2023

# Table of Contents

<b>INTRODUCTION .....</b>	<b>1</b>
<b>CHAPTER 1. ETHNOMUSICOLOGICAL PERSPECTIVES.....</b>	<b>2</b>
<b>1.1 WHY THE ANCIENT GREEKS COULDN'T SEE THE COLOUR <i>BLUE</i>? .....</b>	<b>5</b>
<b>CHAPTER 2. TUVAN AND MONGOLIAN THROAT SINGING .....</b>	<b>8</b>
2.1 SOVIET HOMOGENISATION AND THE RECENT TRANSFORMATION OF <i>KHÖÖMEI</i> PRACTICE .....	10
2.2. <i>KHÖÖMEI</i> DISTRIBUTION .....	12
2.3 DISPUTE OVER THE OWNERSHIP OF <i>KHÖÖMEI</i> .....	12
2.4 TUVAN STYLES.....	14
2.4.1 <i>Kargyraa</i> .....	14
2.4.2 <i>Khöömei</i> .....	16
2.4.3 <i>Sygyt</i> .....	17
2.4.4 <i>Borbangnadyr</i> .....	20
2.5 MONGOLIAN STYLES .....	22
2.6 INTRINSIC DIVERSITY IN <i>KHÖÖMEI</i> STYLES.....	23
2.7 TUVAN LISTENING AND THE PRACTICAL APPLICATION IN MUSIC CREATION. ....	25
<b>CHAPTER 3. COMPOSITIONAL MODELS IN MY WORKS.....</b>	<b>28</b>
<b>CHAPTER 4. COMPOSITIONAL APPLICATION .....</b>	<b>32</b>
4.1 <i>PARTIALS</i> (2018) .....	33
4.2 <i>HALLELUYAH</i> (2019).....	38
4.3 <i>GASIRI</i> (2019).....	41
4.4 <i>LET THERE BE LIGHT</i> (2020) .....	46
4.5 <i>SLOW ROLLER COASTERS</i> (2020).....	49
4.6 <i>THROUGH THE THROAT!</i> (2020).....	54
4.7 <i>I DENY YOU, BUT STILL MISS YOU</i> (2021).....	58
4.8 <i>THE RIME OF THE ANCIENT MARINER PART IV-I</i> (2021) .....	63
4.9 <i>WHERE MOUNTAIN SINGS</i> (2022) .....	68
<b>CONCLUSION .....</b>	<b>74</b>
<b>RECORDINGS OF COMPOSITIONS .....</b>	<b>76</b>
<b>INDEX OF EXAMPLES.....</b>	<b>77</b>
<b>BIBLIOGRAPHY .....</b>	<b>79</b>
BOOKS AND ARTICLES.....	79
SCORES .....	85
SPECTROGRAM SOUND SOURCES .....	85
OTHER SOURCES.....	86
<b>ACKNOWLEDGEMENTS.....</b>	<b>88</b>

## Introduction

In recent years, Tuvan and Mongolian throat singing (transliteration: Tuv. *khöömei* and Mon. *khöömii*, Cyrillic: хөөмей and хөөмий respectively) has attracted public attention across the world. In company with this attention, from time to time, its singing can be heard in the Netflix series and film soundtracks such as *Marco Polo* (2014). Among many rock music fans, a Mongolian folk-rock and heavy metal band *The Hu*, which primarily adapts traditional Mongolian instruments such as Mongolian fiddle *morin khuur* (Mongolian: морин хуур) and Mongolian throat singing *khöömii* in heavy metal music, has gained traction and had concerts and tours worldwide (Rutherford 2019). Needless to say, it is the sound properties of *khöömei* itself that are phenomenal and unique enough to capture public interest. My first interest in throat singing was for the same reason. By chance, I was able to watch the international film *Mongol: The Rise to Power of Genghis Khan* (UK title, 2007). This film is about Temüjin's early life who later became the great Mongolian emperor Genghis Khan. The film plot was not very interesting to me, but rather the soundtrack. Most tracks are sung by a Mongolian folk-rock band *Altan Urag* (translation: Golden Lineage). Interestingly enough, *Altan Urag* is one of the most influential bands for *The Hu* (Lewry 2019). But the singer's chest voice and flutelike overtones immediately made a strong impression on me.

From that moment, I envisioned music that would integrate the acoustic uniqueness of Tuvan and Mongolian throat singing with Western contemporary classical music. Based on my imagination, I was convinced that this would consolidate my musical identity and individuality as a composer – in those days I was considering this matter for my future career as a composer – but also that there would be an academic value in researching Tuvan and Mongolian throat singing in connection with musical composition. However, I was concerned about applying throat singing technique into Western music because I assumed that there would be challenges with this musical experimentation in the course of my research: without any experience of Tuvan or Mongolian culture how properly to understand *khöömei*, how to compensate for the differences between the Occidental and Tuvan or Mongolian music in music-making process, and how to create suitable music notations for *khöömei*. There were substantial issues needing to be faced. My first doubtful point regarding these concerns was, “Are the guttural tone of the droning voice and overtone movements everything for this vocal technique?”. If not, what else can I consider more while composing music with *khöömei*?

These questions sound naïve but have led me to search for a methodology to access non-Western traditional music that could address these.

## Chapter 1. Ethnomusicological Perspectives

From Bartók's era in the early 20<sup>th</sup> century up to the early 1990s, the prime focus, first in comparative musicology and later, in ethnomusicology was to collect folk music by travelling and to observe relations between Western and non-Western music (Antokoletz 2011; Bohlman 1988; Nelson 2012); primarily with the aim of preservation. Since the 19<sup>th</sup> century, music scholars began taking note more of non-western music leading them to conduct fieldwork in non-western regions such as Asia, Africa and South America (Nettl 2005). In the process of their fieldwork, since the late 1960s, they expanded their research in more practical ways. For example, they concentrated more on the process of music-making itself, rather than on simply folk music collection (Myers, 1992). Furthermore, exploration in “musical ethnography” and anthropology by “participant observation”, investigating musical performances, events, and societies by way of gathering information from local musicians or participating in the culture of ethnic groups, emerged as a new research approach (Merriam 1964; Ruskin & Rice 2012, 300; Spradley 1980).

However, I have witnessed that some ethnomusicologists, such as Nattiez (1983) in *Some Aspects of Inuit Vocal Games* and Aksenov (1964) in *Tuvan Folk Music*, of that era still exploit Western styles for interpreting non-European music by analysing folk tunes using Western music theory, transcribing the tunes in Western notation and identifying certain traditional musical instruments or vocal techniques in the manner of comparing them to Western instruments or vocal techniques.

I sometimes find it useful to employ Western techniques in the interpretation of non-Western music. This is because Western interpretation methods are currently the world-accepted protocol in the field of musical analysis, including Western musical notation. Based on this musical convention, to some extent, musicians trained in Western classical or popular music can also more easily recognise and understand music from other worlds when using a definable and visible system of Western music analysis.

ham ma he ha ham ma ha ha he ha ham ma ha he he ha

hā- ā

ham ma ha ha he ha ham ma ha he ham ma [u]

hā- ā [u]

Ex. 1) Nattiez's transcription of an Inuit vocal game motif (1983)

As an example, I once planned to make a piece of contemporary music with a Korean sound, wanting to imitate the sound of the classic Korean bamboo flute *piri* (Korean:  $\text{피리}$ ) with European woodwind instruments such as flute and clarinet. When I embarked on the preliminary plan, I could not devise a way to mirror the sonic image of *piri* in the musical score despite being born and raised in South Korea. Nevertheless, in the first step, I collected Korean folk *Piri* tunes and then analysed the musical scales and natural traits of Korean folk music, the “linear correlation” between instruments in spacious textures (Yang, et al. 2022), and designed musical textures and technical notations to emulate the Korean sound and timbre of *Piri*. Although I cannot affirm that I completely reproduced the original Korean sound after this process, at least I could smoothly map out a plan for my work and create a desired sound image in my piece of music.

However, I still believe that translating non-Western music with European music language is questionable for the reason that there must be musical distinctions that Westerners and those who are trained in European music cannot be aware of, since both civilisations, European and non-European, have progressed in different cultures, societies, terrains and histories (Born and Hesmondhalgh 2000). Accordingly, discovering what perspective to take on Tuvan and Mongolian music, in addition to on Tuvan *khöömei* and Mongolian *khöömii*, came to be a new task in my early research. I will now compare two influential ethnomusicologists for Tuvan music. Each separately travelled to the Republic of Tuva, in different eras, and then published a journal and book about Tuvan folk music and *khöömei*: A. N. Aksenov's (1909-1962) *Tuvan Folk Music* was published in 1964 and Theodore Levin (1951- now) and Valentina Süzükei's *Where Rivers and Mountains Sing: Sound, Music, and Nomadism in Tuva and Beyond* in 2006, respectively.



Aksenov (Russian: A. K. Аксенов) was the first European music-based scholar who researched and wrote about Tuvan music and culture. In *Tuvan Folk Music*, he focuses on ethnography, Tuvan musical performances and cultural music events. Additionally, he briefly introduces traditional Tuvan instruments and the general styles of *khöömei*. Throughout his writing, he demonstrates Tuvan vocal technique mainly from a Western musician's perspective. For example, he compares the fundamental in *kargyraa*, one of the *khöömei* styles, as similar in timbre to the lower register of the French horn. In addition, he transcribes certain styles of *khöömei* in Western music notation (Example 2).

Ex. 2. Tuvan throat singing

a) Kargyraa style  
 2 = 1st. all on one breath

(partials)  
 (fundamental)

b) Borbanandir style  
 (partials) 6 7 8 9 10 11 12 13 (14) 15  
 (fundamental)

c) Sigit style, 1st G  
 (partials) 8  
 (fundamental)  
 A - ram bi - la achen ish - kash o  
 A - mi - rad - dig abu ven - mechok

d) Esengiller, type 1  
 (partials) 8 9 10 11 12 13  
 (fundamental)

e) Esengiller, type 2  
 (partials) 8 9 10 11 (12) 12 13 (14)  
 (fundamental)

Ex. 2) Aksenov's transcriptions of *khöömei* styles (1964)

In contrast to this, in the book *Where Rivers and Mountains Sing: Sound, Music, and Nomadism in Tuva and Beyond*, Theodore Levin delineates Tuvan musicians' and scholars' perspectives on their music based on interviews, mainly with a music group *Huun-Huur-Tu* and ethnomusicologist Valentina Süzükei. Although his comments, as a musicologist, on Tuvan music are included, he mostly makes an effort to deliver original Tuvan musicians'

ideas and aesthetics. The most intriguing point in Levin and Süzükei's book is Tuvan musicians' "timbre-centrism" in their performances. To put it simply, Tuvan performers' musical concentration is on perceiving an intermingled sound created by a drone and the sonority of the drone rather than individual harmony or melody while performing. Süzükei advises that the drone is the primary centre of attention when listening (Levin with Süzükei 2006, 46-47).

These two contrasting approaches to reporting on *khöömei* can be attributed to a difference in stance. Within the research of folklore and anthropology the widely accepted terminologies "etic" and "emic" attempt to make sense of such differences in perspective: etic means "from outside", from the angle of the observer, and emic means "from inside", from the angle of the participant (Headland et al. 1990). The etic approach focuses on "human behaviour", then it is construed by experts, for example in folklore or anthropology, most commonly based on cultural anthropology (Friedman et al. 2012; Jingfeng 2013). Etic expositions take a presumed neutral attitude generalising their analyses. The emic approach centres on "how local people think" but also their ways of being (Kottak 2006; Morris et al., 1999). Naturally, the emic narrative can be ethnocentric, but this also leads to an in-depth comprehension of a "culture-specific" perspective (Organista 2006, 7; Sahlins 2017).

It can possibly be said that, for all its value, Aksenov's perspective is mainly etic because he observes *khöömei* from an outsider's angle, and then documents his acquaintance with objective disciplines. Without a doubt, his approach guides us to understand *khöömei* by means of 'universally' accepted Western music theory and notation. Levin is also an outsider, but he works with the Tuvan scholar and academic colleague Valentina Süzükei giving voices to other local participants. This method of approach tends towards a blending of etic and emic. His approach leads us to gain not only detailed understanding of *khöömei* from a new perspective but also mediated approach to *khöömei* from a more neutral perspective. For example, his interviewees assert their own ethnocentric perspectives, especially on the issue of whether the drone-partials vocal technique originated from Tuva or Mongolia. However, he mediates between them putting forward a more neutral contextualisation.

### **1.1 Why the Ancient Greeks Couldn't See the Colour *Blue*?**

When those two perspectives, etic and emic, collided in my brain, I could still not come up with an exemplary idea to blend both practices in my composition. Furthermore, I was not

able to find an equilibrium between the two approaches, since I realised all the more that I was perhaps inevitably under a bias toward etic throughout my career in music.

To search for a way through this, I liaised with Ken Ueno, a composer working at UC Berkeley, US. Ueno's pieces of music with throat singing, in which he himself also does the vocal technique and other extended vocal techniques, had impressed me in a variety of ways (I will call his two drone-partials vocal techniques "throat singing" and "overtone singing" because he distinguishes them in that manner). Especially, in his orchestral piece *On a Sufficient Condition for the Existence of Most Hypothesis* (2008), the symphonisation between the orchestral sound and his drone-partials vocal techniques is worthy of close attention. Moreover, his orchestral embodiment of timbral phenomenon of throat singing has become a model for my music. We had communicated, and during this conversation, in reference to the problem of perspective, he recommended researching *Homer* studies and the lack of the word "blue".

Briefly: in Homer's Epics, *The Iliad and The Odyssey*, the sea is described as the colour red, not blue. Concerning this, German scientist Hugo Magnus explained that, in the era of Homer, red, orange and yellow only existed as names of colours (Bellmer 1999). Humans of this era could actually discern blue colour in their eyes, as we can, but they defined the colour of the sea merely as red because red was the brightest colour in their notion as well as they don't have any appointed language for the colour blue. Each cultural or social group has its own colour spectrum because it is subjective and varies especially among contemporary people. Ethnomusicologist Carole Pegg noted this to me, "Mongols identify many shades of colour for different grasses, colours of horses, and so forth, that we do not". This is because Mongols have a different colour spectrum from their own ways of being. Therefore, when we experience different cultural values and beliefs clash, it will be sensible to acknowledge the difference modestly, rather than seeing an existence outside of our society's conceptual frame. Additionally, it is worth trying to embrace the native concept. If not, we might judge it by our social convention with a lack of empathy, however unintended. This means looking at a thing from an unconsciously biased point of view (Oberai & Anand 2018; Toribio 2018).

Let us relate this now to music. In the last discussion with Ueno, he pointed out "Throat singing has begun to become normalized. It's more visible in Western consciousness". This phrase reminded me of Akesenov's approach to *khöömei*. While it may have become normalised, if we accept *khöömei* excessively from a Western standpoint, our understanding of *khöömei* can be limited or distorted. Süzükei (Levin with Süzükei 2006, 55) phrases that she perceives a "physical sensation of three different levels or planes of sound that you could

call lower, middle and higher” when listening to *khöömei* pointing out that the “planes” do not represent locations of pitch. Instead, they are in zero gravity where there are no vertical relations. Accordingly, only afterwards do we leave aside our manneristic perception, in which we consider overtones of *khöömei* as components of a melody and take note only on the levels of a drone and overtone pitches, we might be able to obtain a better understanding of the Tuvan approach in music.

I became convinced of this in the process of becoming a throat singing performer. At present, I hear *khöömei* differently from before I became a performer, experiencing timbre-centred listening. Ultimately, we ought to explore indigenous ideas about *khöömei*, and also what indigenous practitioners hear from it first. After this exploration, we can always analyse it with other, the etic approaches, and discover ways to integrate it with Western contemporary music.

In the next chapter, I will describe Tuvan and Mongolian throat singing in more detail.

## Chapter 2. Tuvan and Mongolian Throat Singing

Tuvans and Mongolians use a unique vocal technique generating multiple pitches with a “throaty” drone sound (Bloothoof et al. 1992). Due to this peculiarity of this vocal technique, nowadays many people out of Southern Siberia call this singing “throat singing” or “overtone singing” (Ruiz & Wilken 2018). In early stage of research, this drone-partials vocal technique is referred in multifarious English terms: “overtone singing” (Pegg 1992), “Jew’s harp voice” (Hamayon 1973, *Chants Mongols Et Bouriates*. Field recording issued as LP record) and “biphonic singing” (Smith et al. 1967). However, the appearance of dual or multiple voices in some extended vocal techniques, such as “glottal overpressure”, “forced blown inhaling and exhaling singing” and ingressive vocal fry, and the possibility of “undertone” presence have not demonstrated the suitability of the early phraseology (Burt et al. 1974; Rehding 2003; Švec et al. 1996). It seems that the term “throat singing”, a translation of a Russian phrase “gorlovogo penie” (Russian Cyrillic: горлового пенье) used by ethnographer and composer A.V. Anokhin ([1910] 2005; Kyrgys 2008, 13-14), has been favoured for the reason that the Tuvan or Mongolian term “*khöömei*” (Tuvan) or “*khöömii*” (Mongolian) denotes “pharynx” (Todoriki 2017). Zoya Kyrgys (2008, 83-84) points out that the term “throat singing” is inadequate because the age-old vocalising method of *khöömei* is not from the throat but is from deep chest breathing quoting the Tuvan conventional appellation *khorekteer* or *khorek-bile yrkaar* (to sing with one’s chest).

Another debatable point is the etic term “throat singing” includes many different types of vocal techniques in different cultures of the world; Tuvan and Mongolian singing, Tibet chant, Inuit singing, Japanese Ainu’s Rekuhara, Canto a tenore (or Sardinian singing), et cetera (Smith et al. 1967; Nattiez 1983; Nattiez 1999; Mercurio 2013). Technically, each vocal technique, so-called “throat singing”, has different purposes for performance and vocal sound productions. For instance, Inuit singing is designed as a “vocal game”, not as a form of music (Nattiez 1983). The vocalisation of this game attaches to producing growling voiced and unvoiced sounds by inhalation and exhalation while Tuvan and Mongolian singing centres on husky drone sound and melodic overtone performance (Beaudry 1978; Levin & Edgerton 1999). Concerning the appellation of Inuit vocal game, ethnomusicologist Nattiez (1983) is unwilling to use the term “throat singing” or “throat game” since the indigenous name *katajjaq* does not include any meaning of “throat” as well as the method of naming is a way more westernised. Accordingly, he calls this game *katajjaq* or vocal game. In connection with Tuvan and Mongolian singing, it will be more sensible to call it by the native term too.

Hence, I will therefore refer to Tuvan *khöömei* and Mongolian *khöömii*, which generally refer not only to the throat singing in both Tuva Republic and Mongolia but also to one style of Tuvan vocalisations (Sakakibara et al., 2001; Todoriki 2017).

The origin of *khöömei* is unknown. Moreover, no written records have been discovered relating to its first appearance. But it is possible to estimate such vocalisation was practised before the 16<sup>th</sup> century as one passage has been found in an old Chinese record describing singing with “many sounds from the throat and the lips” (Serruys 1945, 153; Pegg 1992). Concerning a contributory factor in *khöömei*, one thing to note is, many years back, Turkic-linked ethnic and Mongolian groups that migrated to the Altai region shared their ways of being and spiritual beliefs, which were primarily animistic and shamanistic (Beahrs 2021, 78; Levin with Süzükei 2006, 71). In their beliefs, all living things and non-living things, such as rocks, mountains, wind, and rain, in nature places are animate and looked after by spiritual residents “spirit-owners” or “spirit-masters (or spirit-mistresses)” (Alt., Kaz. and Tuv.: *ee*, Mo.: *ezen*), these spirits can simultaneously be masculine or feminine (Levin with Süzükei 2006, 27-28; Pegg 2021, 21). People there also believe that spirit-owners not only have their own place in nature but also watch over and protect everything that exists in their own domains (Beahrs 2021, 78; Levin with Süzükei 2006, 27; Pegg 2021, 23). In return, the visitors to the spiritual places must give offerings as an act of gratitude or an entreaty for protection to the spirit-owner. The offering can be “material” and “musical” or sound (Colwell 2021, 53-54). In Levin and Süzükei’s book (2006, 28), *khöömei* master Anatolii (‘Tolya’) Kuular states, “The spirit-master (or -owner) likes to hear the sounds of the place or thing that it protects”. Naturally, this ceremonial offering with *khöömei*, which is generally wordless intensifying harmonics, has been practised in a way of sound mimesis of certain locations or beings that the spirit-owners safeguard.

This sonic communication with a spirit-owner has been linked to different styles of Tuvan *khöömei*. In the time-honoured Tuvan ritual festival *Ovaa*, one of *khöömei* styles *kargyraa* is generally performed on mountainsides or steppe slopes, on which *kozhagar kargyraazy* (peak *kargyraa*) or *khovu kargyraazy* (steppe *kargyraa*) is performed respectively, to be in touch with the spirit-owner of each place (Kyrgys 2008, 70-71). In addition, another *khöömei* style *borbangnadyr* is described as not only a sonic representation of the turbulence of the water as it rolled in a pebbly stream bed but also a sonic dialogue between the performer and the spirit-owner of the stream in Levin and Süzükei’s book (2006, 58-62). – This YouTube video shows how *borbangnadyr* performer Anatolii Kuular imitates the nature sound communicating with the spirit-owner. (The Voice of Nature. “Anatoli Kuular imitate the sounds of water (throat singing),” 0:00 to 2:36).

## 2.1 Soviet Homogenisation and the Recent Transformation of *Khöömei* Practice

Throughout all former Marxist–Leninist states, all cultural elements, such as music, dance, drama, narrative, literature, customs, and basic industries, were homogenised adapting diverse cultural traditions to create a unified socialist context (Hervouet & Kurilo 2016; Jiménez-Tovar & Lavička 2020; Oshchepkova & Vinokurova 2018). This occurred in both Soviet Central Asia and Inner Asia, where the cultural gap between the official Europeanised culture of the U.S.S.R and local cultures was huge, there were radical disruptions and alterations to the old traditions of Inner Asia. For example, the Kazakh poetry competition *Aitys* (Kaz. Айтыс), which includes music and drama, was adapted and then exploited as a vehicle for propaganda to enlighten the public about socialism (Kendirbaeva 1994). Tuvan traditional folk tunes were adopted to the European harmonies and tuning system along with being transcribed in Western notation (Pegg 1992). Musicians had to sing in European singing styles such as *bel canto* (Levin with Süzükei 2006, 24). Additionally, the lyrics of songs had to deal with “patriotic themes” and the economic benefit of communism (Kendirbaeva 1994; Levin with Süzükei 2006, 24). *Khöömei* was also transformed into a performance art on stage (Levin with Süzükei 2006, 67; Pegg 1992). This transformation ended up in the generalisation and limitation of the performing styles and art forms (Levin with Süzükei 2006, 66-67).

This problem was eventually recognised and exposed by several ethnomusicologists such as Valentina Süzükei, who took measures to reclaim the nature of Tuvan music through her own and co-author research articles. She has also reported the current state of *khöömei* practice in term of encountering with Western cultures. At the online conference of the Transtraditional Istanbul (TTI) project in 2021, Süzükei made a speech in a mixture of Russian and Tuvan, translated into English by Tuvan-speaking American Sean Quirk, on the theme “Tyvan Institute of the Humanities and Applied Socio-Economic Research”. In it, she pointed out that the influx of Western culture distorted the timbre-centred nature of Tuvan music emphasising the importance of the indigenous trait of Tuvan music. Meanwhile, this circumstance has also contributed to the evolution of *khöömei* practice in different genres of music. An article by Lamazhaa and Süzükei (2019, a Russian-written article, but the abstract is translated into English) reports that *khöömei* still remains in its traditional form but has also been transformed in its fusion with various genres of pitch-based Western music such as “pop, jazz, rock, and avant-garde music”. That was also discernible in my personal online interview with a Tuvan fusion music group *Oduchu* in 2020. To my question on how the guitarist of the group musically supports the *khöömei* performer, the group’s answer was:

*“In fact, all Tuvan music is sheer improvisation. Of course, there are specific melodies of songs, but melodies, we can say, are all that we have.”*

*Everything is built around the melody. An experienced khöömeiji can perform pentatonic overtones without problems. Tuvan throat singing has its own traditions of how to combine notes in pentatonic scale to create exactly the Tuvan style”.*

Nowadays *khöömei* is no longer an exclusive possession of males even though it was conventionally restricted for females. It was believed that *khöömei* can destroy a woman's ability to have children (Levin with Süzükei 2006, 199). Also, others believe that making a face by contorting the facial features ruins a woman's beauty. However, several female musicians like female ensemble *Tuva Kyzy* (translation: Daughters of Tuva) and experimental performer Sainkho Nahchylak have recently been taking part in *khöömei* performances now. Furthermore, *khöömei* practice tends to promote to all regardless of age or gender, or even nationality, by the Tuvan Cultural Centre, Kyzyl, Tuva Republic, RF. – This YouTube video shows a young Tuvan girl's *khöömei* performance. (Tuvan cultural center / Центр тувинской культуры. “Шинин Алдынай Кызыл,” 0:10 to 2:23).



Ex. 3) Map of Inner Asia (Thrift 2017)



## 2.2. *Khöömei* Distribution

Nowadays *khöömei* occurs in different countries and regions (see the map above, example 3). Tuva and Mongolia, are the most famous, have highly developed the vocal technique and range of styles (Pegg 1992; 2001). In other Russian Republics, Altaians, Khakas, adjacent to Tuva, and Bashkirs nearby Ural Mountain practice *khöömei* too (Aksenov 1964). Down to the border of Russia and Mongolia, it is also known that *khöömei* can also be found in Kazakhstan, Uzbekistan and Inner Mongolia in China (Cosi & Tisato 2014; D'Evelyn 2021). In terms of stylistic diversity, outsiders might deem that all the styles of Tuvan and Mongolian singing are similar or the same. However, already, they are not the same as each other. Besides, since the mid-late 20<sup>th</sup> century, the styles of Tuvan *khöömei* and Mongolian *khöömii* have been categorised in different ways (Pegg 1992; Levin with Süzükei 2006, 67-68). It is probably because the national boundary between Mongolia and Russian Federation has acted on their independent musical practices with the passage of time although they shared the geocultural heritage in the past (Curtet 2021, 188). Additionally, since the 1950s, Tuvan and Mongolian drone-partials music have independently been “spectacularised, professionalised and institutionalised”, and this has contributed to the state-based development of the vocal technique in both countries (Curtet 2021, 100-115; Süzükei 2009, 9; van Tongeren 2004, 84-86).

## 2.3 Dispute Over the Ownership of *Khöömei*

Although the formatted restoration of cultural elements in Inner Asia during the Soviet period “elevated to an art form of *khöömei*”, later leading to international progress under state-by-state “heritage-making” in post-Soviet states, this also has given rise to a neighbourly dispute about the ownership (Pegg 2021, 15). In particular, both Tuva Republic and Mongolia have claimed the honour of originating *khöömei*, arguing that theirs is the truest traditional framework (Levin with Süzükei 2006, 69). Mongolian people from Chandman’ *sum*, a district of Khovd province in Western Mongolia, argue that Chandman’ is the first place of origin of *khöömii* (Pegg 1992). One Mongolian *khöömii* musician from Chandman’, Tserendavaa Dashdorj, points out that Tuvan style is not the original, but also the sound production is attributed less to other body parts such as the chest (Levin with Süzükei 2006, 69). Against Tserendavaa’s view, Tuvan ethnomusicologists Kyrgys and Süzükei (Kyrgys 2008; Curtet 2021, 125) claim that Tuvan *khöömei* is authentic because it is the most advanced and Mongolian *khöömii* musicians have made a historical connection with Tuvans. However, there has been no scientific evidence to prove the claims of both sides yet.

The only thing proven is that drone-partials vocalisations of Tuva and Western Mongolia have ritually and musically been developed in the similar “geocultural” background (Levin with Süzükei 2006, 71).

Another dispute over *khöömei* ownership occurred after China’s 2009 inscription for *khöömii* in the UNESCO representative lists of Intangible Cultural Heritage (ICH), arousing the anger of Tuvan *khöömei* and Mongolian *khöömii* practitioners and researchers, and other interested parties (Curtet 2021, 117-118; D’Evelyn 2021, 140). This negative reaction was inevitable because the Chinese claim seemed “unilateral”, not trying to liaise with any stakeholders in the procedure of the inscriptions. The Chinese inscription also contained misleading lines leaving unresolved questions (Curtet 2021, 118-120). Mongolian reactions to the Chinese conduct were full of disappointment because not only was Inner Mongolian *khöömii* initiated by Mongolian musicians, but they consider Inner Mongolia as a kind of *khöömii* disciple (D’Evelyn 2021, 146-147). In response, Mongolia separately registered *khöömii* for the UNESCO ICH in 2010.

With regards to the controversial UNESCO ICH registry, Tuva Republic has explored every avenue for registration of Tuvan *khöömei* informing the international community of the identity of Tuvan *khöömei*. However, it has not been listed on the ICH because Russian Federation has not been a member of the party to the Convention for the Safeguarding of the ICH (Curtet 2021, 124-125; Pegg 2012, 4). As a matter of fact, this *khöömei* proprietorship race among the three nation-states has a tendency to be encouraged by UNESCO’s dislocated strategy. It pursues international standards and identity-tracing, so it tends to incite competitive relationships and to lead conceptualising *khöömei* as a national art form among Mongolia, Inner Mongolia and Tuva Republic (Curtet 2021, 118). Yet recently this method of conceptualisation has been standing on its head, in my view, it is more rational to see *khöömei* from a multifaceted perspective by investigating its geocultural and spiritual origin and taking an apolitical stance since one might argue that heritage-making is discovering “what proves itself resistant to translation” and, by extension, presenting enriched policy and strategic discourses (Colwell 2021,66-67; Stolpe 2010, 2).

## 2.4 Tuvan Styles

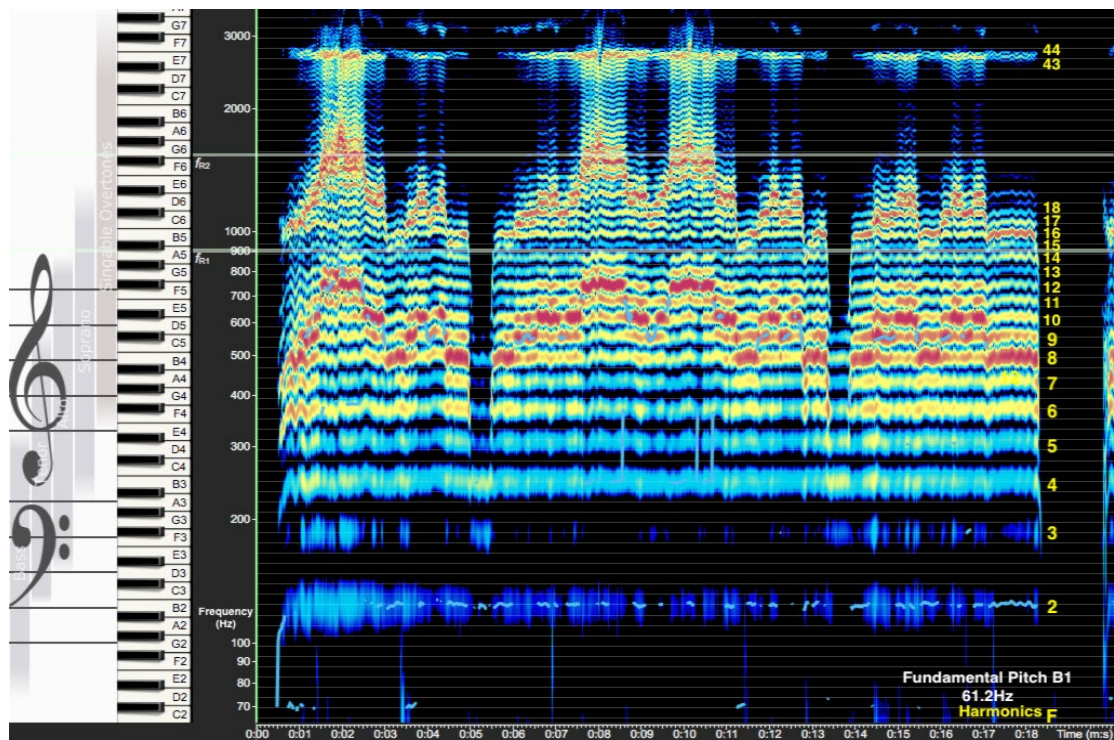
In *Tuvan Folk Music*, Aksenov (1964) identified 4 characteristic types of Tuvan *khöömei* classifying them by melodic styles of the overtones and registers of the drone pitches: *kargyraa*, *borbangnadyr*, *sygyt* and *ezengileer*. Forty years later, one more style, called *khöömei* which is also a general term for Tuvan drone-partials vocal technique, was added by Zoya Kyrgys (Levin with Süzükei 2006, 66; Kyrgys 2008). In the next subchapters, I will demonstrate *kargyraa*, *khöömei*, *sygyt* and *borbangnadyr* as these four styles contains distinctive properties in my view.

### 2.4.1 *Kargyraa*

The origin of the word *kargyraa* is most often traced back to a Tuvan onomatopoeia *kargyraar*, which generally means “to wheeze” or “to produce wheezing sounds” (Kyrgys 2008, 60). The fundamental drone is in a very low pitch and should be resonated in the chest (Cosi & Tisato 2014; Levin with Süzükei 2006). Different from other styles, the mouth in *kargyraa* is half-opened and the partials are selected by vowel qualities such as those represented in the International Phonetic Alphabet (IPA) /u/, /o/, /ɔ/, /a/, etc. Other styles are more influenced by tongue position or mouth shape (Aksenov 1964; Cosi & Tisato 2014; Levin & Edgerton 1999).

Aksenov (1964) asserts that the melody of *kargyraa* is mostly improvised without texts. It is not a common case, but sometimes *kargyraa* begins with words with deep growling voice, which is like a chanting Hymn. This type of style can be heard in a Mongush Saidash’s performance video on YouTube (“Tuvan Throat Singing,” 0:33 to 1:09). In addition, the sub-styles of *kargyraa* can be differentiated by the acoustic space from which the performer draws inspiration, sometimes by *kargyraa* masters’ styles: *khovu kargyraazy* (steppe *kargyraa*), *dag kargyraazy* (mountain *kargyraa*), *dumchuk kargyraazy* (nasal *kargyraa*) and *oidupaa kargyraazy* (the virtuoso Oidupaa’s *kargyraa*) (Kyrgys 2008, 95). In old times, Tuvan peoples depended on hunting or herding for their livelihood, these activities were carried out in the steppe or “steep-sided mountain with barren slopes” (Levin with Süzükei 2006, 57). This life environment, including their spiritual offerings to the spirit-owners, thus creates two different types of *kargyraa*, that show timbral contrasts: Steppe *kargyraa* features gentler sound and Mountain *kargyraa* features stronger sound (Kyrgys 2008, 70-71, 95; Levin with Süzükei 2006, 57) – audio examples (Levin & Süzükei 2019, recording sections 22 & 23).

The visual representation of sound below (Example 4) is a spectrogram analysis of *kargyraa* vocal technique. A layer of the harmonic series over the fundamental pitch B1 (61.2Hz) is shown in the spectrogram. My overtone analysis program does not show the pitches below C2, but the fundamental is B1, also the fundamental is analysed as B1 in Cosi & Tisato's paper (2014). Deep red lines in the layer signify perceptible overtone sounds to the ears. The overtones move according to the vowels: harmonics 8<sup>th</sup> (B4, 492 Hz) is selected by the vowel /u/, 9<sup>th</sup> (C#5, 557Hz) selected by /o/, 10<sup>th</sup> (D#5, 621Hz) selected by /ɔ/ and 12<sup>th</sup> (F#5, 750Hz) selected by /a/. Other coloured lines, yellow and blue, are not perceptible but are auxiliary tones. Also, the overtone presence can extend up to the 43<sup>rd</sup> (E7, 2672Hz) or 44<sup>th</sup> (F7, 2736Hz) in *kargyraa* evident here, even though these are subtle tones (Cosi & Tisato 2014; Levin & Edgerton 1999).



Ex. 4) Spectrogram: A Tuvan tune *Artii-sayir* in *kargyraa* style, performed by Vasili Chazir.

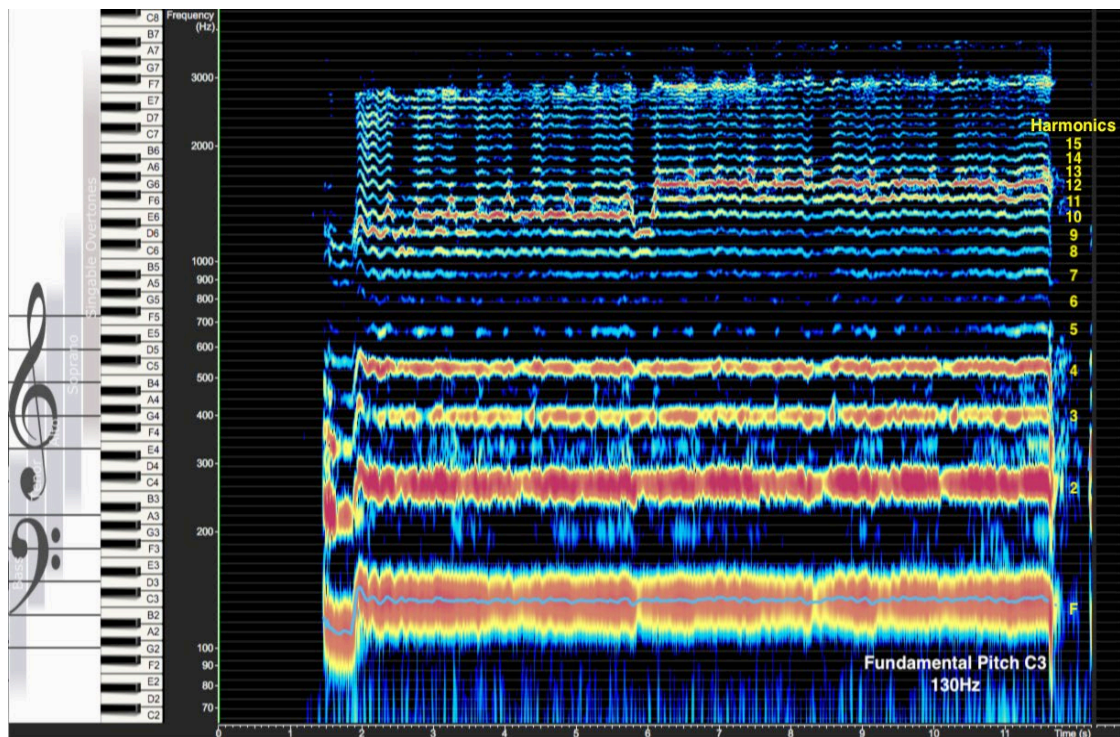
The fundamental pitch is in B1 (61.2 Hz).

Outside listeners might regard *kargyraa* as similar to Tibetan Buddhist chant because both are practised at a very low pitch and the sound quality of the fundamental is heard deep and guttural in both styles. However, the vocalisation of the Tibetan chant is different to *kargyraa* in practice because *kargyraa* requires far more force in the chest (Levin with Süzükei 2006, 64; van Tongeren 2004). Moreover, Cosi and Tisato (2014) argue that the vocal folds are less stressed in Tibetan chant than with *kargyraa*, adding this comment, the Tibetan chant has more similarities with the *borbangnadyr* style.

### 2.4.2 *Khöömei*

*Khöömei* is a fundamental genre and is also a general term referring to all types of Tuvan vocal technique (Cosi & Tisato 2014; Levin & Edgerton 1999). *Ergi khöömei* (old *khöömei*) forms characteristics of rich sonority and dynamic melodies while *opei khöömei* (lullaby *khöömei*) is practised in a soft and nasal tone and monotonous melody with the Tuvan word “*uvai-uvai*” (Kyrgys 2008, 87-89). It also has potential the old style is altered in the soft lullaby style changing the timbral intensity during a performance. The fundamental pitch is normally practised in the middle range among all the *khöömei* styles, but depending on who performs in *khöömei* the range can be variable (Cosi & Tisato 2014). In *khöömei*, the performer generally positions the tongue on the roof of the mouth first and then gradually pushes the tongue forward to produce higher overtones and draws the tongue backwards to produce lower overtones (see example 6, Levin & Edgerton 1999; Ruiz & Wilken 2018).

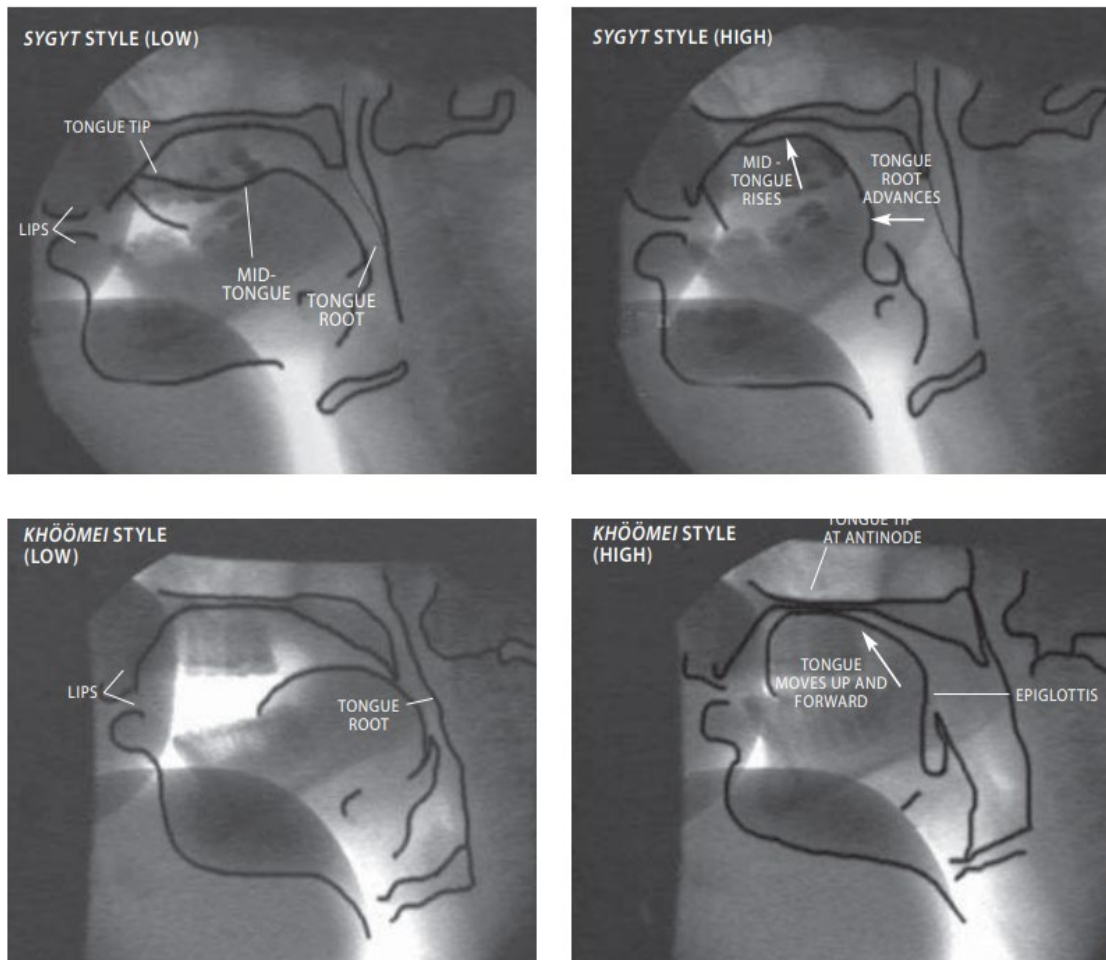
In my case, I feel it easier to sound when remembering specific tongue tip positions or mouth shapes to change the overtones. The shapes are similar to those of vowel sounds but not exactly the same. If I just sound like speaking vowels, I cannot generate clear overtones. Unlike *kargyraa*, low pressure is put on the chest or abdomen, but also the voice box and ventricular folds in the throat are a little strained (Cosi & Tisato 2014).



Ex. 5) Spectrogram: *Khöömei* style, performed by Sundukai Mongush.

The fundamental pitch is in C3 (122 Hz).

The picture above (Example 5) is a spectrogram analysis of *khöömei* style. The fundamental pitch is C3 (122 Hz). In the spectrogram, the 2<sup>nd</sup> harmonic (C4, 264Hz) and selected overtones by the performer, ranging from 9<sup>th</sup> (E6, 1330HZ) to 12<sup>th</sup> (G6, 1594Hz), are comparably more forceful than the fundamental. Other middle tones, from 3<sup>rd</sup> (G4, 393 Hz) to 4<sup>th</sup> (C5, 527Hz) are more energetic than *kargyraa*'s middle tones.



Ex. 6) X-ray: Tongue movements in *khöömei* and *sygyt* styles, Levin & Edgerton (1999).

### 2.4.3 Sygyt

It is suggested that the name of style *sygyt* is derived from the Tuvan verb *sygyr-*, *sygyt* can be translated into “whistle” in English (Kyrgys 2008, 58-59; Vainshtein 1980, 152, written in Russian but translated in English by Kyrgys (2008, 86)). This fundamental pitch of *sygyt* is generally in baritone register and the overtones are relatively in high register (Levin with Süzükei 2006, 231). This is most commonly performed along with *kargyraa* in Tuvan music concerts because it is “well-established” with regard to style (Levin with Süzükei 2006, 66).

As the timbre of the overtone is vigorous and sonorous, *sygyt* performers have the advantage of improvising overtone melodies (Cosi & Tisato 2014).

Sometimes, the tunes of *sygyt* start with words in a rasping voice. Once the short phrase with words ends, the performer improvises overtone interludes. Then, the performer continues to the next text, followed by further, varied overtone improvisations. Several named tunes, such as *Alash Khem* (translation: The River Alash), have specific overtone melodies associated with them, but the melodies are ornamented or varied by a personal performer's style. This pattern repeats until the end of the tune.

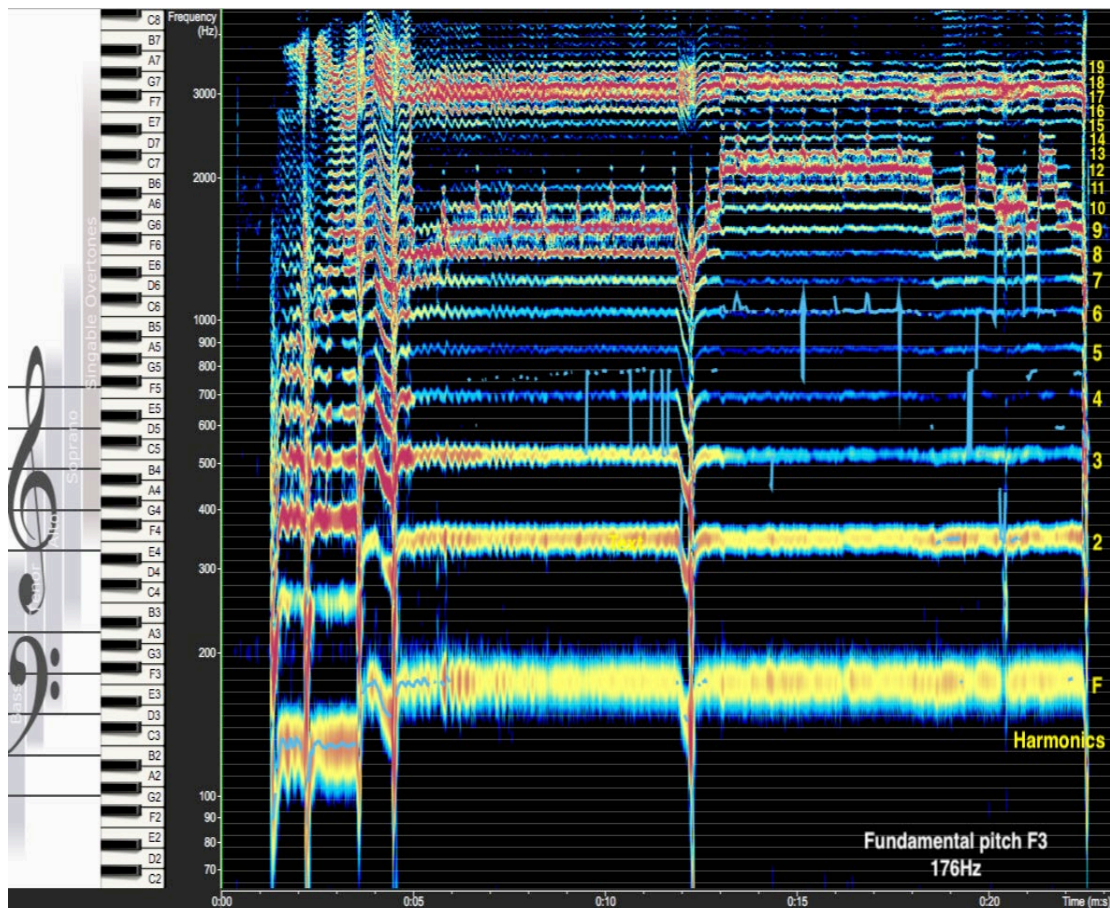
### *Alash Khem* (The River Alash)

- Ужен-Дортен кадыргызы (30-40 graylings) → Overtone Improvisation
- Уступ баткан Алажымны (Flowing along the Alash River) → Overtone Improvisation
- Уш-ле карыш чавагазын (Patterned ornaments on a three-span braid) → Overtone Improvisation
- Сула салган чаражымны (My beauty unravelling her hair) → Overtone Improvisation
- А-хо! (A-ho!) → Overtone Improvisation
- Алдан-бежен кадыргызы (60-50 graylings) → Overtone Improvisation
- Агып баткан Алажымны (Flowing along the Alash River) → Overtone Improvisation
- А-хо! (A-ho!) → Overtone Improvisation (ending)

In the *sygyt* style, the mouth should be half-opened, but the overtone pitch can be selected by the movement of the mid-tongue in the oral cavity (Aksenov 1964; Cosi & Tisato 2014). A *sygyt* performer puts the tongue tip right behind the upper teeth, then moves the mid-tongue up and down to choose a desired overtone pitch: moving up selects a higher pitch and moving down selects a lower pitch (see example 6, Levin & Edgerton 1999). Most importantly, huge force should be applied to the abdominal area and midriff because substantial air pressure should pass through the throat (Cosi & Tisato 2014).

The picture (Example 7) is a spectrogram analysis of *sygyt* style. The first 4 seconds shows a singing part with text. At 5 seconds, the overtone improvisation starts. The fundamental pitch is at F3 (176 Hz). In this recording, the performer mainly selects harmonics 8<sup>th</sup> (F6, 1395Hz), 9<sup>th</sup> (G6, 1594Hz), 10<sup>th</sup> (A6, 1734Hz) and 12<sup>th</sup> (C7, 2068Hz). However, in brief moments, he selects the 13<sup>th</sup> harmonic (C#, 2247Hz) to create *appoggiaturas*. This is a rare case, but several virtuosos, like the greatest Tuvan performer Kongar-ol Ondar, are freely able to select the harmonic 13<sup>th</sup> (Aksenov 1964).

Another amplified resonance region can be seen in the harmonics range from 17<sup>th</sup> (F#7, 2988Hz) to 18<sup>th</sup> (G7, 3156Hz) unlike *khöömei* style. It is also important to note that the selected overtones (8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup>) have the most density and loudness whilst the mid-overtones, between 3<sup>rd</sup> (C5, 521 Hz) and 4<sup>th</sup> (F5, 697Hz), are not perceptible. This is the primary difference between *sygyt* and *khöömei* techniques.



Ex. 7) Spectrogram: A Tuvan tune *Alash Khem* in *sygyt* style, performed by Mergen Mongush.

The fundamental pitch is in F3 (176 Hz).



#### 2.4.4 *Borbangnadyr*

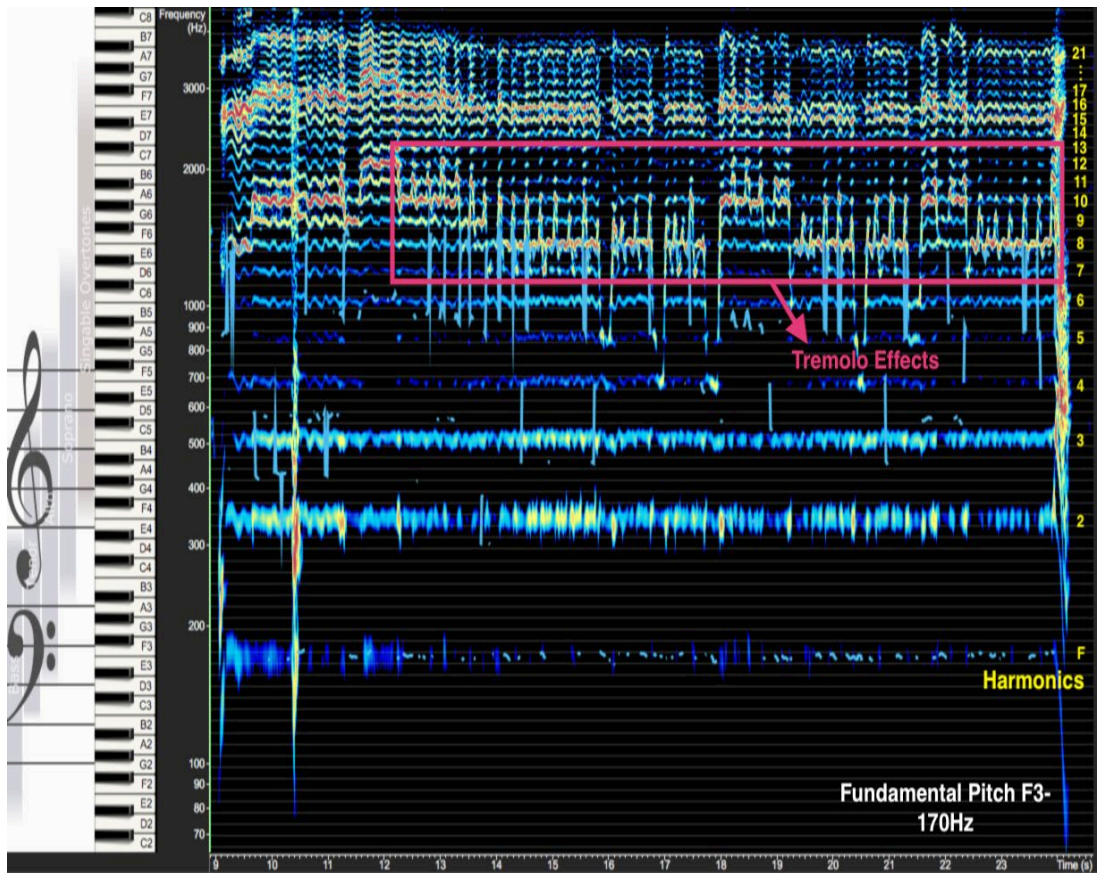
The term *borbangnadyr* is a derivative from a Tuvan verb *borbanna-* (Eng. “to sing in a rolling manner”) (Kyrgys 2008, 58). It is an embellishing style of *khöömei* adding a trilling or rolling effect with the rapid change of the overtones. The register of fundamental pitch is relatively low as Aksenov (1964) describes its timbral register is in the “lower register of bass clarinet”. The articulation of *borbangnadyr* analogises with *khöömei*, but in *borbangnadyr* the performer focuses more on “timbre colouring” rather than melodic ornamentation (Kyrgys 2008, 89-91). Also, the sound of *borbangnadyr* is not as intense as *khöömei* or *sygyt* (Aksenov 1964, Cosi & Tisato 2014).

The sound creation of *borbangnadyr* in the vocal cords corresponds to the *kargyraa* style in that the mouth is almost closed while the drone sound in *borbangnadyr* is softer than in *kargyraa* (Aksenov 1964). Owing to the similarity with *kargyraa* in sound creation, *kargyraa* performers often move into *borbangnadyr* during a performance.

In Levin and Süzükei’s book (2006, 58-62), Tuvan musician Anatolii Kuular describes *borbangnadyr* as a sonic representation of swirling water and, by extension, its rolling sound as it flows over pebbles and stones in streams while in a sonic dialogue with the spirit-owner *ee*. Hence, here the overtone movements are not melodious but more like *tremolos*. That is to say, the soundscape of stream water being stirring up is emanated providing a spirited sonic vortex by extensive mouth movements.

The representation below (Example 8) is a spectrogram analysis of *borbangnadyr* performance. In this recording, the first event, from 0 to 9 seconds, is again of textual performance, then the performer starts to improvise in *borbangnadyr* style. The fundamental pitch is discernible at roughly F3 (170 Hz). However, because of the rolling effect in the mouth, the fundamental is ever-changing, but marginally, from 176Hz to 170 Hz.

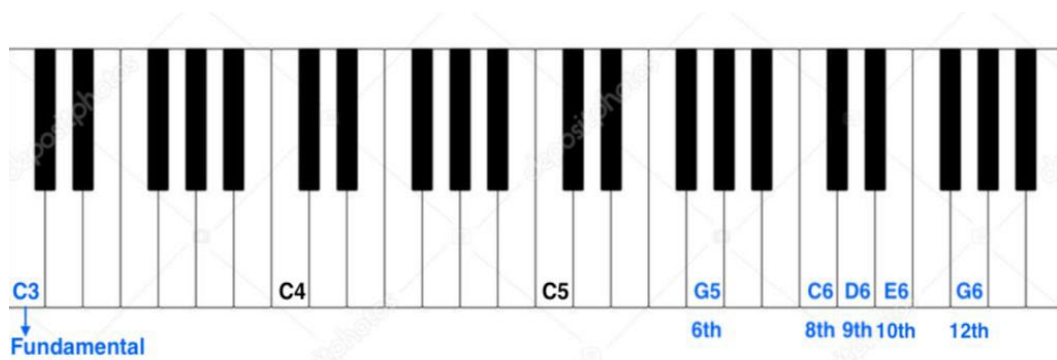
As mentioned above, the fundamental has little intensity, while the mid-tones, the harmonics 2<sup>nd</sup> (F4, 340Hz) and 3<sup>rd</sup> (C5, 510Hz), are a little thicker. Between 12 and 24 seconds, there is a tremolo-alike effect with the overtones: tremolo effects at the 10<sup>th</sup> Harmonic (A6, 1711Hz, 12 to 14 seconds), at the 8<sup>th</sup> (F6, 1365Hz, 14 to 18 seconds) and this sequence continues by 24 seconds. It is also possible to find another amplified resonance region above the harmonic 10<sup>th</sup> is also possible: between the 15<sup>th</sup> (E7, 2566Hz) and 16<sup>th</sup> (E7+, 2701Hz).



Ex. 8) Spectrogram: *Borbangnadyr* style, performed by Tumat Kara-Ool. The fundamental pitch is in F3 (170 Hz)

## 2.5 Mongolian Styles

Mongolian *khöömii* (Mongolian Cyrillic: хөөмий) is more melodious with its use of harmonics than Tuvan *khöömei* (Levin with Süzükei 2006, 68) – I refer to it in this text as *khöömii* (Mongolian) to distinguish it from *khöömei* (Tuvan). Its melody is created by 4 notes of the pentatonic scale, related to the amplifiable harmonics of *khöömii* or *khöömei*. Both *khöömei* and *khöömii* performers can select the harmonics 6<sup>th</sup>, 8<sup>th</sup>, 9<sup>th</sup>, 10<sup>th</sup> and 12<sup>th</sup>, but the 7<sup>th</sup> and 11<sup>th</sup> are not used (Aksenov 1964; Ruiz & Wilken 2018). When these harmonics correspond to musical pitches formed on a fundamental C3, the pitch class includes G5, C6, D6, E6 and G6 respectively (Ruiz & Wilken 2018). This is equivalent to the standard pentatonic scale: root, 2nd, 3rd, 5th, and 6th intervals of the major scale, but the 6<sup>th</sup> interval is omitted from the overtone pitch class (Example 9).



Ex. 9) Overtone pitch class of *khöömei* and *khöömii*, Fundamental is C3 (130.8Hz).<sup>1</sup>

A more extensive, and the latest categorisation with Mongolian *khöömii* styles was established by a *khöömii* performer Tserendavaa in 1988 and is identified by the body areas in which singers feel vibratory resonance. This distinguishes it from Tuvan classifications of styles. This categorisation is only for *Uyangiin Xöömii* (melodic or lyrical *khöömii*):

*Xamryn Xöömi* (nasal *khöömii*)

*Bagalzuuryn Xöömii* (glottal, throat *khöömii*)

*Tseejiin Xöndiin, Xevliin* (chest cavity, stomach *khöömii*)

*Tagnain Xöömii* (palatal *khöömii*)

*Uruulyn* (labial *khöömii*)

*Turlegt or Xosmoljin Xöömii* (*khöömii* combined with long songs) (Pegg 1992; 2001).

<sup>1</sup> These are obviously in just intonation.

Tserendavaa also includes another *khöömii*-style *Xarxiraa*, which is equal to the Tuvan *kargyraa* style, adding the comment that the sonic source of *xarxiraa* was from “rippling waterfall” (Levin with Süzükei 2006, 68; Pegg 1992). In the paper *Mongolian Conceptualizations of Overtone Singing (xöömii)*, Pegg (1992) explains that some *khöömii* performers debate the issue of whether or not *xarxiraa* is an independent style from *khöömii*. Nonetheless, they can technically be differentiated because performers of *xarxiraa* open the vocal tract whilst *khöömii* performers tighten their throats.

## 2.6 Intrinsic Diversity in *Khöömei* Styles

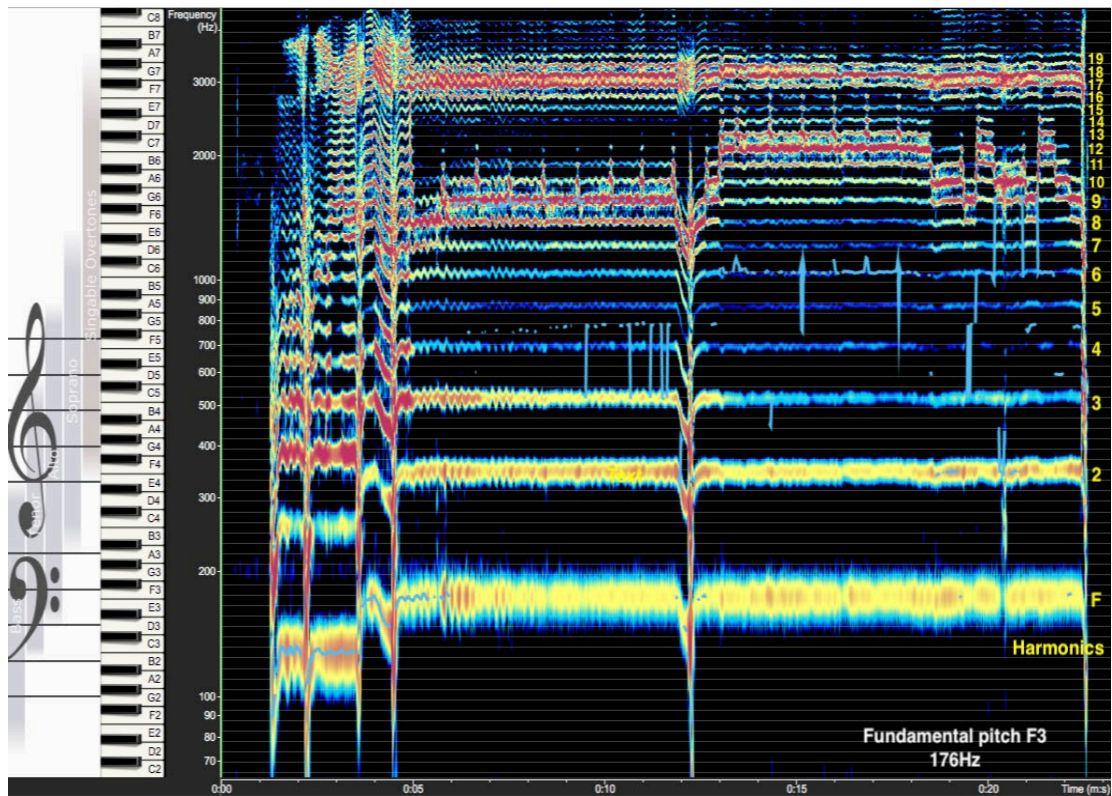
These categorisations of Tuvan and Mongolian vocalisation have been created quite recently, with the aim of universalisation; presumably, they began to be classified in the 20<sup>th</sup> century. Conventionally, *khöömei* styles have always been diverse and individualised because their skill was not acquired by formalised training or schooling, but by the personal “sound mimesis” of nature that Levin and Süzükei (2006, 66, 88) describe. In later generations, the practice of *khöömei* in nature was transformed into a theatrical art form, and local audiences into mass audiences (Pegg 2001, 253-61; van Tongeren 2004, 84). Some results of this might be a stylistic generalisation but also may include approachable concepts as a genre of vocal music.

Moreover, the cultural homogenisation policies practised throughout the Soviet era have contributed to the transition to standardisation in music or European-style art activities. However, the stylistic diversity of *khöömei* has remained in the personal uniqueness and creativity of different performances even though producing the same *khöömei* style.

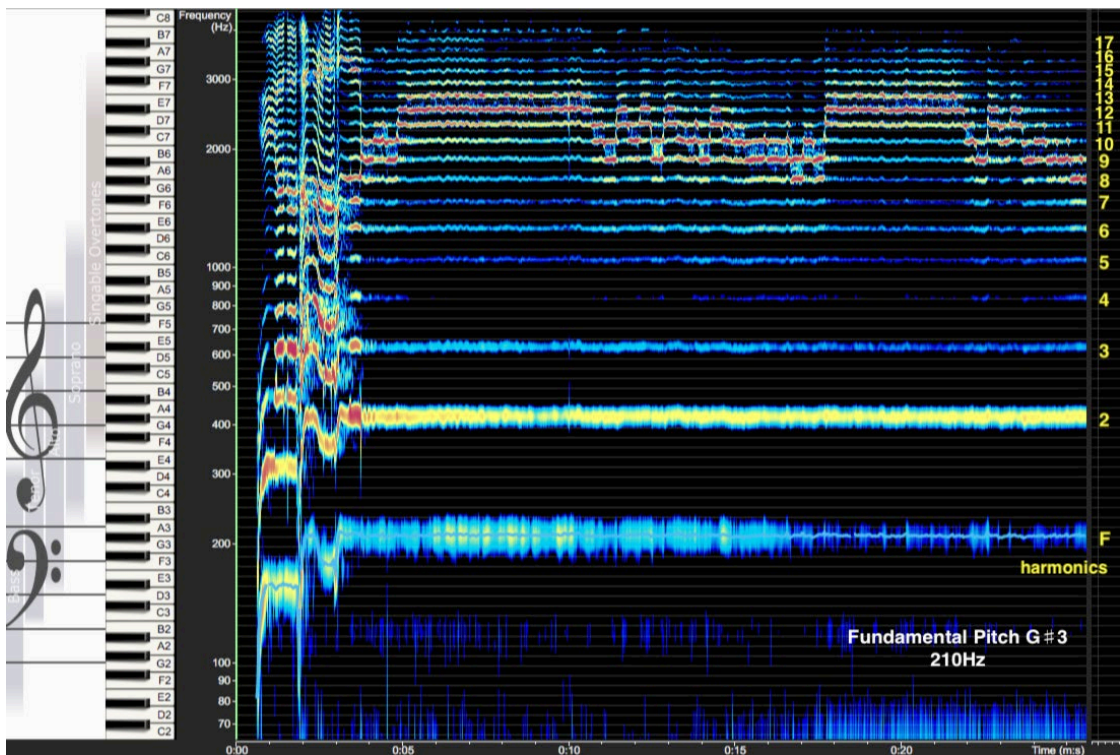
In relation to this, my spectrogram analyses of each *khöömei* style have shown that each performer has their own distinctive acoustic characteristic (Examples 10a and 10b). I have analysed spectral differences between two recordings in which the performers use the same style and tune. Interestingly, the spectrogram analyses show significant differences in resonance dispersion between the two *sygyt* performers: Mergen’s (Example 10a) has a wider dispersed figure, creating another resonance region between the harmonics 17 and 18 while Kongar-ool’s (Example 10b) intensively amplifies harmonics between the 8<sup>th</sup> and 13<sup>th</sup>.

These results have influenced my compositional approach to *khöömei*, which is to accommodate all the instrumentation and orchestration to my own vocal data. I have

accordingly applied only my voice spectrum in some of my later compositions since I am the main performer of these works.



Ex. 10a) Spectrogram: Mergen Mongush's performance *Alash Khem* in sygyt style.



Ex. 10b) Spectrogram: Kongar-ool Ondar's performance *Alash Khem* in sygyt style.

## 2.7 Tuvan Listening and the Practical Application in Music Creation.

In reference to “the importance of understanding Tuvan perspective in music”, I found the most support in Levin and Süzükei’s 3<sup>rd</sup> chapter (2006), *Listening the Tuvan Way*.

Throughout a plethora of cultures, contemporary cosmopolitans have, in effect, musically been colonised under Western music. The music we commonly listen to is rooted in the Western art form and our musicians tend to perform or compose music based on Western notion of art, which includes musical form, melodic and harmonic progression and motivic and rhythmic development.

This influence has also contributed to our way of listening to all different kinds of music. The first time I listened to *khöömei*, I attempted to analyse it by identifying the individual fundamental pitch and overtone melody, the harmonic relation between overtones and the fundamental, and the form of music. It is more than likely that most musicians trained in Western music listen to *khöömei* concentrating on pitch, in addition to pitch relations and changes.

However, Süzükei (Levin with Süzükei 2006, 45-48) explains following pitch is not an important inspirational factor for Tuvan musicians, and that Tuvan listening is mainly characterised by a perception of higher-dimensional acoustic space created by a tone of sound. She uses a metaphor to describe this: when a vibratory tone, from instruments or mouth, emerges, the tone spreads and then creates a multi-layered sound, a harmonic layer, in the same manner as a light dispersion through a prism. Such a layer can clearly be seen in my spectrogram analyses above. Each tone of the sonic layer is not independently heard. The whole layered sound is like a naturally-merged sonority, timbrally rich, deep and thick. This sympathetic sound is the main source of Tuvan listening. Süzükei names such a way of listening “timbre-centred listening”.

Tuvan listening “timbre-centred listening” is a different dimension of listening from Western listening “pitch-centred listening”. Pitch-centred listening generally focuses on a perceptible pitch sound corresponding to a frequency figure (Lau & Sebastián 2012; Levin with Süzükei 2006, 51). Therefore, pitch-centred listening tends to be a more objective and concrete auditory perception. Also, pitch-centred performers create music based on the movements of each pitch source of sound. Contrary to this, timbre-centred listening emphasises perceiving an internal resonant dimension arising from a sound of a pitch, which retains abundant timbral quality as it is made of harmonic complex tones (Levin with Süzükei 2006, 50-51).

Perception of this sphere can be more subjective, intuitive and abstract. *Khöömei* performers in timbre-centred listening often need a few moments for admittance to a timbral zone. When they enter this zone, then can manipulate certain members of the harmonic series as a prime element of music in music performance.

Süzükei points out that timbre-centred listening also applies to Tuvan instrumental sounds. For example, on the *igil*, a Tuvan string instrument, players always bow on two strings simultaneously. They listen to the reciprocal sound of the two strings, not the individual pitches of two strings, whilst producing rich harmonics by controlling the bow pressure. As another example, the unique sonic qualities of playing the *khomus*, Altaian and Tuvan instruments analogous to Jew's harp, causes timbral richness and emanates a wide range of harmonics. The performer focuses on the acoustic spectrum of the drone sound while performing.

Another difference between Western pitch-centred and Tuvan timbre-centred music is in attitudes towards time. Western or pitch-centred music is temporal. In Western music, there are systemised structures in time, including bars, phrases, sections and movements. Furthermore, pitch-based musicians play or compose strictly within a defined space of time, as do pitch-centred listeners. Timbre-centred musicians are much freer than pitch-centred musicians. In Süzükei's words in terms of time, "In timbre-centred music, the space dimension is different and the time dimension is different" (Levin with Süzükei 2006, 54). She goes on her explain, nomadic life in Tuva is not constrained by time, but by season. Under the influence of this lifeways, in musical performance Tuvan performers get into the zone of their environments and express their feelings as much as they want.

I have sensed this since I became a *khöömei* performer. In concert rehearsals of my compositions, I naturally got into a zone of the harmonic spectrum and instrumental sounds and then improvised my feelings along with listening to them. I mostly felt that counting time and fixed time duration - in the performance - disturbed my improvisation even though I gave enough time for my parts. For this reason, I sometimes sang longer or missed the beats in my part.

In practice, it is a task of great difficulty to convert pitch-centred to timbre-centred listening, especially for listeners habitually oriented towards Western music. If I bring Cornelia Fales' idea in *The Paradox of Timbre* (2002) drawn mostly from a study of Burundi ritual song to pitch-centred listeners' exposure to *khöömei*, then the timbral complexity of *khöömei* clashes with discernible and definable pitch-centred listening, causing disorientation. However, this

clash of transition from pitch-centralism to timbre-centralism, can be eased by the “redistribution of perceptualisation” giving rise to timbre-centred listening (Fales 2002; Levin with Süzükei 2006, 255-256). My understanding is that Fales’ concept of “redistribution” enables listeners to appreciate Tuvan listening. If so, it will be crucial to find a way for the “redistribution” in music-making.

Süzükei also suggests there are ways to coexist between pitch-centrism and timbre-centrism. She calls these “hybrid forms” of music, which cross from pitch-centred into timbre-centred and vice versa (Levin with Süzükei 2006, 56-57). She gives an example of Tuvan musician Oleg Kuular’s performances. In his performance, he begins with a timbre-centred section using *khöömei* and Jew’s harp, then changes in the next section to pitch-centred music. In the last section, he returns to the timbre-centred section. This idea of “hybrid music” identified by Süzükei has also developed in the current Tuvan music scene, coexisting pitch and timbre-centred musics by transforming its fusion with various genres of music and maintaining *khöömei* in its traditional form into the bargain (Lamazhaa & Süzükei 2019). In pursuing and with reference to the execution of Tuvan hybrid music, I have attempted to avoid the risk of “cultural appropriation”. One of my pieces *The Rime of the Ancient Mariner Part IV* can be an example of this, in which the first section begins with a pitch-centred design and is transformed into a timbre-centred section.

In the next chapter, I will introduce my compositional models with timbre-centralism.



### Chapter 3. Compositional Models in My Works

Through my research on *khöömei*, I have been convinced that the “redistribution of perceptualisation” together with timbre-centralism of Tuvan music must be a paramount aim in my music creation. This personal goal was solidified and given impetus by Valentina Süzükei’s keynote speech on the final day of the conference of the *Transtraditional Istanbul* (TTI) project in 2021. After her speech, I questioned her, “Western musicians cannot understand Tuvan listening well. Have you watched any foreign musicians who have worked with *khöömei* musicians well? If so, how have they worked with *khöömei* musicians”. Her answer was very simple, “I cannot remember anyone, but most importantly Western musicians should understand the prism effect<sup>2</sup> of *khöömei* to work with the musicians”. I agree with her entirely. Of course, I could bring many different concepts of music and experiment with *khöömei* because I believe that musical possibilities are limitless. Most importantly, however, venerating the musical identity of ethnic music and their practices, with the inclusion of preserving these, should be a credo of cross-cultural musicians.

To reflect timbre-centralism in my composition, I especially paid attention to two musicians and their works with drone-partials vocal techniques: visionary composer David Hykes and contemporary music composer Ken Ueno. David Hykes (1953 ~ ) learned various vocal styles from Inner Asia such as Tuvan *khöömei*, Mongolian *khöömii* and Tibetan ritual chanting (David Hykes Harmonic Presence 2015). Additionally, he was the first westerner to collaborate with drone-partials music practitioners from those countries. Hykes generally creates music intended for meditation with his group *The Harmonic Choir*, which is well known for being one of the world’s outstanding overtone singing ensembles. Technically, he and his choir do not apply authentic styles of *khöömei*. He has, however, developed new overtone vocal techniques such as glissando of fundamental pitch or overtones in the vocal performance. As far as I know, this technique is not shown in traditional *khöömei* performance. Hykes also utilises each vowel quality in a word to achieve different overtones while singing song texts. These words contain deep and meditative meanings, such as *Eleison* and *Kyrie* – this became an inspiration in my composition *Hallelujah*.

I also note Irlandini’s (2013) comment that, “Listening is a form of inspiration” in David Hykes’s music. That means Hykes puts great emphasis on the act of listening. He intends his singers and the listeners to sense the inner sonority of vocal tones and fluid overtones at the same time throughout his works. This leads to unusual sound perception for both the

---

<sup>2</sup> She described the phenomenon of harmonic dispersion over a drone in *khöömei* as “prism effect” in her speech.

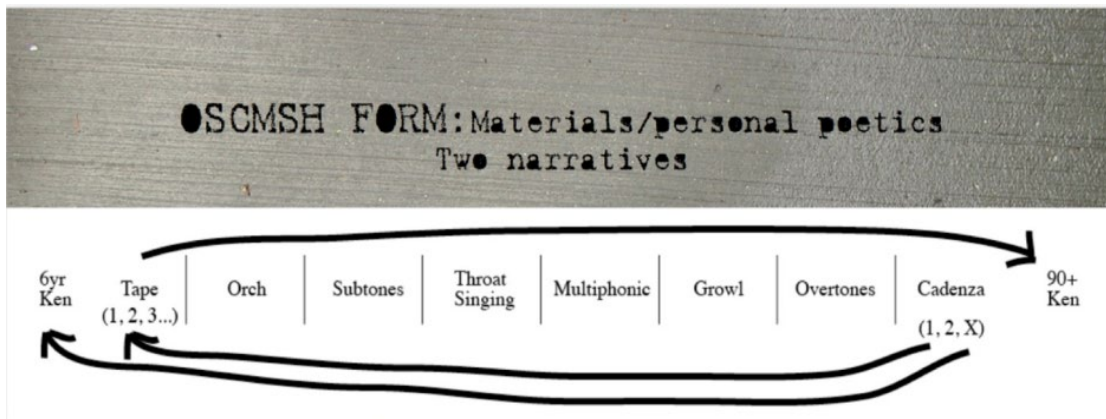
performers and auditors. Such listening parallels timbre-centred listening. In order to guide the listening, he focuses on producing higher frequencies of overtone naturally and clearly. For example, his choir normally performs with amplifiers in small chambers which have a fine echo effect and reverberation or in their recordings they control the sound effects by adding subtle amplification and some reverb as a sound controller. Although his manner pertains to the acoustic environment, it has the merit of delivering harmonic sounds in their natural condition.

Additionally, the melodic phrases of his music, in each vocal part are fairly linear gradually changing to the next phrase. When multiple vocal parts go together at different pitches, in his sound settings, different sound spectrums from different root tones mingle together leading to prodigiously complex and dense timbre. A Czech chorus *Overtone Choir Spektrum* also utilises this timbre creation in their choral music (“Overtone Choir Spektrum - Pacem (Stuart Hinds).” YouTube, 2:11). This practice has been a muse for my choral music and soundscape composition: *Hallelujah*, *Let There Be Light* and *Where Mountain Sings* respectively.

Several of Ueno’s throat-singing works, especially in his orchestral piece *On a Sufficient Condition for the Existence of Most Hypothesis*, apply various extended vocal techniques such as multi-phonetic, subtone, throat, and overtone singing - He himself defined these vocal techniques on a YouTube video (Djmoderne, “UC Berkeley Lecture, intro to his art philosophy.” 8:34).

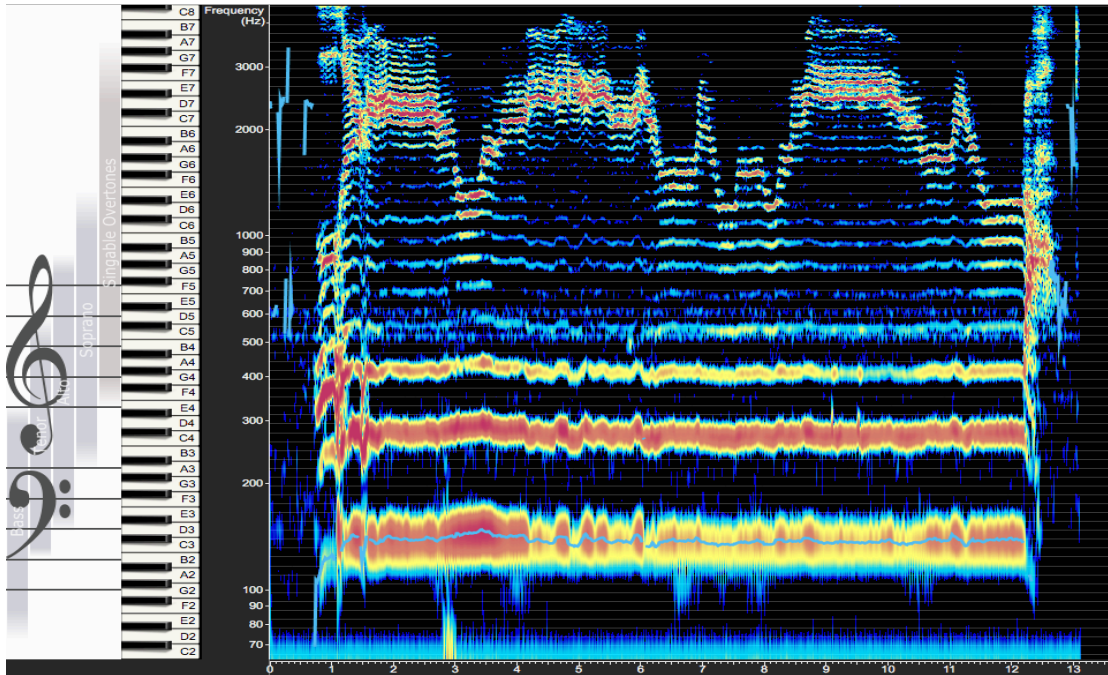
As a throat singer, Ueno regards his body as a “prime resonator” (Ueno 2022). As he emits sounds of throat singing from the nearest part of his mouth, he is able to perceive the inner space of the resonances more clearly, similar to *khöömei* performers. Musically to display the presence of the timbral domain, Ueno adopts the spectralists’ concepts in his compositions. Briefly, spectral music (French: *musique spectrale*) was a music trend that emerged in the late twentieth century. Due to the advance of modern science, a physical measurement of resonance, such as the spectrogram used above, was practicable for the first time (Anderson 2001; Reigle 2008). Certain French composers, including Tristan Murail and Gérard Grisey, took a profound interest in making use of this technology in music (Murail 2005; O’Callaghan 2018). Based on the spectral analysis, in which they identified pitch components of sound tones associated with frequency, they created timbre-based works using acoustic musical instruments. This often represents the reinvention of a sound source to live music performances (Wannamaker 2008).

Returning to Ueno's composition *On a Sufficient Condition for the Existence of Most hypothesis*, like the spectralists, Ueno analyses the harmonic spectrums of his drone-partials vocalisations, and these analyses are used as inspiration not only for the orchestration, but also for each section dividing each section to fit each vocal technique (Example 11, Ueno 2022). The former maximises the orchestral potential of natural overtones to bring about reallocation of perception into timbre-centred listening. As far as the latter is concerned, Ueno's method gives a most effective spectral balance between vocal technique and orchestration.



Ex. 11) Form design of *On a Sufficient Condition for the Existence of Most Hypothesis* (Ueno 2022)

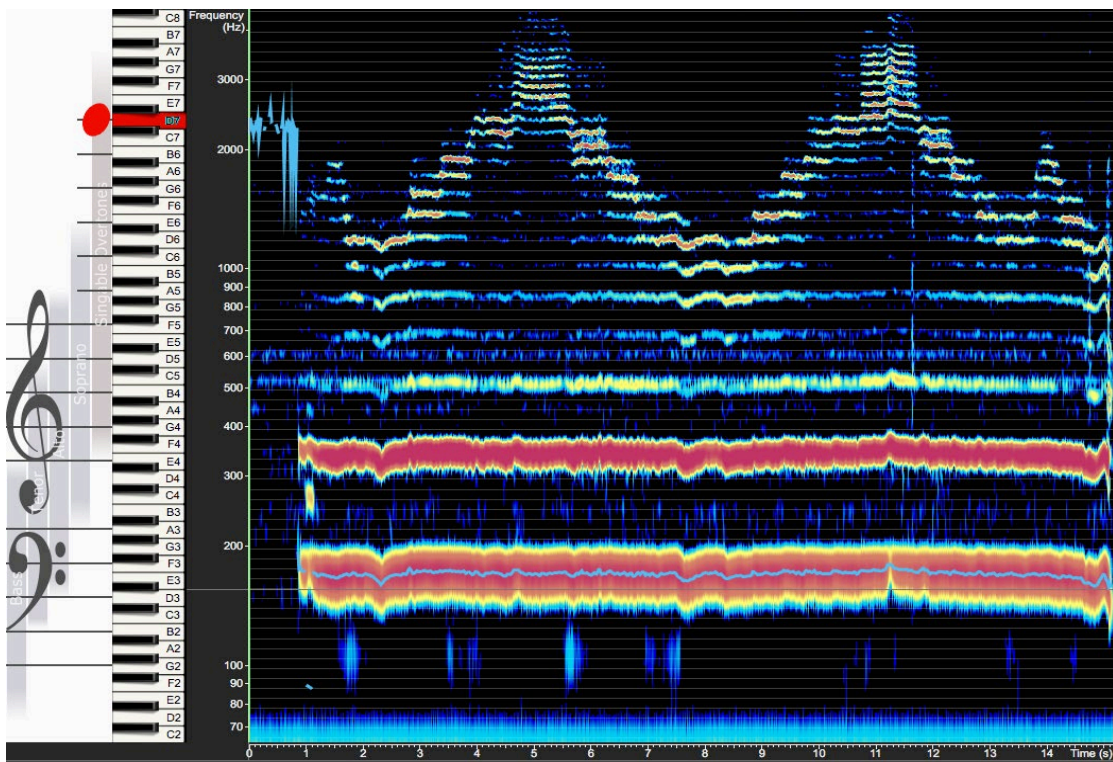
Spectral analyses of drone-partials vocal techniques have proved that each vocal style has different properties evident on the spectrogram (Examples 12a and 12b). Furthermore, such vocal techniques are commonly practised across different ranges of fundamentals depending on the performer's vocal range and styles. Therefore, in terms of designing musical form, their exhibition throughout a piece of music should be free-standing, in addition to vocal-specific. Finally, in live performance, Ueno also sets a voice amplifier in the manner of Hykes. This is an indispensable sound setting in live concerts as harmonic sounds would otherwise be imperceptible in large-sized concert halls. I have referred to Ueno's orchestral approach and structural design mainly for my instrumental pieces with drone-partials vocal techniques: *Gasiri*, *I Deny You But Still Miss You* and *The Rime of the Ancient Mariner Part IV*.



Ex. 12a) Spectrogram:

My drone-partials vocalisation 1 (more stress in the chest and vocal cords)

Overtone melodies are louder than the fundamental pitch and the overtone dispersion is wider than the vocalisation below.



Ex. 12b) Spectrogram:

My drone-partials vocalisation 2 (less stress in the chest and vocal cords)

The drone pitch and 2<sup>nd</sup> harmonics are louder and deeper than overtone melodies.

## Chapter 4. Compositional Application

While studying music in my MA, I began to be particularly interested in Ligeti's experimental approach to timbre with sound, especially in his masterpiece *Lux Aeterna* (1966). In this piece, his musical focus is on timbral presentation with the use of micropolyphony and tone clusters, not on melody, harmony, or rhythm (Bernard 1994; Steinitz 2003, 150-151). In company with this interest, I centred on expressing qualities of musical sounds in my musical compositions. I also had a strong curiosity about the sounds of Western or non-Western folk instruments and vocal techniques. The main musical curiosity was how to embed the musical images of those into contemporary music works. As an example, I was considerably interested in sounds of Korean instruments and musical aesthetics of East Asia. Accordingly, I made in-depth studies not only of the sound qualities of Korean instruments such as Korean flute *piri* and drum *buk* but also of compositions of Isang Yun (1917-1995) and Tōru Takemitsu (1930-1996) to learn how they made contemporary classical compositions with Korean or Japanese musical sounds and aesthetics reflecting the research in my musical works.

I learned Scottish bagpipe and sometimes joined concert practices in the St. Andrews Pipe Band based in Hamble-le-Rice, Hampshire, UK. This experience became a great interest in Scottish folk music and a trigger for attentiveness to drone-overtone sound. My exposure to drone-overtone music was naturally connected to Tuvan and Mongolian vocal techniques. I embarked on applying drone-partials vocal technique in one of my MA compositions studying about the basic principle of vocalisation. This interest was not momentary, but it was still strong in my heart. Maybe it was meant to be. I adopted Tuvan and Mongolian singing as a research topic for my PhD.

In the next sub-chapters, I will introduce my compositions.



N. Mus. O. 822  
Stockhausen  
STIMMUNG

Modelle

französische Stimme

The image shows three models of vocal performance for Stockhausen's 'Stimmung'. Each model is presented in a separate box with its own notation and instructions.

- Model 1 (Top Left):** Labeled '6' and 'T=72'. It features a series of notes on a staff with stems pointing up and down. Below the staff are the letters 'a a a o o o u o o a a z'. The notes are grouped into two main sections.
- Model 2 (Top Middle):** Labeled '2' and 'ca 47'. It shows a series of notes with stems pointing up. Below the staff are the letters 'i e e a a o o u o o a a y y i'. The notes are grouped into two main sections. A note 's' is written to the right of the staff.
- Model 3 (Top Right):** Labeled '5' and 'T=135'. It features a series of notes on a staff with stems pointing up and down. Below the staff are the letters 'h u o o o h u o o a o h u o o h u o o'. The notes are grouped into two main sections. There are additional notes and stems below the staff.
- Model 4 (Middle Left):** Labeled 'O=48'. It features a series of notes on a staff with stems pointing up and down. Below the staff are the letters 'i i o o u o o a a i i o o u o o e o e'. The notes are grouped into two main sections. There are additional notes and stems below the staff.
- Model 5 (Middle Middle):** Labeled '3' and 'T=162 (d. = 54)'. It features a series of notes on a staff with stems pointing up and down. Below the staff are the letters 'Y u h o w a m i y n i j r b y d e m'. The notes are grouped into two main sections. There are additional notes and stems below the staff.
- Model 6 (Middle Right):** Labeled '3' and 'T=81'. It features a series of notes on a staff with stems pointing up and down. Below the staff are the letters 'h u o o h u o o h u o o h u o o'. The notes are grouped into two main sections. There are additional notes and stems below the staff.
- Model 7 (Bottom Left):** Labeled '7' and 'T=126'. It features a series of notes on a staff with stems pointing up and down. Below the staff are the letters 'n i n i n y n y n a n a h o n a n e n a n y n y n i n i n i t m a i s'. The notes are grouped into two main sections. There are additional notes and stems below the staff.
- Model 8 (Bottom Middle):** Labeled '9' and 'T=189'. It features a series of notes on a staff with stems pointing up and down. Below the staff are the letters 'e i e i etc.'. The notes are grouped into two main sections. There are additional notes and stems below the staff.

Additional text in the models includes instructions like 'manchmal individuell', 'da capo', 'einmal allein, gegen Ende', and 'bei Übereinstimmung...'. There are also some small diagrams and symbols scattered throughout the notation.

Ex. 13b) Notation of “Stimmung” (1968)

Based on his demands, I designed my own notation system in my early composition *Partials*. As shown below (Example 14), the harmonics shift freely and gradually over the fundamental pitch according to the vowel sounds in the given time duration. For practical reasons, the use of time for vocal part should be spacious to enhance the performer’s convenience.

In my interview with a German overtone singing expert Frauke Aulbert (2019), she points out that she can more comfortably perform in drone-partial vocalisation when freedom in rhythm and tempo is given to her. Accordingly, I utilised a graphical score which combines time flexibility and practicality in ensemble performance in my compositions, referring to Tōru Takemitsu’s masterpiece *Rain Spell* (1982) as an example (see example 15a and b). In addition, I put overtone contours above the ledger lines to guide harmonic melody lines for the singer in *Partials*, in addition to my later piece *Let There Be Light*, but after becoming a *khöömei* performer myself I did not put the contours, since they are unnecessary and make a messy score in large ensemble works.

3

8 - 10" Freely & Spatially

S. Solo

13

*p* *mf*

/u/ /e/ /i/ /e/ /o/

13/4

Ex. 14) My notation for drone-partials vocal part, m. 13, *Partials* (2019)

2

## Rain Spell

for flute, clarinet, harp, piano and vibraphone

Toru Takemitsu

Freely, very spatially. *mf* *sfz*

Piano

*pp* *p* *pp* *pp* *poco mf* *sfz*

Harp

*pp* *Mi* *pp sempre* *bisbigliando* *Eolian rustling* *Do* *Sol* *poco f* *(pp)*

Vibraphone

(medium hard mallets) *Motor on pp sempre*

Flute

*ppp*

Clarinet (in B $\flat$ ) (Transposed)

Ex. 15a) Toru Takemitsu's graphic notation in *Rain Spell* (1982)



5

24

S. Solo

7 - 9" Freely & Spatially

mp

mf

/e/ /u/ /e/ /i/

7 - 9" Freely & Spatially

Pno.

sfz

mf

mp

f

mp

sfz

mp

sfz

mp

Ex. 15b) My graphic notation, mm. 24-25, *Partials* (2019)

*Partials* is divided into two sections in the score: A-B. The first section is measure 1 to 60 and the second section is from 61 to 101. The main purpose of this piece is to materialize integration between contemporary classical and drone-partials music as well as to learn about the practicality of my new notation with both experts and non-experts in the use of the special vocal technique. The piece was composed for a workshop where a Soprano singer Christie Finn was invited to read pieces of MA and PhD students. Composing a piece of music for her voice was a great opportunity as she had experience with drone-partials vocal technique in the context of *Stimmung* by Stockhausen, as well as a wide experience with contemporary vocal music.

While designing this piece, I got in touch with Christie to obtain her vocal information: her vocal range with drone-partials vocal performance and her singing experience with *IPA* (*International Phonetic Alphabet*). Collecting the vocal information of the performer should be prioritised before writing music because normally the vocable range of drone-partials vocal technique is more limited than a typical vocal range of the performer. Moreover, the performer can produce clearer harmonics within their comfortable fundamental range. As learned, she had particular flexibility with overtones on the fundamental pitches between D4 and C5, I chose the main fundamental pitch A4 for her drone-overtones vocalisation. Also, I employed IPA for the lyrics (/a/, /e/, /i/, /o/, /u/) throughout this piece.

I set a root pitch of A1 for the piano part, and then based on this pitch I calculated the harmonic series using a fast Fourier transform (FFT) algorithm. However, I confronted a problem with the use of piano because the harmonic series, sometimes including quarter tones, are commonly in direct conflict with the equal temperament of the piano. As a practical matter, I had to use piano for the workshop.

Despite some pitches not being accurate according to the harmonic series, based on FFT calculation, I selected pitches close to the series to facilitate being played on the piano. It was a big challenge to draw up a plan supporting the drone-partials vocal technique textually. My supervisor Michael Ellison recommended researching some spectral music such as Grisey's or Murail's compositions. While studying these, I found then referenced Unsuik Chin's piano Etude No.1 *In C* (1999), in which the overtone series of "C" is utilised as the main reference throughout the piece (Kim, 2012). I especially paid attention to the texture, which maintains the low left-hand part by the use of pedal, and together with energetic gestures in the upper parts because these motions have an analogy with drone-partials music.

Ex. 16) Etude No.1, "In C", mm. 1-5, Unsuik Chin (1999).

On reflection, this piece leans towards a pitch-centred or hybrid work because I concentrated more on overtone melody than on drone of timbre. Also, the pitch classes in the piano part are not enough to represent the real harmonic series. However, the elements of my new notation with IPA, FFT algorithm and the graphic score would become the cornerstone of my next compositions.

## **4.2 Halleluyah for four solo voices (2019)**

**: estimated performance time: 12 to 13 mins**

Recalling the interview with Frauke Aulbert, at the end of our conversation, she had asked the question: “Are you considering melody or timbre with overtone singing in your composition?” My answer was “both”. To be honest, I was confused about how to approach drone-partials music at this time because I was still a completely pitch-centred composer. I naturally, then, concentrated more on the melody lines of the overtone in my first piece *Partials*. For my next work, I desired to take a different approach focusing on the timbral potential of drone-partials vocal technique. I designed my second piece *Halleluyah* according to this.

*Halleluyah* is acapella music featuring 4 parts: soprano, alto, tenor and bass. The most important requirement for the soloists is they should be able to do drone-partials vocal techniques. Additionally, if the bass singer is not equipped to attempt Tuvan *kargyraa* style, one of *khöömei* styles practiced in a very low drone resonating in the chest, or Tibetan chanting, an alternative means of vocalisation given is vocal fry, a creak voice by vibrating cords in a low vocal register. Through this, a more unique and diverse timbral palette for the ensemble can be created in the performance. This piece is divided into three sections in the score: A – B – A. (First section bars from 1-61; second section bars 62-116; last section 117 to the end).

The most important aim of this piece was to apply drone-partials vocal technique with words containing meanings, similarly to Tibetan monks chanting a hymn *Om Ma Ni Padme Hum* and *kargyraa* performer’s text recitations (Aksenov 1964; Pereira 2016). I embedded in the word “Halleluyah”. With these devices, performers can easily do drone-partials vocal technique. Hykes’ compositions, such as *Halleluyah* and *Eleison*, both released in 1986, had a strong influence on the lyric setting of “Halleluyah” as Hykes makes good use of characteristic words for drone-partials vocal performance.

To use the word “Halleluyah” as an example, when pronouncing “Ha-al” or “le-el”, to produce overtones, the tongue is rolled up with the second syllables “-al” and “-el”, respectively; at the same time the vocal cords should be vibrated quickly. Then the performer can produce overtones. In terms of the syllables “lu-u” or “yah-ah”, overtones can be produced with the alteration of jaw position or mouth shape when sounding the second syllables “-u” and “-ah”. In this connection, Ruiz and Wilken (2018) argue that overtones are

produced when altering the position of the jaw by rolling up the tongue in the manner of whistling. The harmonics are produced depending on the sounds of syllables. However, as a practical matter, for clear harmonic productions, syllables for drone-overtone vocalisation should be long-extended. Also, the transition to the next syllables should be gradual and slow.

Before writing this piece, the biggest concern was to organise a group of performers. On the one hand, I took account of the choir ensemble first, calculating that a large group could make possible sustaining notes for a long period by supporting each other in the same vocal parts. On the other, I considered the clearer presentation of overtones for the listeners, expecting that a large performing group can acoustically compromise clear projection. Consequently, my choice was four voices (SATB) because I put more weight on the clear projection of overtones.

*Halleluyah's* first section starts with a low-pitched D in the bass part, and then the rhythm of the phrase used in measures 1 to 5 continuously varies throughout section A. In case the bass soloist could only perform with vocal fry I set the dynamics from *piano* to *mezzo forte*, since the creaky sound of vocal fry can easily be broken when performed in louder dynamics (e.g. *forte* or stronger). The first phrase develops and builds up to clustered harmonies with homophonic texture until bar 49 (Example 17), then gradually tapers off, preparing the transition to the next section.

6

ca. ♩=55-60

S. Solo  
Ha - a(l) - le - e(l) - lu - yah

A. Solo  
Ha - a(l) - le - e(l) - lu - yah - ah

T. Solo  
Ha - a(l) - le - e(l) - lu - yah

B. Solo  
with vocal fry:  
Ha - a(l) - le - e - i - lu - yah

Ex. 17) Harmonic destination of the first section, mm. 44-49, *Halleluyah* (2019)

The second section starts at measure 62 with a soprano solo. Unlike the first section, this section features chromatic and rhythmic gestures with polyphonic textures. The final section in measures between 117 to the end is a variation of A section. However, while the bass pitch is transposed to Eb and the harmonic sequence is the same as the first section, in regards to texture, this section has a similarity to section B.

One of the most important requirements for a choir work was to create a simple notation for drone-partials vocal techniques. My solution was simply to mark circular shapes above each note in the manner of notating harmonics for other instruments (Example 17).

This piece features a diversity of timbral and textural thickness, especially for the moments different harmonic spectrums mingle together. However, I expect performance possibilities will be limited for the reason that four performers equipped with drone-partials vocal techniques need to be recruited. Also, Covid had an impact on getting choirs together. Therefore, I started to devise economic and practical solutions for my next work.

### 4.3 *Gasiri* for solo bass voice, flute, clarinet, gong, violin and violoncello (2019) : estimated performance time: 15 to 17 mins

*Gasiri* is a piece of chamber music featuring flute, clarinet, gong, violin, violoncello and bass soloist; the soloist should be able to do Tuvan *kargyraa*, or alternatively Tibetan chanting. This piece is divided into five sections in the score: A (meditative and atmospheric) – B (featuring density, dramatic atmosphere, complexity and intensity) – A' (a short recapitulation of section A) – C (a spatial texture with graphic notation) – Ending (Coda) (First section measures bars 1-60; second section is bars 61-114; third section measures bars 115-131; fourth section bars 132-184 and last section bars 185 to the end).

After completing this work, my supervisor Ellison and I strived hard to create a performance opportunity finding a real *khöömei* performer or young vocalist willing to try 'extended techniques', but we could not seize the chance due to the lack of *khöömei* performers in England. Finally, this piece could only be developed in workshops and recorded in part, for some crucial passages, after a two-year Covid delay and without the *khöömei* part by *Hezarfen Ensemble* in 2022.

The setting of the text is from a classical Korean poem *Gasiri* which is interpreted as "Would you go?". The text comprises a person's longing for an ex-lover who has abandoned the person (Kim 2015). To raise the degree of musical concentration, I only set the first line "Ga-si-ri" (Korean: 가시리/) and "Ga-si-ri-i-ko" (translation: "Would you really go?", Korean: 가시리잇고). These words are ceaselessly repeated throughout the piece. However, I applied the IPA vowels (a, e, i, o, u) only for the drone-partials vocal part in the work.

For some events, the instrumentation is intended to express or emulate not only traditional Altai and Tuvan instruments such as a *khomus* (Jew's harp) but also sounds in nature such as wind sounds. These features are mostly shown in the string and woodwind parts. Example 18a shows the imitation of the Jew's harp sound by *glissando pizzicato*. It also shows the imitation of wind sounds with airy sounds of a flute and Clarinet, air only or half air/half-tone by flute and clarinet. This approach was influenced by the nature mimesis of Tuvan musicians (Matrenitsky & Friedman 2012; Levin with Süzükei 2006, 73-78).

Ex. 18a) Imitation of Jew's harp in violin and air sounds in woodwinds, mm. 5-6, *Gasiri* (2019)

Moreover, I introduced here one more *khöömei* style, shaking effect, which *khöömei* performers often apply in the *borbangnadyr* style (Example 18b).

Ex. 18b) Shaking voice, mm. 12-13, *Gasiri* (2019)

In the first section, the main sound source is from the overtone series of A2 (Example 19a), based on the FFT algorithm. The texture of the first section is gradually layered on. This then develops into clustered “inharmonic” at the end of phrases in the same manner as the interpolations of spectralism such as *Grisey’s* masterpiece *Partiels* (Murail 2005, 143; Teodorescu-Ciocanea 2003). This harmonic conversion is the main material of this piece developing until the end (Example 19b).



Ex. 19a) Overtone series of A2

Ex. 19b) Transition to Inharmonicity, mm. 17-19, *Gasiri* (2019)

Composer Ken Ueno’s piece for a voice and violoncello (2010), in which a circular bowing technique lasts on the violoncello with his drone-paritals vocal techniques, had a strong influence on this piece. While Ueno focuses on various timbres in his piece, additionally I focused on musical development: namely textural transitions, progress with variations and harmonic, and tempo transitions.



The second section shows the adoption of Tuvan musical textures and rhythms. In the instrumental parts of a Tuvan ensemble, the instrumentalists normally support *khöömei* with repetitive rhythms, but timbre is varied – you can listen to a typical texture of Tuvan vocal music in Levin and Süzükei’s audio and video archive (2019) – play the recording section 60, “Kojamyk performed by Tyva Kyzy.” 02:15. Therefore, I stick to such accompaniment styles throughout the second section (Example 20a). For the third section, my main aim was to create freer and more spatial events based on the harmonic spectrum over a drone because I wanted to provide the *khöömei* performer with enough time and freedom, which is also for the instruments. To achieve this, I utilised graphic notation based on the notation design of my first piece *Partials*, showing harmonics over the drone pitch (Example 20b).

Ex. 20a) Main texture of the second section, mm. 60-61, *Gasiri* (2019)

Ex. 20b) Main texture of the third section, m. 138, *Gasiri* (2019)

In the recording session for this piece, the whole acoustic presentation with the instruments was remarkably satisfying to my ears, especially in the first and third sections. Furthermore, the timbre creation between wind tone techniques of flute and clarinet and other instruments was impressive resulting in very unique sonorities. One disappointment was that I could not hear *khöömei* with these instrumental sounds in the session.

I also expected a practical disadvantage. Since *khöömei* is accompanied by an ensemble, the vocal sound can be interfered with by other instruments. In particular, when the music enters intense moments with loud dynamics and complex rhythms, the harmonic spectrum created by *khöömei* might not clearly be heard by the listeners. As a solution for this, a voice amplifier should be set for the singer.

**4.4 Let There Be Light for 10 voices (2020)**  
**:estimated performance time: 18 to 19 minutes**

*Let there be light* is acapella music featuring eight voice parts and two soloists (soprano and bass). The two soloists should be able to do drone-partials vocal techniques such as on Stockhausen demands in *Stimmung* and *khöömei*. This piece is divided into 4 sections in the score: First section bars 1-79; second section bars 80-134; third section bars 135-233; ending bars 234 to the end.

The main aim for this piece was not only to apply *khöömei* in choir music and discover how the vocal sound timbres from Tuva Republic and Mongolia can be merged with using singing but also to present a variety of overtones using the IPA vowels as Stockhausen did in his piece “*Stimmung*” (Saus, 2009) (Example 21). Since the main language for the lyrics here are in English, I had to use the IPA vowels separately for drone-partials vocal techniques: the IPA has the advantage of making accurate overtones. This is important to me because the listeners can clearly hear overtone spectrums when the singers make accurate vowel sounds.

**A**

**Throat singing**  
 \*Lyrics - sounded by IPA vowels

Ex. 21) Use of IPA vowels for drone-partials vocal techniques, mm 31-36, *Let There Be Light* (2020)

The first section begins with a harmonic sequence in a homophonic texture between measures 1 and 4 (Example 22), then it builds up with clustered harmonies and by variations of the main motif in measures 1 to 4 until bar 63.

## Let There Be Light

**Adagio, molto legato espressivo**  
 (♩=70) rit. . . . A tempo Taekkyu, Lee  
2018

Soprano Solo

Bass Solo

SOPRANO 1,2

ALTO 1,2

TENOR 1,2

BASS 1,2

Let there be light. Let there

Let there be light. Let there

Let there be light. Let there

Let there be light. Let there

Ex. 22) Main harmonic sequence of the first section, mm 1-6, *Let There Be Light* (2020)

The second section starts at measure 80. Rather than focusing on showing the harmonic sequence, this section features chromatic and rhythmic gestures with limited pitches introducing gradually varying singing parts. This movement and the texture of this section were largely inspired by Morton Feldman's *Three Voices* (1982).

for Joan La Barbara

## Three Voices

(1982) Morton Feldman  
(1926 – 1987)

Voice 1

Voice 2

Voice 3

ppp

ppp

ppp

Ex. 23) Opening of *Three Voices* (1982), Morton Feldman.

The third section presents the story of *The Three Temptations* from the Bible (Matthew 4:1-11). It is a dialogue between Jesus and Satan. This section sets an adapted version of the Bible text. One notable characteristic of this section is the appearance of drone-partials vocal techniques in both soloists' parts and of spoken words such as a whispering voice and *parlando* in the other parts, which corresponded to my aim for this piece of merging between the different voices. Rich timbres are invoked to vividly portray the atmosphere and characters of the story. Drone-partials vocal parts mostly support the spoken word parts and another solo part. The whole sound effect by blending different vocal techniques at the same moments is intended to portray the background of the Bible story. In addition, spoken voices are mostly applied for creating Satan's evil character.

To be more specific about "merging different voices", my intention was that when the sounds of drone-partials vocal techniques mingle with those of other vocal techniques, then listeners will hear one total, mixed sound. Especially, the buzzing and whispering sounds of the chorus parts timbrally interact with drone-partials music and much like Inner Asian end-blown flute (Mo.: *tsuur*, Tuv.: *shuur*, Kaz.: *sybyzgy*) creates a distinctive acoustic texture with buzzing drone and flutelike overtones (Pegg 1991, 78). – This YouTube video shows the sound of Mongolian *tsuur*. (UNESCO. "Traditional music of the Tsur," 27 Sept 2009. 10:44). This also corresponds to timbre-centrism, as I guide listeners to hear differently by an aural combination of the two voices. I believe that this approach has the potential to bring the listeners into timbre-centred listening.

In the score, I indicate that there should be a device to amplify the sound of overtone spectrums if the performance space is not reverberant. Places which create a fine echo effect such as church halls or small chamber halls will be the best for the performance. In drier spaces, controlling the sound effect by adding subtle amplification and some reverb such as a sound controller provides a viable alternative.

#### **4.5 *Slow Roller Coasters* for solo bass voice, trombone, percussions and violoncello (2020)**

**:estimated performance time: 10 to 11 mins**

*Slow Roller Coasters* is a piece of small ensemble music for trombone, percussion, violoncello and bass solo. The bass soloist should be able to do drone-partials vocal technique. The piece is divided into 3 sections in the score: A-B-Coda.

The inspiration for this piece is David Hykes' music *Rainbow Voice* in his album "Hearing Solar Winds" (CD release in 1989). At the beginning of this music, a vocalist gradually slides the pitch upwards, while using drone-partials vocal techniques. To support this basic material, I designed instrumentation in which I could effectively use *glissando* and present sound resonance. As a result, the answer was trombone, windchimes, crotales and violoncello.

When using long *glissandi* with drone-partials vocalisation, identifying a vowel sound which has a wide pitch range is the biggest challenge. I first proposed to apply two options for drone-partials vocal techniques: Tuvan *khöömei* style and style in Stockhausen's piece *Stimmung*. However, it is technically difficult to do a large-interval *glissando* with *khöömei* because the vocalisation caused by an intense vibration of vocal cords and the chest has a limited range of a drone.

Stockhausen's style can carry with *glissandi* much more freely. One practical issue with this, however, is that all vowels are not possible with *glissandi*. Through research and my drone-partials vocalising experimentation, I discovered that closed vowel sounds like /u/, /o/ or /i/ have the best pitch range and stable sound quality for this vocal technique (Titze et al, 2017). Accordingly, I chose the sound /woo/, /oh/ or /yi/ as singing words for the steep rise and fall of the *glissandi* (Example 24a & b).



The image shows a musical score for Example 25, titled "Timbral support given by wah-wah effect on trombone, mm. 31-34, *Slow Roller Coasters* (2020)". The score is written for five instruments: Trombone (Tbn.), Wah-Chorus (W.Ch.), Crotales (Crot.), Soloist (i. Solo), and Violoncello (Vc.). The Trombone part (mm. 31-34) is highlighted with a red box and features a wah-wah effect with dynamic markings (f, p, mf, mp) and glissandi. The Soloist part features overtone singing with lyrics "ah yi yah", "yi yu", and "ah". The Violoncello part includes a "sul pont." instruction and a note to "slap the fingerboard by one hand".

Ex. 25) Timbral support given by wah-wah effect on trombone, mm. 31-34, *Slow Roller Coasters* (2020)

In the first section, upward *glissandi* are only evident in the voice part. The movement of this *glissandi* is also very slow. I again used graphic notation with ample time durations, as I believed that this flexibility would be more helpful to support such *glissandi* with a drone and overtones driven vocal technique. Between bars 31 and 37, the appearance of drone-partials vocalisation and a wah-wah effect on the trombone is produced to show a new timbre produced by the combination of overtonally-changing sounds (Example 25).

The second section is a development of the first. Here, I focus on upward and downward *glissandi* in the voice part and harmonic support in the cello part. The other parts support the voice and cello, providing more timbral variation. I still apply /woo/ and /oh/ vowel sounds to keep a vocal fry sound quality throughout the *glissandi*. At the close of section B, measures 87 to 90, drone-overtone vocalisation with *glissandi* is produced to show another aspect of sound quality with *glissandi* (Example 26).



Ex. 26) Use of a vowel “Yi” with *glissando*, mm. 88-89, *Slow Roller Coasters* (2020)

Ex. 27) Pitch reference points for the singer, mm. 65~72, *Slow Roller Coasters* (2020)

This piece contains much dissonance throughout. Supporting the vocal pitch for a long duration is the biggest challenge. Also, other percussion is often either not loud enough to support the voice or is unpitched. For a solution to this, I put my effort into creating reference points for the vocal part to help them find pitches in a place with such large and long *glissandi*. For this, I mainly use trombone and violoncello in the manner of appearing the reference points earlier or of meeting in unison at a time (Example 27).

The most highly anticipated aspect of this piece is how the natural harmonics by drone-partials vocal performance and trombone are heard, and how these two sounds can blend into each other. Therefore, places which create a fine echo effect such as church halls or small chamber halls will be the best for performance. In drier spaces, controlling the sound effect by adding subtle amplification and some reverb a sound controller will again be an alternative.

#### 4.6 *Through the Throat!* for solo voice (2020)

:estimated performance time: 3 mins

*Through the Throat!* was composed for a UoB workshop which invited a contralto singer Noa Frenkel to read pieces of MA and PhD students. Composing a piece of music for her voice was a great opportunity as she can do drone-partials vocal technique in a style of Stockhausen's *Stimmung*, as well as having extensive experience with both conventional and contemporary vocal techniques.

The main idea of *Through the Throat!* is to show timbral diversity by using a variety of "throaty" and multiphonic vocal techniques such as Inuit vocal game *katajjaq*, *khöömei*, drone-partials vocal technique on Stockhausen's demands in *Stimmung* and vocal fry. For this reason, I focused on showing the sound qualities of those vocal techniques rather than focusing on rhythmic or melodic developments.

**Inuit singing**  
*mf*

hm hm ha hm hm hm ha ha

Ex. 28a) Inuit vocal game *katajjaq*, mm. 1-2, *Through the Throat!* (2020)

**Freely**  $10^{\circ}\text{Ca}$   
Overtone singing

(y i e)

\*Overtones freely change between the given IPA vowels in any order over the fundamental.

Ex. 28b) Drone-partials vocal technique in Stockhausen's *Stimmung*, m. 4, *Through the Throat!* (2020)

$10^{\circ}\text{Ca}$   
Vocal Fry

(a e i)

\*Vocal Fry - Sound as lowest pitch as possible.  
The given IPA vowels freely change in any order.

Ex. 28c) Vocal fry, m. 15, *Through the Throat!* (2020)

10"Ca  
Throat singing

20 *mf* *mf*

(y i e o u)

\*Overtones freely change between the given IPA vowels in any order over the fundamental.

Ex. 28d) *Khöömei*, m. 20, *Through the Throat!* (2020)

I was quite confident in applying such vocal techniques in contemporary music because I had worked on putting them to practical use in my research: by designing the notation and learning the vocal techniques by myself. In terms of the notation for Inuit *katajjaq*, I centred on natural sound qualities: voiced and unvoiced sounds and timbral changes produced by inhaled and exhaled sounds. To support all of those sound materials, I designed a notation for *katajjaq* based on Beaudry’s suggestion (1978) in her transcription of an Inuit vocal game (Examples 29 a, b and c). In addition, I adopted a 5-line staff to apply pitched notes while performing.

Vocable Accentuation	18 - HAN - -	Contrasting elements
Ex. / Insp.	E E E E I	Vocable / Non vocable
Voiced/Voiceless	□ ■ □ ■ ▲	Exp. / Insp.
Abstract intonation contour	- - - -	Voiced/Voiceless
Continuity	— · —	High/Low registers
Dynamics levels	f m f m m	Continuous/Discontinuous sound (legato) (Staccato)
Intonation	Op Op Op OpOp	No such opposition in this example.
Rhythm	□ □ □ □ □	
Other vocal qualities could be added here.		

Ex. 29a) Beaudry’s suggestions on Inuit vocal game transcription (1978)

ham ma he ha ham ma ha ha he ha ham ma ha he  
 ha a ha a ha a ha a ha a ha a ha a ha  
 he ha ham ma ha ha he ha ham ma ha he ham ma  
 a ha a ha a ha a ha a ha a ha a ha a ha

Ex. 29b) A transcription of *katajjaq* (Nattiez, 1999)



10"Ca  
Overtone singing

16 *mp* *mf* *mf* *mp* ,

y → i <lo lol> → e → i → e <lo lo lol> → u → y

\*"<" - please sing the text in the "<" symbols using English pronunciation of the syllables. But the others are sung by using the IPA vowels.

Ex. 30a) "lol" syllable addition in of drone-partials vocal technique, m. 16, *Through the Throat!* (2020)

10"Ca  
Vocal Fry

17 *mf* + + + + + + + + + *p* *sfz* ,

e a e a e → i

\* "+" symbol - Cover the mouth and open by one hand like giving the wah-wah effect.

Ex. 30b) Wah-wah effect in vocal fry, m. 17, *Through the Throat!* (2020)

♩ = 60  
Vocal Fry

23 *mp* *mf* *mp* *mf* ,

a a a a

Ex. 30c) Dissimilar vocal sounds with exhalation and inhalation of vocal fry, mm. 23-26, *Through the Throat!* (2020)

Challenges with this piece occurred in her recording of this piece, given very little time, but solutions were usually suggested during the workshop. However, one practical matter with *khöömei* application with Western-trained singers is that most of them are reluctant to do *khöömei* because it damages their throat (Pegg 1992; Sauvage 1989). And indeed, for this reason, *khöömei* performers retire early according to my Tuvan friend, Kezhik Aya. If I had had more conversations about this during the process of composing, I would have found an alternative to *khöömei*. Nevertheless, Noa Frenkel and I had constructive talks about the practical applications of those extended vocal techniques in the workshop. These talks helped me considerably in writing my next pieces.

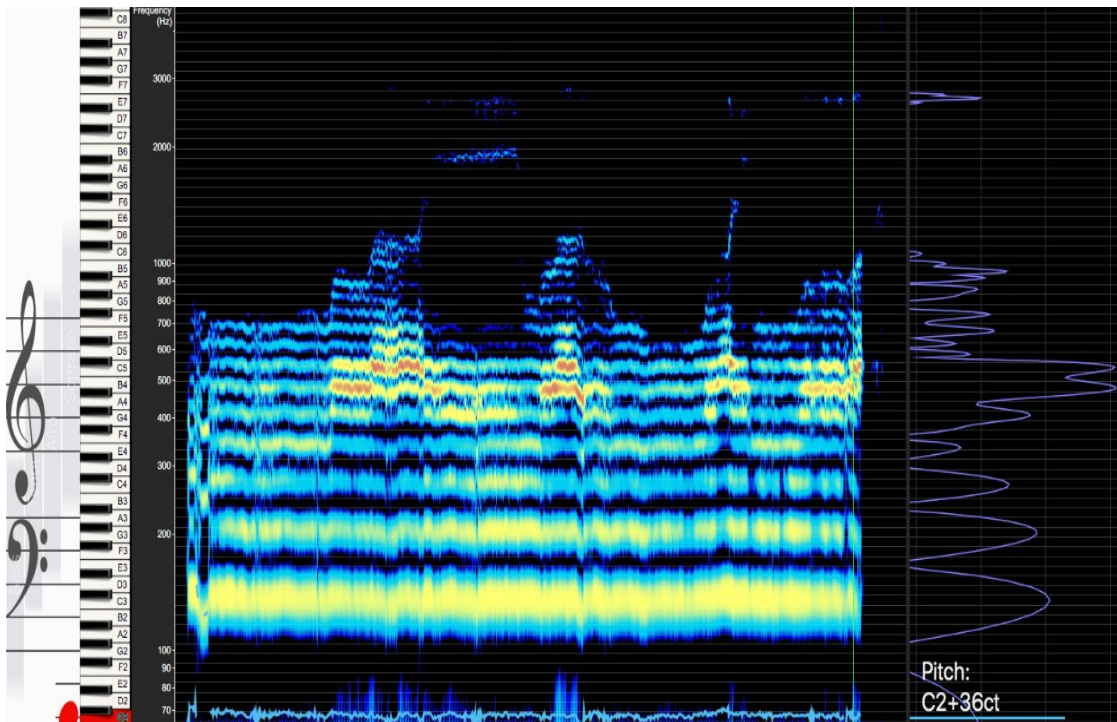
**4.7 *I Deny You, But Still Miss You* for flute, clarinet, French horn, percussions,  
violin, violoncello and solo baritone voice (2021)  
:estimated performance time: 12 mins**

During the first two years of my PhD, I had worked on developing practical notation and language applications but also experimenting with *khöömei* techniques. However, my compositions could not be performed, not only because of Covid, but because I asked for professional *khöömei* performers, while not succeeding in finding any *khöömei* performers in England. Nevertheless, on my own I had practised do drone-partials vocal technique for music-making. Having heard my own experiments with drone-overtones vocalisation during supervisions, at one point, my supervisor suggested that I become a performer for my future music. Although I was not confident with drone-partials vocal technique, I decided to be a performer for my next piece *I Deny you, But Still Miss You*.

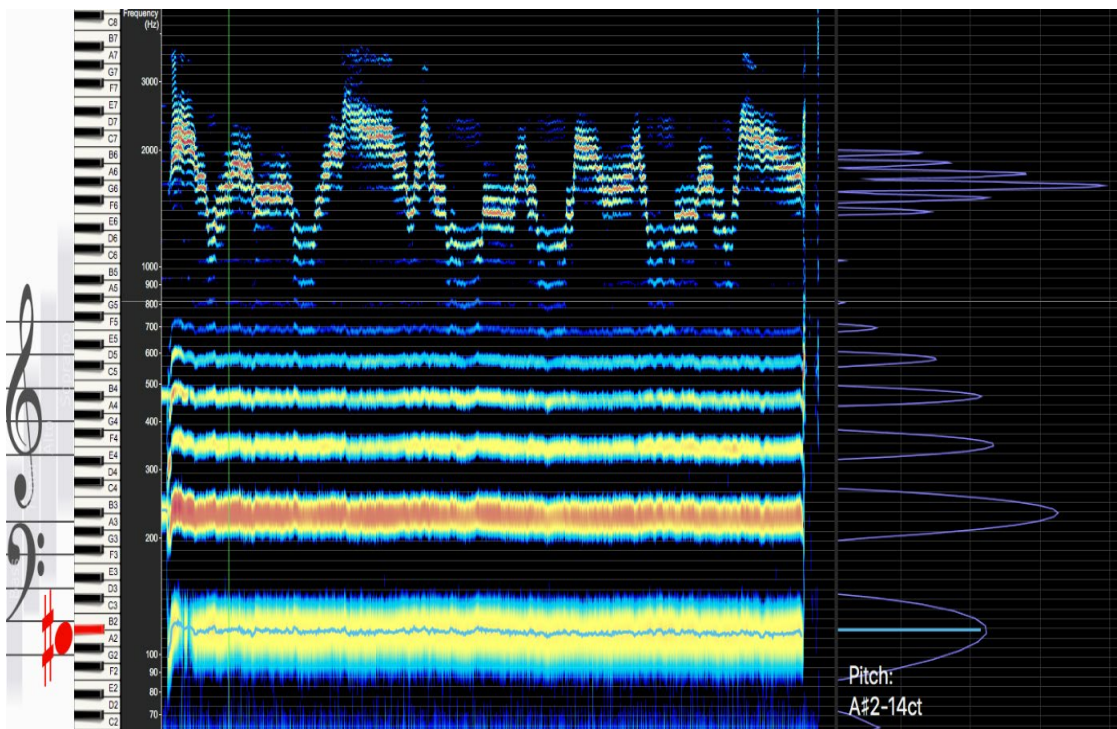
*“I Deny you, But Still Miss You”* was composed for the *New Music Ensemble* concert scheduled for the 25<sup>th</sup> of March 2022. This piece is divided into 4 sections: Introduction- “I deny you” section – “I still miss you” section - Ending (“Good-bye” section), (introduction bars 1-24; second section bars 25-76; third section bars 77-117; ending bars 118 to the end).

As a musical scenario, I planned to depict the process of my emotional changes after a breakup with my ex-girlfriend. These emotional changing states are portrayed with various timbral and textural changes in each section. At the time I planned this piece, I was not yet highly skilful at *khöömei*. Accordingly, I adopted my story as musical material, hoping to make up for my lack of *khöömei* skills by a personal, emotionally engaging approach in this music.

To optimise my vocal capabilities for this music, first I had to obtain feedback of my performance using extended vocal techniques such as vocal fry and drone-partials vocalisations. Accordingly, I analysed the harmonic spectrum of my performance recordings by the computer software *VoceVista Video*. I also planned that then the analytic information, such as the harmonic series, harmonic movements and the amplitude levels of each harmonic, would be used as inspiration for the instrumentation of each section. This approach and musical form design were influenced by Ken Ueno’s composing process for his piece *On a Sufficient Condition for the Existence of Most Specific Hypothesis* (2010).



Ex. 31a) Analyses of my vocal fry, *I Deny You, But Still Miss You* (2021):  
analysis shows a thicker layer of a spectrogram than *khöömei*'s



Ex. 31b) Analyses of my *khöömei*, *I Deny You, But Still Miss You* (2021)

Also, I introduced a degree of indeterminacy, which allows the performer to feel a certain freedom, in the notation of all vocal sections, in addition to using *ad-libitum* sections for the vocal part at various moments throughout the piece. One reason for this is that I wanted to



facilitate the comfort of the performer, allowing some interpretive flexibility with the special vocal techniques in company with timbre-centred listening. In the rehearsals and the concert performance, this notation cleared the way for focusing on sounds of harmonic spectrums and allowing smooth and natural improvisation.

9

The score for measure 27 is marked "Freely" and includes the following details:

- Fl. and Cl.:** Vibrato (vib.) markings. Dynamic markings: *p*, *mf*, *pp*. Time intervals: "9 to 10''", "4 to 5''", "4 to 5''".
- Hn.:** \*grace note: slowly, *fp*.
- B. D.:** i.v., \*grace note: slowly, *mf*, *f*, *mf*.
- Gong:** \*Scrape outside the edge T.B., *f*.
- Vocal Solo:** Vocal fry, *mf*, ad lib., u, \*Improvise overtones over the fundamental (when being breathless, cut and keep singing again).
- Vln.:** Freely, Norm., *pp*, \*play it wih random rhythms.
- Vc.:** Norm. → SP → Norm., SP, *p*, gliss.

Ex. 32) Graphic notation, m. 27, *I Deny You, But Still Miss You* (2021)

This indeterminacy also helped to create temporal rhythmic complexity and acoustic compactness in the instrument parts, as they are instructed to be played randomly, within limits. I referred to Lutoslawski's "aleatoric notation" because his method makes an excellent use of uncomplicated notational imagery, while setting up the potentiality to create rhythmic density (Paja 1990).

2<sup>me</sup> INTERMEDE

216 AD LIB.  
20"  
10 1/2 sec.

Ex. 33a) Lutosławski's aleatoric notation, *Livre pour orchestra* (1968)

Freely

31

3 to 4"

5 to 6"

2 to 3"

Fl.

Cl.

Hn.

B. D.

Gong

Vocal fry

tr. Solo

Vln.

Vc.

\*Interperse spaces in between randomly

\*Interperse spaces in between randomly

*f*

*fp*

*mf*

\*Scrape outside the edge:

T.B.

*f*

ad lib.

u

\*Improvise overtones over the fundamental (when being breathless, cut and keep singing again)

*pp* \*play it with random rhythms.

Norm. → SP → Norm.

SP

*p*

*pp*

Ex. 33b) My aleatoric notation, m. 31, *I Deny You, But Still Miss You* (2021)

As a transitional event between each section, namely measures 46 to 79 and 127 to the end, I placed a timbral leitmotif intended to be associated with a signal of my emotional change, from “denial” to “longing” and from “longing” to “resignation”.

**B**

46

Fl.  $\frac{5}{8}$  ( $\text{♩}=\text{♩}$ )  $\frac{3}{8}$   $\frac{5}{8}$   $\frac{3}{8}$   $\frac{4}{8}$   $\frac{3}{8}$   $\frac{4}{8}$

Cl. *pp* *mf* *pp* *mf* *pp* *mf*

Hn. *sfz* *pp* *pp* *mf* *pp* *mf* *pp*

B. D. *mf* *mf* *mf* *mf*

Gong

Bar. Solo Throat singing *mf* *mp* *mf* *mp*

*i*  $\rightarrow$  *o*  $\rightarrow$  *i*  $\rightarrow$  *o*

\*gradually & slowly changes the vowels, then the overtone movements make the glissando effects.

**B**

Vln. *p* *mp*

Vc. *pp* *mf*

Ex. 34) Leitmotif, mm. 46-53, *I Deny You, But Still Miss You* (2021)

On the concert stage, for the reason that it was my first vocal performance, the performance was not the best. Also, if I admit one misconfiguration in this work, this is in its use of vocal fry. I could briefly make this sound on a pitch, but I could not sustain it for very long. Inevitably, I had to substitute *khöömei* for vocal fry in the concert. Nonetheless, during the rehearsals and concert, I could surely enter into the ‘zone’ of the work’s inner harmonic world by listening to the instrument sounds combining with my performance, which led to timbre-centred listening. The use of a voice amplifier helped my listening, too.

One more achievement of this piece is that not only has my compositional style transformed from generalisation into performer-specific, but my position with *khöömei* also has transformed from a keen observer into an actual practitioner. This adaptation into a performer’s role has paved a way for an understanding of timbre-centred music and for discovering the way I should proceed as a composer, *khöömei* researcher and performer.

#### 4.8 *The Rime of the Ancient Mariner Part IV-I*

**for flute, French horn, tuba, piano, violin, violoncello, percussion, throat singer  
and baritone (2022)**

**performance time: 6 mins**

*The Rime of the Ancient Mariner Part IV-I* was composed for the *Contemporary Music Venture* concert *The Rime of the Ancient Mariner*, to commemorate the English poet Samuel Coleridge's 250th birth year, for which we chose his extended poem *Rime of the Ancient Mariner*. The unifying idea for a concert, which commissioned a large number of composers, was to have the entirety of the poem set to music. Composers were each assigned a portion of the poem by the committee. My portion is the first eight stanzas of Part IV. In the original poem, each regular stanza includes four lines, but I divided the sections based on the plot of the poem.

##### **First section (Wedding Guest's fear)**

'I fear thee, ancient Mariner!  
I fear thy skinny hand!  
And thou art long, and lank, and brown,  
As is the ribbed sea-sand.  
I fear thee and thy glittering eye,  
And thy skinny hand, so brown.'—

##### **Second section (Reply of the Ancient Mariner and resumption of his tale)**

<p>Fear not, fear not, thou Wedding-Guest! This body dropt not down. Alone, alone, all, all alone, Alone on a wide wide sea! And never a saint took pity on</p>	<p>My soul in agony The many men, so beautiful! And they all dead did lie: And a thousand thousand slimy things Lived on; and so did I.</p>
---	---

##### **Third section (Ancient Mariner's terror of death)**

I looked upon the rotting sea,  
And drew my eyes away;  
I looked upon the rotting deck,  
And there the dead men lay.

##### **Fourth section (Ancient Mariner's despair)**

<p>I closed my lids, and kept them close, And the balls like pulses beat; For the sky and the sea, and the sea and the sky Lay dead like a load on my weary eye,</p>	<p>And the dead were at my feet The cold sweat melted from their limbs, Nor rot nor reek did they: The look with which they looked on me Had never passed away.</p>
--	---

Ex. 35) Section division of *The Rime of the Ancient Mariner Part IV-I* (2022), a poem by Coleridge  
(1798)

Based on these section divisions, this piece is musically divided into four sections in the score: A-B-A'-B', with first bars 1-21; second bars 22-52; third section bars 53-72; last section bars 73 to the end. To help define these, I planned to create audibly contrasting harmonies above the fundamental tone Bb2 between the preceding and next sections: based on stories of the poem texts.

The first section adopts a textually-based theatrical presentation, while the following section takes a distinctly timbral approach to sounds with my drone-partials vocalisations, regenerating the overtone spectrums of my vocal sounds in the instrumentation. The following, third and fourth sections take this succession once again, even if the fourth section contains more harmonic density in inharmonicity compared to the second, and the drone-partials vocal technique merely gives timbral support for other instrumentalists. I adopted this form of design by referring again to Valentina Süzükei's suggestion of musical "hybrid forms", a form arrangement of timbre-centred to pitch-centred or vice versa (Levin with Süzükei 2006, 56-57).

The musical score for Ex. 36 shows the primary sonority for the first and third sections (mm. 4-5) of *The Rime of the Ancient Mariner*, Part IV-I (2022). The score is written for a full orchestra and includes the following parts:

- Fl. (Flute):** Marked with a red **B** and *bisbigl.* (pizzicato). Dynamics include *ff* and *pp*.
- Hn. (Horn):** Dynamics include *ff* and *pp*.
- Tba. (Trombone):** Dynamics include *fp* and *sf*.
- Gong:** Marked with "Padded soft mallet = S.M." and *f*.
- Pno. (Piano):** Marked with a red **Bb**. Dynamics include *ff*, *mf*, and *sf*.
- Vln. I (Violin I):** Marked with *nat.* (natural). Dynamics include *ff* and *pp*.
- Vc. (Viola):** Marked with a red **F**. Dynamics include *ff* and *pp*.

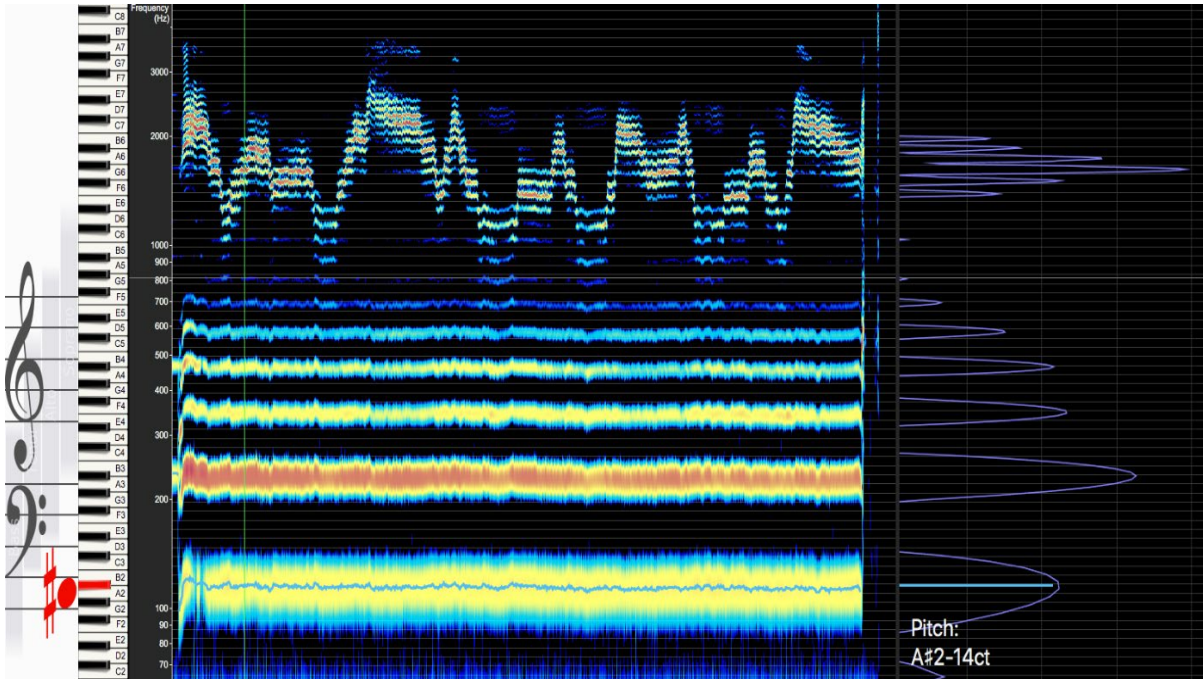
The score is in 3/4 time and features a key signature of one flat (Bb). The first section (mm. 4-5) is marked with *ff* and the second section (mm. 6-7) is marked with *pp*. The Flute part is marked with *bisbigl.* (pizzicato) and the Piano part is marked with *mf* and *sf*.

Ex. 36) Primary sonority for the first and third sections, mm. 4-5, *The Rime of the Ancient Mariner*  
Part IV-I (2022)

In the sketch for the first and third sections, I devised a central chord, Bb-F-B. This chord dominates throughout sections one and three (Example 36). Along with a homophonic accompaniment closely based on this, I instructed the baritone singer to sing with a dread-filled spoken, or sometimes whispered, voice—rhythmically improvising, as an actor, in the given time of each bar (Example 37). This is to purposefully create exuberantly dramatic scenes where either the wedding guest or the ancient mariner are gripped with fear.

Ex. 37) Theatrical setting, mm. 6-9, *The Rime of the Ancient Mariner Part IV-I* (2022)

In the timbrally-driven sections, I planned the ensemble sounds to match with baritone, and with drone-partials vocal techniques to create a grainy palette of shifting colour, atmosphere and close harmonies. I adopted the harmonic spectrum over a fundamental pitch of my *khöömei* as the main harmonic material of these timbre-approaching sections. A most important consideration was that Bb2 is the lowest pitch I can perform with *khöömei*.



Ex. 38) Harmonic spectrum analysis of my *khöömei*, *The Rime of the Ancient Mariner Part IV-I* (2022)

I also concentrated acoustically on conveying the scene elements, such as actions, dialogue, emotions and place, within each section or line of the poem. For example, to represent the sections for a wedding guest and an ancient mariner's fear, I set a wide dynamic scope, ranging from *fff* to *pp*, while producing the dissonance, Bb and B, between French horn and tuba. In the piano part of the second section, I used *glissando* on the string with a credit card, to imitate the movement of sea waves. Furthermore, as sound effects, I depict text lines by using tone painting with extended instrumental techniques. For example, I used the *key clicks* technique in the flute part to describe the line "And the balls like pulses beat;"

\**fff* = as loudest as possible      bisbigl.

Ex. 39a) Wide dynamic range, mm 4-5, *The Rime of the Ancient Mariner Part IV-I* (2022)

Pno.

gliss on the strings with a credit card

*p* *gliss.* *p* *gliss.*

Ex. 39b) *Glissando* on the string of piano, mm 21-24, *The Rime of the Ancient Mariner Part IV-I* (2022)

75

\*key clicks

*mf* *f*

*ppp* *pp*

*ppp* *pp*

Bowed

*p*

*p* *gliss.* *f*

Bar. and the balls like pulses beat;

Ex. 39c) Use of key clicks in flute, mm 75-76, *The Rime of the Ancient Mariner Part IV-I* (2022)

In the concert, I did not set up a vocal amplifier because I intended my drone-partial vocal part to support the main singer and other instruments. However, in the stage arrangement of instruments, for the entire suite of pieces, I ended up having to perform next the tuba. Unfortunately, my vocal sounds were drowned out by the intensity of the tuba sound. In any case, a voice amplifier should be demanded for the *khöömei* part in a live concert.



#### 4.9 *Where Mountain Sings*

**for alto flute, violoncello, throat singer and soundscape (2022)**

**:performance time: 2:30 mins**

*Where Mountain Sings* was composed for the UoB student concert “*DISTANCE THROUGH TIME*” which was a Fringe event of the *Bristol New Music* festival in 2002. For this concert, I wanted to compose a new piece with a different approach utilising soundscape technique. Because I did not have experience with soundscape composition, I asked a soundscape composer, Ainolnaim Azizol do a collaboration work.

The main inspirations for this piece come from Tuvan musicians’ mimesis of specific natural sounds. I drew up a schematic, in which the scenery of the Southern Siberia mountains *Sayan* was embodied by *khöömei*, alto flute, cello, and soundscape in the work’s stage plan. I have not been to the mountains, but the scenery in pictures of it impressed me. The sounds of traditional Tuvan and Mongolian instruments, *igil* and *tsuur*, are emulated by the cello and alto flute in the piece. I also planned that spatial distinctions between the bottom of the mountain and its summit would be distinctly heard as the music went on.



Ex. 40) *Sayan* mountain ranges (Sekretenko 2004)

In the beginning, for the structure of the soundscape, I gave a timeline of the entrance and exit of mainly natural sound sources for the soundscape maker Azizol.

**First section (at the bottom of the mountain)**

0'00-0'55; soundscape mountain breeze wind fade in and go.

0'05-0'55; soundscape rustling sounds by plants fade in and go.

0'10-2'17; cello in

0'18-0'42; Alto flute solo(reverb effect).

0'20-0'40; soundscape bird sounds fade in and out (in the meantime, rustling sounds are softer).

0'40-0'56; Pre-recorded low Throat singing solo (doubling with octave down voice sounds) in and out.

0'55-1'15; soundscape mountain breeze wind- fade out

0'55-1'15; soundscape rustling sounds by plants- fade out

**Second section (at the summit of the mountain)**

1'15-2'00; soundscape at the peak mountain strong wind fade in and go.

1'17-1'50; Alto flute solo with “Sing and Play” (reverb effect)

1'48-2'05; Pre-recorded low Throat singing solo (doubling with the octave down voice sounds) fade in and out.

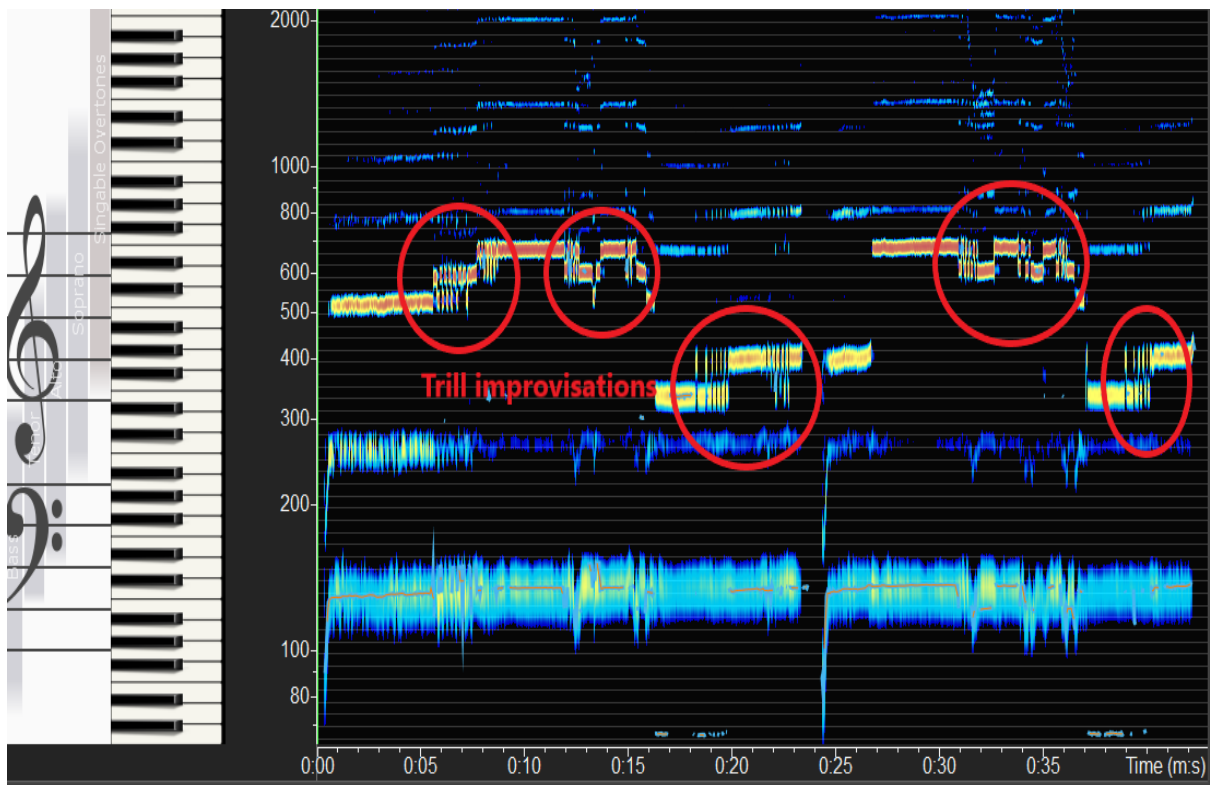
1'50-2:05; throat singing solo (in live – reverb effects)

2:17: cello out

2'03-2:20; soundscape at the peak mountain strong wind-fade out.

When the soundscape part was completed, we had a recording of my voice combined with the soundscape. I had two reasons for this recording. The first reason is I am not able to perform *kargyraa* style. The second reason is I wanted to create the rich echo effect of the side of the mountains throughout the piece. In the second section, I perform *khöömei* live, doubling this recording.

After the soundscape and vocal recording sessions, I mapped out a whole composition plan with other instruments and my live performance. I projected the flute to act as the Mongolian flute *tsuur*, while the cello acts as the Tuvan string instrument *igil*. To help materialise this, I analysed the sound spectrums of performance recordings of *tsuur* and *igil* with a spectral analyser. Then I collected the data such as the available scales of both instruments, figural timbral changes by the instrumental techniques and the sound spectrums. This became the framework for the instrumentation of this piece.

Ex. 41a) Spectrogram of *tsuur*

*Tsuur* is played by a buzzing vocal drone and the overtone melodies can be selected by fingering the instrument in the same manner as *khöömei* (Pegg 1991): on this spectrogram, the drone is at the pitch C3 and the pitch class is at E4, G4, C5, D5 and E5.

Taek-Kyu Lee  
2022

10.0"  
3.1  
Hit 03

Pitch selection for trills & embellishments

Alto Flute

Violoncello

\*Harmonic tremolos sul pont. → over the fingerboard (gradually moving from the bridge up to near the left finger, then reverse back) → sul pont. nat.

\*Sing & Play (flute: upper & voice: lower)

pp < p < pp < p >

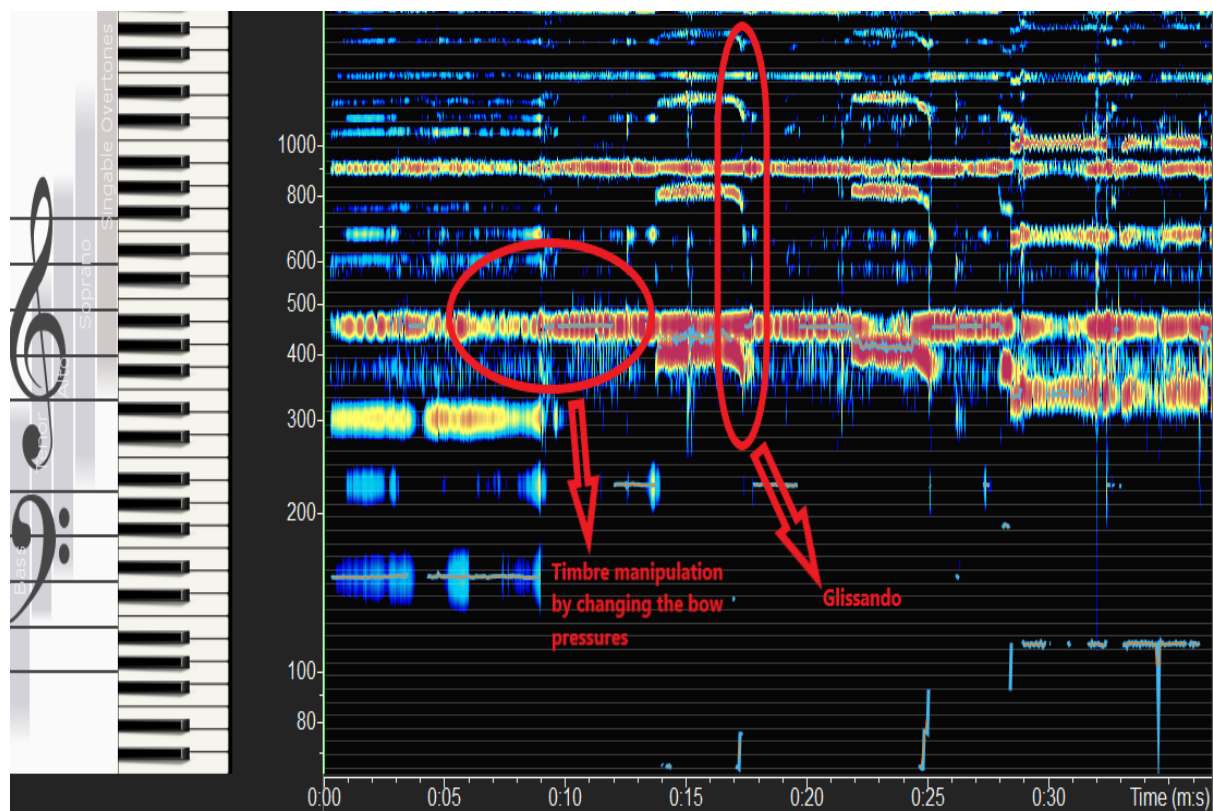
Improvise on adding trills and embellishments based on the given melody lines.

Ex. 41b) A pitch class for ornamental improvisation in flute, mm. 1-4, *Where Mountain Sings* (2022)

For the flute part, I asked the flute player Rowena Marshall to improvise trills and grace notes in the “sing and play” technique to achieve the sonic quality and sheer improvisation of real *tsuur* performance. Also, for her improvisation of grace notes, I provided a pitch set in which she can freely select pitches for musical ornamentation. At the same time, I afforded her examples of *tsuur* performances, as she herself requested.

After showing her the flute part, we discussed practical matters regarding the “sing and play” technique; namely, adding breathing points and breathy tones for the singing part of the technique. I also asked her to add the breathy tones *ad libitum*. As a result, I could complete the flute score in the best way.

For the cello part, I applied not only the main scale and harmonics of *igil*, playing two strings at the same time and changing pitches on the higher-pitched string, but also timbral changes *vis á vis* positioning the bow in different regions on the strings, and by *glissandi*. Therefore, I often changed the bowing position, *sul ponticello* – natural sound – *sul tasto*, when changing the bowing direction, in addition to adding frequent *glissandi* on the higher-pitched string.



Ex. 42) Spectrogram of *igil*

A. Fl. *p* \*breathing

Vc. *mp* *mf* *mp* sul pont. sul tasto nat. sul pont. nat.

Ex. 43a) Timbral changes with bowing position in cello, mm. 12-13, *Where Mountain sings* (2022)

A. Fl. *mp* *sfz* \*breathing

Vc. *mp* *mf* *p* *f* nat. gliss. gliss. sul pont.

Ex. 43b) Timbral changes with *glissandi* in cello, mm. 22-23, *Where Mountain sings* (2022)

For the live singing part, I simply gave time for my vocal part, and so improvised based on my intuition to listening to the overall sound of instruments and soundscape.

A. Fl. 1'50.0" 28.1 Throat singing in \*breathing *p* *f* *pp* bisbig.

Vc. Throat singing in sul pont. *f* *mf* vib. no vib.

A. Fl. 2'05.0" 31.1 Throat singing out *f* *pp* bisbig.

Vc. sul pont. nat. Throat singing out \*Harmonic glissando *f* *mf* *f* *p* *pp*

Ex. 44) Entrance and exit of *khöömei*, mm. 28-33, *Where Mountain sings* (2022)

I was satisfied with this performance because I managed to achieve a sound close to Tuvan music as I had intended in the plan of this work. Also, I was able to find future direction through this composition. By applying soundscape with *khöömei*, I expect that a new type of art can be achieved. Hence, I am taking a course to prepare for future soundscape works with *khöömei*.

## Conclusion

Based on my research on Tuvan and Mongolian vocal techniques, I have focused on composing timbre-based music experimenting with *khöömei* within a variety of musical concepts. This musical aim has been influenced by Tuvan listening in which Tuvan musicians perceive a whole sonority created by the richly-sounding drone source of the performance. With this listening orientation, *khöömei* musicians improvise their harmonic melodies along with other instruments. Tuvan musicologist Valentina Süzükei refers to this as “timbre-centred listening”. Largely based on this musical concept and re-orientation, I have put efforts into presenting the inner sound world of *khöömei*’s harmonic spectrum through instrumental and vocal ensembles in two ways: recreating the sound of the overtone spectrum with Western classical instruments, and by extracting the pristine sonority by vocalisation and sound settings.

Ethnomusicological resources and approaches should be accompanied to gain a deep understanding of *khöömei*, especially for pitch-centred composers. Concerning the research methodology, I have exemplified two research approaches to *khöömei*: Aksenov’s essentially etic and Levin and Süzükei’s essentially blending of emic and etic approach. In the final analysis, I have concluded that both methods of approach should have a stake in the comprehension of *khöömei*, but the emic approach should be prioritised. Ultimately, combining these opposing perspectives will not only lead to multifaceted understandings of drone-partials music in music research, but also present potential for subduing cultural appropriation in cross-cultural music making.

The importance of *khöömei* is in its variety of personalised performance styles. This attribute can clearly be verified by simply careful listening and analysing with spectral analysis. Since I became a *khöömei* performer for my own works, I have worked on infusing the attribute into my compositions by personalising each harmonic spectrum of my own drone-partials vocal techniques through vocal analyses. Besides, for my concert performance, I have learned and improved upon special *khöömei* techniques fitting my voice. These practices have led my music to both be vocal-specific, and also seek for the best harmonisation and timbral integration with European instruments.

Tuvan musicians’ perspective regarding time is also contemplated in this commentary. *Khöömei* performers prefer to focus on listening and then improvise on their intuition without considering measured time, mostly in contrast to Western musicians. To help offset the differences between Western and Tuvan music in this area, I have adopted graphic notation which provides the performer and instrumentalists with time flexibility and freedom. But in a case when my music needs to be realised in exact time, I still now allow enough time to execute polished *khöömei* improvisation.

Two compositional models, David Hykes and Ken Ueno, have especially inspired me in various aspects. Based on David Hykes's approach, the extraction of sheer resonant sound by sound settings, the creation of harmonic density by coinciding different sources of sonority and the act of listening have been prioritised in my choir works. Ken Ueno's throat-singing music has technically given pragmatic reference points to regenerate the acoustic features of *khöömei* in European-style contemporary classical music. Furthermore, the conversation with him marked a turning point to take *khöömei* aesthetically from a much wider perspective.

Being a *khöömei* performer myself has significantly influenced taking more practical approaches in my compositions. Whilst I was concerned more with overtone melodies before I became a *khöömei* performer, after becoming a performer I concentrate more on the drone sound and improvisational freedom. This has resulted in me applying *ad libitums* for the notation of the *khöömei* more often, rather than notating for arrays of specific vowels or drawing overtone contours. Most importantly, this unconstrained setting has guided me to have timbre-centred listening assisting my partial improvisation.

Lastly, I am certain that there is a need for more practical experimentation with Tuvan and Mongolian drone-partial music. I still believe that my output is limited because my *khöömei* skill is inadequate for concert performance, as well as the lack of opportunities to work with professional *khöömei* musicians. For this reason, until now I have relied on a small number of *khöömei* recordings. If given a chance, I would like to do fieldwork in Tuva or Western Mongolia. Additionally, through my last work *Where Mountain Sings*, I have discovered the new musical potentiality of soundscape application with *khöömei*. Hence, my future aim is to experiment with soundscape works: recording nature sounds and practising them with *khöömei*. Of course, I am in the preparation stage.



## **Recordings of Compositions**

*Gasiri*

*(Opening, Rehearsal Mark D and F)*

*Through the Throat!*

*I Deny You, But Still Miss You*

*The Rime of the Ancient Mariner Part IV-I*

*Where Mountain Sings*

*(Soundscape and Concert Recording)*

## Index of Examples

Ex. 1) Nattiez’s transcription of an Inuit vocal game motif.....	3
Ex. 2) Aksenov’s transcriptions of <i>khöömei</i> styles.....	4
Ex. 3) Map of Inner Asia.....	11
Ex. 4) Spectrogram: A Tuvan tune <i>Artii-sayir</i> in <i>kargyraa</i> style.....	15
Ex. 5) Spectrogram: <i>Khöömei</i> style.....	16
Ex. 6) X-ray: Tongue movements in <i>khöömei</i> and <i>sygyt</i> styles.....	17
Ex. 7) Spectrogram: A Tuvan tune <i>Alash Khem</i> in <i>sygyt</i> style.....	19
Ex. 8) Spectrogram: <i>Borbangnadyr</i> style .....	21
Ex. 9) Overtone pitch class of <i>khöömei</i> and <i>khöömii</i> .....	22
Ex. 10a) Spectrogram: Mergen Mongush’s performance <i>Alash Khem</i> in <i>sygyt</i> style.....	24
Ex. 10b) Spectrogram: Kongar-ool Ondar’s performance <i>Alash Khem</i> in <i>sygyt</i> style.....	24
Ex. 11) Form design of <i>On a Sufficient Condition for the Existence of Most hypothesis</i> .....	30
Ex. 12a) Spectrogram: My drone-partials vocalisation 1.....	31
Ex. 12b) Spectrogram: My drone-partials vocalisation 2 .....	31
Ex. 13a) Stockhausen’s demands, <i>Stimmung</i> .....	33
Ex. 13b) Notation of <i>Stimmung</i> .....	34
Ex. 14) My notation for drone-partials vocal part, <i>Partials</i> .....	35
Ex. 15a) Toru Takemitsu’s graphic notation.....	35
Ex. 15b) My graphic notation, <i>Partials</i> .....	36
Ex. 16) Etude No.1, <i>In C</i> .....	37
Ex. 17) Harmonic destination of the first section, <i>Halleluyah</i> .....	39
Ex. 18a) Imitation of Jew’s harp in violin and air sounds in woodwinds, <i>Gasiri</i> .....	42
Ex. 18b) Shaking voice, mm. 12-13, <i>Gasiri</i> .....	42
Ex. 19a) Overtone series of A2.....	43
Ex. 19b) Transition to Inharmonicity, <i>Gasiri</i> (2019).....	43
Ex. 20a) Main texture of the second section, <i>Gasiri</i> .....	44
Ex. 20b) Main texture of the third section, <i>Gasiri</i> .....	44
Ex. 21) Use of IPA vowels for drone-partials vocal technique, <i>Let there be Light</i> .....	46
Ex. 22) Main harmonic sequence of the first section, <i>Let there be Light</i> .....	47
Ex. 23) Opening of <i>Three Voices</i> (1982), Morton Feldman.....	47
Ex. 24a) Use of a vowel “Woo” with <i>glissando</i> , <i>Slow Roller Coasters</i> .....	50
Ex. 24b) Use of a vowel “Oh” with <i>glissando</i> , <i>Slow Roller Coasters</i> .....	50
Ex. 25) Timbral supports given by wah-wah effect on the trombone, <i>Slow Roller Coasters</i> .....	51
Ex. 26) Use of a vowel “Yi” with <i>glissando</i> , <i>Slow Roller Coasters</i> .....	52
Ex. 27) Pitch reference points for the singer, <i>Slow Roller Coasters</i> .....	52

Ex. 28a) Inuit vocal game <i>katajjaq</i> , <i>Through the Throat!</i> .....	54
Ex. 28b) Drone-partials vocal technique in Stockhausen’s <i>Stimmung</i> , <i>Through the Throat!</i> .....	54
Ex. 28c) Vocal fry, <i>Through the Throat!</i> .....	54
Ex. 28d) <i>Khöömei</i> , m. 20, <i>Through the Throat!</i> (2020).....	55
Ex. 29a) Beaudry’s suggestions on Inuit vocal game transcription.....	55
Ex. 29b) A transcription of <i>Katajjaq</i> .....	55
Ex. 29c) My notation with Inuit vocal game, <i>Through the Throat!</i> .....	56
Ex. 30a) “ <i>lol</i> ” syllable addition in drone-partials vocal technique, <i>Through the Throat!</i> .....	57
Ex. 30b) Wah-wah effect in vocal fry, <i>Through the Throat!</i> .....	57
Ex. 30c) Dissimilar vocal sounds with exhalation and inhalation of vocal fry, <i>Through the Throat!</i> .....	57
Ex. 31a) Analyses of my vocal fry singing, <i>I Deny You, But Still Miss You</i> .....	59
Ex. 31b) Analyses of my <i>khöömei</i> , <i>I Deny You, But Still Miss You</i> .....	59
Ex. 32) Graphic notation, m. 27, <i>I Deny You, But Still Miss You</i> .....	60
Ex. 33a) Lutosławski’s aleatoric notation, <i>Livre pour orchestra</i> .....	61
Ex. 33b) My aleatoric notation, <i>I Deny You, But Still Miss You</i> .....	61
Ex. 34) Leitmotif, <i>I Deny You, But Still Miss You</i> .....	62
Ex. 35) Section division of <i>The Rime of the Ancient Mariner Part IV-I</i> .....	63
Ex. 36) Primary sonority for the first and third sections, <i>The Rime of the Ancient Mariner Part IV-I</i> .....	64
Ex. 37) Theatrical setting, <i>The Rime of the Ancient Mariner Part IV-I</i> .....	65
Ex. 38) Harmonic spectrum analysis of my <i>khöömei</i> , <i>The Rime of the Ancient Mariner Part IV-I</i> .....	66
Ex. 39a) Wide dynamic range, <i>The Rime of the Ancient Mariner Part IV-I</i> .....	66
Ex. 39b) <i>Glissando</i> on the string of piano, <i>The Rime of the Ancient Mariner Part IV-I</i> .....	67
Ex. 39c) Use of key clicks in flute, <i>The Rime of the Ancient Mariner Part IV-I</i> .....	67
Ex. 40) <i>Sayan</i> mountain ranges.....	68
Ex. 41a) Spectrogram of <i>tsuur</i> .....	70
Ex. 41b) A pitch class for ornamental improvisation in flute, <i>Where Mountain sings</i> .....	70
Ex. 42) Spectrogram of <i>igil</i> .....	71
Ex. 43a) Timbral changes with bowing position in cello, <i>Where Mountain sings</i> .....	72
Ex. 43b) Timbral changes with <i>glissandi</i> in cello, <i>Where Mountain sings</i> .....	72
Ex. 44) Entrance and exit of <i>khöömei</i> , <i>Where Mountain sings</i> .....	72

## Bibliography

### Books and Articles

- Aksenov, A. N. "Tuvín Folk Music." *Asian Music* 4, no. 2 (1973): 7–18.  
<https://doi.org/10.2307/833827>.
- Anderson, Julian. "Spectral Music." *The New Grove Dictionary of Music and Musicians*, second edition, edited by Stanley Sadie and John Tyrrell. London: Macmillan, 2001.
- Anokhin, Andrei. V. "Narodnaya muzyka tyurkov i mongolov. (Folk music of the Turks and Mongols)", ed. I. I. Belekov. Gorno-Altai. RU: Ministry of Culture and Film of the Republic of Altai, 2005.
- Antokoletz, Elliott. "Béla Bartók: A Research and Information Guide (Routledge Music Bibliographies)." Routledge; 2nd edition, 2011.
- Bausinger, Herman. "Folklorismus" In K. Ranke et al., ad., *Enzyklopedie des Marchens* 4, (1984): 1405-10. Berlin: Walter de Gruyter.
- Behrs, Robert O. "Gifts of the *Sygytchy*-Sons: Tethering Melodies to Land, Kin, and Life Energy at the *Khöömei Ovaa*, Tyva Republic." *Asian Music* 52, no. 2 (2021): 72-107.  
 doi:10.1353/amu.2021.0015.
- Beaudry, Nicole. "Toward Transcription and Analysis of Inuit Throat-Games: Macro-Structure." *Ethnomusicology* 22, no. 2 (May 1987): 261-273. <https://www.jstor.org/stable/851490>.  
<https://www.jstor.org/stable/851490>.
- Bellmer, Elizabeth H. "The statesman and the ophthalmologist: Gladstone and Magnus on the evolution of human colour vision, one small episode of the nineteenth-century Darwinian debate." *Annals of science* vol. 56,1 (1999): 25-45. DOI: 10.1080/000337999296517.
- Bernard, Jonathan W. "Voice Leading as a Spatial Function in the Music of Ligeti." *Music Analysis* 13, no. 2/3 (1994): 227–53. <https://doi.org/10.2307/854260>.
- Bloothoof, G. Bringmann., Bringmann, Eldrid Van Cappellen, Marieke Van Luipen, Jolanda B. Thomassen and Koen P. "Acoustics and perception of overtone singing". *Journal of the Acoustical Society of America* 92, no.4, pt.1 (1992): 1827–1836. <https://doi.org/10.1121/1.403839>.
- Bohlman, Philip V. "Traditional Music and Cultural Identity: Persistent Paradigm in the History of Ethnomusicology." *Yearbook for Traditional Music* 20 (1988): 26–42.  
<https://doi.org/10.2307/768164>.
- Born, Georgina. and David Hesmondhalgh, eds. "Western Music and Its Others: Difference, Representation, and Appropriation in Music". University of California Press, 2000.

- Burt, Warren., Linda Vickerman and Richard Jennings. "Index to a Recorded Lexicon of Extended Vocal Techniques." University of California at San Diego, 1974.
- Coleridge, Samuel Taylor. "The Rime of the Ancient Mariner". Dover Publications; 1st edition, 1992.
- Cosi, Piero. and Graziano Tisato. "ON THE MAGIC OF OVERTONE SINGING". ResearchGate (2014).  
[https://www.researchgate.net/publication/228780318\\_ON\\_THE\\_MAGIC\\_OF\\_OVERTONE\\_SINGING](https://www.researchgate.net/publication/228780318_ON_THE_MAGIC_OF_OVERTONE_SINGING).
- Colwell, Andrew. "Propriety, Property, and Heritage in the Performance of Mongol *Khöömii*." *Asian Music* 52, no. 2 (2021): 46-71. doi:10.1353/amu.2021.0014.
- Curtet, Johanni. "Khöömii, World Lists, and the Question of Representation." *Asian Music* 52, no. 2 (2021): 108-138. doi:10.1353/amu.2021.0016.
- D'Evelyn, Charlotte. "Khöömii, Chooryn Duu, and Dissonant Heritage in Inner Mongolia, China." *Asian Music* 52, no. 2 (2021): 139-169. doi:10.1353/amu.2021.0017.
- Dorson, Richard M. "Introduction: The Concepts of Folklore and Folklife Studies." In *Folklore and Folklife: An Introduction*, ed. Richard M. Dorson, 1-50. Chicago: University of Chicago Press, 1972.
- Fales, Cornelia. "The Paradox of Timbre." *Ethnomusicology* 46, no. 1 (2002): 56–95.  
<https://doi.org/10.2307/852808>.
- Friedman, Howard S., and Miriam W. Schustack. "Personality: Classic Theories and Modern Research." 5th Ed., [International Ed.]. ed. Upper Saddle River, N.J.; Harlow: Pearson Education, 2012.
- Gawronski, Bertram. "Six Lessons for a Cogent Science of Implicit Bias and Its Criticism." *Perspectives on Psychological Science* 14, no. 4 (July 2019): 574–95.  
<https://doi.org/10.1177/1745691619826015>.
- Gusev, V. E., "Fol'klor v sisteme sovremennoi kul'tury slavianskikh narodov." In: *Istoriia kul'tura etnografii i fol'klor slavianskikh narodov*. Edited by V.A. D'iakov. Moskva: Nauka, (1978): 283-98.
- Headland, Thomas., Kenneth L. Pike and Marvin Harris. "Emics and Etics: The Insider/Outsider Debate." *The Journal of American Folklore* 105, no. 418 (1990). DOI:10.2307/541632.
- Hervouet, Ronan. and Kurilo Alexandre. "The Heritage of Soviet Paternalism in the Belarusian Countryside: The Moralization and Folklorization of the Social World." *Mir Rossii* 25, no 4 (2016): 30–51. <https://mirros.hse.ru/article/view/4885/5249>.
- Irlandini, L. Antonio. "An introduction to the poetics of sacred sound in twentieth-century music." *Revista Vórtex*, Curitiba, no. 2 (2013): 65-86. <http://vortex.unespar.edu.br/>.
- Jiménez-Tovar, Soledad and Martin Lavička. "Folklorized politics: how Chinese soft power works in Central Asia." *Asian Ethnicity* 21 (2019): 244 - 268. doi:10.1080/14631369.2019.1610355.

- Kendirbaeva, Gulnar. "Folklore and Folklorism in Kazakhstan." *Asian Folklore Studies* 53, no. 1 (1994): 97–123. <https://doi.org/10.2307/1178561>.
- Kim, Jin-hee., "Gasiri and the Tradition of Korean Classical Poetry." *Yeol-sang Journal of Classical Studies* 44, (2015): 203-236. <https://www.earticle.net/Article/A245100>.
- Kim, Soo-Kyung. "A Study of Unsuk Chin's Piano Etudes." University of Georgia, 2012. [http://getd.libs.uga.edu/pdfs/kim\\_soo\\_k\\_201205\\_dma.pdf](http://getd.libs.uga.edu/pdfs/kim_soo_k_201205_dma.pdf).
- Kottak, Conrad. *Mirror for Humanity*, New York: McGraw Hill, 2006.
- Kyrgys, Zoya K. "Tuvan Throat Singing: Ethnomusicological Investigation." Trans. K. Khlynov. Kyzyl, RU: International Scientific Centre Khöomei, 2008.
- Lamazhaa, Chimiza K. and Valentina Y. Süzükei. "Tuvan Throat Singing As Intangible Cultural Heritage and As Tuva's Cultural Brand." *The New Research of Tuva*, no. 2 (2019):72-83. <https://doi.org/10.25178/nit.2019.2.6>.
- Lau, Lach. and Juan Sebastián. "Harmonic duality: from interval ratios and pitch distance to spectra and sensory dissonance." PhD diss., (University of Leiden, 2012).
- Levin, Theodore C. with Valentina Süzükei. "Where Rivers and Mountains Sing: Sound, Music, and Nomadism in Tuva and Beyond." Indiana University Press, 2006.
- Levin, Theodore C., and Michael E. Edgerton, "THE THROAT SINGERS OF TUVA." *Scientific American* 281, no.3 (1999): 80-87. DOI: 10.1038/scientificamerican0999-80.
- Lewry, Fraser. "10 songs that inspired The Hu." Loudersound. last updated December 05, 2019. <https://www.loudersound.com/features/10-songs-that-inspired-the-hu>.
- Matrenitsky, Vladislav. and Harris L. Friedman. "Transpersonal effects of exposure to shamanic use of Khoomei (Tuvan throat singing): Preliminary evaluations from training seminars. [Research note]" *International Journal of Transpersonal Studies* 31, no.2 (2012): 111–117. DOI:10.24972/ijts.2012.31.2.111.
- Massey, Alexander., "Vowel sounds and mouth positions." Oxford singing lessons, 2019. <https://www.oxfordsingingleasons.so.uk/entered-sounds-and-mutn-positions/>.
- McLeod, Norma., and Marcia. Herndon. "The Ethnography of Musical Performance." Norwood, Pa: Norwood Editions, 1980.
- Mercurio, Paolo. "Introduzione alla musica sarda: de musica sardiniae, praefatio Ethnomusica & istruzione." Narcissus, 2013.
- Merriam, Alan P. "The Anthropology of Music." Northwestern University Press, 1964.
- Myers, Helen. "Ethnomusicology: Historical and Regional Studies." Norton & Company, Incorporated, W. W., 1992.
- Morris, Michael W., Kwok Leung, Daniel Ames and Brian Lickel. "Views from inside and outside: Integrating Emic and Etic Insights about Culture and Justice Judgment." *The Academy of Management Review* 24, no. 4 (1999): 781-796. <https://doi.org/10.2307/259354>.

- Moser, Hans. "Vom Folklorismus in unserer Zeit." In *Zeitschrift für Volkskunde* 58, (1962): 177- 209.  
[https://is.muni.cz/el/1421/jaro2004/ETBA04/8969/Moser\\_Folklorismus.pdf](https://is.muni.cz/el/1421/jaro2004/ETBA04/8969/Moser_Folklorismus.pdf).
- Murail, Tristan. "Scelsi and L'itinéraire: The Exploration of Sound." *Contemporary Music Review* 24, no. 2–3 (2005): 181–185. doi:10.1080/07494460500154830.
- Murail, Tristan. "Spectra and Sprites." *Contemporary Music Review* 24, nos. 2-3 (2005): 137-147, doi: 10.1080/07494460500154806.
- Nandlall, Lav. "Mongolian Metal Sensation The HU Discuss Their Musical Influences, Debut Album 'The Gereg' and Throat-Singing." V13, 2019.  
<https://v13.net/2019/04/mongolian-metal-sensation-the-hu-discuss-their-musical-influences-debut-album-the-gereg-and-throat-singing/>.
- Nattiez, Jean-Jacques. "The Rekkukara of the Ainu (Japan) and the Katajjaq of the Inuit (Canada): A Comparison." *The World of Music* 25, no. 2 (1983): 33–44.  
<http://www.jstor.org/stable/43560906>.
- Nattiez, Jean-Jacques. "Some Aspects of Inuit Vocal Games." *Ethnomusicology* 27, no. 3 (1983): 457–75. <https://doi.org/10.2307/850655>.
- Nattiez, Jean-Jacques. "Inuit Throat-Games and Siberian Throat Singing: A Comparative, Historical, and Semiological Approach." *Ethnomusicology* 43, no. 3 (1999): 399–418.  
 doi:10.2307/852555.
- Nelson, David T. "Béla Bartók: The Father of Ethnomusicology."  
*Musical Offerings* 3, no. 2 (2012), Article 2. doi: 10.15385/jmo.2012.3.2.2.
- Nettl, Bruno. "The Study of Ethnomusicology: Thirty-one Issues and Concepts. (2nd ed.)" Urbana; Chicago: University of Illinois Press, 2005.
- Nettl, Bruno. "The Study of Ethnomusicology: Thirty-Three Discussions."  
 University of Illinois Press, 2015. <http://www.jstor.org/stable/10.5406/j.ctt1hj9xkf>.
- Oberai, Himani and Ila Mehrotra Anand. "Unconscious bias: thinking without thinking." *Human Resource Management International Digest* (2018): 14-17.  
 doi:10.1108/HRMID-05-2018-0102.
- O'Callaghan, James. "Spectral Music and the Appeal to Nature." *Twentieth-Century Music* 15, no. 1 (2018): 57–73. doi:10.1017/S1478572218000063.
- Organista, Pamela B. "ACCULTURATION." In *Encyclopedia of Multicultural Psychology*. ed. Yo Jackson, 6-7. Thousand Oaks, CA: SAGE Publications, Inc., 2006.  
<https://doi.org/10.4135/9781412952668>.
- Oshchepkova, Anna I. and Vinokurova, Antonina A. "The Problem of Folklorism in Russian and National Literatures of the Early 20th Century." *Journal of Siberian Federal University. Humanities & Social Sciences* 4 (2018): 596-601.  
<https://pdfs.semanticscholar.org/4026/9759d767dc885f0472c1183ccce90bfc36c4.pdf>.
- Paja, Jadwiga. "The Polyphonic Aspect of Lutosławski's Music." *Acta Musicologica* 62, no. 2/3 (1990): 183–91. <https://doi.org/10.2307/932632>.
- Pereira, Contzen. "Frequencies of the Buddhist Meditative Chant – Om Mani Padme Hum."

- International Journal of Science and Research (IJSR)* 5, no.4 (2016): 761-766.  
<https://www.ijsr.net/archive/v5i4/NOV162732.pdf>
- Pegg, Carole. "The revival of ethnic and cultural identity in West Mongolia: The Altai Uriangkhai *tssur*, the Tuvan *shuur* and the Kazak *sybyzgy*." *Journal of the Anglo-Mongolian Society* 8, no.1-2 (1991): 71-84. ed. C. Humphrey. Cambridge.
- Pegg, Carole. "Mongolian Conceptualizations of Overtone Singing (xöömii)." *British Journal of Ethnomusicology* 1, (1992): 31-54.  
<https://www.jstor.org/stable/3060726>.
- Pegg, Carole. "Mongolian Music, Dance & Oral Narrative.", University of Washington Press, 2001.
- Pegg, Carole. "Cradle of Drone-Overtone and Timbre-Centered Music: Cultural Landscapes of the Indigenous Peoples of the Altai Mountain Range and Its Neighboring Areas." *Asian Music* 52, no. 2 (2021): 11-45. doi:10.1353/amu.2021.0013.
- Pegg, Carole. "Drones, Tones, and Timbres: Sounding Place among Nomads of the Inner Asian Mountain-Steppes", University of Illinois Press, 2024.
- Rehding, Alexander. "Hugo Riemann's Moonshine Experiment." Chapter. In *Hugo Riemann and the Birth of Modern Musical Thought*, 15–35. New Perspectives in Music History and Criticism. Cambridge: Cambridge University Press, 2003. doi:10.1017/CBO9780511481369.002.
- Reigle, Robert. "Spectral Musics Old and New." In *Spectral World Musics: Proceedings of the Istanbul Spectral Music Conference*, edited by Robert Reigle and Paul Whitehead. Istanbul: Pan Yayincilik, 2008.
- Rice, Timothy. "Modelling Ethnomusicology." Oxford University Press; 1st edition, 2017.
- Ruskin, Jesse D., and Timothy Rice. "The Individual in Musical Ethnography." *Ethnomusicology* 56, no. 2 (2012): 299-327. <https://doi.org/10.5406/ethnomusicology.56.2.0299>.
- Rutherford, Kevin. "The Hu Brings Mongolian Metal to No. 1 on Hard Rock Digital Song Sales Chart." *Billboard*. April 18, 2019. <https://www.billboard.com/pro/the-hu-mongolian-metal-number-1-hard-rock-digital-song-sales/>.
- Ruiz, Joseph M. and David Wilken. "Tuvan throat singing and harmonics." *Physics Education* 53, no.3 (2018): 1-6. <https://doi-org.bris.idm.oclc.org/10.1088/1361-6552/aaa921>.
- Sahlins, Marshall. "The original political society." *Hau: Journal of Ethnographic Theory* 7, no. 2 (2017): 91–128. <https://doi.org/10.14318/hau7.2.014>
- Sakakibara, Ken-Ichi., Hiroshi Imagawa, Tomoko Konishi and Kazumasa Kondo. "Vocal fold and false vocal fold vibrations in throat singing and synthesis of khöömei." Proc. ICMC, 2001. <http://hdl.handle.net/2027/spo.bbp2372.2001.030>.
- Sauvage, Jean-Pierre., "Observation clinique de Monsieur Tran Quang Hai." In *Dossier No 1, Le chant diphonique*, (1989): 11-14. Limoges: Institut de la voix.
- Saus, Wolfgang. "Karlheinz Stockhausen's Stimmung and Vowel Overtone Singing." *Creative Commons Attribution*, (2009): 1-3.  
[https://www.oberton.org/wp-content/uploads/stimmung-and-vowel-overtone-singing-2lr\\_sp\\_EN.pdf](https://www.oberton.org/wp-content/uploads/stimmung-and-vowel-overtone-singing-2lr_sp_EN.pdf).



- Scharfe, Martin. "Ungleichzeitigkeiten: Einführung." In *Volkskultur in der Moderne: Probleme und Perspektiven empirischer Kulturforschung*, ed. Utz Jeggle, Gottfried Korff, Martin Scharfe, and Bernd Jürgen Warneken, 347-50. [Reinbek bei Hamburg]: Rowohlt's enzyklopad, 1986.
- Serruys, Henri "Pei-lou fong-sou: Les coutumes des esclaves septentrionaux de Siao Ta- Heng." *Monumenta Serica* 10 (1945): 117-209. (Catholic Univ. of Peking)
- Slawson, A. W. "Vowel Quality and Musical Timbre as Functions of Spectrum Envelope and Fundamental Frequency." *The Journal of the Acoustical Society of America* 43, no. 87 (1958). <https://doi.org/10.1121/1.1910769>.
- Stolpe, Ines. "Earthing Eternal Heaven: Towards a Mongolization of Educational Philosophies." *Mongolian Studies* 32 (2010): 1–35. <http://www.jstor.org/stable/43193598>.
- Šmidchens, Guntis. "Folklorism Revisited." *Journal of Folklore Research* 36, no. 1 (1999): 51–70. <http://www.jstor.org/stable/3814813>.
- Smith, Huston., Kenneth N. Stevens and Raymond S. Tomlinson. "On an Unusual Mode of Chanting by Certain Tibetan Lamas." *J. Acoust. Soc. Am* 41, no. 5 (1967): 1262–1264. doi:10.1121/1.1910466.
- Süzükei, Valentina. "Learning Traditional Music in Tuva: Historical Problems and Contemporary Solutions." In *Sacred Knowledge: Schools or Revelation? Master-Apprentice System of Oral Transmission in the Music of the Turkic Speaking World*, ed. Razia Sultanova, 7–16. Cologne: Lambert Academic, 2009.
- Švec, Jan G. Harm K. Schutte and Donald G. Miller. "A subharmonic vibratory pattern in normal vocal folds." *Journal of speech and hearing research* 39, no. 1 (1996): 135-43. doi:10.1044/jshr.3901.135
- Spradley, James P. "Participant Observation." Cengage Learning, 1980.
- Steinitz, Richard. "György Ligeti: Music of the Imagination." Northeastern University Press, 2003.
- Teodorescu-Ciocanea, Livia. "Timbre versus spectralism." *Contemporary Music Review* 22, no. 1 (2003): 87-104. <https://doi.org/10.1080/0749446032000134751>.
- Titze, Ingo R. "Principles of Voice Production." Prentice Hall; 1st edition, 1994.
- Titze, Ingo R., Lynn M. Maxfield and Megan C Walker. "A Formant Range Profile for Singers." *Journal of voice: official journal of the Voice Foundation* 31, no. 3 (2017): 382.e9-382.e13. doi:10.1016/j.jvoice.2016.08.014.
- Todoriki M. "Archaic Oirat substratum of the "circa-Altai musical Kulturkreis" in Tuva." *The New Research of Tuva*, no. 3 (2017): 147-208. <https://nit.tuva.asia/nit/article/view/731>. doi: 10.25178/nit.2017.3.9.
- Toribio, Josefa. "Implicit Bias: from social structure to representational format." *An International Journal for Theory, History and Foundations of Science* 33, no. 1 (2018): 41-60. <http://philsci-archive.pitt.edu/id/eprint/14465>.

- Ueno, Ken. “Embodied Practice in Ken Ueno’s “Person-Specific” Concertos.” *The Oxford Handbook of Spectral Music*, online ed., Oxford Academic, 2021.  
<https://doi.org/10.1093/oxfordhb/9780190633547.013.47>.
- Vainshtein, S. I. “Феномен музыкального искусства, рожденный в степях.” *Сов. этнография*. no 17. М. Наука, (1980): 149-156.
- van Tongeren, Mark C. “Overtone Singing: Physics and Metaphysics of Harmonics in East and West.” Revised 2d ed. Amsterdam: Fusica, 2004.
- Wannamaker, Robert A. "The Spectral Music of James Tenney." *Contemporary Music Review* 27, no. 1 (2008):91–130. doi:10.1080/07494460701671558.
- Xia, Jingfeng. “An anthropological emic-etic perspective on open access practices.” *Journal of Documentation; Bradford* 67, no. 1 (2011): 75-94. doi:10.1108/00220411111105461.
- Yang, Wonyoung, Ki-hyun Kwak and Choon-ki Seo. “Subjective acoustic survey of Korean traditional wind instruments, piri and daegeum, in a concert hall using auralisation techniques.” *Applied Acoustics* 185, (2022): 1-11.  
<https://doi.org/10.1016/j.apacoust.2021.108421s>

## **Scores**

- Chin, Unsuk. “Piano Etude No.1 (in C).” Boosey & Hawkes, 1999.
- Feldman, Morton. “Three Voices.” Universal Edition, 1982.
- Lutosławski, Witold. “Livre Pour Orchestra.” Music Sales America, 1968.
- Stockhausen, Karlheinz. “Stimmung für 6 Vokalisten.” Universal Edition. 1968.
- Takemitsu, Tôru. “Rain Spell.” Schott Music. 1982.

## **Spectrogram sound sources**

- Kargiraa Style - Chazir, Vasili. “Kargiraa Artii-Sayir.” *Tuva: Voices from the Center of Asia*.  
 Smithsonian Folkways Recordings. 1990, compact disc.
- Xöömei style - Mongush, Sundukai. “Khoomei.” *Tuva: Voices from the Center of Asia*.  
 Smithsonian Folkways Recordings. 1990, compact disc.
- Sygyt Style - Mongush, Mergen. “Sigit Alash.” *Tuva: Voices from the Center of Asia*.  
 Smithsonian Folkways Recordings. 1990, compact disc.
- Borbannadir Style - Kara-ool, Tumat. “Borbannadir.” *Tuva: Voices from the Center of Asia*.  
 Smithsonian Folkways Recordings. 1990, compact disc.

Kongar-ol's Sygyt - Ondar, Kongar-ol. "Alash khem (The Alash River)." *Genghis Blues: Music from the Motion Picture*. Six Degrees Records. 2000, compact disc.

Music Instrument *Tsuur* - Baatarjav. "Tsuur." *Authentic Mongolia, Vol. 2*. Sonoton Authentic Series. 2016, compact disc.

Music Instrument *Igil* - Ay-Kherel. "Igil solo." *The Music of Tuva*. ARC Music. 2004, compact disc.

## **Other Sources**

Aldynay, Shinin. "Шинин Алдынай Кызыл."

uploaded by Tuvan cultural center / Центр тувинской культуры. 26 May 2021,

YouTube video, 2:23. <https://youtu.be/uc2cDNGJC0s>.

Bodrov, Sergei, director. "Mongol: The Rise to Power of Genghis Khan." Kinokompaniya CTB, 2007, 2hr., 6min.

Fusco, John, director. "Marco Polo." The Weinstein Company TV, 2014–2016, TV Series, 1h.

<https://www.netflix.com/gb/title/70305883>.

Kuular, Anatoli. "Anatoli Kuular imitate the sounds of water (throat singing)." uploaded by The

Voice of Nature, 30 Mar 2018, YouTube video, 2:36. <https://youtu.be/RQpEeuMXRc4>. Kuular,

Anatoli. "Borbangnadyr with Stream Water." uploaded by Various Artists – Topic, 7 Feb

2017, YouTube video, 2:43. [https://youtu.be/E9nVj2yp4\\_8](https://youtu.be/E9nVj2yp4_8).

Hamayon, Roberte. "Chants Mongols Et Bouriates." Disques Vogue, 1973, LP record.

Hykes, David. and The Harmonic Choir. "Harmonic Meetings." Celestial Harmonies Records (BMI),

1986, compact disc.

Hykes, David. "About David Hykes." David Hykes Harmonic Presence.

<https://www.harmonicworld.com/#about>.

Hykes, David. and The Harmonic Choir. "Hearing Solar Winds." OCORA Radio France, 1989,

compact disc.

Sekretenko, Andrey. "Western Sayan Ergaki 2004 Gornyh Duhov Lake." Image. Public domain,

28 July 2004.

[https://commons.wikimedia.org/wiki/File:Western\\_Sayan\\_Ergaki\\_2004\\_Gornyh\\_Duhov\\_Lake.jpg](https://commons.wikimedia.org/wiki/File:Western_Sayan_Ergaki_2004_Gornyh_Duhov_Lake.jpg).

Levin, Theodore. & Valentina Süzükei. "Where Rivers and Mountains Sing." Media Collections

Online Indiana University. 19 July 2019.

[https://media.dlib.indiana.edu/media\\_objects/ks65hw42z/section/7d279996g](https://media.dlib.indiana.edu/media_objects/ks65hw42z/section/7d279996g).

Overtone Choir Spektrum. "Overtone Choir Spektrum - Pacem (Stuart Hinds)."

uploaded by Overtone Choir Spektrum, 30 Dec 2016. Youtube video, 2:11.

<https://youtu.be/isYAqvvtFLw>.

Ueno, Ken. "Ken Ueno (throat singer) and Joan Jeanrenaud (cello) @ BAM/PFA."

uploaded by djmoderne. 4 May, 2010. Concert video, 9:22.

<https://www.youtube.com/watch?v=Ol6ppCMMDIU>.

Ueno, Ken." On a Sufficient Condition for the Existence of Most Specific Hypothesis."

uploaded by Eduardo Leandro. 25 Nov 2016. Concert video, 20:15.

[https://youtu.be/TAYLRQjm\\_og](https://youtu.be/TAYLRQjm_og).

UNESCO. "Traditional music of the Tsuur." uploaded by UNESCO. 27 Sept 2009.

YouTube video, 10:44. [https://youtu.be/LHAe9LOY\\_Fs](https://youtu.be/LHAe9LOY_Fs).

Thrift, Eric. "Map of Inner Asia." 2017. Image. Culture and Development Research Centre, 2017.

<http://digitalmongolia.org/item/3bfd6968-94f4-4553-bcc6-a9c84e16a71e/index-en.html>.

## Acknowledgements

### Special thanks to:

Prof. Michael Ellisson, supervisor, University of Bristol.  
 Prof. Neal J. Farwell, second supervisor, University of Bristol.  
 Prof. John Pickard, former second supervisor, University of Bristol.  
 Prof. Justin Williams, University of Bristol.  
 Prof. Sarah Hibberd, University of Bristol.  
 Dr. Tatiana Fry, Russian Language Tutor.  
 Music Department, University of Bristol.  
 Dr. Amanda Bayley, Bath Spa University.  
 Dr. Carole Pegg, University of Cambridge.  
 Dr. Robert O. Beahrs, Istanbul Technical University, TR.  
 Dr. Valentina Süzükei, Tuvan Institute for Humanities Research, RF.  
 Dr. Ken Ueno, University of California, Berkeley, US.  
 Frauke Aulbert, Voice Performer.  
 Noa Frenkel, Contralto Singer.  
 Oduchu, Tuvan Music Band.  
 Christie Finn, Voice Performer.  
 Ensemble Variances.  
 CMV Members.  
 Sean P. Quirk, Tuvan Cultural Centre, Kyzyl, Tuva Republic, RF.  
 Dr. Michael Finnissy.  
 Dr. Matthew Shlomowitz, University of Southampton.  
 Dr. Benjamin Oliver, University of Southampton.  
 Dr Andrew Fisher, University of Southampton.  
 Dr. Valeria De Lucca, University of Southampton.  
 Dr. Thomas Simaku, University of York.  
 Gilly Howe, University of York.  
 Dr. Amnon Wolman, Jerusalem Academy of Music and Dance, IL.  
 Dr. Pilsung Kim, Hansei University, KR.  
 Dr. Ji-young Jung, Hansei University, KR.  
 Tuvan Friends: Ayana, Kezhik Aya, Valentina Ondar and Alantos Sanashiri.

To my family, friends and people who have helped my UK life for their constant support.

Many thanks to the performers recorded for this submission:

Hezarfen ensemble, Noa Frenkel, Richard Jones, Ainolnaim Azizol, Caleb Kernaghan, Rowena Marshall, Dominic Lipari, Molly Leigh, George Owen, Georgina Hill, Erin Hassan, Tom Lofmark, Oliver Bowes, Ciara Glossop and Jonathan Scott.