

Žanna PÄRTLAS*

Rising and Falling Tonality in Seto Multipart Songs (Southeast Estonia). The *Kergütämine* Technique and Its Functions

Kylanti ir krintanti tonacija setų etnografinio regiono (Pietryčių Estija) daugiabalsė dainose. Kergütämine technika ir jos funkcijos

Estonian Academy of Music and Theatre, Tatari 13, 10116, Tallinn, Estonia
zhanna.partlas@eamt.ee

Abstract

Changing pitch level (tonality) in traditional unaccompanied vocal music is a widespread but little studied phenomenon (Alekseyev 1986; Ambrazevičius 2014, 2015; Scherbaum & Mzhavanadze 2020). There is a well-known tendency towards gradual upward transposition, but the focus of this study is the much rarer phenomenon of abrupt downward modulation following a gradual rise in pitch regularly practiced in the multipart songs of the Seto (Southeast Estonia) and known as *kergütämine* (“relief”). This study is the first attempt to describe this unusual technique by means of an acoustic analysis of samples belonging to the “primary” tradition. The main research material is composed of nine songs performed by the choirs of three prominent Seto lead singers, Anne Vabarna (b. 1877), Kreepa Pihlaste (b. 1892), and Veera Pähnapuu (b. 1916). The results of the analysis not only allow a thorough description of this technique, but also enable us to test three main hypotheses regarding the functions of *kergütämine*: 1) as a practical necessity to facilitate singing; 2) as a semantic and compositional device associated with the verbal text; 3) as an ancient custom that should be maintained. As a result of the study, one further explanation is proposed, namely that a rapid pitch rise originally had an independent aesthetic value and emotional and ritual functions in the Seto tradition, and the role of *kergütämine* was not to restrain the rise but to promote it, giving the choir “space” for more rapid ascent.

Keywords: vocal technique *kergütämine*, changing pitch level (tonality), traditional *a capella* singing, Seto multipart songs, acoustic analysis.

Anotacija

Garso aukščio (tonacijos) kaita tradicinėje vokaliniėje muzikoje be akompanimento yra paplitęs, bet menkai tyrinėtasi reiškinys (Alekseyev 1986; Ambrazevičius 2014, 2015; Scherbaum & Mzhavanadze 2020). Tradicinėje muzikoje egzistuoja gerai žinoma laipsniška transpozicija aukštyn, tačiau šiame tyrime pagrindinis dėmesys skiriamas daug retesniai reiškiniui – staigiai moduliacijai žemyn po laipsniško garso aukščio kilimo, reguliariai praktikuojamai daugiabalsė setų (Pietryčių Estijos) dainose ir žinomai kaip *kergütämine* [reljefo] technika. Tai – pirmasis bandymas apibūdinti tokią neįprastą techniką, remiantis „pirminei“ tradicijai priklausančių pavyzdžių akustine analize. Pagrindinę tyrimo medžiagą sudaro devynios dainos, atliekamos trijų pagrindinių setų vokalistų Anne Vabarnos (g. 1877), Kreepos Pihlaste (g. 1892) ir Veeros Pähnapuu (g. 1916) chorų. Analizės rezultatai leidžia ne tik išsamiai apibūdinti šią techniką, bet ir patikrinti tris pagrindines hipotezes, susijusias su *kergütämine* funkcijomis: 1) kad tai yra praktinė būtinybė dainavimui palengvinti; 2) semantinė ir kompozicinė priemonė, susijusi su žodiniu tekstu; 3) senovinis paprotys, kurį reikia išsaugoti. Atlikus tyrimą, siūlomas dar vienas paaiškinimas – tai, kad greitas garso aukščio kilimas iš pradžių turėjo savarankišką estetinę vertę bei emocines ir ritualines funkcijas setų tradicijoje, o *kergütämine* funkcija buvo ne suvaržyti kilimą, o jį skatinti, suteikiant chorui „erdvės“ greičiau kilti.

Reikšminiai žodžiai: vokalo technika *kergütämine*, garso aukščio kaita, tradicinis *a capella* dainavimas, setų daugiabalsės dainos, akustinė analizė.

Introduction

In discussing the traditional musical culture of the small ethnic group of Estonians called the Seto,¹ the words “rare” and “unusual” have to be used often, especially when applied to the ancient layer of this culture. The traditional Seto songs differ significantly from those of the rest of the Estonians and of the Seto’s closest neighbors, the Russians of the Pskov region, and represent a well-preserved cultural

fragment from ancient times whose true origins remain unclear (Rüütel 1994, 1999; Laul 1997; Kolk 1979; Pärtlas 2005). Indeed, certain aspects of the Seto musical style appear “rare” and “unusual” on a far wider geographical scale: the structure of Seto vocal polyphony is peculiar, the rhythmic system of the songs and the manner of singing rather specific, and the musical scales and tuning extremely rare.² The phenomenon which will be the center of interest in this paper is perhaps even unique and concerns the

* This article has been prepared with the support of the European Union through the European Regional Development Fund (the Centre of Excellence in Estonian Studies, 2014-2020.4.01.15-0015).

technique of abrupt downward modulation, which has the folklore name *kergütämine* (literally “relief, easement”). *Kergütämine* is initiated by the lead singer several times during a performance of a song and is preceded by a gradual rise in pitch level (tonality)³ spread over several melostrophes.⁴ A gradually changing pitch level (especially a rising one) during an unaccompanied vocal performance is fairly ubiquitous in the music of oral tradition; regular abrupt descending modulations, however, are not to be found among other peoples, or at the very least, are poorly documented and insufficiently represented in academic literature. In any case, there is little doubt that *kergütämine* is a very unusual and rare phenomenon in traditional music.

Though *kergütämine* is mentioned and briefly described in many studies of Seto songs (for example, Väisänen 1913, Tampere 1934, Garšnek 1953, Vaike Sarv 1976, Jaan Sarv 1977, Laanemets 2007, Pärtlas 2011), there has yet to be a comprehensive study dedicated wholly to this phenomenon. The goal of this article is to describe in detail the *kergütämine* technique, using acoustic measurements from a sufficiently large number of sound recordings, and to establish the traditional functions of this musical device, regarding which researchers have expressed different hypotheses. This also provides the opportunity to discuss some issues of both a musical-ethnographic and musical-psychological nature that have a broader theoretical significance from the point of view of ethnomusicology.

One of the related issues, the gradual transposition⁵ of the tune, has already been touched upon in ethnomusicological literature but has yet to be studied in depth. Despite the fact that the Seto singers use the term *kergütämine* to refer specifically to the very moment of the leap-like descending modulation, a necessary prerequisite for this device – and therefore an important subject of research in this paper – is the gradual rise in pitch that precedes it. Generally speaking, the gradual change in pitch (also called “floating tonality”) during a song performance without an accompanying instrument occurs quite naturally, since singers have no external reference points to enable them to maintain absolute pitch. In Western European art music, where accuracy of intonation is an aesthetic value, choirs singing *a capella* learn to maintain a constant pitch, for which a musical education is useful. Most traditional musical cultures lack such an aesthetic attitude, and a gradual change in pitch level is thus a common practice, though not an obligatory one. Nonetheless, the shift in pitch is not always an accidental process; it may have its own laws and causes. For example, the interesting fact that traditional singing is clearly dominated by the tendency to raise the pitch rather than to lower it begs an explanation.⁶ Moreover, in many folk traditions, a tendency towards ascending pitch is a performative norm and sometimes even a special technique and a skill deemed necessary.

Researchers of folk music are well-acquainted with the phenomenon of pitch transposition, not least because of the problems it creates for musical analysis. Difficulties arise as early as at the stage of the musical transcription of sound recordings because European notation is not designed to transcribe music with a continuously shifting pitch level. To overcome this problem, special notational devices and designations have been developed; these, however, do not fully resolve the issue. The pitch shift is often mentioned by researchers, for example, in commentaries to their musical transcriptions, but this typical trait of traditional vocal performance rarely becomes the object of in-depth study or theoretical discussion. Perhaps the reason for this lack of attention is that a gradual pitch transposition in many cases is not a conscious creative decision on the performers’ part with its own special functions and meanings.

The gradual transposition becomes the focus of attention more often in acoustic studies of traditional music, and the most rigorous investigations of this phenomenon are therefore made within the field of cognitive ethnomusicology (e.g., Ambrazevičius 2014, 2015; Ambrazevičius, Budrys, Višnevskā 2015; Scherbaum & Mzhavanadze 2020). Ambrazevičius analyses in great detail the rise in pitch level in Lithuanian monophonic and homophonic songs and reveals the interesting interrelations between rising tonality and the changes in the intervallic structure of the scales – both the “evolving” (widening) scales in the monophonic songs and the “shrinking” (narrowing) scales in the homophonic songs (Ambrazevičius 2014, 2015). He also reflects upon the musical-psychological reasons behind such processes:

The rise and widening might be attributed to warming-up, timbral brightening, and mastering of range, whereas the gradual shrinking manifests as the upper scale degrees reach gradually the upper part of a vocal range not comfortable for voice production. (Ambrazevičius 2015: 182)

However, it seems that a gradual transposition of tonality more frequently draws scholars’ attention as a circumstance that complicates acoustic analysis, especially when it comes to defining the intervallic structure of musical scales and multipart singing. To overcome this obstacle, researchers have had to develop certain mathematical procedures. Some of these are described in the chapter “Eliminating gradual transposition” in a book co-written by Ambrazevičius, Budrys, and Višnevskā (2015: 129–145), while the method of deriving “pitch-drift corrected pitch trajectories” is used in an article by Scherbaum and Mzhavanadze (2020: 158–159). The same problem is mentioned in the study of Ingrid Rüütel and Jaan Ross on Votic folk music (1988). The studies of McNab et al. (1996), Pauws (2002), Ryyänen (2004) and others deal with this problem mainly in connection with a computer aided music transcription and identification.

The interest of ethnomusicologists in this phenomenon naturally increases when they are faced with its extreme manifestations, which can produce a strong expressive effect. Thus, Eduard Alekseyev describes in the book *The Pitch Nature of Primitive Music* a case of a descending slip in the recitative passages of the Yakut epic *olonkho*, where the performer manages to drop the pitch level during one breath by an interval of more than one and a half octaves (Alekseyev 1986: 76–77). In the same book there is also an example of a North Russian lament recorded in the Vologda region, where a steep rise in pitch occurs which, by the end of the performance, reaches almost two octaves (Alekseyev 1986: 97–98). A rise of one-and-a-half octaves in the tessitura in Russian funeral laments is also mentioned in the textbook on Russian musical folklore edited by Olga Pashina (Narodnoye... 2005: 518). Niemi and Jousté mention an octave rise in the performances of Sámi *joiks* (Niemi & Jousté 2002: 256), while Scherbaum and Mzhavanadze have observed “a strong gradual pitch rise of up to 100 cents per minute” in the three-voiced Svan funeral dirges *zár* (Scherbaum & Mzhavanadze 2020: 138).

With regard to the common, unintentional, and often imperceptible change in pitch observed in the traditional songs of many peoples, this is estimated by Alekseyev to average a tone and a half during the performance of a song (Alekseyev 1986: 77). A similar result was noted by Ambrazevičius in his acoustic measurements of Lithuanian folk songs, where he found a clear tendency to rise in pitch, although the difference between the initial and final pitch of the tonic here was largely limited to a semitone (Ambrazevičius 2015: 180, 181). It seems that such an “ordinary” change in pitch deserves greater attention from ethnomusicologists, and it would be interesting to compare this phenomenon in different ethnic styles, genres, and historical layers of songs, as well as in performances of singers of different generations.⁷

The practice of gradual transposition has often been written about in connection with ancient styles of traditional music. A theoretical discussion of this topic can be found in the abovementioned book by Alekseyev, dedicated to the initial formation of pitch relations in music. Alekseyev considers some cases of the shift in pitch as a phenomenon associated with ancient musical thinking – for example, as one of the manifestations or traces of “primary gliding” (*первичное глissандирование*) (Alekseyev 1986: 77). Niemi and Jousté argue that a gradual rise in pitch is a characteristic feature of the vocal practices of the “primitive music” characteristic of the peoples of northern Eurasia, such as the Sámi, Nenets, Samoyeds, Khanty, Mansi, and others (Niemi & Jousté 2002: 256). Examples from the traditional songs of the Eastern Slavs mentioned by ethnomusicologists usually also refer to archaic genres – laments as well as calendar and labor songs. Similarly, the Svan examples

from Georgia described by Scherbaum and Mzhavanadze belong to funeral songs, which are akin to lamentations.⁸

As far as leap-like modulations are concerned, if we are talking about a systematically used technique, these are far less common in traditional music. Such a practice is known, for example, in the Sardinian *a tenore* singing style; here, however, the similarity with the Seto *kergütämine* is limited and only superficial, since in *a tenore* songs, shifts in pitch of about a whole tone occur both upward and downward and are not associated with any previous gradual transposition. The purpose of such leap-like modulations here is mainly to “refresh the sound” rather than to facilitate singing, as is the case in the Seto *kergütämine* (the latter, as will be demonstrated later, may have other functions as well, but this is the most evident one; it is possible, too, that a refreshing of the sound may also be one of the desired effects of *kergütämine*).

If we look for closer analogies to *kergütämine*, we should turn to the song traditions of the Mordovians (Moksha and Erzya peoples), whom some scholars consider to be culturally related to the Seto (Rüütel 1994, Laul 1997, Kolk 1979, Pärtlas 2005). The musical similarities have not really been studied yet in any depth; however, there is some evidence that the Mordovians have (or, rather, had) a musical device similar to the Seto *kergütämine*. I have heard such a statement in conversations with the outstanding Mordovian folklorist Nikolay Boyarkin; the same claim, apparently based on his words, is also made by some Estonian ethnomusicologists (e.g., Rüütel 1994). Unfortunately, I was not able to access Boyarkin’s recordings, and this technique is not found in any of the published sound recordings of Mordovian songs. Furthermore, during my numerous expeditions to Mordovia between 2014 and 2020, I only once happened to come across a phenomenon similar to *kergütämine*, when an Erzyan singer, performing a wedding song, suddenly lowered the pitch level; to my question about the reasons for doing so she replied that in the past they used to do this to make the wedding song sound sadder. All the more noteworthy, therefore, is the evidence of the Russian ethnomusicologist Natalya Gilyarova, who, comparing the Russian and Mordovian songs of Meshchera,⁹ discovered this peculiarity in the performance of Russian spring round dance songs by the Erzya:

The greatest dissimilarity of the aforementioned spring songs compared to their Russian variants is to be found in the nature of their intonation, the main characteristic of which is the aim to “play out” the song with an untempered, gradual rise of tessitura towards the end of the strophe, followed by a return to the initial pitch in the next strophe. (Gilyarova 1989: 36)

Gilyarova noted the same principle in the ritual songs of the Moksha (in the Anaivo village of the Zubovo-Polyansky district of the Republic of Mordovia), whereas it was not observed in non-ritual songs (Gilyarova 1989: 36).¹⁰ These

observations on the part of other researchers suggest that the Mordovians actually did have a technique reminiscent of *kergütämine* (a gradual rise in pitch and its abrupt decrease); however, the degree to which it was widespread, the regularity of its use and its similarity to the practice of *kergütämine* still remain unclear.

1. Collectors' and researchers' observations concerning the technique and functions of *kergütämine*

There are many descriptions of *kergütämine* in the publications on Seto songs, some of which are valuable in that they reflect the performing practice of the time when the Seto tradition was still intact. What information can be gleaned from these descriptions and what assumptions can be made about the practice and functions of *kergütämine* in the past?

The earliest of these descriptions, dating back to 1913, is from the outstanding Finnish musical ethnographer Armas Otto Väisänen, who was the first to record Seto songs using a phonograph and to explore their musical aspect:

In this way, my attention was drawn above all, as I heard their song, to one strange fact: the sudden descent of the pitch several times, that is, consciously, during the song. In Seretsova, this habit, *kergitamine*, was explained as being necessary in long songs (especially in those in connection with games), since for the one who sings *kilõhee*, the higher voice (there is one such singer in the choir) it may be difficult to sing unless the sound is lower. *Kergitamine* is the task of the lead singer; the choir is immediately ready to adapt to the new tone. It always occurs at the beginning of the verse. In the *Leigotamine* game song [the lead singer] Nasta first used *kergitamine* after every three repetitions, then after seven, eight, four repetitions, and so on. The sound dropped by a whole tone each time. *Kergitamine* does not seem like an easy task and sometimes needs two repetitions to take effect. Sometimes, when it occurs at an appropriate point in a poem, such as in the context of the words “varastigi mi varasti” [“stolen *mi*, stolen”], it has the effect of an art. (Tampere 1934: 70–71)¹¹

This is a very informative description. From it we learn that *kergütämine* occurs several times throughout the song (a possible frequency is after every 3–8 melostrophes), that the technique is used deliberately, that it is employed by the lead singer at the beginning of a verse line, and that the pitch is lowered by a whole tone. We also learn that this technique is especially important in long songs (especially in game songs), that it should primarily facilitate the singing for the performer of the upper solo part *killõ*, that it requires certain skills from the singers and that, if it coincides with the semantic accent in the lyrics, *kergütämine* can emphasize the meaning of the words. Estonian ethnomusicologist

Herbert Tampere, who quotes Väisänen in his 1934 article, agrees that the task of *kergütämine* is to facilitate the singing for the *killõ* singer, and notes that “the Seto choir has a tendency to rise” (Tampere 1934: 70). It is noteworthy that Väisänen calls this technique “strange,” and Tampere draws attention to the fact that *kergütämine* is unknown among other peoples.

Another great expert and collector of Seto songs was the Estonian composer Anatoli Garšnek, who in 1953 wrote a dissertation on the subject. He explains the meaning and technique of *kergütämine* as follows:

The lead singer should choose the pitch of the song to be performed and make sure that the choir is comfortable to sing all the time. This is necessary for the reason that the choir usually raises the pitch. When it becomes difficult to sing, the lead singer begins the next strophe of the song lower or, starting in the previous key, reaches a new, lower pitch shortly before the chorus enters again; the singers are very sensitive to such a change and enter quite accurately in terms of intonation. This technique is called by the Setu *kergütämine* (relief). This technique, having emerged out of necessity, has become traditional. We also observed cases when the lead singer used it unnecessarily and so often that by the end it was difficult for the choir to sing owing to the low register in which the song found itself. (Garšnek 1953: 31)

Garšnek's description adds new valuable observations. First, he describes more precisely the technique that the lead singer uses for the downward modulation: she either immediately starts the melostrophe at a new pitch or modulates during the solo part of the melostrophe to arrive at the new pitch level before the chorus enters. The second important observation is that already in the 1940s–1950s the device of *kergütämine* may be understood as merely a custom applied without any practical need.

A separate issue is the possible connection between *kergütämine* and the content of the verbal text mentioned by Väisänen. Vaike Sarv, a Seto culture researcher, suggested in her early student work that “each modulation is not an independent musical phenomenon, but directly related to the text” (Sarv, Vaike 1976: 91), and that “*kergütämine* in Seto songs is primarily a means to underline important verses of the text and point out turns in its content” (Sarv 1976: 95; cited in Laanemets 2007: 55). While Sarv did not actually support her claims with song analysis, Jaan Sarv, in his 1977 analytical paper, noted the correlations between the use of *kergütämine* and the text content in the narrative song “Brother's War Story” (Sarv 1977: 77).¹² Analyzing the performance, consisting of 74 melostrophes and containing 4 *kergütämine*, he finds a correspondence between the lead singer's modulations and the content of the text in all four cases. He also considers it no coincidence that on two occasions, after the *kergütämine* the lead singer uses the same melodic variation as at the beginning of the song. On closer

examination, however, the connections identified by Jaan Sarv do not appear very convincing; and anyway, it is not possible to draw any meaningful conclusions from the analysis of one song. Nevertheless, the hypothesis that *kerģütämine* might have a semantic function merits further consideration.

In 2007, Liisi Laanemets tested this hypothesis in her master's thesis, using the example of three songs performed by the outstanding Seto singer Anne Vabarna (1877–1964): a midsummer song (30 melostrophes, 2 *kerģütämine*), a wedding song (14 melostrophes, 1 *kerģütämine*), and a harvest song (54 melostrophes, 13 *kerģütämine*).¹³ Summarizing the data for the three songs, we can state that out of 16 cases of *kerģütämine* the author managed to find some tenuous connections with the text in only three instances (Laanemets 2007: 55–59). Laanemets comes to the conclusion that Vabarna used *kerģütämine* primarily for practical reasons, since in her songs the descending modulation was always preceded by a rise in pitch.

Taking into account all the above, we can set one further goal for this research, in addition to the detailed description of the processes involved in *kerģütämine*. Namely, we aim to test the main hypotheses regarding the functions of this practice: whether it is a practical necessity, a semantic and compositional device, or simply a custom established by tradition. Besides these three possible functions, *kerģütämine* may also have other effects and meanings, related, for example, to game situations, contrasts of timbre, or expressive ends. It would also be interesting to compare how this technique is put into practice by different performers in different historical periods.

2. Rises and falls: measuring *kerģütämine*

2.1. Musical material for analysis

The musical material of this research forms two “circles” – on one hand, a limited number of performances intended for detailed analysis, and on the other a broader selection of material for the purposes of comparison and to obtain an overall picture. The main requirement for the material of the first circle was the singers' belonging to the so-called “primary” tradition, that is, we preferred those performers who adopted the tradition orally at a young age from singers of previous generations. In addition, the status of the lead singer in the local tradition was taken into account, and suitable sound recordings were sought from the most prominent and respected lead singers (the Seto people call them *lauluimä* – “mother of song”). From the recordings of such singers, the longest possible performances with many examples of *kerģütämine* were chosen. There was also a wish to compare tunes from different stylistic layers, while on the other hand different performances of the same tune were also of interest.

During the initial search for material some surprising discoveries were already made. First, it quickly became clear that different outstanding Seto lead singers have different tendencies in the use of *kerģütämine*. Ollö Laanetu (b. 1909), for example, applied this technique very sparingly: in most of her recordings I listened to there were no instances of *kerģütämine* at all, while in a few cases it occurred only once, despite the rather long duration of the song. Another *lauluimä* Ekaterina Lummo (b. 1915), judging from the recordings available, used this device even less. The same can be said of Nati Tarkus (b. 1922): among the recordings on a 1998 CD, she uses *kerģütämine* only in one long song, but in an unexpected way, applying the device only towards the end of the performance three times within a short space of time. On the other hand, listening to the LP of the *lauluimä* Veera Pähnapuu (b. 1916), we find *kerģütämine* in each song, often three times, even though the performances on this LP are rather short.¹⁴ The lead singer Maarja Pähnapuu (b. 1914) also employs this technique in almost every song. The legendary Seto singer Anne Vabarna (b. 1877), mentioned above, uses *kerģütämine* unevenly – Laanemets detected this technique in 19 of the 55 multipart songs she analyzed, with the number of modulations more or less dependent on the length of the song – the largest number of *kerģütämine*, 13, was found in two songs consisting of 54 and 68 melostrophes (Laanemets 2007: 54). However, as a rider to these statistics it should be noted that among the songs of Vabarna without *kerģütämine* there are many short performances where this technique might not be useful in any case.

As a result of the above facts, the songs selected for close analysis were those of three outstanding lead singers – Anne Vabarna, Kreepa Pihlaste (b. 1892), and Veera Pähnapuu – all of whom represent the tradition of the northern part of Setomaa, where the ancient Seto musical style is particularly well preserved.¹⁵ From the repertoire of each singer, three songs were selected, recorded between 1959 and 1973 (see Table 1). The songs belong to the more ancient genres: labor songs – the work/game song *Hand Mill* (*Käsikivilaul*) and the harvest and fishing songs; calendar songs – the Kadri song (the song of Catherine's Day); two narrative songs (*Brother's War Story* and *Beauty Song*); and one lyrical song. One of the tunes – the harvest tune (in folk terminology, *lelotämine*) – is performed by all three singers (with different lyrics). The performances have a duration of 20 to 84 melostrophes; *kerģütämine* occurs from 4 to 14 times in each performance.

The tunes of the songs selected for analysis belong to the ancient stylistic layer. Many of them are polytextual tunes that are not only used with different texts but which can also serve different functional genres (the “use category,” according to Alan P. Merriam). The attempt to find good examples of songs with *kerģütämine* belonging to the different stylistic layers (including the later ones) was not entirely successful,

Table 1. List of songs analyzed.

	archival number	year	genre	number of strophes	number of <i>kergütämine</i>
Anne Vabarna (1877–1964)	RKM, Mgn. II 321 a	1959	work/game song	69	14
	RKM, Mgn. II 1381 c	1959	harvest song	55	13
	RKM, Mgn. II 1382 b	1959	narrative song	84	6
Kreepa Pihlaste (1892–1968)	RKM, Mgn. II 1632 b	1967	Kadri song	32	8
	RKM, Mgn. II 1633 h	1967	harvest song	25	4
	RKM, Mgn. II 1632 c	1967	fishing song	29	5
Veera Pähnapuu (1916–1989)	RKM, Mgn. II 2351 c	1973	harvest song	20	5
	RKM, Mgn. II 2350 b	1973	narrative song	44	7
	EKRK, Fon. 96 (a14)	1977	lyrical song	26	4

since it turned out that *kergütämine* is especially characteristic of the songs of the old style. Six of the chosen songs have the specific one-three-semitone scale typical of the old Seto style, while in the other three we are dealing with scales of apparently later origin – anhemitonic-diatonic and purely diatonic; however, the influence of the one-three-semitone system is noticeable in these performances as well (with regard to the Seto modes see: Pärtlas 1997, 2006, 2010; Ambrazevičius & Pärtlas 2011). The stylistic features of the songs most suitable for the analysis of *kergütämine* indicate that this technique belongs to the complex of features that characterizes the ancient musical thinking of the Seto.

To better understand the analysis and its results, it is necessary to briefly describe the specific style of the songs that constitute the main material of this study. The most important aspects here are the structure of the melostrophe, the texture of the polyphony, and the modal system.

In Seto songs the melostrophe consists of two sections: first, the lead singer performs an entire verse of text and the corresponding line of the melody, after which the chorus (or rather a small group of singers, usually about five people) repeats the text and melody of the lead singer with variations and, often, with extensions. The chorus enters on the last syllable-notes of the lead singer’s section or on the refrain, if there is one. The choral texture consists of two obligatory parts: the main lower part, called the *torró*, performed by several singers in a heterophonic manner, and the subsidiary

upper solo part, known as the *killõ*, which generally alternates between two or three upper scale notes. Sometimes one of the *torró* singers uses consistently lower variants of the main melody, and this is how the third part (or, more often, elements of a third part) emerges (researchers call this the “lower *torró*”). The lead singer sings in a recitative manner, quietly and rather quickly, slowing down before the chorus enters. The chorus usually sings in a more chanting manner, more slowly, more loudly, and with a more intense timbre.

The one-three-semitone mode mentioned above has a very unusual symmetrical intervallic structure, which can be expressed in semitones by the numbers 1–3–1–3–1 (in notations the notes D–Eb–F#–G–A#–B are usually used). The maximum range of the scale is six scale notes, and the minimum is three notes (the intervallic structure 1–3). The vertical sonorities are formed according to a rather strict rule – the notes situated next but one in the scale sound together, due to which two functional harmonic complexes D–F#–A# and Eb–G–B appear. Interestingly, all the harmonic complexes consist only of major thirds, which makes the one-three-semitone mode a rather rare example of a mono-intervallic harmonic system. The modal center (“tonic”) is most often the scale note G, less often F#. The tunes can end either in unison on G or F#, or even more often, with major thirds G–B, Eb–G or F#–A#. All the tunes analyzed in this paper have the scale note G as their modal center (see Fig. 1).

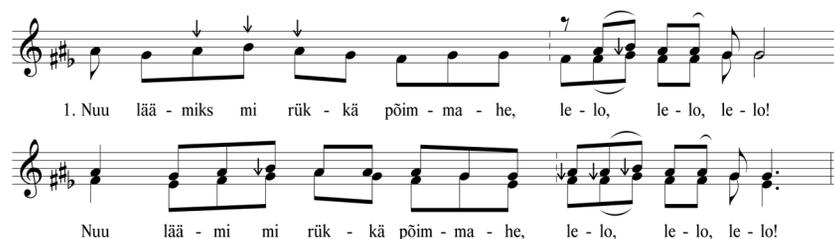


Figure 1. Harvest song performed by Kreepa Pihlaste and her choir.

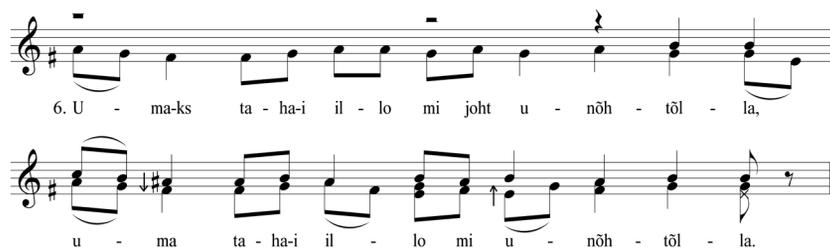


Figure 2. Lyrical song performed by Veera Pähnapuu and her choir.

In tunes with anhemitonic-diatonic (E–G–A–B–C) and diatonic (D–E–F#–G–A–B–C) scales, we can often notice traces of the influence of the one-three-semitone mode, which is expressed in abundant micro-alterations. In two of the songs analyzed, this is especially evident in the *killõ* part which, instead of a major second A–B, sings an (almost) minor second A#–B (see Fig. 2). This “leading tone effect” characteristic of the *killõ* part may be one of the reasons for the gradual rise in pitch throughout the song, and consequently, may be behind the need for *kergütämine*.

2.2. Analytical method

For the acoustic analysis of the selected samples, the Praat software was used.¹⁶ I measured the pitch (the fundamental frequency) of the modal center (scale note G) in each melostrophe, thus allowing changes in pitch level throughout the song performance to be tracked. As the pitch level in Setu songs can change significantly even during a single melostrophe, I did not calculate the average pitch of the modal center during the whole melostrophe (as Ambrazevičius did when analyzing Lithuanian songs – Ambrazevičius 2015), but instead measured the pitch of the tonic at the beginning and end of each melostrophe so as to gain more detailed information about the modulation processes. Such a procedure, of course, increases the role of randomness in the performance of each single syllable-note and, consequently, of its measurement; however, it seems in the end that the method has justified itself, since the results obtained reveal a systematic pattern.

In the measurement process I encountered a number of difficulties, some of which are typical of this kind of analysis – for example, the fact that the pitch contour of the syllable-note may not be strictly horizontal but may turn out to be ascending, descending, or domed. In such cases I had to determine the most adequate measurement area based on my own intuition and experience. One of the specific problems was that of determining the pitch of the tonality at the beginning of the strophe, first because the lead singer does not usually start directly from the tonic, and secondly because the Seto lead singers often sing in a recitative manner, which leads to a rather indefinite intonation.

To solve this problem, in each solo section it was necessary to choose the scale note G that was sung with the most stable intonation; where possible, the same syllable-notes of the tune were measured in each melostrophe, but where that was not feasible for some reason, I used different syllable-notes from either the beginning or the middle of the solo section for the necessary measurements.

Another specific problem was the fact that the melostrophe might end with a harmonic sonority rather than a unison. In those tunes where the melostrophe ends with the major third G–B or Eb–G, the only possibility to find the pitch of the modal center using Praat was to employ spectrum analysis; the measurements were carried out in two to four places throughout the syllable-note and their average calculated (the problem in such cases was that, being unable to see the pitch contour of each voice owing to the limitations of Praat, I had to act intuitively). As a result, the inevitable inaccuracy of my measurements must be taken into account; I hope, however, that this is counterbalanced by the statistically large number of such measurements – 768 syllable-notes in total. Moreover, as mentioned above, the systematic nature of the results thus obtained is encouraging.

2.3. Initial observations: visualizing *kergütämine*

The rises and falls in pitch level in Seto songs with *kergütämine* can be graphically demonstrated by diagrams that visualize the results of the measurements. The initial experiences of visualization exceeded our expectations, revealing much more information than could have been foreseen. Let us start the analysis with the diagram of the performance of the harvest song by Anne Vabarna and her choir, which shows the pitch of the modal center at the beginning and end of each melostrophe (Diagram 1).

The diagram clearly shows the cycles of the rises and falls in tonality. The large downward shifts on the diagram indicate instances of *kergütämine*. In this performance, consisting of 55 melostrophes, Vabarna applied this technique 14 times. The diagram also reveals that, as expected, in all cases the *kergütämine* is preceded by a rise. However, it would not be entirely correct to call these rises “gradual.” A very surprising measurement result is a pronounced zigzag

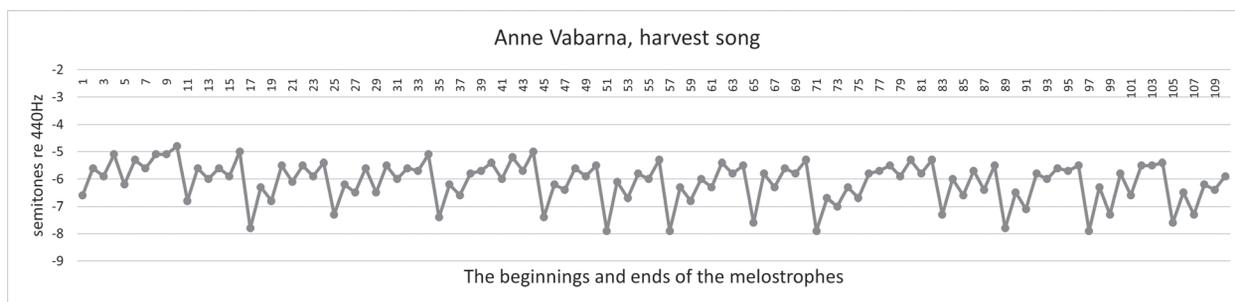


Diagram 1. Change in pitch level during performance (the pitch of the modal center at the beginning and end of each melostrophe). Harvest song performed by Anne Vabarna and her choir.¹⁷

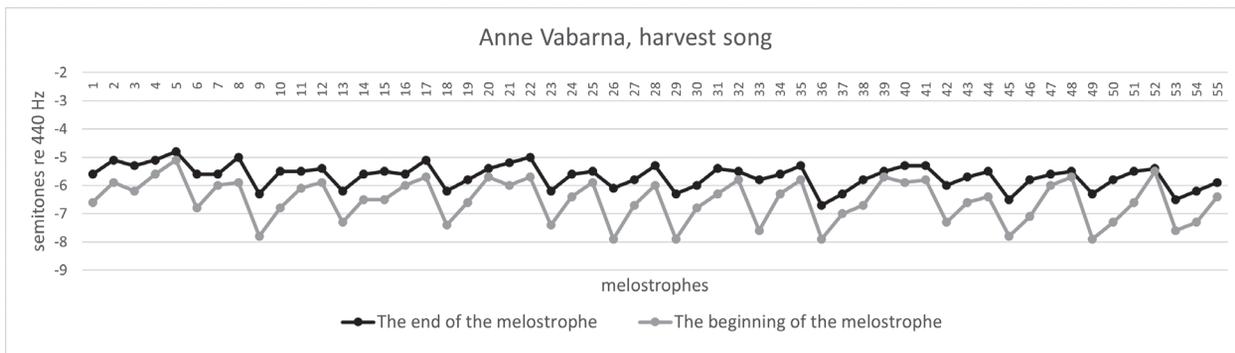


Diagram 2. Comparison of the pitch level at the beginning and end of each melostrophe. Harvest song performed by Anne Vabarna and her choir.

contour in the ascending phases. The lower points of the zigzag correspond to the beginning of each melostrophe in the lead singer's part; this means that the lead singer systematically starts each new melostrophe lower than the chorus ends the previous one. We can deduce from this that in addition to what is known in the Seto tradition as *kergütämine*, there is a kind of micro-*kergütämine* at the beginning of each melostrophe, a technique which, interestingly, is mentioned neither by researchers nor by the bearers of tradition. Another pattern that can be seen in this diagram is that immediately after each *kergütämine* the chorus raises the tonality especially quickly.

The difference between the pitch level that the lead singer sets at the beginning of the melostrophe and the pitch level that the chorus reaches at the end of the melostrophe is

revealed even more clearly in Diagram 2, where the beginnings and ends of the melostrophes are shown separately by two lines. This difference is quite significant, and it is especially large in melostrophes with *kergütämine*, indicating a more marked rising transposition on the part of the chorus immediately after the use of this device. The fact that the two lines never cross indicates that the chorus never modulates downwards.

The question arises as to whether the patterns revealed here are inherent only to this performance, to this lead singer and choir, or maybe only to this tune type. To answer this question, let us compare the diagrams of the performances of the same harvest tune by other choirs, where the lead singers are Kreepa Pihlaste (Diagram 3) and Veera Pähnappuu (Diagram 4).

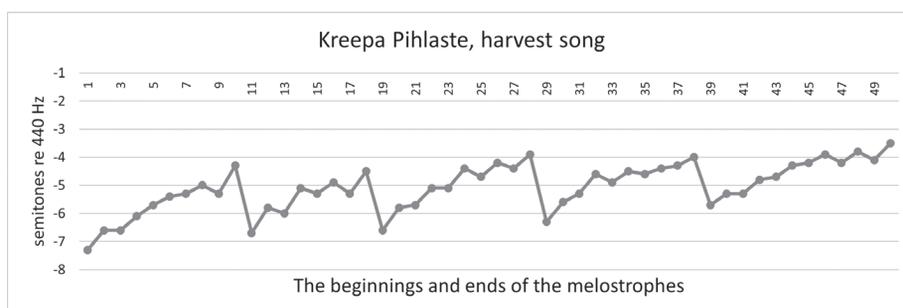


Diagram 3. Change in pitch level during performance (the pitch of the modal center at the beginning and end of each melostrophe). Harvest song performed by Kreepa Pihlaste and her choir.

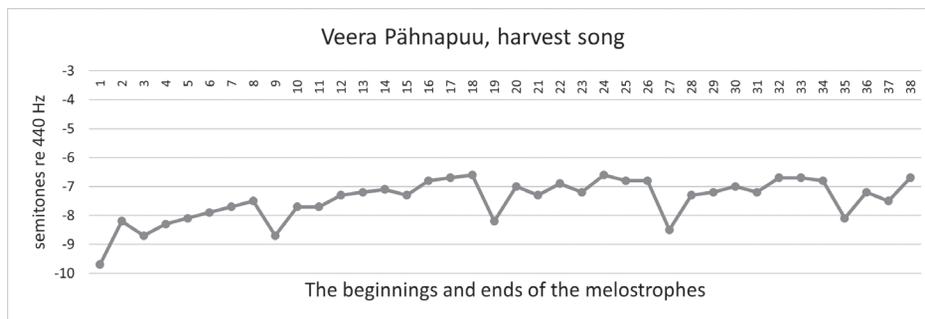


Diagram 4. Change in pitch level during performance (the pitch of the modal center at the beginning and end of each melostrophe). Harvest song performed by Veera Pähnapuu and her choir.

In the diagrams of the choirs of Pihlaste and Pähnapuu we can also see the zigzag pattern in the ascending phases, though this is not as pronounced as in the performance by Vabarna. In the performance of Pihlaste's choir, the zigzag prevails in the second and third cycles of *kerģütämine*, but in the first, fourth, and fifth cycles it is present only fragmentarily. A more precise calculation reveals that the lead singer shifts lower in 11 cases out of 20 (melostrophes with *kerģütämine* do not count), that is, in about half the cases. However, she does not lower the tonality as sharply as Vabarna. Pähnapuu uses a similar downward micro-modulation only in six cases out of 15 and often starts the next melostrophe even slightly higher with respect to the pitch the chorus has reached in the preceding melostrophe. The tendency of the Vabarna choir to quickly raise the pitch immediately after *kerģütämine* is also present in the performances by the choirs of Pihlaste and Pähnapuu. In the performance of Pähnapuu's choir, the rapid rise in pitch in the chorus of the melostrophes beginning with *kerģütämine* is especially noticeable – indeed, the choir returns almost to its previous pitch. In Pihlaste's performance we can also notice a tendency to employ *kerģütämine* after melostrophes in which the chorus raises the tonality more sharply than usual; the performances by Pähnapuu and Vabarna show no such correlation.

Testing the patterns revealed in the harvest tune on other songs with the same lead singers, we find that each singer and choir have their own preferences and habits

associated with the modulation technique. Of the three lead singers under consideration here, Anne Vabarna is the most inclined to descending micro-modulations – the diagram of her work/game song *Hand Mill* is very similar to that of the harvest song with its abundant zigzag. Micro-modulations are also clearly present in the narrative song *Beauty Song (Ilo laul)*, but here the zigzag in the diagram is unsystematic – it is interspersed with halts at the same pitch and even an upward movement. The lack of consistency in the changes in pitch level in this song may possibly be connected with the style of its tune – while the harvest song and the song *Hand Mill* are based on the ancient one-three-semitone scale, the tune of the narrative song is diatonic and probably of later origin.

In the diagrams of the songs with Pihlaste and Pähnapuu, there is less evidence of the zigzag pattern than in Vabarna's performances but enough to recognize descending micro-modulations as common practice (I have also observed this technique in other singers, e.g., the prominent lead singer Ollõ Laanetu). The smallest number of such micro-modulations appears in Pähnapuu's performance of the narrative song *Brother's War Story (Venna sõjalugu)* (see Diagram 5). In this song, the upward transposition is mostly gradual, though the speed of the pitch shift may vary, and descending micro-modulations still occur. However, in the lyrical song performed by Pähnapuu a regular zigzag contour was found (see Diagram 6). Diagram 6 also demonstrates the previously observed tendency towards a

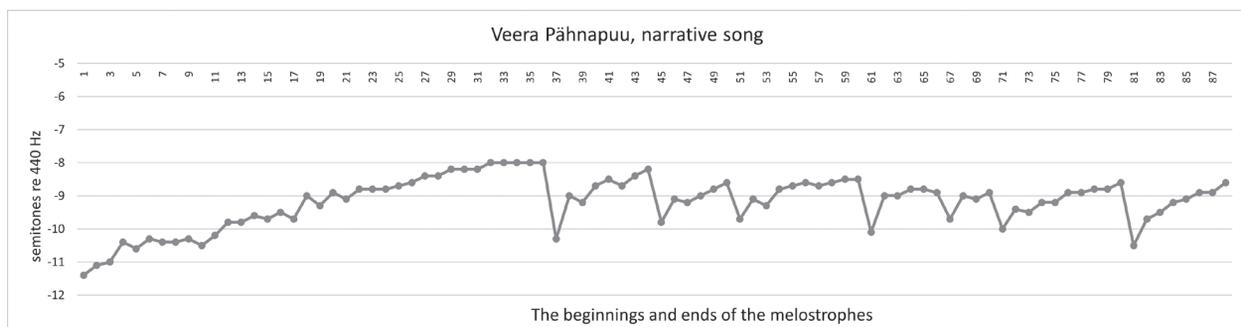


Diagram 5. Change in pitch level during performance (the pitch of the modal center at the beginning and end of each melostrophe). Narrative song (*Venna sõjalugu*) performed by Veera Pähnapuu and her choir.

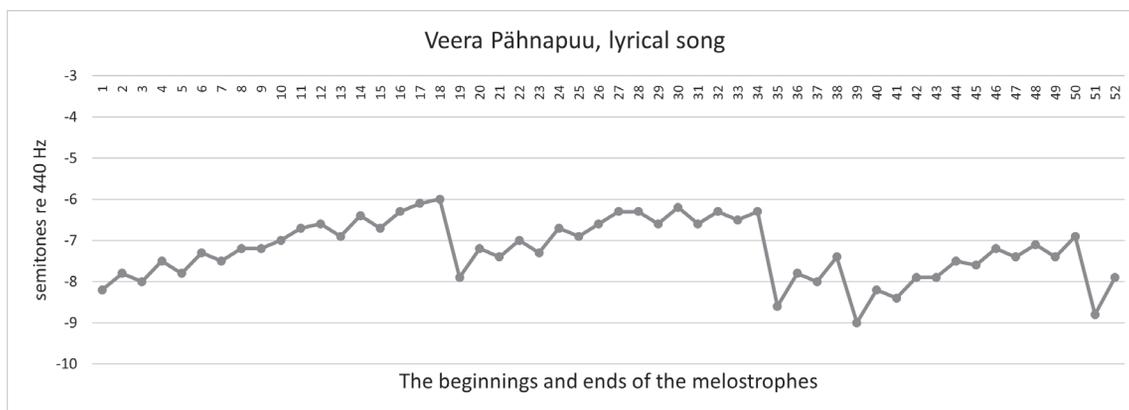


Diagram 6. Change in pitch level during performance (the pitch of the modal center at the beginning and end of each melostrophe). Lyrical song performed by Veera Pähnapuu and her choir.

rapid ascending transposition in the melostrophes beginning with *kergütämine*. All three diagrams of Pihlaste's songs confirm that this lead singer often reacts to a sharper rise in the chorus section by employing *kergütämine*.

The diagrams also demonstrate how often and with what periodicity the lead singers use *kergütämine*.¹⁸ In all three performances of the harvest song, for example, this technique occurs quite often and at more or less equal intervals (see Diagrams 1, 2, and 3). If we support visual observations with numbers, then the average distance between two instances of *kergütämine* in this tune is about four melostrophes in the performances of Vabarna and Pähnapuu, and six melostrophes in Pihlaste's performance. A similar picture is observed in the Kadri song sung by Pihlaste's choir (4 melostrophes between the *kergütämine*), and in the *Hand Mill* song performed by Vabarna's choir (5 melostrophes). In Pihlaste's fishing song and in Pähnapuu's narrative and lyrical songs, *kergütämine* occurs in every 6–7 melostrophes. In the narrative song performed by Pähnapuu, on the other hand, the use of *kergütämine* is uneven – she does not apply it at all until the 19th melostrophe, after which the intervals between *kergütämine* vary between two and five melostrophes (Diagram 5). Vabarna, in her narrative song, employs descending modulations very rarely and rather unevenly – only six *kergütämine* during 84 melostrophes. Generally speaking, if we look for patterns in the distribution of *kergütämine*, it can be noticed that a more frequent and systematic use of this technique occurs in faster songs (such as the Kadri song) or in those that are performed in a more intense manner (for example, a harvest song). In the unhurried and quieter long narrative songs, on the other hand, *kergütämine* occurs more rarely.

2.4. Practical necessity? Results of statistical analysis

2.4.1. Is it all about a rapid rise in tonality?

As mentioned above, in traditional unaccompanied singing a gradual upward transposition is quite a common phenomenon, though not one that has yet been fully

explained. However, abrupt downward modulations, especially regularly used, are a very rare device in traditional singing. The question therefore arises as to why Seto singers do this. One possible answer is because they raise tonality unusually quickly. To test this assumption, some calculations were performed to detect the speed of the gradual pitch rise in the Seto songs analyzed (see Table 2).

There are several possible approaches to calculating the speed of the pitch rise. If the goal is to find how quickly the tonality rises between two *kergütämine*, it is useful to compare the pitch at the ends of adjacent melostrophes. On this basis we can calculate how much the pitch level would rise during the whole performance if the lead singer did not use the *kergütämine* technique. However, to reveal the real speed of transposition, we should also take into account the lead singer's descending micro-modulations at the beginning of the melostrophes, and therefore it is necessary to calculate how much the pitch level rises over the duration of each melostrophe. Based on these calculations, it is possible to estimate how much the tonality would rise during the entire song if the lead singer employed neither *kergütämine* nor micro-modulations.

Comparison of the pitches of the last syllable-notes of adjacent melostrophes reveals the interval of the pitch shift without taking into account the descending micro-modulations of the lead singer (if they are present). Table 2 shows data for the most typical (median) rise between adjacent melostrophes in each song under analysis. Results range between 0.1 and 0.4 semitones, with a mean of 0.23 semitones across the sample set. Raising the tonality at this rate without using the *kergütämine* technique might by the end of the song result in a significant rise in tessitura, which would make singing very uncomfortable or even impossible. The results in terms of the total pitch shift for each performance, depending on the speed of transposition and the number of melostrophes, are naturally very different – from 5.2 to 16.5 semitones; even a shift by a perfect fourth (five semitones), however, is already quite significant when

Table 2. The rise in pitch level in the performances analyzed.

		Number of strophes	Median rise between the ends of strophes (semitones)	Total rise without <i>kerģütāmine</i> (semitones)	Median rise during one strophe (semitones)	Total rise without any descents (semitones)	Median speed of the rise during one strophe (cents/s)
Anne Vabarna	work/game song	69	0.2	13.8	0.4	27.6	4.2
	harvest song	55	0.3	16.5	0.7	38.5	6.7
	narrative song	84	0.1	8.4	0.3	25.2	3.8
Kreepa Pihlaste	Kadri song	32	0.2	6.4	0.4	12.8	4.9
	harvest song	25	0.4	10	0.5	12.5	4.5
	fishing song	29	0.2	5.8	0.3	8.7	2.9
Veera Pāhnapuu	harvest song	20	0.3	6	0.3	6	2.6
	narrative song	44	0.2	8.8	0.2	8.8	2.1
	lyrical song	26	0.2	5.2	0.4	10.4	3.2
Vabarna's songs (mean)			0.2		0.47		4.9
Pihlaste's songs (mean)			0.27		0.4		4.1
Pāhnapuu's songs (mean)			0.23		0.3		2.6
All songs (mean)			0.23		0.39		3.9

singing in the chest register, especially for the performer of the upper *killō* part.

In addition, the effective rise in tonality during each melostrophe – from its beginning to its end – was also calculated (this process takes place mainly in the chorus section). In many cases, the results obtained are even more noteworthy. The median rise during the melostrophe ranges from 0.2 to 0.7 semitones, and the mean for all the songs is 0.39 semitones, which is about twice as big an interval as that between the last notes of the adjacent melostrophes. The total rise in pitch throughout the song – that is, if the lead singer did not lower the pitch either by *kerģütāmine* or by micro-modulations – could in this case even equal 38.5 semitones (the result for the long harvest song of Anne Vabarna's choir). The minimum increase in pitch calculated using this method, six semitones, is found in the short harvest song of Veera Pāhnapuu's choir. In any case, in all these examples it is clear that in these songs the rise in pitch is far greater than is usual in traditional music.

Besides establishing the fact that in Seto songs the pitch shift takes place so rapidly that "countermeasures" are needed, the difference in the results for the various lead singers and songs is also of interest. While the data for the rise between neighboring melostrophes does not differ very greatly (for the choirs of Vabarna, Pihlaste, and Pāhnapuu this averages 0.2, 0.27, and 0.23 semitones respectively), the rise throughout the melostrophe varies more (0.47, 0.4, and 0.3 semitones). Since the interval of transposition within the melostrophe can be dependent on its length, the speed of pitch rise in cents per second was calculated to get even more accurate data (see the last column of Table 2). These

calculations relating to the speed of the rise revealed an even greater difference between the choirs of the three lead singers, equal to 4.9, 4.1, and 2.6 cents per second respectively. Comparing these results with the above-mentioned findings of Scherbaum and Mzhavanadze, who observed in the Svan funeral dirges "a strong gradual pitch rise of up to 100 cents per minute" (Scherbaum, Mzhavanadze 2020: 138), the rise in tonality in these Seto songs – 294, 246 and 156 cents per minute respectively for the three choirs – is truly remarkable.

The fact that in the performances of different singers the shifts between adjacent melostrophes differ less than the actual speeds of the pitch rise indicates a successful compensation for the rapid pitch rise in the chorus sections by the descending micro-modulations initiated by the lead singers. Here, however, a further question arises as to which of these two phenomena is the cause and which is the effect: is the lead singer forced constantly to lower the tonality in order to compensate for the rapid pitch rise of the chorus, or do the lead singer's small drops in tonality at the beginnings of the melostrophes serve to induce a greater rise during the chorus sections?

Since Anne Vabarna and Kreepa Pihlaste, who were born in 1877 and 1892 respectively, represent an older tradition than Veera Pāhnapuu, born in 1916, and their songs were recorded somewhat earlier (in 1959 and 1967) than the songs of Pāhnapuu (1973 and 1977), it can be assumed, albeit very cautiously, that the high speed of pitch rise within the melostrophe and the descending micro-modulations of the lead singers may be characteristic of an earlier Seto song tradition. In the material used in our analysis, there is no

correlation between these two phenomena and the specific tune types (the results for the harvest tune, which is presented in three performances, are very different). However, it is possible to notice some connections with the type of scale, as in the songs with a diatonic scale (the third song of Vabarna and the second and third songs of Pähnapuu), the speed of rise is relatively low. In order to investigate the correlations between the rise in tonality and the scale type, it would be necessary to significantly increase the volume of research material. The most convincing evidence of such a connection currently available is the small number of suitable diatonic tunes that we were able to find for our analysis of *kergütämine*.

2.4.2. Which matters more: absolute or relative pitch?

According to one of the aforementioned hypotheses regarding the function of *kergütämine*, this device is particularly necessary for the performer of the upper part *killõ*, who would otherwise end up singing in too high a register. It is quite understandable that when tonality is raised, the *killõ* singer is the first one to experience discomfort in terms of the high tessitura, especially since the Seto women sing with the chest voice. The range of the (chest) voice is limited for each singer to a certain absolute pitch, which is physiologically determined and also to some extent dependent on the skills, age, and health of the individual singer. If the performer of the *killõ* part has problems as a result of the rise in tonality, it follows that for each *killõ* singer there is a certain absolute pitch, approaching which the voice production becomes too intense, and that the lead singer must react to this by employing *kergütämine*. To test this hypothesis, we compiled Diagram 7, which represents the range of the change in pitch level (i.e., the range of the modal center, of which the scale notes used by the *killõ* are about a major third up).

If we compare the tonic range of all nine performances, we get an interval of about eight semitones. By adding the major third above and below – this is the approximate diapason of the Seto scales – we get a fairly large overall vocal range, namely, 16 semitones. The diagram also shows that the choice of tessitura in the performances analyzed is very wide – in Pihlaste’s first song, for example, the lower limit of the pitch level is higher than the upper limits in two of Vabarna’s songs as well as in two of those of Pähnapuu.

Of greatest interest in this diagram is the upper limit of the modulation range, since this should, in theory, determine the need to use *kergütämine*. If we compare all the performances on this basis, then the difference between the upper limits of the pitch level will be about 4.5 semitones – approximately from C# to a slightly sharp F# above middle C. Such a big difference could be explained by differences in the individual composition of each choir (especially in the individual qualities of the *killõ* singers’ voices), assuming that the results across the songs of each choir were similar. The individual qualities of the voices could also explain the fact that Pihlaste’s choir sings all three songs much higher than the Vabarna and Pähnapuu choirs. However, this explanation is rendered doubtful by the significant difference in pitch level among the performances of choirs with the same lead singer, as can be observed in both Vabarna’s and Pähnapuu’s songs. Unfortunately, we do not have precise information about all the singers of each choir, but there are reasons to believe that they were more or less the same on each recording. All three of Vabarna’s songs were recorded in 1959; furthermore, though her second and third songs were sung on the same day, the difference in pitch between them is very large. The first and second of Pähnapuu’s songs were also performed on the same day, but their pitch level differs significantly as well.

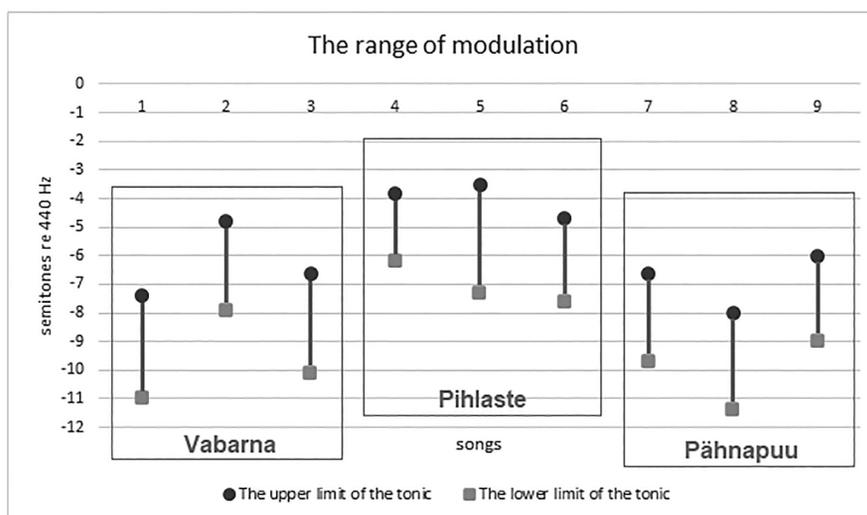


Diagram 7. The range of modulation in all songs under analysis.

As for the range of modulation in each song, this varies between 2.4 and 3.8 semitones. It would be logical to assume that this range should depend on the bottom limit of the pitch level – the lower it is, the further upward the singers can move. However, this assumption is only confirmed by the fact that the narrowest range present in any of the songs actually coincides with the song with the highest bottom limit (the first song of Pihlaste's choir). In the rest of the songs, such a relationship is not seen.

From the analysis of the absolute pitch of the performances, we can conclude that even in the case of a single choir this is not a decisive factor for the use of *kerģütämine*. In different performances, the lead singer may allow the choir to sing considerably higher or lower. The vocal capabilities of the *killõ* singer have little effect on the use of *kerģütämine*, since the lead singer often modulates downwards even when the pitch is still quite comfortable for the *killõ* (this is demonstrated by the fact that the same *killõ* sings much higher in other performances). However, this factor should not be completely disregarded, since there is no doubt that it is impossible to modulate infinitely upwards, and at some point in the tessitura any singer will begin to experience difficulties.

If the absolute pitch does not determine the use of *kerģütämine*, then its reasons should be sought in the relative change of pitch. To estimate this factor, we calculated the relative rise in pitch prior to *kerģütämine* and compared it with the interval of the descending modulation. The data for each song, each lead singer, and for all the songs analyzed are shown in Table 3, which contains the minimum, maximum, mean and median intervals.¹⁹

As we can observe visually in Diagrams 1-6, and as the data in Table 3 reveals, the individual rises before

kerģütämine and the *kerģütämine* intervals can be quite different. The minimum rise after which the lead singer used this technique is only 0.8 semitones, and the minimum *kerģütämine* interval is 0.7 semitones²⁰; the maximum values are 3.4 and 2.8 semitones respectively. In addition, as can be seen in the diagrams, a large ascent may be followed by a small descent and vice versa. The mean and median values for each song differ less: taking them all into account we can see that the interval of the rises varies from 1.2 to 2.6 semitones, and the interval of *kerģütämine* from 1.3 to 2.3 semitones; the mean and median values for the songs of each lead singer are, respectively, from 1.5 to 1.9 and from 1.6 to 2 semitones. In general, when averaged across all the songs, a fairly balanced picture emerges: the mean and median values of the ascents and descents thus obtained differ only by 0.1 semitones (respectively 1.8/1.7 and 1.7/1.6 semitones). It is noteworthy that the intervals of the rises tend to be slightly larger than those of *kerģütämine*, with the result that many (but not all) the songs are characterized by a slight ascending shift in the overall pitch level over the whole performance (see, for example, Diagrams 3, 4 and 5).

In general, we can say that the overall pitch level changes little during the performance, that is, the rise in pitch towards the end of the song compared to that at its beginning remains within the normal interval of the ascent between two *kerģütämine*, namely, slightly less than a whole tone. A rise in tonality by such an interval throughout a song is observed in the traditional songs of many peoples; the Seto singers, however, achieve this result in a very complex way, by means of numerous larger and smaller ascents and descents in the pitch level.

With regard to the reason for using the *kerģütämine* technique, it may be assumed that in general it is employed

Table 3. The rise in pitch before the *kerģütämine* and the descent of the *kerģütämine*.

		Rise before <i>kerģütämine</i> (semitones)				Interval of <i>kerģütämine</i> (semitones)			
		min	max	mean	median	min	max	mean	median
Anne Vabarna	work/game song	0.8	2.7	1.6	1.5	1	2.7	1.7	1.5
	harvest song	1.8	2.6	2.2	2.3	1.9	2.8	2.3	2.3
	narrative song	1.1	2.8	1.8	1.9	1.3	2	1.7	2
Kreepa Pihlaste	Kadri song	1.1	2.1	1.5	1.5	0.7	2	1.5	1.6
	harvest song	2.2	3	2.6	2.5	1.7	2.4	2.2	2.3
	fishing song	0.9	1.7	1.2	1.2	1	2.6	1.5	1.3
Veera Pähnapuu	harvest song	1.4	2.2	1.8	1.7	1.2	1.7	1.4	1.3
	narrative song	0.8	3.4	1.6	1.2	0.8	2.3	1.5	1.6
	lyrical song	1.2	2.2	1.8	1.9	1.6	2.3	1.9	1.9
Vabarna's songs		0.8	2.8	1.9	1.9	1	2.8	1.9	2
Pihlaste's songs		0.9	2.1	1.8	1.5	0.7	2.6	1.7	1.6
Pähnapuu's songs		0.8	3.4	1.7	1.7	0.8	2.3	1.6	1.6
All songs		0.8	3.4	1.8	1.7	0.7	2.8	1.7	1.6

to contain the upward transposition of the chorus, the speed of which may be really very fast in Seto songs. However, the reason for each particular downward modulation is not so much that the extreme pitch reached by the choir actually impedes singing; rather it is a preventive mechanism to lower the tonality after a rise of somewhere between a semitone and a minor third – on average, a little less than a whole tone. In view of this, the absolute pitch of the tonality does not really matter, since the songs can be performed even by the same choir in very different tessitura.

2.4.3. “Forces of ascent” versus “forces of descent”

When analyzing Seto songs with *kergütämine*, we often get the impression that during the song there is a constant struggle between the “forces of ascent” and the “forces of descent.” The former is associated with the chorus, and the latter with the lead singer. As already shown, the lead singer uses two methods to control the rise: one of them is *kergütämine*, and the other is downward micro-modulations at the beginning of the melostrophes. In both cases, the pitch level changes after the caesura. *Kergütämine* is a deliberate, generally accepted technique – one of the necessary singing skills. Downward micro-modulation is most likely not a completely conscious action, since there are no comments about it from the bearers of the tradition, and perhaps for this reason researchers have not yet paid attention to it. The chorus also has two methods of raising the pitch level: a smaller gradual rise in each melostrophe and a more significant, but also gradual, rise in the melostrophe beginning with *kergütämine*. Although researchers assert that the chorus readily accepts the new tonality proposed by the lead singer, this is only partly true, since it is in the melostrophes with *kergütämine* that the greatest “struggle” to preserve the higher tessitura already achieved occurs. To research these processes, let us first determine the magnitude

of the micro-modulations of the lead singer and the pitch rise employed by the chorus immediately after *kergütämine*; these data are shown in Table 4.

The very fact that a singing intonation is unstable and that the lead singer can start the melostrophe slightly lower or higher is not surprising – this is typical of traditional singing generally and especially to be expected if we take into account the recitative manner of the Seto lead singers’ performance. What is significant in the results of our analysis is the fact that the lowered beginnings of the melostrophes clearly predominate in some songs and in the performances of some lead singers (see the first column of Table 4). This is especially true of Anne Vabarna, in whose songs the lowered beginning (micro-modulation) is found in 67–88% of cases (the melostrophes with *kergütämine* do not count). Kreepa Pihlaste uses fewer such micro-modulations, which occur in 43% to 61% the melostrophes – that is, in about half of them – a fact which may also point to random fluctuations in intonation. Veera Pähnapuu’s data vary greatly from song to song: in the narrative song only 33% of the melostrophes present a lowered beginning, while in the lyrical song the figure rises to 76% (this can be clearly seen from the zigzag line in Diagram 6).

The magnitude of such descents is also of importance. In Pihlaste’s and Pähnapuu’s songs, the maximum descents (excluding the *kergütämine*) are 0.3-0.5 semitones, while in Vabarna’s case the descent can even be as much as 0.7–1.1 semitones, which suggests a “failed” *kergütämine* (in the sense that the chorus quickly returns to the previous pitch or even exceeds it). Although in our calculations very small descents of 0.1 semitones, almost imperceptible to the ear, account for some of the micro-modulations, in many songs the mean drop in pitch – for example, a drop of about 0.3–0.4 semitones – is large enough to be noticeable even without acoustic analysis. Interestingly, when calculating the

Table 4. The lead singer’s micro-modulations and the chorus’s rise in pitch directly after *kergütämine*.

		Lead singer’s micro-modulations in the strophes without <i>kergütämine</i> (percents, semitones)				Rise of the chorus in the strophes with <i>kergütämine</i> (semitones)			
		percentage of descents	maximum descent	mean descent	mean change in pitch	min	max	mean	median
Anne Vabarna	work/game song	67	-0.8	-0.29	-0.16	0.1	2.2	1.03	0.95
	harvest song	88	-1.1	-0.44	-0.41	1.1	1.8	1.38	1.3
	narrative song	69	-0.7	-0.29	-0.17	-0.2	0.7	0.34	0.5
Kreepa Pihlaste	Kadri song	43	-0.3	-0.17	0	0.4	0.9	0.63	0.6
	harvest song	50	-0.4	-0.26	-0.07	0.4	0.9	0.7	0.75
	fishing song	61	-0.5	-0.17	-0.07	0.3	1.1	0.66	0.7
Veera Pähnapuu	harvest song	50	-0.5	-0.29	-0.08	0.9	1.2	1.08	1.1
	narrative song	33	-0.3	-0.16	0	0.6	1.3	0.83	0.7
	lyrical song	76	-0.4	-0.23	-0.15	0.7	0.9	0.8	0.8

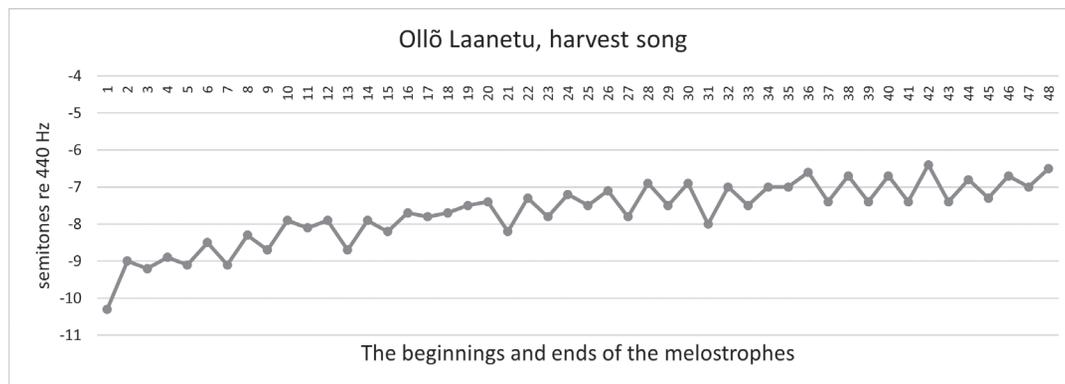


Diagram 8. Change in pitch level during performance (the pitch of the modal center at the beginning and end of each melostrophe). Harvest song performed by Ollö Laanetu and her choir.

mean changes in pitch at the beginnings of the melostrophes (see the fourth column of Table 4), which involves cases of both lowering and raising the pitch, the mean values for the individual performances never exceed zero and, with the exception of two songs, are negative. This confirms that the tendency towards a downward shift at the beginning of the melostrophes clearly prevails, although it is not equally strong everywhere. As might be expected, the most pronounced descending trend – from 0.16 to 0.41 semitones – was detected in the performances of Anne Vabarna, who hardly ever raises the tonality herself and regularly makes downward micro-modulations.

It should be emphasized that not all lead singers (regularly) use downward micro-modulations. In order to check how typical this tendency is, it would be necessary to significantly expand the range of musical material analyzed. Among the performances which were measured for comparison with the main materials used in our study, the abundance of descending micro-modulations attracted attention in the songs of the aforementioned prominent lead singer Ollö Laanetu (b. 1909).²¹ In the performances that I had at my disposal, she made very little use of *kergütämine*; however, she regularly lowered the tonality slightly at the beginnings of the melostrophes. In Diagram 8, we can observe the pitch changes in the harvest song recorded by her choir in 1973.²² Laanetu never employs true *kergütämine* in this song (at least, there is no “successful” *kergütämine* here), but the constant descents at the beginning of the melostrophes (corresponding to the zigzag line in the diagram) are clearly audible. Calculations show that Laanetu uses downward micro-modulations in 91% of the melostrophes, while the mean interval of these modulations – 0.47 semitone – is even greater than that in Vabarna’s songs. As a result, the pitch rises by 3.8 semitones by the end of the song. Thus, we can conclude that although the lead singers themselves sometimes contribute to the rise in pitch level by starting a new melostrophe a little higher, in general their function is to lower the tonality; this is expressed not only by the use of *kergütämine* techniques, but also by the systematic, less

evident drop in pitch (micro-modulations) at the beginnings of the melostrophes.

While the task of the lead singer is to lower the pitch level, raising it is largely the responsibility of the chorus, which is opposed in this respect to the lead singer. The speed of the rise in tonality in regular melostrophes (that is, in those without *kergütämine*) was analyzed above and turned out to be significantly faster than usually observed in unaccompanied traditional singing. Table 4 presents data concerning the chorus’s rise in the melostrophes beginning with *kergütämine*. While the mean rise in regular melostrophes is 0.39 semitones (see Table 2), in the melostrophes with *kergütämine* it is twice as large – 0.83 semitones. The “extreme” cases in Vabarna’s songs even approach the whole tone (preceded by an even larger *kergütämine*). These are significant results, especially considering that in the Seto songs the melostrophes are mostly quite short (in the material here studied, their duration is from 8 to 12.6 seconds).

Such a “confrontation” between the lead singer and the chorus is suggestive – after all, the lead singer’s goal should be to help the choir sing in a comfortable tessitura, but the choir seems to resist this help, raising the tonality higher and higher. As a result, the choir constantly sings in a higher tessitura than the lead singer suggests, as demonstrated by the comparison of the mean and median pitches with the lowest and highest tonality in the song. Mean and median pitches for all songs turned out to be in the upper half of the total modulation range, with the median being mostly above the mean. Thus, we can conclude that in the “confrontation” between the lead singer and the chorus, the latter is more likely to “win.”

Discussion and conclusions

In order to explain the phenomenon of *kergütämine*, two questions need to be answered: on one hand, why the lead singer lowers the pitch level, and, on the other, why the chorus raises it. Researchers have suggested some

considerations with regard to the first question, but that Seto choirs have a particular tendency to raise tonality has always been taken as a fact, and no explanation for it has been suggested as yet. Clearly, the answers to these two questions are interrelated, and it is possible that the key to solving the enigma of *kergütämine* actually lies in discerning the reasons behind the unusual pitch rise characteristic of Seto multipart singing.

However, we will start with a discussion of the reasons for and functions of *kergütämine* itself. As already mentioned, there are three main hypotheses. *Kergütämine* is:

- 1) a technique practically necessary to maintain a comfortable singing tessitura,
- 2) a semantic and compositional device associated with a verbal text, or
- 3) an ancient custom which should be followed for no particular reason.

Leaving aside for the time being the question of the connection between *kergütämine* and the lyrics of the song, let us turn to the opposition between “necessity” and “custom.” As far as necessity is concerned, it should be remembered that such a need is not universal, but quite specific (it does not arise in many other musical cultures). With regard to custom, it should be borne in mind that at some point this custom came about for reasons which may have been forgotten over time, rethought, or replaced by others. We may also assume that *kergütämine* is both a necessity and a custom, in which case we should seek the relationship between the two factors, comparing the arguments for the relative weight of each. Anything that points to the direct necessity of *kergütämine* weakens the importance of the conventionality of this technique, whereas cases of “unjustified” use of *kergütämine* speak in favor of its function as a mere custom.

The main argument in favor of the practical necessity of *kergütämine* is the unusually high speed of the upward transposition, which our analysis fully confirmed. There is no doubt that with such a steep rise in pitch it would be impossible to sing for a long time without descending modulations. Moreover, analysis has revealed that *kergütämine* alone is often not enough and that some lead singers constantly curb the chorus’s rise by means of downward micro-modulations. An additional factor here is the considerable length of Seto songs, especially the narrative ones: Seto song culture, in fact, gives great prominence to the lyrics and the long song texts are highly valued (the most important skill of a lead singer, from the traditional point of view, is the knowledge of texts and the ability to improvise them).

On the other hand, our measurements have shown that the use of *kergütämine* is not related to reaching a specific absolute pitch; the same choir can actually sing in very different pitch ranges, but even then the difference in the use

of *kergütämine* (frequency and interval) is very small or entirely absent. In any case, when comparing performances, the question often arises as to why *kergütämine* was used at all in one song, if in another song the same choir successfully sang much higher.

The assumption of the practical necessity of *kergütämine* is also supported by the fact that sometimes there are situations when the reason for using this technique seems to the observer quite clear – for example, when a previous *kergütämine* did not achieve the desired result (the chorus did not sufficiently support the new pitch level) and the singer repeats the attempt after a couple of melostrophes. In performances by Kreepa Pihlaste, we can also notice a tendency to employ *kergütämine* after melostrophes in which the chorus raised the tonality especially strongly – that is, the accelerated pitch rise becomes a trigger for a downward modulation.

The factor evidencing against the direct necessity of many specific applications of *kergütämine* is that they are related not so much to the absolute pitch reached by the chorus, but rather to the relative rise in pitch by a certain interval (on average, about 1.7 semitones). The lead singer reacts to this by using the descending modulation, even though the tessitura may still be quite convenient for the choir at the time. In other words, *kergütämine* is mostly of a preventive nature, and there is usually no direct connection between the tessitura of the singing and the use of this technique. It is also noteworthy that by applying *kergütämine* the lead singer can descend to a very different absolute pitch during the performance of a song. The initial pitch, which – logically – should be the most convenient, is by no means a landmark for subsequent modulations: Vabarna, for example, tends to start quite high and then modulate much lower. At the same time, within the same performance the absolute pitches preceding the instances of *kergütämine* differ less than the absolute pitches reached by the downward modulations. This may indicate that within the limits of one performance of a song some threshold for the maximum permissible absolute pitch still exists.

The uneven use of *kergütämine* in different songs and within one song also raises a further interesting point. In some songs this technique is employed regularly and often – for example, after every 4–5 melostrophes in the harvest song of Anne Vabarna. However, in a long narrative song, the same singer uses *kergütämine* much less frequently and very unevenly – six times during 84 melostrophes at intervals of between two and 20 melostrophes. This unevenness suggests the existence of some specific reasons for using *kergütämine* beyond simply following the tradition, as in the latter case a more regular use of this technique would be expected.

Another interesting circumstance is that sometimes the lead singer uses *kergütämine* shortly before the end of

the song, when there is no longer any practical need for doing so. Moreover, it must not be forgotten that many performances without *kergütämine* exist as well, even in the presence of quite a substantial rise in tonality. This means that the descending modulations are still “voluntary” for the lead singers. It is also noteworthy that in performances without *kergütämine*, as a rule, there is no unrestrained rise in pitch. It would appear that if the lead singer does not use downward modulations, then the chorus does not raise the pitch level much higher than its comfort zone and vice versa.

One of the controversial issues with relation to *kergütämine* is the existence of connections between this technique and the verbal text. If such correlations were revealed, then many cases of *kergütämine* which are not entirely justified from the point of view of the singing tessitura would be explained. As can be concluded from what was said about this above (see section 1), the author of this study is rather skeptical with regard to this hypothesis: Jaan Sarv's analysis of concrete song sample does little to prove it convincingly, and neither the analysis of three of Vabarna's songs by Laanemets (2007) nor our own experience provides evidence of such a link. Nevertheless, the view that there is a connection of *kergütämine* with important structural points in the verbal text is quite widespread and can be heard not only from researchers but also from modern bearers of the tradition. To obtain an independent, unbiased, and informed view with regard to this issue, I turned for help to the ethnomusicologist and philologist Janika Oras. Our analysis of nine songs revealed some unexpected tendencies.

First, it is necessary to explain the criteria we used to determine the presence of a connection between *kergütämine* and the structure and content of the text. The texts of Seto songs are built on the same principles as runic poetry in general. Runic texts, which do not have end rhymes at the line ends, are not divided into strophes, but the lines often form so-called “parallel groups,” united by syntactic and semantic similarities. Initial rhymes – alliterations and assonances – are often used within a line. From the point of view of the structure and content of the text, the least suitable place for *kergütämine* is inside parallel groups, where the same idea is repeated with variations and the lines are maximally connected. The most suitable lines for *kergütämine* should, in theory, be those with which large semantic blocks of text begin; these moments are often associated with repetitions of the initial lines of previous blocks. Compositional caesuras of medium importance are located within large blocks, but outside parallel groups. In song texts containing dialogues, the disjointing factor may be the beginning of direct speech.

The analysis of the nine songs considered in this study shows that there are no cases where the applications of *kergütämine* coincide with the large caesuras. In some

cases, there are coincidences with the mid-level caesura – the beginning of a relatively new topic or direct speech in dialogue. However, an unexpected finding is the fact that the majority of *kergütämine* – more than 40 out of the 66 instances found in the songs analyzed – occur within parallel groups. Kreepa Pihlaste is especially consistent in this respect, regularly employing *kergütämine* in the last lines of parallel groups.

It is clear that where there are a large number of *kergütämine* in a song, these may quite well coincide with both essential and “passing” lines. Though the occurrence of *kergütämine* at a meaningful moment more easily attracts the attention of a researcher (as Väisänen said in the fragment quoted above, such cases “create the impression of art”), it would appear that such instances are likely to be mere coincidences. On the other hand, the abundance of modulations within parallel groups seems not to be accidental. Janika Oras, who has a rich personal experience of performing Seto songs, offered an explanation that appears quite convincing: during the performance, the lead singer is primarily responsible for the verbal text, and this takes up a lot of their attention; therefore, it is more convenient for the lead singer to take care of the musical side of the performance when the text is on “reliable tracks,” namely in a parallel group. Such a psychological explanation is certainly worth considering.

When drawing conclusions on this issue, however, we must not forget that the relationship between *kergütämine* and the verbal text may be different in performances of different lead singers (this is partly indicated by our analysis). Nevertheless, it seems highly probable that, at least in the old Seto tradition, *kergütämine* was neither semantic nor a compositional device, though individual cases may still occur.

Having discussed the possible reasons for the use of abrupt downward modulations, let us try to make at least some assumptions relating to the reverse process – the gradual rise in pitch, which, for some mysterious reason, in Seto songs occurs more rapidly than is generally the case in traditional unaccompanied vocal music. What are the “forces” that are pulling the Seto choir up in pitch?

In the opinion of some ethnomusicologists, a gradual upward transposition in traditional singing is associated with warming-up; but this would naturally occur only in the first melostrophes of the song, after which such a rise would stop. On the other hand, many researchers see a connection between a rise in pitch “with an increase in the emotional strain of the performers” (Narodnoye... 2005: 518). For some genres, such as funeral or wedding laments, this seems to be a convincing explanation. In Seto wedding laments (which are performed by a choir and are structurally similar to other multipart songs), a pitch rise does, as a rule, actually occur. However, Seto singers also raise the tonality

in songs in other genres. In our analysis some correlation between a pitch rise and the “more emotional” song genres can be traced: for example, in cheerful, fast songs (game and calendar songs) and in labor songs performed in the open air in an intense manner (for example, harvest songs), a faster rise was detected than in the calmer narrative and lyrical songs. And yet it cannot be said that the Seto sing ritual and labor songs more emotionally than, for instance, the Russians or Mordovians, whose upward transposition is moderate and does not necessitate the use of special compensatory modulation techniques.

It is also hypothesized that traditional singers tend to raise the pitch due to their desire to sing with a brighter, lighter timbre (e.g., Ambrazevičius 2015: 181). Evaluating the timbre by ear is inevitably subjective, and therefore I can only note that, in comparison, for example, with the singing of their Russian neighbors, the characteristic Seto timbre seems to me rather more “dark” and “covered” than “light” and “open.” At the same time, in comparison with the runic songs of other Estonians, the Seto timbre is more intense and their songs are usually sung more loudly. The Seto lead singers tend to sing more quietly than the chorus and in a recitative manner, which may to some extent contribute to the emergence of descending micro-modulations. The chorus, on the other hand, sings more chantingly, intensely and loudly, which can result in some pitch rise; however, as with warming-up and increased emotionality, this does not sufficiently explain the entity and rapidity of the rise, for there is nothing particularly specific to the Seto in any of these factors.

As for “timbre brightening,” the more specific factor would seem to be the special requirements for the timbre of the *killõ* singer. The very word *killõ* means “high, penetrating.” Such a timbre is necessary for the *killõ* to be heard against the background of the chorus. Could the *killõ* singer be the initiator of the pitch rise? In addition to the bright, tense timbre, the upward tendency in the *killõ* part may also be associated with the peculiarities of the Seto ancient musical style, namely, with the above-mentioned one-three-semitone mode. The two upper notes of this scale, which the *killõ* primarily uses, are a semitone apart (see Fig. 1), which creates a kind of “leading-tone” tension. As already noted above (see section 2.1), the *killõ* singers often tend to raise certain scale notes also in the diatonic scale in order to reduce the interval between the two upper notes (see the scale notes A#–B in Fig. 2).

Another specific stylistic factor that might cause an upward transposition is the prevalence of major thirds in the harmony of the Seto songs. The interval structure of the one-three-semitone scale itself was probably brought into existence by the preference of singers for the mono-intervallic harmony of major thirds (Pärtlas 1997, 2006). Moreover, acoustic analysis reveals a tendency towards some

enlargement of the major thirds, which may be associated with the desire to make consonances sound even brighter (Pärtlas 2010). A certain influence of the pitch system on the rise in tonality in the songs analyzed seems quite probable, not least because, when searching for musical material for this study, it was performances based on the one-three-semitone mode that turned out to be the most suitable for the investigation of *kergütämine*.

Even these stylistic factors, however, seem insufficient to fully explain the unusually rapid rise in pitch in Seto songs. If the “forces of ascent” were insuperable, the Seto simply could not sing without *kergütämine*, but in actual fact they manage perfectly well when the lead singer for some reason either forgets to use *kergütämine* or considers it unnecessary. What happens in those songs where *kergütämine* is absent? When examining some such performances, several scenarios were found. Sometimes, though quite rarely, the chorus continues to raise the pitch and the song ends in a very high tessitura.²³ In some other cases, the chorus stops raising the pitch or slows the rate of rise as the song continues – this is also observed in those songs where the lead singer postpones the use of the *kergütämine* (for example, in two of Veera Pähnapuu’s songs; see Diagrams 5 and 6). Another possibility is that in a song without *kergütämine* the tonality may vary chaotically with no constant upward tendency on the part of the chorus and fluctuating intonation on the part of the lead singer; nevertheless, towards the end of such songs the pitch level generally rises, but not sufficiently to make *kergütämine* a necessity.²⁴ Sometimes the impression emerges that when the chorus does not raise the tonality the lead singer herself begins to do so, or tries to “swing” the tonality with small micro-modulations both up and down. It is interesting that a stable pitch level, which is normal in many song traditions, is not typical of Seto singing: among the singers belonging to the “primary” tradition the tonality always fluctuates, usually rising across the whole performance.

On the basis of the above considerations, it seems necessary to add one more factor to those already discussed in order to explain the phenomenon of *kergütämine*. Since today there are no longer any bearers of the Seto tradition who would be able to answer questions on this topic, I will allow myself to make an assumption that seems to me quite logical, namely that in the old Seto tradition not only the descending modulations of the lead singer but also the raising of the pitch level by the chorus were deliberate techniques designed to achieve a desired aesthetic effect. If this assumption is correct, then the role of *kergütämine* was not to impede the pitch rise, but rather to promote it – that is, it was more a case of “cooperation” between the lead singer and the chorus rather than one of “confrontation,” and a traditional performance would therefore have been based on a balanced interaction between the lead singer and the

chorus. The singers of the chorus (possibly led by the *killõ*) deliberately raised the tonality, achieving a special brightness and emotionality in the sound, in the knowledge that the lead singer would help them at the right moment with a downward modulation. It is their reliance on *kergütämine* that explains the chorus's "carelessness." The lead singer with her *kergütämine* does not so much "save the situation" when it becomes difficult to sing, but on the contrary stimulates the choir to raise the tonality by giving the chorus "space" for the rise. This could explain the numerous cases where the lead singer apparently modulates unnecessarily; it is quite possible that her purpose is to "swing" the tonality and provoke the chorus to a rapid rise in pitch. This also explains why the lead singer often modulates too far downward from a practical point of view: after all, the lower she modulates, the higher the speed of the ascent can be.

Assuming this hypothesis to be correct, it follows that in the ancient Seto song tradition, the aesthetic value lay not just in singing with a bright intense timbre, but in the dynamics of timbre and pitch change itself, a kind of pitch and timbre *crescendo*, followed by a pitch and timbre contrast created by an abrupt downward modulation. Such a technique could take on different connotations in different song genres – for instance, an increase in the weight of expression in laments or in the magical effect in ritual songs, an expression of joy in festive songs, or an additional game element in game songs.

In this article, I have tried to uncover the original nature of *kergütämine* in the ancient Seto song tradition, a tradition which has undergone significant changes during the twentieth and early twenty-first centuries. Although the tradition has survived in active use until today, many of the original stylistic features (for example, the one-three-semitone mode) have been (almost) lost or at least modified under the influence of European professional and popular music culture. The *kergütämine* technique is now rarely used, and it seems that it has finally lost its original meaning and become little more than a custom. The problem here is not so much that the lead singers have lost the skill of this technique, but that Seto choirs, with rare exceptions, are no longer able to raise the tonality as they would have done traditionally; as a result, the use of *kergütämine* not only has no practical necessity, but sometimes leads to a pitch level that is too low for comfortable singing, and the chorus is unable to raise it. It seems that at the moment it is possible to recreate this unique ancient practice only through the conscious efforts of modern carriers of the tradition on the basis of thorough ethnomusicological knowledge. Fortunately, this need has been recognized by some Seto choirs, and their desire to revive the original style of the old Seto songs is already bearing fruit.

Endnotes

- ¹ The Seto people are a small ethnic group of Estonians living in Southeast Estonia and within the adjoining border territories of Russia. The Seto name their region *Setomaa* (in Estonian – *Setu* and *Setumaa*). The Seto tongue, a Võro-Seto dialect of Estonian, is spoken by about 12,500 people (according to the 2011 Census) and belongs to the Finnic subgroup of the Finno-Ugric languages. The traditional culture of the Seto differs notably from the culture of other Estonians. Unlike most other Estonians, who are Lutherans, the Seto people are Orthodox. With regard to music, the greatest peculiarity of the Seto culture is the ancient tradition of multipart singing – the so-called Seto *leelo*, which in 2009 was included in the UNESCO list of Intangible Cultural Heritage. The musical tradition of the Seto is one of the very few in Estonia that has been preserved in active use until today.
- ² A description of the specific features of the Seto musical style will follow in Section 2.1 of the article.
- ³ In this article the term "tonality" is not associated with European functional harmony; it is used to mean the absolute pitch (pitch level) at which music is performed.
- ⁴ The term "melostrophe" is used instead of "strophe," since in the texts of Seto songs (a kind of runic poetry) there is no (rhymed) strophes, while from the musical point of view we can speak about the melostrophes consisting of two melodic lines.
- ⁵ In Western musical terminology the term "transposition" usually refers to an intentional act, whether in composing or in performance. In the context of the present study this term (and also the term "modulation") refers to every change in the pitch level of the performance.
- ⁶ Interestingly, in Western musical culture an involuntary gradual fall in pitch is a typical problem among amateur choirs, with which their conductors have to struggle. For example, the eminent Estonian choral conductor and composer Tuudur Vettik wrote about this in detail in 1939 in his guide *Handbook for a conductor of an a capella choir* (Vettik 1939: 255–261). Matti P. Ryyänen also mentions in his master's thesis: "non-professional singers tend to change their tuning (typically downwards) during long melodies" (Ryyänen 2004: 27).
- ⁷ While working on this paper, I conducted a selective analysis of field recordings made with my participation in different geographical regions and found a moderate tendency to pitch rise in the songs of the Russian-Belarusian borderlands and in Mordovian songs. These findings cannot be called new, but the initial comparison revealed that the pitch rise in the songs of the Russian-Belarusian borderlands was more marked than in the Mordovian examples. However, in the Udmurt improvisational vocal genre *krež'*, for example, a shift in pitch was not found (of course, more thorough research is needed here).
- ⁸ Surprisingly, this observation contradicts the results of Ambrazevičius's analysis, which detects the presence of an even greater rise in tonality in Lithuanian songs of a later style than in those of more ancient style (Ambrazevičius 2015: 182). In any case, this is an interesting question that has so far been little studied.

- ⁹ A region situated on vast territories along the Oka, Moksha, and Tsna rivers, once inhabited by the Finno-Ugric Meshchera tribe, which is related to the modern Erzya people.
- ¹⁰ Unfortunately, Gilyarova's observations are only published in brief as a conference abstract (Gilyarova 1989).
- ¹¹ The original is in Finnish; it is preserved in the Estonian Folklore Archives (EÜS X 812/3).
- ¹² This song was recorded in Obinitsa village in 1972; the lead singer is Hemmo Mast (b. 1900) (RKM, Mgn. II 2314).
- ¹³ The archival numbers of these sound recordings are RKM, Mgn. II 322 c, ERA, Pl. 25 A2 and Mgn. II 1381 c.
- ¹⁴ "Setu lauluema Veera Pähnapuu" [The Seto mother of song Veera Pähnapuu], 1989, LP, Мелодия – C30 28769 001.
- ¹⁵ Anne Vabarna lived in the village of Tonja (former Värskä district), Kreepa (Agregina, Agripina) Pihlaste in Haudjassaare (Audjassaare) (former Mikitamäe district), and Veera Pähnapuu in Pörste (Pechora district, Pskov region of Russia).
- ¹⁶ Praat, a free computer software, www.fon.hum.uva.nl/praat/.
- ¹⁷ All data concerning the sound recordings analyzed appear in Table 1.
- ¹⁸ When discussing these results, it is necessary to take into account the fact that only songs with the most active use of *kergütämine* were selected for this analysis; it follows that, on average, this technique occurs less frequently in the tradition as a whole.
- ¹⁹ Median values have been calculated in order to reduce the impact of individual extreme cases; on the other hand, for the songs where little *kergütämine* was used, the mean values seem to be more indicative. However, as Table 3 reveals, the difference between the mean and median values is usually very slight.
- ²⁰ Here the question may arise as to why we have defined such a small modulation as *kergütämine*, but not as a micro-modulation. Sometimes it is really difficult to decide whether we are actually dealing with the former or the latter, especially when the interval is slightly less than a semitone, which is too small for *kergütämine* and too large for micro-modulation. The decisive factor may, in fact, be the reaction of the chorus to the lead singer's downward modulation: the effect of *kergütämine* is clearly perceived when the chorus supports the new tonality and continues singing at a significantly lower pitch level than that preceding the modulation.
- ²¹ Ollõ (Elena, Olga) Laanetu lived in the village of Rõõсна (Suure-Rõõсна) (former Mäe district).
- ²² The archival number is RKM, Mgn. II 2423d.
- ²³ An example of such a performance is a shepherd song, performed by the choir of Kreepa Pihlaste on the same day as her songs analyzed in this work (RKM, Mgn. II 1633 g). In the first melostrophes the lead singer applies downward micro-modulations, but later she even starts to raise the tonality slightly herself. The pace of the rise slows somewhat in the second half of the song; by the end of the song, however, the upward transposition is equal to the interval of a major third, so that the song reaches the highest pitch (G above middle C) attained in all the songs analyzed. It is more than likely that, had the song been longer, the lead singer would have used *kergütämine*; we can only speculate as to why she did not do so during this performance.
- ²⁴ An example of such a scenario is the performance of the swing song by the choir of Kati Lummo (Mgn. II 2231 a).

References

- Alekseyev 1986: Алексеев Эдуард, *Раннефольклорное интонирование. Звуковысотный аспект*, Москва: Советский композитор, 1986.
- Ambrazevičius Rytis, and Žanna Pärtlas, Searching for the "Natural" Origins of the Symmetrical Scales: Traditional Multipart Setu Songs, in: *Journal of Interdisciplinary Music Studies*, Vol. 5 (1), 2011, p. 1–17.
- Ambrazevičius Rytis, Performance of Musical Scale in Traditional Vocal Homophony: Lithuanian Examples, in: *Музикологија*, Vol. 2014 (17), 2014, p. 45–68.
- Ambrazevičius Rytis, Transformations of Musical Scales in Traditional Unaccompanied Singing, in: *Proceedings of the 9th Triennial Conference of the European Society for the Cognitive Sciences of Music*, 17–22 August 2015, Manchester, UK, Ginsborg, J., Lamont, A., Phillips, M., Bramley, S. (eds.), 2015, p. 178–184.
- Ambrazevičius Rytis, Robertas Budrys, and Irena Višnevskā, *Scales in Lithuanian Traditional Music: Acoustics, Cognition, and Contexts*, Kaunas: Arx reklama, 2015.
- Garšnek 1953: Гаршнек Анатолий, *Народные песни сету*, диссертация на соискание ученой степени кандидата искусствоведения, Москва: Московская Государственная Консерватория имени П. И. Чайковского, 1953.
- Gilyarova 1989: Гилярова Наталья, Многоголосие как один из компонентов музыкального диалекта, in: *Песенное многоголосие народов России. Тезисы докладов конференции (Воронеж, 24–29 сентября 1989 г.)*, Москва: Комиссия музыкаловедения и фольклора Союза композиторов РСФСР, ГМПИ им. Гнесиных, 1989, p. 34–36.
- Kolk 1979: Кольк Удо, Проблемы сетуского многоголосия, in: *Ученые записки Тартуского государственного университета*, вып. 501, Тарту, 1979.
- Laanemets Liisi, *Setu lauliku Anne Vabarna viisirepertuaarist ERA helisalvestiste põhjal*. Master's thesis, Tallinn: Estonian Academy of Music and Theatre, 2007.
- Laul Silvia, Lõunaestlaste ja Volga rahvaste ühiskultuurist, in: *Keel ja Kirjandus*, No. 9, 1997, p. 577–584.
- McNab Rodger J., Lloyd A. Smith, and Ian H. Witten, Signal Processing for Melody Transcription, in: *Proceedings of the 19th Australasian Computer Science Conference, Melbourne, Australia, January 31–February 2, 1996*, p. 301–307, https://www.researchgate.net/publication/2518860_Signal_Processing_for_Melody_Transcription [last checked 16.02.2021].
- Narodnoye...* 2005: *Народное музыкальное творчество*, Ольга Пашина (ред.), Санкт-Петербург: Композитор, 2005.
- Niemi Jarkko, and Marko Joust, Monochronic and Additive Principles in North Eurasian Song Styles, in: *Этномузыкаловедение Поволжья и Урала в ареальных исследованиях*, Irina Nurieva (ed.), Izhevsk: UIIYaL UrO RAN, 2002, p. 250–282.
- Pärtlas Žanna, Tähelepanekuid setu laulu laadichitusest ja mitmehäälsusest, in: *Teater. Muusika. Kino*, No. 1, 1997, p. 23–28.
- Pärtlas Žanna, К вопросу о сходствах в сетуской, мордовской и южнорусской песенных традициях, in: *Setumaa kogumik 3: Uurimusi Setumaa loodusest, ajaloost ja folkloristikast*, Mare Aun and Ülle Tamla (eds.), Tallinn: Tallinna Ülikooli Ajaloo Instituut, 2005, p. 196–237.

- Pärtlas Žanna, "Sümmeetrilised laadid" ja monointervalliline mitmehäälsus vokaalses rahvamuusikas: mõningaid paralleelsetu ja Lõuna-Venemaa rahvalaulu vahel, in: *Regilaul – esitus ja tõlgendus*, Aado Lintrop (ed.), Tartu: Eesti Kirjandusmuuseum, 2006, p. 219–248.
- Pärtlas Žanna, Setu Multipart Singing: Comparison of Written Sources and Sound Recordings, in: *Historical Sources and Source Criticism*, Susanne Ziegler and Urban Bareis (eds.), Stockholm: Svenskt Visarkiv, 2010, p. 227–237.
- Pärtlas Žanna, Lexicon of Local Terminology on Multipart Singing in Setu, Estonia, in: *European Voices II. Cultural Listening and Local Discourse in Multipart Singing Tradition in Europe*, Ardian Ahmedaja (ed.), Wien, Köln, Weimar: Böhlau, 2011, p. 317–326.
- Pauws Steffen, CubyHum. A Fully Operational Query by Humming System, in: *Conference: ISMIR 2002, 3rd International Conference on Music Information Retrieval, Paris, France, October 13–17, 2002, Proceedings*, https://www.researchgate.net/publication/220723563_CubyHum_A_Fully_Operational_Query_by_Humming_System [last checked 16.02.2021].
- Rüütel Ingrid, and Jaan Ross, A Study of Pitch Contours and the Scale Structure in Votic Folk Music, in: *Musikometrika*. M. Boroda (ed.), Bochum: Brockmeyer, 1988, p. 169–190.
- Rüütel 1994: Рюйтел Ингрид, *Исторические пласты эстонской народной песни в контексте этнических отношений*, *Ars musicae popularis* 12, Tallinn: Eesti Teaduste Akadeemia. Eesti Keele Instituut, 1994.
- Rüütel Ingrid, Setu rahvalaulu kihistused ja etnokultuuriline taust, in: *Keel ja Kirjandus*, No. 1, 1999, p. 33–52.
- Ryynänen Matti P., *Probabilistic Modelling of Note Events in the Transcription of Monophonic melodies*, Master's thesis, Tampere University of Technology, Department of Information Technology, 2004, https://www.cs.tut.fi/sgn/arg/matti/mryynane_thesis.pdf [last checked 16.02.2021].
- Sarv Vaike, *Ühe setu rahvalauliku repertuaari muusikaline analüüs*, Diplomitöö, Tallinn: Tallinna Riiklik Konservatoorium, 1976.
- Sarv Jaan, Üheksa setu rahvalaulu, in: *Soomesugri rahvaste muusikapärandist*, Ingrid Rüütel (ed.), Tallinn: Eesti Raamat, 1977, p. 68–103.
- Scherbaum, Frank, and Nana Mzhavanadze, Svan Funeral Dirges (Zär): Musical Acoustical Analysis of a New Collection of Field Recordings, in: *Musicologist*, Vol. 4 (2), 2020, p. 138–167, https://www.uni-potsdam.de/fileadmin/projects/soundscapelab/PapersMusic/2020/Zar_Paper_Final_1.pdf [last checked 16.02.2021].
- Tampere Herbert, Eeslaulja ja koor setu rahvalaulude ettekandmisel, in: *Eesti Rahva Muuseumi aastaraamat IX–X. 1933/34*, Tartu: Eesti Rahva Muuseum, 1934, p. 49–74, <https://www.digar.ee/viewer/et/nlib-digar:367789/317490/page/54> [last checked 16.02.2021].
- Vetrik Tuudur, *A cappella laulukoori juhataja käsiraamat*, Tallinn: Eesti Lauljate Liit, 1939.

Santrauka

Garso aukščio (tonacijos) kaita tradicinėje vokalinėje muzikoje be akompanimento yra paplitęs, bet menkai tyrinėtai reiškinys (Aleksyev 1986; Ambrasevičius 2014, 2015; Scherbaum & Mzhavanadze 2020). Tradicinėje muzikoje egzistuoja gerai žinoma laipsniškos transpozicijos aukštyn tendencija, tačiau šiame tyrime pagrindinis dėmesys skiriamas daug retesniai reiškiniui – staigiai moduliacijai žemyn po laipsniško garso aukščio kilimo, reguliariai praktikuojamai daugiabalsėse setų (Pietryčių Estijos etnografinio regiono) dainose ir žinomai kaip *kerģūtāmine* [reljefo] technika. Tai – pirmasis bandymas apibūdinti tokią neįprastą techniką, remiantis „pirminei“ tradicijai priklausančių pavyzdžių akustine analize. Pagrindinę tyrimo medžiagą sudaro devynios dainos, atliekamos trijų pagrindinių setų vokalistų Anne Vabarnos (g. 1877), Kreepos Pihlaste (g. 1892) ir Veeros Pähnapuu (g. 1916) chorų. Tyrimu siekta nustatyti tradicinės *kerģūtāmine* funkcijas. Todėl patikrintos trys pagrindinės literatūroje minimos hipotezės, kad *kerģūtāmine* yra:

- 1) technika, praktiškai būtina norint išlaikyti patogią dainavimo tesitūrą,
- 2) semantinė ir kompozicinė priemonė, susijusi su žodiniu tekstu, arba
- 3) senovinis paprotys, kurio dažnai laikomasi be jokios ypatingos priežasties.

Straipsnyje siūlomos naujos interpretacijos, kodėl ši technika atsirado ir kokios yra jos funkcijos bei reikšmės.

Akustiniai matavimai atskleidė naujų faktų apie *kerģūtāmine*. Nustatyta, kad kartu su akivaizdžiomis staigiomis moduliacijomis žemyn (jų vidutinis intervalas – 1,7 pustonio) kai kurios pagrindinės setų vokalistės kiekvieno posmo pradžioje šiek tiek žemina natą. Tokios reguliarios mikromoduliacijos gali būti laikomos papildoma priemone, ribojančia nuolatinį garso aukščio kilimą. Analizė taip pat patvirtino prielaidą apie neįprastai didelį laipsniškos transpozicijos aukštyn greitį chorinėje partijoje (vidutinis kilimo greitis yra 3,9 cento ir ilgesnėse dainose gali siekti iki 38,5 pustonio), o tai logiškai rodo praktinę *kerģūtāmine* būtinybę. Tačiau paaiškėjo, kad *kerģūtāmine* vartojimas susijęs ne tiek su absoliučiu choro pasiektu garso aukščiu, kiek su ankstesniu santykinu tono pakilimu (vidutiniškai apie 1,8 pustonio). Vadinasi, dažnai nėra tiesioginio dainavimo tesitūros ir šios technikos naudojimo ryšio, o praktinės funkcijos atžvilgiu *kerģūtāmine* dažniausiai yra prevencinio pobūdžio. Įvairiuose skirtingų pagrindinių vokalistų pasirodymuose *kerģūtāmine* vartojimo dažnis ir reguliarumas skyrėsi. Stabilus skirtumas tarp dviejų *kerģūtāmine* atvejų gali siekti vidutiniškai apie 4 ar 6 melostrofas, tačiau pasirodymuose ši technika naudojama labai netolygiai. Kai kurios gerai žinomos vokalistės pasitelkia šią techniką labai retai arba visai jos nenaudoja. Buvo patikrinta ir hipotezė apie

kergütämine technikos ryšį su verbaliniu tekstu ir kompozicija. Visų devynių dainų analizė nepatvirtino esant tokias koreliacijas. Didžioji dalis *kergütämine* naudojimo atvejų daugiau nei 40-yje iš 66-ių analizuotų dainų atsirado vadinamosiose lygiagrečiose teksto eilučių grupėse, kitaip tariant, moduliacijos nebuvo susijusios su dainų tekstu kompozicinėmis cezūromis.

Galiausiai galime daryti išvadą, kad nors neįprastai greitas garso aukščio kilimas tarytum įrodo praktinį *kergütämine* būtinumą, ši technika dažnai naudojama be

jokios aiškios priežasties, išskyrus sekimą tradicija. Norint paaiškinti šio papročio kilmę, reikėtų išsiaiškinti itin greitų transpozicijų aukštyn setų dainose priežastis. Straipsnyje bandoma paaiškinti, kad greitas tono kilimas iš pradžių buvo tikslinis ir turėjo nepriklausomą estetinę vertę bei emocines ir ritualines funkcijas, o *kergütämine* vaidmuo buvo ne suvaržyti kilimą, o jį skatinti, suteikiant chorui „erdvės“ greičiau kilti. Tokiu būdu pagrindinio vokalistų ir choro „konfrontacija“ pasirodo esanti subalansuota sąveika siekiant ypatingo efekto.

Delivered / Straipsnis įteiktas 2021 03 05