LANGUAGE AND SPEECH, 1994, 37(4), 407 – 424

LOST PROSODIC OPPOSITIONS: A STUDY OF CONTRASTIVE DURATION IN ESTONIAN FUNERAL LAMENTS*

JAAN ROSS

Institute of Estonian Language, Tallinn, and University of Helsinki

and

ILSE LEHISTE

Ohio State University, Columbus

This study examined the temporal structure of three recorded South-Eastern Estonian laments, a vocal style close to the old folksong tradition of the same region. A one-to-one correspondence was found between syllables in the text and notes in the melody. The duration of more than 700 syllables was measured. Syllable duration was found to vary by a considerable amount. In spoken language, the three quantities of disyllabic Estonian words are signalled by characteristic ratios between the durations of the first and the second syllable (S1/S2 ratio), which have approximately the values of 0.67, 1.5, and 2.0 for short, long, and overlong degrees. In laments, the range of S1/S2 ratios was much smaller. The difference in S1/S2 ratio between long and overlong disyllabic words was nonsignificant in all three performances, and that between short and long words was nonsignificant in one performance. This tendency toward rhythmic regularity may be explained on the basis of the original activity-associated nature of the old folksong tradition.

Key words: Estonian, laments, quantity

INTRODUCTION

When a spoken utterance is transformed into a sung one, it undergoes certain modifications which may alter its acoustical shape substantially. Important characteristics of the speech signal, such as its fundamental frequency, temporal structure, and spectral properties, are exploited in a quite different manner in song. Generally, fundamental frequency changes are continuous in speech, while in music they have a discrete character

---

* This study was made possible through a Fulbright scholarship granted to the first author in 1992. The authors would like to express their gratitude to Veera Pino of the Institute of Estonian Language, Tallinn, and Paul Hagu of Tartu University for their kind help in determining the expected quantity degrees in the texts of Setu funeral laments as well as their willingness to serve as readers of the lament texts. Comments by Bruno Repp and Vaike Sarv on earlier drafts of the manuscript have been very helpful. Parts of this paper were presented during the Stockholm Music Acoustics Conference (SMAC93) at the Royal Institute of Technology, Stockholm, July 28 – August 1, 1993, and have appeared in the Proceedings of that conference, pp. 240 – 243.

Correspondence should be addressed to the first author whose address is Institute of Estonian Language, Roosikrantsi 6, EE 0100 Tallinn, Estonia (e-mail jankel@kki.ee).

based on a predetermined scale. The fundamental frequency range is narrower and lower in speech compared to singing. Similarly to the fundamental frequency domain, temporal relations in music tend to be used in a more categorical manner than in speech. Extensive fundamental frequency changes in singing may lead to a radical change of spectral features compared to speech. In European classical opera, for example, the fundamental frequency of a note sung by a high female voice may exceed the normal range of the first formant of a vowel, so that the formant frequency is raised to a much higher frequency than occurs in speech (Sundberg, 1987).

In the performance of a text set to music, the voice production of the singer has to meet two requirements simultaneously: The sung words should be understood by the listener, and the sound of singing should be musically enjoyable. This suggests that acoustical transformations of the utterance should remain within reasonable limits, in order to grant the maximum possible intelligibility of the message. Yung (1983a, b) studied what happens to the Cantonese dialect in traditional Chinese opera and found that three relevant prosodic parameters of spoken Chinese, *viz.* pitch level, contour, and duration, are retained in the musical delivery of the text. Chen (1985) investigated Gregorian chant and suggested the existence of general tune-text association rules which the choir and/or congregation must have learned, in order to be able to sing any psalm verse to any psalm tone intoned by the cantor. Palmer and Kelly (1992) demonstrated that two common English prosodic rules, the Compound Word and Nuclear Stress rules, coincided with musical rules of metrical accent in English songs. Thus there are many instances in which the music accommodates to speech characteristics that are important for the preservation of intelligibility. However, there are also counter-examples, such as the non-preservation of tone in Mandarin singing (Chan, 1987).

The present study is concerned with the problem of whether or not the Estonian quantity distinctions are preserved in song. Estonian is one of many languages in which contrastive duration (quantity) is employed in signalling phonological oppositions. It is now generally accepted that Estonian phonology uses a ternary (rather than binary) system of quantity oppositions (e.g., Posti, 1948/1950), called short, long, and overlong. In disyllabic Estonian words, a quantity pattern is distributed over the two syllables in such a way that words in the short quantity (Q1) have a duration ratio between the syllables (S1/S2) amounting to 2:3, words in the long quantity (Q2) have a ratio of 3:2, and words in the overlong quantity (Q3) have a ratio of 2:1 (Lehiste, 1968). It is not known whether these quantity distinctions are preserved in singing. In order to explore this issue, three examples of lamenting were chosen for the present analysis. In laments the text and the tune can hardly exist separately from each other, and it might be speculated that the intrinsic nature of lamenting (which is sometimes characterized as not quite speech and not quite singing) consists of this inseparability of words from melody. In this way, it is similar to the tune-text relationship in the poetical expression (the so-called *musiké*) of the ancient Greeks (Georgiades, 1974). Laments thus offer an example of a music-like idiom which still is not too far from speech on a continuum ranging from conversational speech to singing with predetermined melody and metre (Lehiste, 1991).

Lamenting is a ritual of passionate expression of grief, usually performed by women. Its varieties are reported from different places throughout the world, such as Papua New Guinea (Feld, 1990) or Hong Kong (Johnson, 1988). In Europe, lamenting

as a pre-Christian tradition has survived mostly in the orthodox Christian environment (i.e., in Eastern Europe), due to the greater religious tolerance of the Orthodox church (Honko, 1974). In mostly protestant Estonia, lamenting has been recorded in Setu, a small South-Eastern district which has for a long time belonged administratively to a neighboring Russian province and has adopted the Orthodox confession. Tolbert (1988, 1990) has studied the lament tradition in Karelia, an Eastern European region currently shared by Finland and Russia. The Karelian laments are rather distant from the folk-songs to be found in the same geographical region. Unlike the Karelian tradition, however, the Setu laments are close to the folksong tradition and could be considered as a part of it. They use elements from the common pool of the pre-existent repertoire, and combine these with an improvisational part which links the performance to the specific occasion. The shape and rhythm of lament melodies in Setu are much more stable than in Karelian laments. The claim about a close affinity between the song and lament traditions in Setu is strengthened by the fact that many verse lines are shared by songs and laments (Salve, 1993). Like in every oral tradition, however, it is not rare to find very different manifestations of the same verse line in lament performances. How distant a particular rendition is from folksong (i.e., how close is it to strongly emotional speech) depends on a highly complex set of factors which influence the performer in her action. Pino and Sarv (1981/1982, p. 25) have noted that, in laments which are closer to emotional poetical speech, durational relationships between syllables also resemble those typical of fluent speech.

In the present study, syllable durations were measured in three laments. The syllable duration ratios for disyllabic words were computed separately for the three quantity degrees and compared to the ratios obtained from the poetry-like reading of the same lament texts by two native speakers. The question was whether the quantity ratios typical of spoken language survived in a song genre inherently close to speech.

METHODS

Materials

A complete edition of solo funeral laments from the Setu area has been published by Pino and Sarv (1981/1982). It contains texts and melodies (transcribed in conventional musical notation) of all sound recordings of laments (from the years 1937 – 1980) to be found in Estonian archives. The publication is accompanied by extensive commentaries.

Three laments from this collection are available on the vinyl record M32 45495 004 produced by the "Melodiya" company in Riga in 1984. They correspond to items 46, 4, and 56 in Pino and Sarv (1981/1982). Item 46 consists of 16 verse lines, performed by Anastasia Vanatalo (AV), item 4 consists of 87 lines, performed by Matrjona Suuvere (MS), and item 56 contains 93 lines, performed by Pelageja Karulaan (PK). Only parts of items 4 and 56 are presented on the "Melodiya" record, however, which contains 23 lines from the very beginning of item 4, and nine lines (Nos. 15 – 23) of item 56. According to Sarv (pers. comm.), who edited the "Melodiya" record, selection criteria for inclusion of material in the record were determined by her intention to produce a representative sample, considering differences between laments from the Northern (item 4) and the Southern (items 46 and 56) parts of Setu, as well as by the quality of the original tape recording.

In the present study, we have analysed all the material from the three solo funeral laments on the "Melodiya" record. The total number of lines analyzed thus was 48 and the total number of syllables was 741 (239 for item 46, 357 for item 4, and 145 for item 56).

Transcriptions of the three analysed laments (from Pino and Sarv, 1981/1982) are reprinted in the Appendix. The basic unit of a lament is the line. The verse line in laments is a derivative of the Kalevala verse line of four trochaic feet, equalling eight syllables. According to Sarv (1993), the average number of syllables per line in the Setu laments fluctuates between nine and 11. In addition, the line usually contains one or more extra feet, the so-called address formula, which may be added at the beginning, in the middle, or at the end of a line, and which does not change during the whole lament.

In the three analysed laments, the address formula is present in items sung by AV and MS but absent in the item sung by PK. For AV, the address formula to the performer's deceased husband is located in the middle of the line. The formula consists of the words "kul'la Mihal'" ("dear Michael"), plus the following monosyllabic word "sa" ("you") which grammatically belongs to the next structural constituent, but metrically and/or musically forms a part of the address formula. The formula is preceded and followed in the line by two metric feet consisting of two and three syllables, respectively. For MS, the address formula ("kuku maamakõnõ" or "dear mother") to the performer's deceased mother, which consists of six syllables, is located at the beginning of the line. No invariant verse foot structure can be observed in this item or in the lament by PK.

Measurement procedure

The duration of syllables was measured by the authors using a Kay Elemetrics Signal Analysis Workstation (Model 5500). The sound recording was fed into the Workstation from a cassette tape (copied from the record), with a sampling frequency of 20 kHz. Segmentation was performed using two time-synchronized spectrographic representations of successive four second portions of the sound signal displayed on two panels. The bandwidth of the upper spectrogram was 400 Hz (which better represents the spectral structure), that of the lower spectrogram was 59 Hz (which makes changes in the frequencies of the harmonics clearly visible). The (vertical) frequency axis ranged from 0 to 1000 Hz in the narrow-band spectrogram and from 0 to 8000 Hz in the broad-band spectrogram.

No independent measurement of musical tone durations was performed for the material analysed. With a few exceptions, there is a one-to-one correspondence in laments (and in old folksong in general) between tones and syllables, i.e. each syllable in the text corresponds to one tone in the melody. With such a tune-text relationship, changes in fundamental frequency (which in most cases define the boundaries between successive tones) are expected to be coordinated with changes in spectral structure (which define the boundaries between successive syllables).

The actual measurement procedure was the following. First we established a boundary between two successive syllables on the basis of the broad-band spectrogram. Since the Estonian syllable structure requires that every noninitial syllable start with a single consonant, the durations of syllables were measured from the beginning of the onset consonant to the beginning of the onset consonant of the next syllable. Stop consonant closures were treated as part of the overall syllable duration, as were the

durations of initial sonorants and fricatives.

Thereafter we checked whether the change in spectral quality was synchronous with the change of harmonic frequencies in the narrow-band spectrogram (provided that the two successive tones had different fundamental frequencies). If the latter change happened to be smooth (i.e., spreading over a time span of tens of milliseconds), spectral cues, which in most cases were more abrupt, were given priority in determining the segmental boundary. In addition, auditory verification of the visually determined segment boundaries was used in questionable cases. The time resolution was about 10 – 20 msec.

RESULTS

Syllable durations

Figure 1 displays the overall distributions of syllable durations in the three laments performed by AV, MS, and PK. The three distributions are similar. Having only a single peak, they resemble skewed normal distributions, with a longer tail towards longer durations. The presence of a single peak suggests that a lament singer employs no multiple note duration categories comparable to those in European art music, where each duration category could in principle be divided into two or three units of equal duration. It appears reasonable to conclude that laments do not possess the hierarchical rhythmic structure typical of the European musical tradition, and that other factors must determine syllable durations in laments.

Influences on syllable duration were checked by means of one-way ANOVAs with the following factors: sequential position within the lament of the line in which a syllable appeared, word stress, metrical accent, position in a line, and syllable length. Open syllables with a short vowel were considered short, all other syllables were considered long. The first syllables of trochaic or dactylic verse feet were considered metrically strong, other syllables were considered metrically weak. The position of a syllable in a line was expressed with reference to the ordinal number of the foot in the lament by AV, where lines could be divided into regular metrical feet. In laments by MS and PK, no metrical accent could be determined for syllables because of lack of division into feet, and the position of a syllable in a line was not considered because of unequal length of their verse lines.

The following effects were significant: for AV, word stress [F (1,234) = 30.5, $p < 0.001$], metrical accent [F (1,237) = 20.1, $p < 0.001$], and foot position [F (5,233) = 11.0, $p < 0.001$]; for MS, syllable length [F (1,350) = 38.4, $p < 0.001$]; for PK, syllable length [F (1,143) = 12.6, $p < 0.01$] and word stress [F (1,143) = 4.66, $p < 0.05$]. Long syllables were longer in duration than short syllables (their average durations were 289 and 278 msec, compared to 223 and 232 msec for short syllables, in the performances by MS and PK, respectively), and stressed syllables were longer than unstressed syllables (272 msec *vs.* 244 msec in PK's performance). Surprisingly, stressed and metrically accented syllables were shorter than unstressed and non-accented ones in the performance by AV (averages 273 and 355 msec, and 268 and 336 msec, respectively). The significant effect of foot position for AV was primarily due to final lengthening (average syllable durations were 302, 282, 267, 277, 289, and 408 msec in each of the six feet, respectively). Position of a line within the entire lament did not influence syllable duration for any of the three performers.

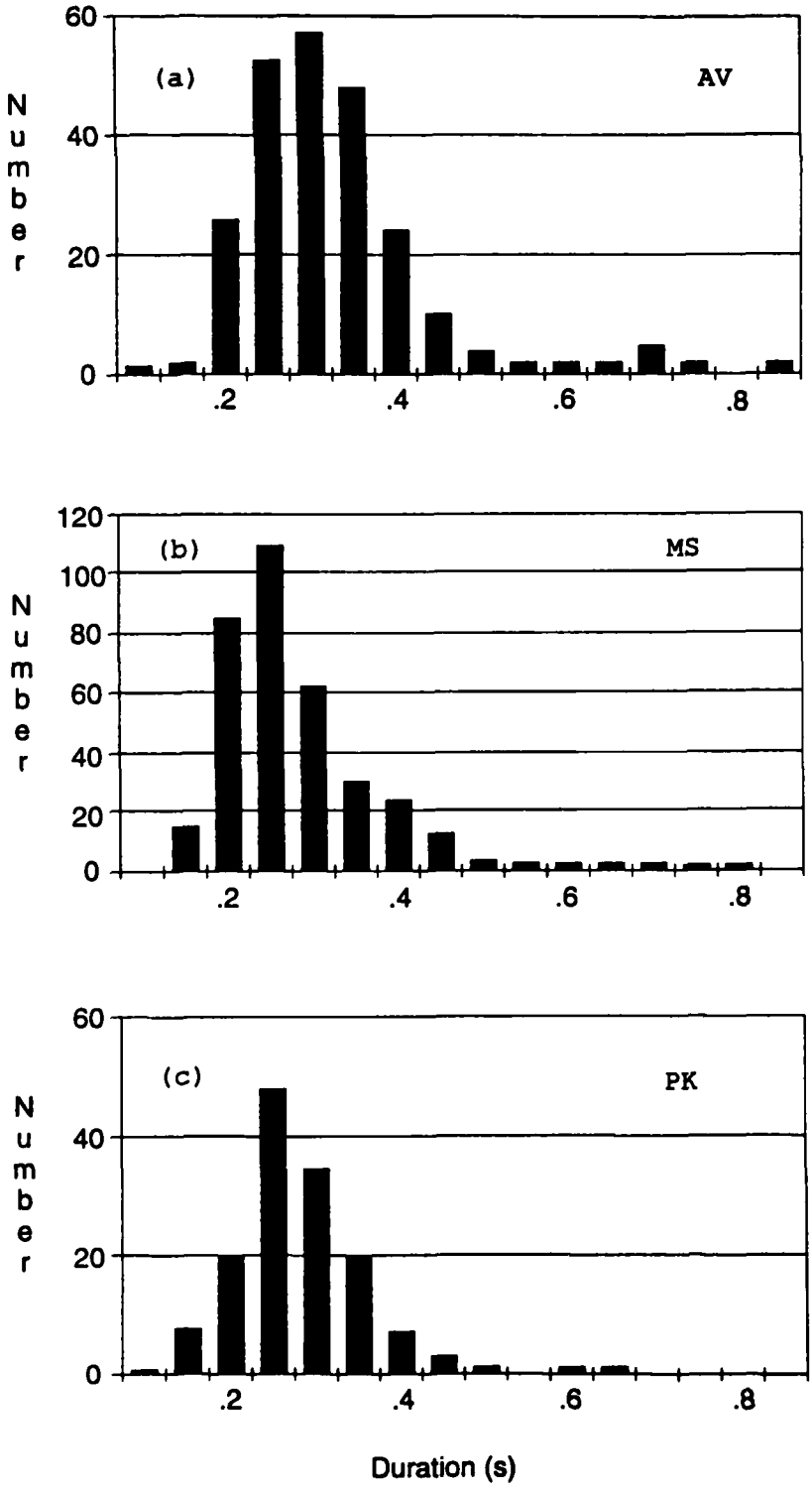


Fig. 1. Distribution of syllable/tone durations in the three laments analyzed, performed by (from top to bottom) AV (a), MS (b) and PK (c). The horizontal axis shows duration, the vertical axis the number of syllables/tones per category (category width is 50 msec).

S1/S2 ratios in disyllabic words

Although dissimilarities may be quite large between Estonian dialects in general, there was no reason to suspect the existence of a quantity system in the Setu dialect different from the one for standard Estonian described in the Introduction. In the present study, we first asked two informants to determine the three quantity degrees for all disyllabic words in the three laments under study. The informants, PH (male) and VP (female), are academically educated native speakers of the Setu dialect. They were given the lament transcriptions (both texts and melodies; see Appendix) and asked to provide each disyllabic word with a number (1, 2, or 3) corresponding to a short, long, or overlong quantity degree. They performed the task jointly. The ability of the informants to produce the requested list may serve as indirect evidence to support the claim that the Setu dialect maintains a three-way durational contrast, just like standard Estonian. However, it does not tell us anything about the typical syllable ratios. To determine those, both informants were asked to read texts of the three laments under study. Their speech was recorded and the syllable durations in disyllabic words were measured, using the criteria described above. The S1/S2 ratio was then calculated for the words measured. Results are presented in Figure 2. Average S1/S2 ratios for Q1, Q2, and Q3 were found to equal to 0.62, 1.3, and 1.9 for PH, and 0.64, 1.3, and 1.8 for VP which is reasonably close to the expected values of 0.67, 1.5 and 2.0. All differences between Q1, Q2, and Q3 were highly significant. Clearly, a three-way durational contrast similar to that of standard Estonian exists in the Setu dialect.

The S1/S2 ratio was then calculated for all disyllabic words found in the three laments. The respective numbers of such words available for Q1, Q2, and Q3 in the three analysed funeral laments was 32, 32, and 19 for AV, 35, 71, and 13 for MS, and 12, 26, and 13 for PK.

Figure 3 presents the S1/S2 ratio in disyllabic words for each of the three performers. It demonstrates that, compared to speech (see Fig. 2), the range of variation of the S1/S2 ratio is reduced in laments. This raises an interesting question: If the S1/S2 variation range is compressed in laments, does the performer still try to maintain the three-way durational contrast on a smaller scale, or does she disregard durational contrasts altogether during the performance? There seem to be individual difference among the three lamenters with respect to the extent and nature of the S1/S2 ratio transformation. Analysis of variance yields significant differences in S1/S2 between Q1 and Q2 for AV [F (1,62) = 35.4, $p < 0.0001$] and MS [F (1,104) = 4.91, $p < 0.05$], but not for PK. There are no significant differences between Q2 and Q3 for any of the three lamenters. AV and MS, on the one hand, and PK, on the other, thus seem to employ different strategies. For AV and MS, only the difference between long (Q2) and overlong (Q3) quantity degrees seems to be neutralized, while for PK, the difference between short (Q1) and long (Q2) quantity degrees likewise disappears.

Differences in the magnitude of the standard deviation should be pointed out as well (see Fig. 3). In speech, the overlap between the standard deviation ranges for Q2 and Q3 indicates the necessity of additional acoustical features to distinguish between the two durational categories. The shape of the fundamental frequency curve is known to serve as such an additional feature (Lehiste, 1968). In laments, there is extensive overlap between the standard deviation ranges of all S1/S2 values, except for those of Q1 and Q2 for singer AV. This suggests that the function of the S1/S2 ratio as a means of manifestation of the contrast between Q1, Q2, and Q3 is noticeably reduced in lamenting.

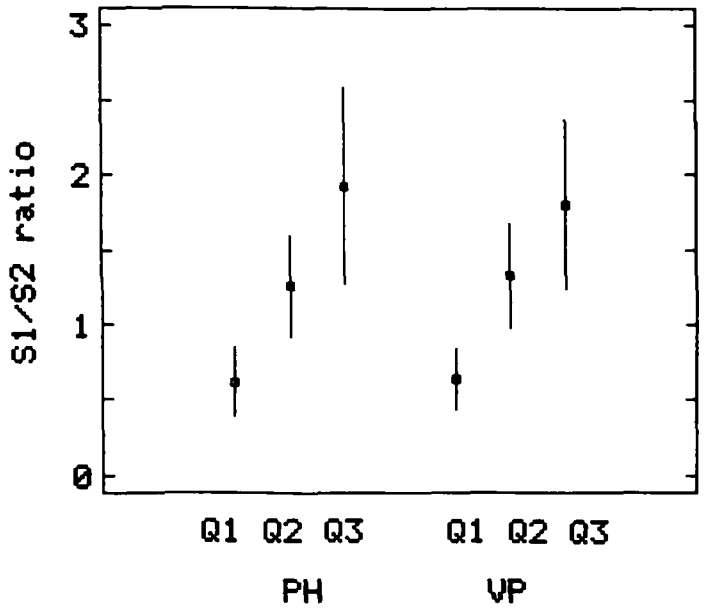


Fig. 2. S1/S2 ratios (durations of the first and second syllable) in disyllabic words found in the lament texts read by PH and VP, for the three quantity degrees. Values for Q1, Q2 and Q3 are represented from left to right, respectively, for each dictor. Vertical bars correspond to standard deviations.

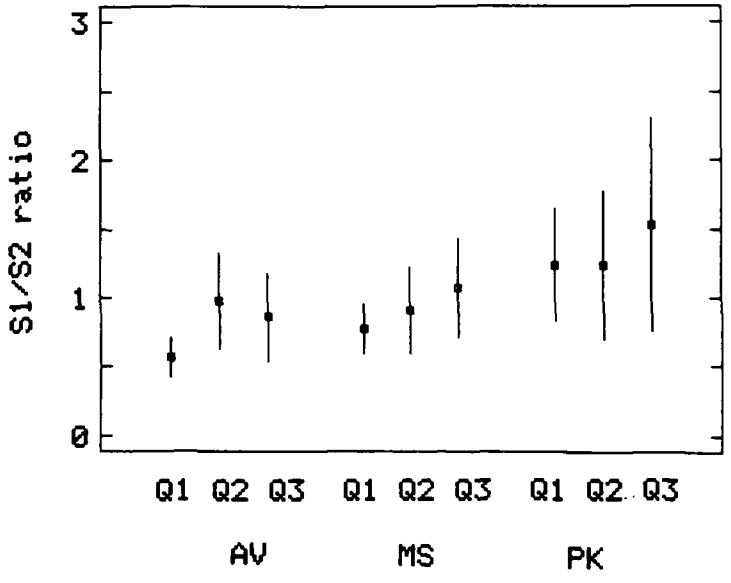


Fig. 3. S1/S2 ratios (durations of the first and second syllable) in disyllabic words found in the three analyzed laments performed by AV, MS, and PK, for the three contrastive quantity degrees. Values for Q1, Q2 and Q3 are represented from left to right, respectively, for each performer. Vertical bars correspond to standard deviations.

DISCUSSION

The observed neutralization of contrastive duration in laments should first of all be interpreted as a tendency towards rhythmic uniformity, inherent to the Estonian folksong in general. The folksong tradition (frequently also called the runic, or Kalevala songs) dates back several centuries. Originally, its artistic (or aesthetical) purpose was only a secondary one, the primary function being to accompany and accentuate rhythmic activities, like work involving repetitive movements or group entertainment like folkdance (Tampere, 1956 – 1965). This explains the rhythmic uniformity exhibited by the folksongs, which in the simplest cases may take the form of an isochronous tone sequence.

The possible role of several factors which might influence the S1/S2 ratio should be discussed. Could the ratio be dependent upon the possible emotional instability of the singer during her performance? If this were true, some variation should show up as the performance is developing from the beginning towards the end. Verse line position, however, showed no significant effect on individual syllable duration. In addition, analysis of variance on the S1/S2 ratio was performed for AV, which demonstrated no influence of the line position either. This finding is consistent with data of Krull (1993) who has demonstrated that the S1/S2 ratio is resistant to acoustic changes which may occur in emotional (compared to laboratory) speech.

Could the S1/S2 ratio be dependent upon the position of the disyllabic word within the line? The analysis of variance for AV demonstrated an influence of position in a line on average foot duration, and a visual inspection of the data linked this effect primarily to final lengthening. As to disyllabic words, the majority produced by AV and MS is contributed by the address formula, the position and contents of which remain unchanged in the verse line across the whole performance. Thus most of Q1-words come from the fourth foot ("Mihal'") and most of Q2-words from the third foot ("kul'la") for AV, and most of Q2-words for MS come from the beginning of each verse line ("kuku maamakõnõ"). This situation makes an independent check of the influence of syllable position on its duration complicated but, at the same time, reduces the possibility that final lengthening may have an effect when the data are pooled for the whole lament. Further, data by Lehiste (1992) show that, if the duration of an Estonian word is changed in poetry reading because of final lengthening, the value of the S1/S2 ratio is not influenced by the overall tempo change.

Could the quantity distinctions be neutralized specifically in the address formula because of its incessant repetition which made intelligibility unimportant for these words? There is no address formula in the lament by PK, yet neutralization of the quantity distinctions is most pronounced in her performance. As to the other two lamenters, only Q1- and Q2-words may have come from their address formulae. If the neutralization was specific to the address formula, differences between Q1 and Q2 should be neutralized and differences between Q2 and Q3 should be significant in the lament performances by AV and MS. The results, however, demonstrate just the opposite.

Given earlier comparisons of linguistic and musical prosodies in other languages and media, discussed in the Introduction, the significant reduction of durational contrast in laments seems somewhat surprising. If a rather close coordination between the two prosodies is the rule, why should the situation be different in the Setu laments? Could it be a result of the use of "sacred language" like in Karelian laments, where words are not

supposed to be understood by the listeners?

The existence of a sacred language in the Setu laments has been unanimously rejected by ethnomusicologists. For example, Pino and Sarv (1981/1982, p. 23) write that "listeners notice whether, in which manner and how extensively the mourner laments, and conclude from that how genuine was her feeling of sorrow towards the deceased" (translation of the first author J. R.). This ability to estimate the "quality" of lamenting presupposes that listeners understand its contents, the descriptive nature of which (see Appendix) can in its most part be followed even by those native Estonian speakers who are unfamiliar with the Setu dialect (for example, the authors of this paper). It hardly seems possible to test the intelligibility of lament words experimentally, for there would be no unbiased audience for such an experiment. Because of dialect differences, listeners in the experiment would have to come from the local rural community, which in turn implies that they know the texts at least to some extent in advance, because they have been chosen by a performer from the common pool of lament repertoire (or partly even from the folksong repertoire in general).

Could it be that the temporal structure of the three quantity degrees of the Estonian language is too complicated to be expressed by means of musical timing? While in European music the temporal structure in the score normally employs a multilevel hierarchy of durations, where on each level of the hierarchy a temporal unit is subject to division into two or three subunits of equal duration, in monophonic music performed solo (e.g., in Gregorian chant) the performer is expected to be more free in his/her choice of durations and of the rhythmical structure in general. Figure 1 shows that syllable duration distributions are wide enough to accommodate ratios of 2:3, 3:2, and 2:1, for distinguishing the three quantity degrees in lamenting. In another study, the temporal structure of the performance of an old Estonian folk song (Ross, 1989) demonstrated the use of two durational categories with considerable variation within each category, amounting to about one third of the average duration. Restrictions of timing thus do not seem to be the reason for reducing the durational contrast in laments.

If, however, we consider the Setu laments as a specific manifestation of the old folksong, examples can be found in the latter tradition which clearly violate certain phonological regularities of Estonian speech. The meter of Estonian old folksong is based on the contrast of short and long, and not on unstressed and stressed syllables (Anderson, 1935). If a dynamically unstressed syllable (i.e., a non-initial syllable of an Estonian word) occurs in a metrically strong position, a conflict arises between word stress and metrical accent. In such cases, the so-called phenomenon of scansion may occur, in which the metrical accent pattern overrides the expected word-level stress pattern (Tampere, 1937). Similarly, the reduction of durational contrast in laments, observed in the present study, is in our opinion caused by the same tendency towards rhythmic uniformity in folksong which violates the word stress pattern in scansion.

Noticeable individual differences between the performers were observed both on the syllable and the word level, which suggests that the three laments do not form a homogeneous group. The performance of AV is the most well-structured. It is the only lament in which each line could be organized into six alternating trochaic and dactylic feet. It is also the only lament among the three where syllables with word stress and metrical accent, contrary to expectations from speech prosody, are consistently shorter than unstressed and/or unaccented syllables. This performance thus seems to deviate notably from the standards of conversational speech prosody.

Performances of MS and PK seem to be closer to speech than the one by AV. The lament by MS contains the addressing formula but no verse foot structure can be observed in it. The number of syllables per line is not constant. The lament by PK is perhaps the least structured among the three: There is no address formula, and the number of syllables per line varies considerably. Unlike the performance by AV, the other two laments exhibit a significant effect of phonological syllable length duration.

For disyllabic words, performers AV and MS showed significant differences in the S1/S2 ratio only between short and long degrees. For AV, at the same time, the average S1/S2 value of Q2, contrary to expectations from speech prosody, is larger than that of Q3. PK showed no significant difference between any of the three quantity degrees. This is somewhat contradictory to the comparisons of the three performances on the basis of syllable duration and the verse line structure. If the lament by PK was the closest to speech prosody standards, the S1/S2 value should demonstrate maximum affinity to conversational speech; however, this is not true. What distinguishes PK from the other two performers is that, according to Pino and Sarv (1982/1982), AV and MS produced the laments upon request by the interviewer, while the lament by PK was recorded during an actual funeral ceremony. It might be argued that the strong emotional involvement of the lamenter PK has introduced more rhythmical uniformity into her performance, compared to the recordings by AV and MS, which were made in an emotionally (relatively) neutral situation.

CONCLUSIONS

Laments have been characterized as being not quite speech and not quite singing. They may be placed on a continuum between these two forms of oral communication. The continuum is characterized by adherence to the prosodic rules of speech at one end, and the prosodic rules of (sung) folksong at the other end. Different lamenters may be closer to one or the other end of the continuum. The archival material at our disposal does not enable us to evaluate whether the same lamenter may perform differently on different occasions, but this possibility is not excluded. The existence of a continuum suggests also that laments as a genre should not be characterized by prosody alone.

A study of the temporal structure of three South-Eastern Estonian laments reveals that:

(1) no multiple syllable/note duration categories are employed; individual durations vary around a single average of about 250 msec;

(2) the Estonian system of contrastive durations that employs three distinctive quantity degrees is not maintained; the acoustic differences between the three quantities are much reduced or completely neutralized.

The findings of this study suggest that the neutralization of contrastive duration observed in the laments studied may be caused by affinity of the Setu laments to the old folksong tradition. The primary function of old folksongs has been to accompany and accentuate activities like work or entertainment, which resulted in a strong tendency towards rhythmic uniformity.

(Received September 8, 1993; accepted August 17, 1994)

REFERENCES

ANDERSON, W. (1935). *Studien zur Wortsilbenstatistik der älteren estnischen Volkslieder (Studies on Syllable Statistics in Old Estonian Folksongs): Commentationes Archivi Traditionum Popularium Estoniae, No. 2 = Acta et commentationes Universitatis Tartuensis, B34*, 1. Tartu.

CHAN, M. K. M. (1987). Tone and melody interaction in Cantonese and Mandarin songs. *UCLA Working Papers in Phonetics*, **68**, 132 – 169.

CHEN, M. Y. (1985). Toward a grammar of singing: Tune-text association in Gregorian chant. *Music Perception*, **1**, 84 – 122.

FELD, S. (1990). Wept thoughts: The voicing of Kaluli memories. *Oral Tradition*, **5**, 241 – 266.

GEORGIADES, T. (1974). *Musik und Sprache (Music and Speech)*. Berlin: Springer-Verlag.

HONKO, L. (1974). Balto-Finnic lament poetry. *Studia Fennica*, **17**, 9 – 61.

JOHNSON, E. L. (1988). Grieving for the dead, grieving for the living: Funeral laments of Hakka women. In J. L. Watson and E. S. Rawski (Eds.), *Death Ritual in Late Imperial and Modern China* (pp. 135 – 163). Berkeley: University of California Press.

KRULL, D. (1993). Word-prosodic features in Estonian conversational speech: Some preliminary results, *Working Papers: Department of Linguistics and Phonetics, Lund, Sweden*, **41**, 148 – 151.

LEHISTE, I. (1968). Vowel quantity in word and utterance in Estonian. In *Congressus Secundus Internationalis Fenno-Ugristarum* (pp. 293 – 303). Helsinki: Societas Finno-Ugrica.

LEHISTE, I. (1991). Overview of speech research. In J. Sundberg, L. Nord, and R. Carlson (Eds.), *Music, Language, Speech and Brain: Wenner-Gren International Symposium Series, Vol. 59* (pp. 98 – 107). London: Macmillan Press.

LEHISTE, I. (1992), The phonetics of metrics. *Empirical Studies of the Arts*, **10**, 95 – 120.

PALMER, C., and KELLY, M. C. (1992). Linguistic prosody and musical meter in song. *Journal of Memory and Language*, **31**, 525 – 542.

PINO, V., and SARV, V. (1981/1982). *Setu surnuitkud (Setu Laments for the Dead)*, 2 vols. Tallinn: Eesti NSV Teaduste Akadeemia Keele ja Kirjanduse Instituut.

POSTI, L. (1948/1950). On quantity in Estonian. *Suomalais-ugrilaisen Seuran Aikauskirja*, **54** (2), 1 – 14.

ROSS, J. (1989). A study of timing in an Estonian runic song. *Journal of the Acoustical Society of America*, **86**, 1671 – 1677.

SALVE, K. (1993). Toone tare. Tähelepanekuid setu surnuitkude žanridevahelistest ja geograafilistest seostest (The House of Death. Observations concerning connections between genres and geography in Setu laments for the dead). *Akadeemia*, **5**, 2605 – 2621.

SARV, V. (1993). Setu itkuvärsi meetrikast (The metrical structure of Setu laments). *Keel ja Kirjandus*, **36**, 282 – 292.

SUNDBERG, J. (1987). *The Science of the Singing Voice*. DeKalb, IL: Northern Illinois University Press.

TAMPERE, H. (1937). Eesti vana rahvalaulu rütmiprobleemist (The problem of rhythm in the ancient Estonian folksong). *Looming*, **15**, 190 – 198.

TAMPERE, H. (1956-1965). *Eesti rahvalaule viisidega (Estonian Folksongs with Melodies)*, 5 vols. Tallinn: Eesti Riiklik Kirjastus.

TOLBERT, E. (1988). *The Musical Means of Sorrow: The Karelian Lament Tradition*. Unpublished dissertation, Department of Music, University of California, Los Angeles.

TOLBERT, E. (1990). Women cry with words: Symbolization of affect in the Karelian lament. *Yearbook for Traditional Music*, **22**, 80 – 105.

YUNG, B. (1983a). Creative process in Cantonese opera I: The role of linguistic tones. *Ethnomusicology*, **27**, 29 – 47.

YUNG, B. (1983b). Creative process in Cantonese opera II: The process of t'ien tz'u (text-setting). *Ethnomusicology*, **27**, 297 – 318.

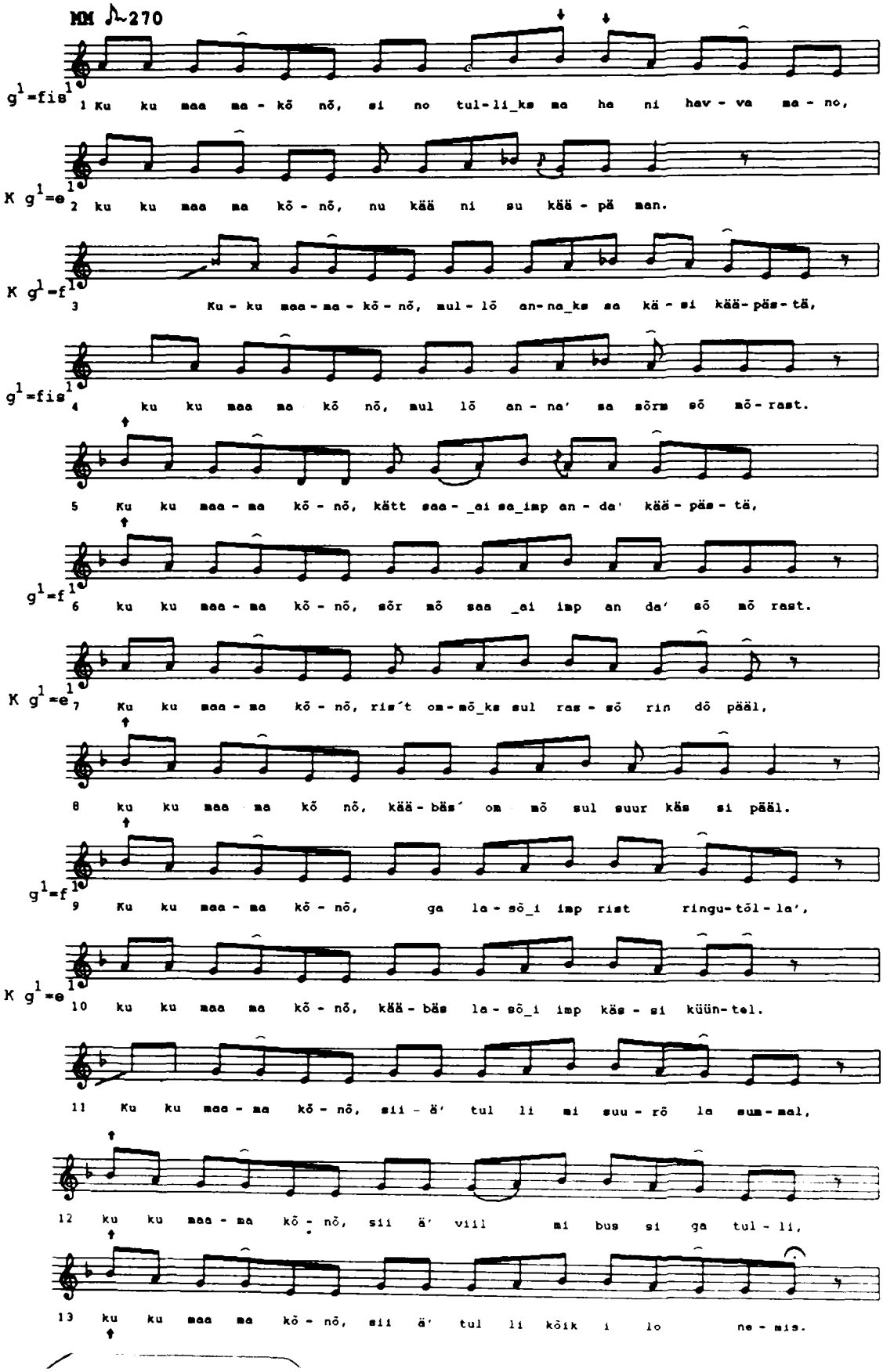
APPENDIX

Transcriptions of the three investigated laments (or parts thereof). Reprinted from Pino and Sarv (1981/1982) with permission. English translations by Ilse Lehiste

1. Oh, you, dear Michael, I came to see,
2. love, dear Michael, I came to call you home.
3. Give me, dear Michael, your hand from under the gravemound,
4. give me now, dear Michael, your finger from under the sand.
5. With the hand, dear Michael, I'll begin to talk,
6. with the finger, dear Michael, I'll exchange words.
7. You cannot, dear Michael, give your hand from under the gravemound,
8. you cannot, dear Michael, give your finger from the sand.
9. Heavy is for you, dear Michael, the gravemound on your hands,
10. high is too, dear Michael, the cross on your chest.
11. Golden your name only, dear Michael, I would take home,
12. tender your voice, dear Michael, I would take with me.
13. When I wake up now, dear Michael, in the morning,
14. when I come up, dear Michael, with the first daylight,
15. then with the name, dear Michael, I carry on a conversation,
16. your tender name, dear Michael, consoles me.

RKM, Mgn. II 3181 (6) < Se, (Vilo v.) Trõnne k. V. Sarv, Õ. Sarv < Anastasia Vanatalo, 69 a. (1979).

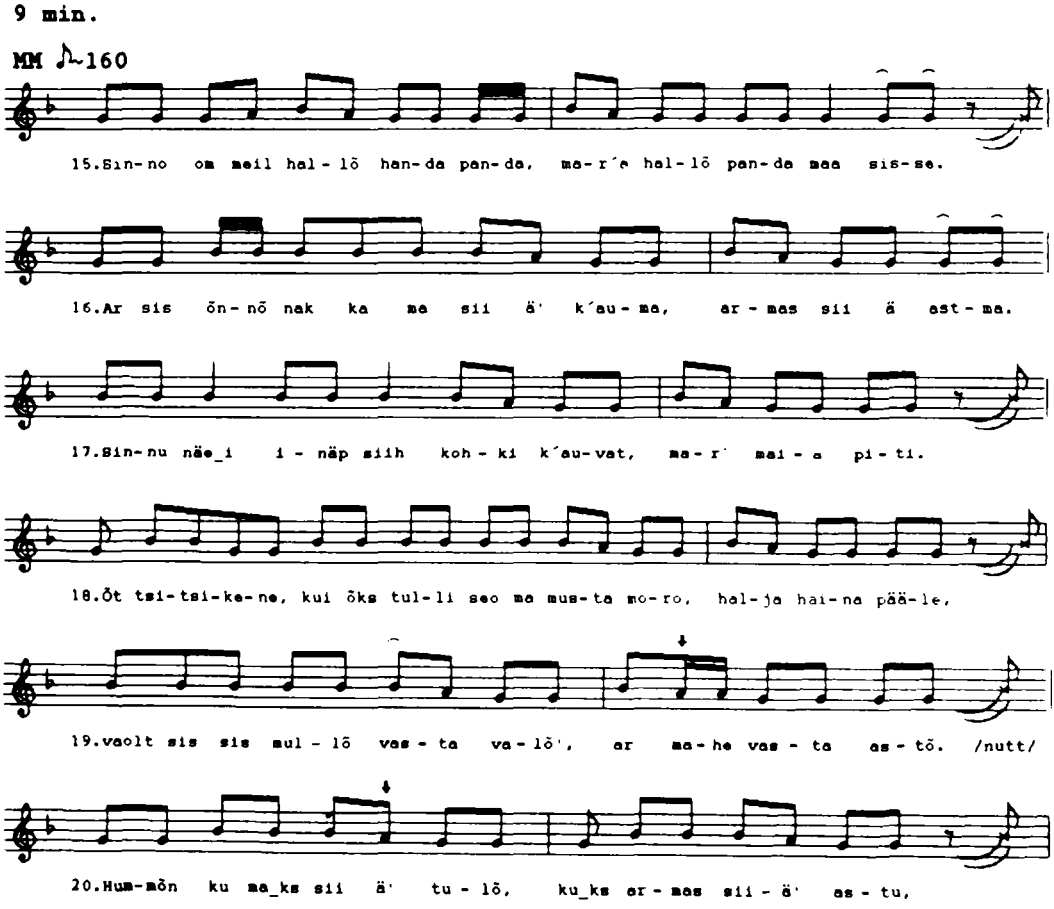
6 min. 15 sek.
1 viisirida 3,8-4,6 sek.



1. Dear mother, I came to your grave,
2. dear mother, now I turned to your gravemound.
3. Dear mother, give me your hand out of the grave,
4. dear mother, give me your finger from the sand.
5. Dear mother, you cannot give your hand from the grave,
6. dear mother, you cannot give your finger from the sand.
7. Dear mother, the cross is heavy on your breast,
8. dear mother, the gravemound is large on your hands.
9. Dear mother, the cross won't let you stretch out,

10. dear mother, the gravemound won't let your hand reach out.
11. Dear mother, we came here in a large group,
12. dear mother, we came here even by the bus,
13. dear mother, we all joyful people came.
14. Dear mother, now turn your mouth to this side,
15. dear mother, now let your mouth be toward the children.
16. Dear mother, you cannot turn your mouth to this side,
17. dear mother, you cannot let your mouth be toward the children.
18. Dear mother, you have turned bad inside the grave,
19. dear mother, you have changed inside the earth.
20. Dear mother, your good shirt has turned bad,
21. dear mother, your headscarf has become soaked.
22. Dear mother, I can never forget you,
23. dear mother, I will mourn you until I die.

RKM, Mgn. II 2339 a < Se, (Järvesuu v.) Tonja k. — A. Strutzkin < Matrjona Suuvere, 75 a. (1972).



15. It is pitiful for us to put you into the grave, to put the loved one into the earth.
16. Then I will begin to come to visit here, dear, to come here.
17. You I'll never see walk here, step around in the house.
18. Oh my little sister, when I came out to the black yard, the fresh hay,
19. then you came from the field to meet me, lovingly stepped up to me.
20. When I come here tomorrow, when, dear, I walk here,
21. I do not see you coming to meet me, lovingly to step up to me.
22. I will hopelessly miss you, I miss your help.
23. But I cannot do anything, dear, I cannot go anywhere.

RKM, Mgn. II 3371 (1) < Se, (Vilo v.) Pööni k. - Õ. Sarv < Pelageja (Palaga) Karulaan, 73 a. (14. II 1980).