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# Commentaries on Altai Kizhi cattle incantations

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## Background

Nataliya Kondrat'eva and Vladimir Mazepus published an informative and interesting article (1993) entitled "Cattle Incantations in the Culture of the Altaians". It is the aim of the present author to revisit their thoughts and musical examples. It is difficult to encounter melodies like these in western sources. Therefore, their paper is valuable as a critically and professionally edited package of data of one tradition little known by western researchers. Their conclusions are valid. However, because I interpret the melodies in the light of a theory that I call Seeker Tone Theory, it may be of local interest to know about a new interpretation of these tunes.

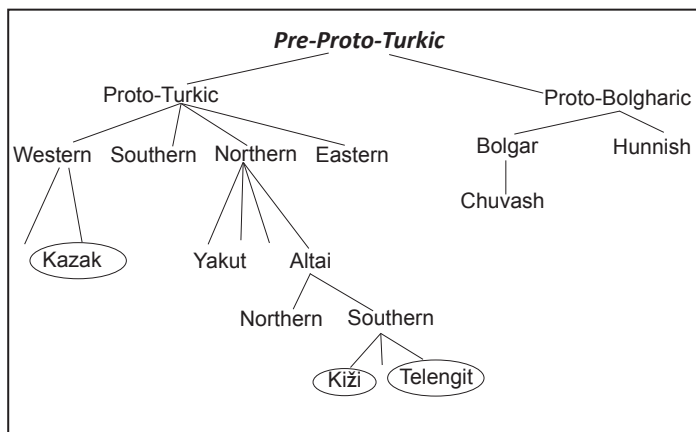
The Altai Kizhis, who number less than 20,000, are a Turkic people living in the Altai Mountains in Central Asia. They form one population among the Turkic-speaking peoples from modern Turkey to eastern Siberia. The main branches of these languages are (A) Eastern, Northern, Southern and Western Turkic, and (B) Bolghar Turkic (See Fig. 1). Along with Yakut, Tuvina and Dolgan, Altai Kizhi belongs to the Northern Turkic branch (Matthews and Polinsky 2003, 46–47). The Turkic language of the Altai Mountains is specifically



**Map 1.** Map of the Altai Kizhi homeland in the main massifs of the Altai Mountains where the borders of Russia, Kazakhstan, China and Mongolia are close to each other. The scale at the top shows the distances of 300 kilometres (3) and 200 miles (2).

called Altai and is divided into the southern and the northern dialects. The Altai Kizhis speak the southern dialect (also known as Altai proper) as also do the Telengits, Tëlës, Teleuts, and the Maima Kizhis (Potapov 1964, 305–306. Vaba 1993, 30–34). The early Altaians were hunters and are known to have had contacts with the Early Proto-Indo-European (Tocharian) Afanas'ev culture (ca. 3500–2500 cal[ibrated years] BC), located in the Upper Yenisei. Later they were in contact with the Proto-Indo-Aryans via the Bronze Age Andronovo culture (ca. 1800–1200 cal BC) who lived on their western side. (Carpelan & Parpola 2001, 60–62; 128–129; 133–136; Potapov 1964, 306.) In those days they started to develop pastoralism and during the first millennium BC nomadism was their main system of subsistence. They also had contacts with the Finno-Ugric peoples of the Volga region and the early Proto-Samoyeds of West-Siberia via the international Bronze Age trading system of Seyma-Turbino. They were mentioned in early Chinese sources and around 500 BC they received Mongols in their neighbourhood (Carpelan & Parpola 2001, 99–111; Potapov 1964, 306–311.). The early Altaians were anthropologically of the European

type but it is not known since when they started speak Proto-Turkic. For instance, Juha Janhunen (1999, 27–36; 1996) has postulated that the speakers of Proto-Turkic were still living in East Mongolia and West Manchuria ca. 2000 years ago having the Proto-Mongolians and the Proto-Tunguses as their eastern neighbours.



**Fig. 1.** Linguistic relations of Altai Kizhi, Telengit and Kazak mentioned in this text.

In spite of problems in the interpretation of the historical data, it is clear that the inhabitants of the Altai Mountains have been members of wide international networks of cultural exchange for millennia. The tradition of cattle incantations is closely connected to nomadism and it is obvious that this genre already belonged to the Proto-Turkic culture since, as Kondrat'eva and Mazepus mention, songs to the female animals are also performed by the Kirghizes, Kazaks, (W), Azeris, Turkmen (S), Khakas, Tuvians (N), and the Uzbeks (E). All four main language groups referred to with letter (A) above, are represented in the list. Moreover, these incantations are also sung by the Mongolians and the Buryats. (Kondrat'eva & Mazepus 1993, 40; Kondrat'eva 2004, 347.)

## Seeker Tone Theory

Kondrat'eva and Mazepus were theoretically on the same track as researchers whose aim is to define the tonic of the melody, then to define the mode, and finally to analyse the tune in relation to the tonic. All this takes place through the analysis of physical tones that emerge when a person sings or speaks or plays a musical instrument. This method has been used for thousands of years in high cultures from Japan and China to Europe and all western cultures, but this is not the method used in this paper. The tonic is not too important in analysis. The dominant is.

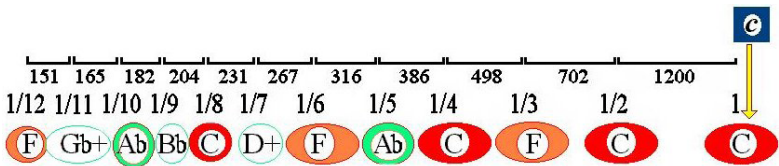
The present theory is based on what occurs in the human brain. Gerald Langner, a German neurophysicist, has studied the auditory system of mammals (humans included) for almost 40 years. In the main exposition of his views Langner (2007) brought several important conclusions together. One of his conclusions is that the auditory system does not define the *pitch* by resolving a periodic tone to its fundamental tone and overtones. The sensation of pitch occurs in such a way that the auditory system measures the period of the fundamental tone. In other words, we experience the pitch because the auditory neurons define how long it takes for one vibration (periodic oscillation) to occur.

From the point of view of melodic analysis a much more important detail is Langner's notion that the fundamental tone activates the neuron which is tuned to its period. Thus, the overtones have no role in the neuronal process of definition of pitch. In other words, when oscillation occurs 440 times a second, it only activates the neuron, which is specialised to respond to its period. This activated neuron (or a narrow band of neurons) *co-activates* a cluster of other neurons according to the mathematical rule called *subharmonic* which is opposite to the *harmonic* rule. In the physical world the harmonic mathematical rule follows the pattern according to which the period of the fundamental tone occurs faster and faster *within* the period of the fundamental. This means that when the period of the fundamental tone occurs 100 times a second (100Hz), the following overtones are repeated 2, 3, 4, 5 etc. times faster,

corresponding to 200, 300, 400 and 500 Hz. However, in the neuronal world of the auditory centre the process takes place in reverse order. The fundamental tone activates the neuron that is tuned to it and this very neuron co-activates a group of other neurons so that the distances between them correspond to the subharmonic mathematical rule. The auditory centre defines the distances by *dividing* the tuning rate of the first activated neuron by whole numbers 2, 3, 4, 5, etc.

According to Langner, all harmonic tones activate a cluster of neurons according to this universal law. If the physical tone is g it activates the G neuron and this neuron immediately activates other neurons according to the pattern G/2, G/3, G/4 etc. Neuron G/2 is one octave apart from the G neuron, the neuron G/4 is two octaves apart from it and G/16 is four octaves apart from it. Moreover, neuron G/3 corresponds to the C neuron and G/6 corresponds to the C neuron that is one octave apart from it and neuron G/5 corresponds to the Eb neuron.

In this paper, I use this very part of Langner's harmonic theory. It is enough for the analysis of melody to study which are the first 12 auditory neurons that are activated by a physical tone (Fig. 2). It is the job of the analyst to define which neurons become activated by the sung tones in the melody.



**Fig. 2.** Neuronal representation of the sung tone c. The figure will be read from right to left. The activated neurons are marked with subharmonic numbers 1, 1/2, 1/3, 1/4 etc. but they are also referred to with tone names C, F, Ab etc. The small digits (1200, 702, 498 etc.) refer to the distances between the neurons as intervals given in cents. One octave is 1200 cents. Normally a tone only activates neurons down to the sixth or the seventh subharmonic.

In the neuronal reaction to tone *c* the C neuron is activated in four loci, the F neuron in three loci, the Ab neuron in two loci, while the neurons D+, Bb, and Gb+ in one locus (Fig. 2). Thus, if the octave multiples are disregarded, there are only *six neurons* that are activated, and the collection of these six neurons is called the *neurochord*. The closer the neuron is to the primary neuron no. 1 (C), the stronger is its relative rate of activation. When the two least activated neurons are written with small letters these six neurons activated by tone *c* are gb+–bb–D+–F–Ab–C. When Fig. 2 is studied more carefully we may find that the neurons F–Ab–C–D form the *F minor chord* Fm5+6 while the neurons Bb–D–F–Ab correspond to the physical *Bb major chord* Bb7. Thus it is possible to form a universal pattern that reveals the neural representation of a physical tone as a neurochord:

$$c = \text{Fm}5+6 / \text{Bb}7.$$

When a melody is sung there are neurons which remain activated even if the sung tones vary. These activated neurons form neural *anchors* and the strongest of them corresponds to the physical tone known as the *tonic*. For reasons not discussed in this paper the next job of the analyst is to define the dominant tone. As seen in Fig. 2, when the tonic is tone *c* the neuron corresponding to the dominant tone *g* is not activated at all in this neurochord. This leads to the universal statement that no tone activates the neuron that is a fifth above it or a fourth below it. Instead of this, because of the subharmonic nature of neural processes, a tone always activates the neurons that are *a fifth below* it—as are the subharmonics F (1/3, 1/6) below C in Fig. 2.

As mentioned above, it is habitual in music analysis that a melody is analysed in relation to tonic or final tone. In the method introduced here the analysis occurs in relation to the tone which is a fourth below the tonic, that is, in relation to the dominant tone. The idea to use the dominant as the tool for analysis was originally adopted from two studies published by the Hungarian Gábor Lükő (1964; 1965). He

identified six modes that he interpreted to be Indo-European in origin (see Fig. 3a). Each mode is based on the dominant tone (degree 5) often with the tonic (degree 1) as the opening and closing tone of a melody. After testing his theory I noticed that these six modes are universal and that any melody in any culture can be analysed with their help. During these tests the present author realised that the dominant can function as a continuous drone below the melody.



**Fig. 3a.** Six hexatonic modalities which were first identified and defined by Gábor Lükő (1964; 1965) as pentatonic because he interpreted tone *f* to be auxiliary in each mode. In the interpretation of the present author, because of the universal use of this degree, tone *f* (degree 4) is not auxiliary but an organic part of these modes. Lükő's original numbering is changed so that Mode I is his mode VI and Mode II is his mode I, and mode VI is his mode II. Degree 1 is the tonic and degree 5 is the dominant. There is no degree between 5 and 6. Each mode is now on the G horizon, which means that degree 5 is *g*<sup>1</sup>.

Moreover, one melody may certainly be based on one drone but usually melodies are constructed such that the drone is transposed to one or two



other places. This means that there are two or three active tonics that alternate above these two or three active drones, which correspond to the dominant tones. The great problem was, however, that there is no representation of this assumed dominant tone in the auditory system. This problem was resolved with Gerald Langner's neurophysiological theory. Each sung tone activates its neurochord. If we ask which *additional* tone has the power to support the melodic progression under analysis, the answer will be that it is the dominant tone. The reason for this is that the continuously sounding dominant tone keeps those neurons in a state of activation which are also activated by the sung tones. In other words, the reason is that the same neuron or neuron band is simultaneously activated by the stimulation from two sources, the drone and the sung tone. This is the key to understanding of the Seeker Tone Theory.

When the same neurons of the auditory centre are simultaneously activated by the stimulus coming from two or more sources, a listener experiences this as attractive and pleasant. (This neural fact is not discussed here.) To use the continuously droning dominant as an external tool in analysis of melody means that the first task in the method is to define the tonic with the help of neurochords and then to define the dominant tone, which is the fourth below the tonic. Because the identification of the tonic results automatically from the neurochords, this also holds for the dominant that does not necessarily even occur in the sung melody. If it is not sung in a melody, it can be theoretically defined in order to go on in analysis. In all cases, the actual or theoretical dominant tone functions as a research equipment because of which it is specifically nominated the *Seeker tone* and the logic below the method is called the *Seeker Tone Theory*. The Seeker is the tool with which the analyst searches for and defines the traits that explain the reasons for the stylistic qualities or features underlying a local genre and melody under analysis. The "reasons" mentioned above are given as specific *syntactic* patterns.

Fig. 3a introduced six hexatonal modalities on the G horizon. However, most human song is not based on hexatonal modes as such but on more simple tone selections that can be theoretically derived

from them.<sup>1</sup> In Seeker Tone Theory various tone selections have been divided into three universal classes. The first class comprises six *hexatonal modes* seen in Fig. 3a. The second class is composed of their *protohexatonal embryos*. An embryo may only have one, two, three or four degrees picked up by the singers from one of the hexatonal modes. If the analyst is able to identify on which mode the sung tones are based the modal (embryonic) definition is possible. For instance, if the singer uses descending tones  $eb^2-c^2-b^1$  *natural* on the G horizon with  $c^2$  as the tonic, there is no doubt that the tune is based on the protohexatonal embryo  $g^*III$ . These tones are its degrees 3-1-6 (see Fig. 3a). The embryo is called protohexatonal because it only has three tones added with the theoretical Seeker  $g$ . If not a single melody of a local region is based on any hexatonal mode, the general conclusion is that the syntax of this local grammar is protohexatonal. The variation of embryos is wide but in spite of this their number remains six.

If, however, the singer uses tones  $eb^2-c^2-bb^1$ , instead of former  $eb^2-c^2-b^1$  *natural*, the analyst has no way of defining the tones modally. In this case the tones may lead to various modalities that are locally used in other melodies under analysis. One possibility is that they are degrees 3-1-6 of mode  $g-IV$ . They can also be degrees 3-1-6 of mode  $g-V$ , or they can be degrees *do-la-sol* of the pentatonal LA mode on  $c$ . To avoid speculation, the tone collections that cannot be defined are called *pre-modal alleles* and each allele (allelomorph) is referred to with a Greek letter. So far I have identified eight world-wide alleles. In this case, tones  $eb^2-c^2-bb^1$  are degree 3-1-6 of *lambda allele*  $g-\lambda$ . It is worth noting that the tone collection still remains as the pre-hexatonal lambda allele even if the singer were also to articulate tone  $g^1$  or  $g^2$ , which is the dominant (the Seeker) of the melody in question. Thus, the addition of the dominant to the tune does not help the analyst. However, if the singer were also to articulate either tone  $d^2$  or  $db^2$  the definition would be successful because  $d^2$  is the second degree of  $g-IV$  and  $db^2$  is the second degree of  $g-V$ .

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1. These six modes have a neuronal basis. However, it is always the researcher who may derive various tone segments from the hexatonal modes, not the singers.

The use of the term *allele* has two reasons. All humans represent one and the same species of the genus *Homo* and there is no reason to assume that the auditory system of Asians is different from that of Australians. This is to say that any natural melody (with the atonal excluded) can be analysed with the same logic. If there were two *Homo* species on the Earth, the concept of allele would not be possible.

The term allele is adopted from genetics in which it refers to a gene that carries one of a pair of alternating characteristics. In humans an allele in the ovum may lead to light or dark hair depending on the corresponding allele of the sperm. Analogically, tones  $g-c-d-e$  make up an allele. If it is combined with allele  $g-bb-c$ , the two lead to Mode  $g-I$  ( $g-bb-c-d-e$ ). If it is combined with allele  $g-b-c$  the result is Mode  $g-II$  ( $g-b-c-d-e$ ). Tones  $g$ ,  $c$ , and  $d$  are “germs” of several simultaneous modal options but the missing tone between  $g$  and  $c$  (i.e. either  $b$  or  $bb$ ) forces the analyst to define the tone selection as allelic. The critical tone is  $e$  of the first allele that forms a pair either with  $b$  or  $bb$ . For example, *psi allele* has germs to lead to three modes (I, IV, V) and *theta allele* has germs to lead to four different directions, to modes I, II, III or IV. A specific group in the class of pre-modal alleles is composed of clusters of usually three or four tones whose structure corresponds to that of harmonics 6—8-9-10. On the G horizon the tones are  $g^1-c^2-d^2-e^2$  with  $c^2$  (the third multiple of the fundamental) as the tonic. This is *alpha allele* and its structure also corresponds to the descending neuronal subharmonics  $C/6-C/7-C/8-C/9$  of  $c$ , that is, the neurons F-D-C-Bb.

The method will be explained with the help of the following figure (Fig. 3b). The tune has four tones that are now accompanied with their neurochords seen vertically below the sung tones. Horizontally is seen which neurons remain in a state of activation even if the tone changes. The C neuron is activated throughout the melodic progression and functions as the neural anchor (nexus) corresponding to the acoustic tonic. Thus, the dominant and the Seeker tone is  $g^1$ , whose neurochord is seen on the right. Because the modal analysis occurs in relation to the Seeker tone the descending tones  $g-e-d-c$  are degrees 5—3-2-1 either

of Mode *g*-I (with tone *bb* as the lacking degree 6) or Mode *g*-II (with tone *b natural* as the lacking degree 6), but it can also be pentatonal *c*-DO. Thus, it is impossible to define the mode. To avoid speculation this collection of tones is universally defined as pre-modal alpha allele *g*- $\alpha$  with the tonic (degree 1) as its opening and closing tone. This melody has a simple syntax<sup>2</sup>: *g*- $\alpha^{1\rightarrow 1}$ . Moreover, the melody is *pending* (P) because the upper octave of the dominant tone is the highest tone. Thus, the final syntactical pattern is *g*- $\alpha^{1\rightarrow 1}$ . The upper indices <sup>1 $\rightarrow$ 1</sup> tell the reader that the opening and the closing tone is degree 1.

NA: C-----

		E		E+		E	E+	
	ⓔb			ⓔb				ⓔb
D+		d	D+	D		d	D	D+
ⓓb+				ⓓb+				ⓓb+
C	C	C	C	c	C	C	c	C
bb		bb+	bb	Bb		bb+	Bb	bb
ⓐ+	ⓐ			ⓐ+		ⓐ+	ⓐ	
Ab	ⓐ		Ab	ab+	ⓐ	ab+	Ab	ⓐ
g♭+	ⓑ	F#+	g♭+		F#+	g♭+		ⓑ
ⓑ	ⓑ	ⓑ	ⓑ	ⓑ	ⓑ	ⓑ	ⓑ	ⓑ

S: *g*

**Fig. 3b.** This simple melody cannot be modally defined because degree 6 is lacking. It is pending as the dominant tone (*g*) is the highest tone. The descending tones are degrees 5—3-2-1 of alpha allele *g*- $\alpha^{1\rightarrow 1}$ . The upper indices (<sup>1 $\rightarrow$ 1</sup>) tell us that the melody is opened and closed with the tonic. The symbol NA above the staff refers to the neural anchor, which is the C neuron, that corresponds to the tonic on *c*<sup>1</sup>. Below each tone is seen vertically its neurochord and horizontally is seen which neurons remain activated for a longer time. They function as the tying neurons. When the C neuron is not prominently active (*c* instead of *C*) it is also the *G*, *D* and *Bb* neurons that are tying the melodic progression. In spite of this it is the C neuron that functions as the anchor throughout the tune. Letter S on the right refers to the Seeker tone on *g*<sup>1</sup>. The structure of its droning neurochord supports both the tonic and each of the other sung tones.

2. In this paper the term syntax refers to such an arrangement of consecutive tones in a melodic progression which shows the constructional relationships of these tones in relationship to the dominant, that is, to the Seeker tone.

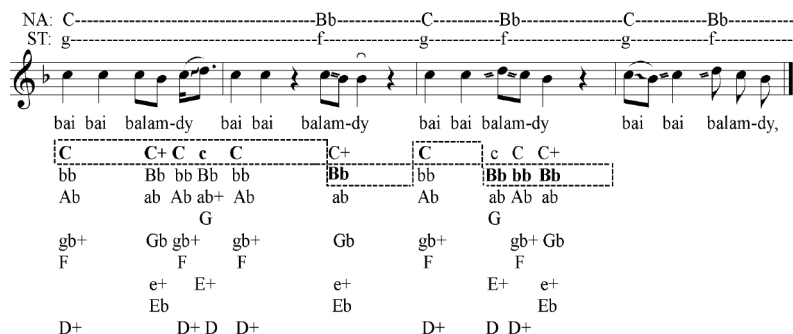
This melody (Fig. 3b) can be harmonised in various ways but this deals with artistic activity based on creative speculation. It has nothing to do with the scientific analysis of this one-voiced melody. When the analysis is carried out as is done here, it is easy to search from the data bases in which parts of the world a melody obeys the parallel syntax  $g^p\alpha^{1\rightarrow 1}$  and in which kinds of cultural surroundings they occur.

### Altai Kizhi incantations

Music examples of this paper are calibrated to the G horizon with the opening tonic on  $c^1$  and the opening dominant on  $g^1$ . Fig. 4 (Kondrat'eva and Mazepus 1993, 45: Music Example 6) is not a cattle incantation but a lullaby. The Altai Kizhis use expressions *balany jaikar* 'to rock a baby' and *balany uiuktadar* 'to lull a baby to sleep'. The term 'rocking' means a rhythmic continuity because of the regular movement of the cradle. Kondrat'eva and Mazepus tell us that "the same performers often sing [cattle] incantations and lullabies to similar tunes" (ibid., 45). They refer to their Note Example 2 that was sung by Tomon Sibirgiev, who also sang the lullaby (Fig. 4) in the present paper. It reveals that the melody is constructed in such a way that the main tying neurons (*neuronal anchors*) are C and Bb that alternate while the singer is rocking the cradle. Thus, the alternating Seeker tones are  $g^1$  and  $f^1$  and the alternation can be symbolised as  $g\rightarrow f$ . The opening tone  $c^2$  is the tonic of the  $g$ -based mode and the final tone  $bb^1$  is the tonic of the  $f$ -based mode. The question now is, what are the modalities?

The lullaby in the following figure (Fig. 4) will be analysed in order to establish its syntactic pattern. When the Seeker tone is on  $g^1$  the sung tones are descending  $d^2-c^2-bb^1$ , which are degrees 2-1-6 either of Mode  $g$ -I or Mode  $g$ -IV (see Fig. 3a). A universally used<sup>3</sup> tone collection like this cannot be modally defined because of which it is called *beta allele* in Seeker Tone Theory. In this lullaby its syntactic symbol is  $g\beta$ .

3. The term "universal" means that the object occurs in songs of all continents.



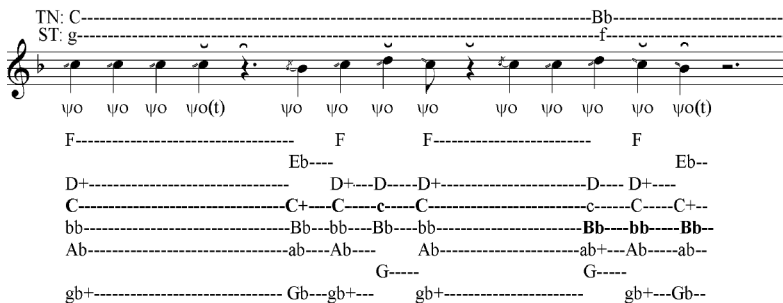
**Fig. 4.** A rocking lullaby calibrated to the G horizon. NA = neural anchor corresponding to the active tonic. ST = Seeker tone, that is, the dominant (which in this melody is purely theoretical since it is not sung). Below each tone is seen its corresponding neurochord as a vertical row. The tying neurons are in horizontal rows. The most prominent horizontal neurons C and Bb are in bold face and function as the alternating anchors (NA) seen above to notes. The duration of the double verse is 7 + 6 seconds. (Kondrat'eva & Mazepus 1993, 45, Ex. 6.)

When tone *f* functions as the Seeker the descending tones are the same  $d^2-c^2-bb^1$  but they are organised differently in the melody. In relation to *f* these tones are degrees 3-2-1 either of *f*-I ( $d^2-c^2-bb^1-ab^1-f^1$ ) or of *f*-II ( $d^2-c^2-bb^1-a^1-f^1$ ) but we have no means to decide. This is the universal *alpha allele f*- $\alpha$ . (already described above). When the opening tone and the closing tone are added as the upper cases, the syntax underlying this Altai Kizhi lullaby of Fig. 4 can be written as  $g-\beta^1 \leftrightarrow f-\alpha^1$ . Both alleles have the tonics (degrees 1) as the closing tone.

Because the ultimate aim of Seeker Tone Theory is the universal comparison and typologisation of song syntaxes, it will be now possible to search where else in Asia such syntax occurs. It is worth mentioning that performance style is irrelevant in typological comparison of syntaxes. This also holds for language: the syntax of a language remains untouched despite the way of uttering, which may be shouting in high or low register, whispering, smiling persuasion, angry cry, polite calmness, etc. The ways of performance are important to the study of song style but not to the study of song syntax.

There is now reason to compare the original Note Example (2) with Fig. 4 of the present paper (see Fig. 5a and 5b). This is a sheep incantation whose text is only composed of the “sound-symbolic” syllable  $\psi\bar{o}$ . This is a “semi-voiced labial vibrant” and may have been pronounced something like “pruu” with loosely trembling lips (without the r-sound). One might say that this uttering is like a humanly produced humming of the bull-roarer. In this paper, this kind symbolic syllable is called a *secreme* ‘secret sound’, from Latin *sēcrētus* ‘set apart from the knowledge of others’. It has or once had meaning but, perhaps, is now forgotten by the singers. If the singers know its meaning, this knowledge is not delivered to outsiders to whom it remains a “meaningless syllable”.

The song has 9 verses. The first of them is seen in Fig. 5a. In verses 2 and 3 the singer was obviously groping for the optimal melodic progression and in verses 4 and 5 he had it (Fig. 5b) and he repeated it to the end. Fig. 5a reveals that the Seeker tone  $g$  is in relation to the sung tones  $bb^1$ - $c^2$ - $d^2$ . This means that the tone selection is allelic: These tones can either lead to Mode  $g$ -I or to  $g$ -IV, both of which are used by the Altai Turkic singers. Because we are unable to identify the mode, the definition can be only beta allele  $g$ - $\beta$  which is opened and closed with the tonic  $c^2$ .



**Fig. 5a.** The long opening line of a sheep incantation according to Kondrat'eva & Mazepus 1993, 45: Note Example 2. Under the tones are seen the vertical neurochords and the tying neurons (TN) with C and Bb as the alternating anchors and  $g$  and  $f$  as the alternating Seeker tones (ST). The duration of the line is 17 seconds.

At the end of Fig. 5a the C neuron is weaker than the Bb neuron and the Seeker is now transposed down to *f*. Above it there are descending tones  $d^2-c^2-bb^1$ , which can be degrees 3-2-1 either of *f*I or of *f*II. Thus, this is again alpha allele *f*α. The syntax of the first verse is  $g-\beta^1 \rightarrow f-\alpha^1$ , opened and closed with the tonic.

All this suggests that even if the sung tones are the same ( $d^2-c^2-bb^1$ ) their treatment in the melody formation leads to various interpretations in analysis. This seems to explain why various melodies sharing the same mode “sound” differently. In other words, the tones in Fig. 4 and 5a are:

<i>beta allele</i>	$g-\beta$ :	$d^2-c^2-bb^1$ = degrees 2-1-6 with <i>c</i> as the tonic and <i>g</i> as the Seeker;
<i>alpha allele</i>	$f-\alpha$ :	$d^2-c^2-bb^1$ = degrees 3-2-1 with <i>bb</i> as the tonic and <i>f</i> as the Seeker;

Thus, the order of these two alleles of Fig. 4 and 5a is the same:  $\beta \rightarrow \alpha$ . Fig. 5. reveals that the singer continued the order of alleles and kept it in such a way that each verse follows the syntax  $g-\beta^1 \rightarrow f-\alpha^1$ . When the syntactic processes of Fig. 5a and 5a are combined they can be simply written as:  $g-\beta^1 \leftrightarrow f-\alpha^1$ , in which the arrow  $\leftrightarrow$  refers to continuous repetition.





attack *ab* via the gliding ictus from below. It cannot be established whether tone *g* between tones *ab* and *f* was the target tone of the singer Tomon Sibirgiev, born 1910. However, according to the transcription, the attack started about minor second below *ab*, that is, roughly from tone *g*. If these tones are transposed to the G horizon, the tones might be *eb-d-c* but this is impossible because the neuronal reaction defines the Ab neuron as the anchor and tonic. When the melody is transposed a major 3rd higher the tones are *g-f#-e* in relation to the Seeker on *g*. This is also impossible because of the interval *g-f#* between degrees 5-4. Thus, the only possibility to calibrate the mode to the G horizon is to conclude that the descending three tones are degrees 2-1-6 of the protohexatonal embryo  $g\text{-}^*\text{VI}$  ( $g^2\text{-}f^2\text{-}e^2\text{-}d^2\text{-}c^{\#2}\text{-}b^1\text{—}g^1$ ). Because this mode and its embryo are always inverted, the tonic cannot function as the final tone because of which it is degree 6 ( $b^1$ ) that functions as the final tone (Fig. 6a).



**Fig. 6a.** An Altai Kizhi sheep incantation on the G horizon. Originally published by Kondrat'eva & Mazepus 1993, 41: Note Example 1. See Fig. 6b. The duration is about 24 seconds.

The neural activation process of Fig. 6a is presented in Fig. 6b. Typically of inversions, the tonic ( $c^{\#}$ ) is sporadically activated whereas the dominant ( $g$ ) is continuously activated. When the Seeker is  $g$  it maximally supports the dominant but it also optimally supports all sung tones. Moreover, even if the Seeker does not activate the D neuron, the sung  $d$  prominently activates the G neuron and so supports the Seeker. To me it is obvious that the singer had a rough image of pitch  $c^{\#2}$  in his subconscious and the glide to tone  $d^2$  from below took place from a pitch closer to  $c^{\#2}$  than to  $c^2$ . Thus the syntax of this tune is the embryo  $g\text{-}\acute{\iota}^*\text{VI}^2\rightarrow^6$ , in which the symbol  $\acute{\iota}$  stands for inversion.

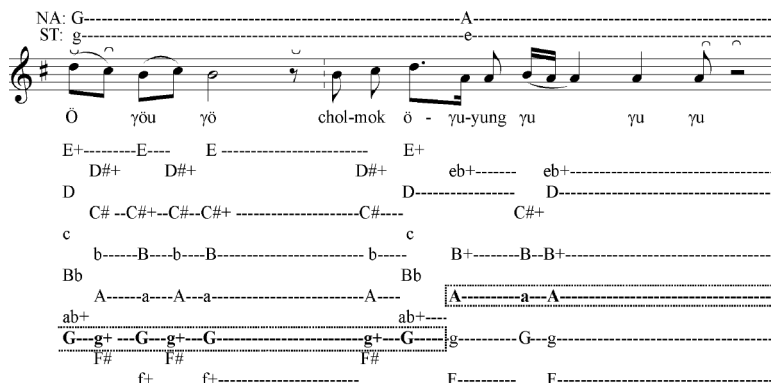
Seeker:

D	D	
$\langle \text{C}^\# \rangle$	$\langle \text{C}^\# \rangle$	db+
$\langle \text{C} \rangle$	$\langle \text{C} \rangle$	C
b	B	
Bb	Bb	
$\langle \text{A} \rangle$	$\langle \text{a} \rangle$	A+
ab+	ab+	
<b>G</b>	<b>g+</b>	<b>G</b>
F#		
	$\langle \text{f}^\# \rangle$	f
E+	E+	E
$\langle \text{D}^\# \rangle$		Eb

**Fig. 6b.** The neurochords (vertical) activated by tones  $d^2$  and  $b^1$  and the slurred  $c^\#2$ . The Seeker activates the neurochord seen on the right. Its neurons support the neurons of each sung tone (hexagons). As always in inversions, the dominant has the status of tonic: it remains activated throughout the melody.

The following figure (Fig. 7a) is a cow incantation performed by Vasiliy Tadinovich Terengin, born 1937 in the Onguday district. The original transcription comprises 10 lines but only four of them are given here because the syntax becomes obvious with their help. Only the first two verses are presented here. Transposing the melody to the G horizon is only successful when the opening tone is the 2nd degree  $d^2$  meaning that the mode is inverted embryo  $g\text{-}\dot{\iota}^*\text{VI}$ . Tones  $d\text{-}c^\#\text{-}b$  are its degrees 2-1-6. Because the main neural activation is directed at the G neuron, it assumes the status of the tonic even if tone  $g$  is the dominant tone. The change occurs at the beginning of the second measure. The G neuron remains activated but it is the A neuron that now assumes the status of the anchor—and the tonic. In other words there occurs a modulation from inverted  $g\text{-}\dot{\iota}^*\text{VI}$  to natural allele  $e\text{-}\alpha$  ( $e\text{---}a\text{-}b\text{-}c^\# = 5\text{---}1\text{-}2\text{-}3$ ). Personally I am convinced that this tone selection is not alpha allele but embryo  $e\text{-}^*\text{I}$ , but to avoid any speculation the definition will be  $e\text{-}\alpha$ .<sup>4</sup> The syntax is  $g\text{-}\dot{\iota}^*\text{VI}^2 \rightarrow e\text{-}\alpha^1$ .

4. In other words, if the 6th degree above the Seeker on  $e$  is  $g$ , the embryo is  $e\text{-}^*\text{I}$ . If it were  $g^\#$  (what the writer doubts) the embryo is  $e\text{-}^*\text{II}$  ( $e\text{---}g^\#\text{-}a\text{-}b\text{-}c^\#$ ).



**Fig. 7a.** This cow incantation (according to Kondrat'eva & Mazepus 1993, 44, Note Example 5) is calibrated to the G horizon. Below the sung tones are the vertical neurochords. Horizontally they form the tying processes. At the beginning it is the G neuron that has the main activation but finally it loses its prominence to the A neuron (see NA = neural anchors above the staff). Even if the tune is on the G horizon, the C neuron is barely activated because the opening embryo is inverted  $g\text{-}\zeta^*\text{VI}$ . This double verse lasted 7 seconds.

After the verses seen in Fig. 7a the singer modulated to allele  $e\text{-}\alpha$  with its tonic  $a^1$  as the closing tone (Fig. 7b). There occurs one transient modulation in the 5th verse because the singer articulated  $b^\sharp$  instead of  $b$  natural, but this does not change the syntax—especially when we cannot say whether this was accidental. Thus, it is now possible to write out the syntax underlying this long incantation:  $g\text{-}\zeta^*\text{VI}^2 \rightarrow e\text{-}\alpha^1$ . In other words, the singer defined the syntax already as in Fig. 7a.



**Fig. 7b.** Verses 3 and 4 of the cow incantation of Fig. 7a. From now on the melody moves in allele  $e\text{-}\alpha$  with tone  $a^1$  as the neuronal anchor (NA) and tonic, and  $e^1$  as the Seeker tone (ST).

In contrast to sheep incantations, this cow incantation has a poem with a content that clearly aims to manipulate the cow (named Cholmok) to look after its offspring. The poem is not a magical command but a magical allure and persuasion: what is good for a calf is a benefit to humans:

<i>Ö yöu, yö,</i>	<i>Ö yöu, yö,</i>
<i>Cholmok öyuyung yu, yu, yu,</i>	<i>Cholmo – öyuyung yu, yu, yu,</i>
<i>Emdi balangdi emisseng yu, yu,</i>	<i>Suckle now your young one – yu, yu,</i>
<i>Südüngdü b'erz'eng saal alayin yu, yu,</i>	<i>Let me milk you – yu, yu,</i>
<i>Emis, emis balangdi, yu, yu, yu,</i>	<i>Suckle, suckle your young one – yu, yu,</i>
	<i>yu,</i>
<i>Südüngdü köp ekel yöu, yöu, ...</i>	<i>Let down your milk – yöu, yöu, [etc.]</i>

The next song (Fig. 8a) is for a goat but it has also a text that is not magical but demonstrative in character, as Kondrat'eva and Mazepus state. It was performed by Jindi Ukarova (born 1915) and the translation of the text runs: “Chu, chu, chu, chu; born from your womb, was your young one; Chu, chu, chu, my nanny-goat – so it is sung.”



**Fig. 8a.** This goat incantation with three verses (Kondrat'eva & Mazepus 1993, 42, no. 3) turns out to share the same syntax with Fig. 6 except that the final tone is not the tonic but the dominant  $e^1$ .

Fig. 8a was not easy to calibrate to the G horizon until the analysis of the neural representation (neurochords) of the sung tones. It revealed that the melody is opened by the 2nd degree of the inverted embryo  $g-\zeta^*VI$  which was quite soon modulated to the natural alpha allele  $e-\alpha$ .

In this song this is repeated twice and the syntax is basically the same as in Fig. 7a and 7b but the treatment of tone clusters and the final tone  $e^1$  force it to be written in a more extended form:

$$\{g-\dot{c}^*VI^2 \rightarrow e-\alpha^1\} \rightarrow \{g-\dot{c}^*VI^2 \rightarrow e-\alpha_s\}.$$

One might assume that the melody is based on the hexatonal mode  $e$ -I, which is lacking its 6th degree and is opened on the 4th degree. One might also assume that the melody is based on the tonal mode A major, opened on the 4th degree and closed on its lower tonic. However, this is not how the melody is constructed and this claim leads to two interesting side tracks, one to modern Turkey (whose language belongs to the Southern Turkic branch: see Fig. 1), and the other to the Russian melody formation in chastushkas accompanied by the accordion).

First, on a worldwide basis, (proto)hexatonal songs are never started on the 4th degree when interpreted with Seeker tone theory. The reason is simply in the fact that, on the G horizon, the fourth degree ( $f^2$ ) does not have tone  $g^1$  as its Seeker. It can only have  $c^2$  as its Seeker, which means that the fourth degree of any hexatonal mode on the G horizon is the tonic of a  $c$ -based mode. For instance, the degrees of the *Hümâyün makamı* of Turkish classical music on  $a$  ( $a^1-bb^1-c^2\#-d^2-e^2-f^2-g^2-a^2$ ) has the hicaz tetrachord ( $a^1-bb^1-c^2\#-d^2$ ) as its degrees 1-2-3-4, but this is but a general agreement of local theoreticians. If the neurochords are studied, the only way to transpose this tetrachord to the G horizon is to lower it a second to  $g^1-ab^1-b^1-c^2$ : From the neural point of view, the opening  $c^2$  is not the 4th degree but the tonic with  $g$  as the dominant. Thus, *Hümâyün makamı* is in the form  $g^1-ab^1-b^1-c^2-d^2-e^2-f^2-g^2$  when transposed to the G horizon. What occurs in the melody is seen in Fig. 8b which is opened by playing out the hicaz tetrachord in measures 1 and 2.



fourth degree of embryo  $g^*III$  but in Fig. 8b this tone is studied more carefully with its neurochord and turns out to be the momentarily appearing tonic of embryo  $c^*IV$ . Because it is the opening tone it has a prominent role and the embryo is separately marked even if  $f^2$  appears briefly. This embryo is soon modulated to  $bb^*II$  and then back to  $g^*III$ . This progression is dramatic. In tonal terms it can be described as a modulation from natural  $c$  minor to  $eb$  major and to harmonic  $c$  minor. The alternating embryos of the lower line are:

$c^*IV$ :		$c$		$eb$	$f$	$g$	$ab$
$bb^*II$ :	$bb$		$d$	<b><math>eb</math></b>	$f$	$g$	
$g^*III$ :	$g$	<b><math>c</math></b>	$d$	$eb$	$f$		
$eb^*III$ :				$eb$		$g$	<b><math>ab</math></b> $bb$ $cb$
$d^*V$ :			$d$		$f$	<b><math>g</math></b>	$ab$ $bb$ .

It is now possible to write the syntax of Fig. 8b:

$$\{g^*III^1 \rightarrow eb^*III \rightarrow d^*V \rightarrow g^*III^1\} \rightarrow \{c^*IV^1 \rightarrow bb^*II \rightarrow [g^*III \leftrightarrow eb^*III] \rightarrow d^*V^1\}.$$

This syntax is loaded with embryo III, which is genetically related to the harmonic minor. Embryo  $*V$  has no tonal equivalent even if it is universal and also present in tonal music. Humans seem to have mainly used it in songs reflecting melancholy and sorrow. This kind of syntax is markedly different from the Northern Turkic syntaxes of the previous cattle incantations and it goes back to the musical grammar of the Anatolian populations who occupied the area before adopting Turkish as their common language. To summarise, a hexatonal melody cannot start on the fourth degree because of which the mode of Fig. 8a cannot be hexatonal  $e$ -I. The main idea of Fig. 8a is to oscillate between the embryo  $*VI$  and allele  $\alpha$ .

The first measure of Fig. 8a is an illuminating example of how a musical instrument affects the human auditory centre and may mislead the result of modal analysis of the *melody*. This can be understood with the help of Fig. 8c, which is based on the same melodic progres-

sion as the beginning of Fig. 8a, only repeated twice in Fig. 8c. It is accompanied by an accordion using the major triads D-A-E7-A. As a result we have the beginning of a popular Russian *chastushka* tune. The reason is not in the melodic progression itself but in the accompanying instrument. Each tone of each triad played by the accordionist activates a neurochord of its own and these result in different neural activation in the auditory system from that activated by the sung melody alone. Chord E7 activates 4x12 neurons instead of 12 and the tying process leads to different neural consequences. This means that if the aim of analysis is to study a tune the analysis must be only based on sung or played tones, not on tones that also are present because of the instrumental accompaniment. In other words, the simultaneously sounding three or four *different* neurochords lead us automatically to experience the descending tones *d-c#-b-a* as degrees 1-7-6-5 of D major. This is not what happens when an Altai Kizhi solo singer articulates the same tones in his specific local style.

Kondrat'eva and Mazepus tell us (1993, 46) that the Altai Kizhi borrowed the genre of Russian *chastushka* along with the Soviet system of collective farms. The collectives changed the classical system of cattle breeding and there was not room for traditional incantations as extensively as there used to be. The genre of *chastushka* is interesting. It is based on 8 morae and suddenly the genre became very popular in North-West Russian towns where these songs were sung especially by young people from the 1860's. Its metre corresponds exactly to what is known as the Proto-*Kalevalaic* metre still used by Baltic Finnic sing-



**Fig. 8c.** The first measure of Fig. 8a repeated twice. If the tune is accompanied with three major triads by the accordion the combination leads to a typical dance-like *chastushka* melody in D major.



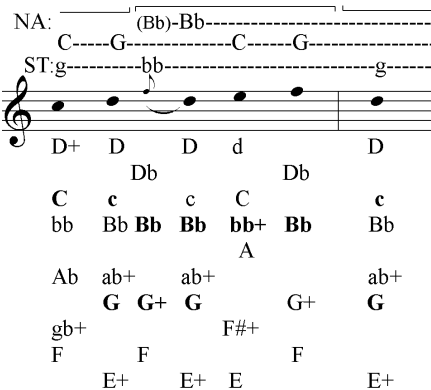
ers. That is why the whole *Kalevala*, the Finnish-Karelian epos, can be performed by singing with any chastushka melody. Thus, it is possible that this metre became a part of Russian culture because especially the bilingual Veps and the Karelian working youth and soldiers started to use their domestic metre when improvising sung ditties in Russian language. Their ancestors had done the same when improvising songs in Baltic Finnic languages for more than 2000 years. Whatever was the true process, the fact is that when the Russians moved to southern Siberia they imported their chastushkas to the lands of the Turkic speaking peoples, who already knew the same metre of eight morae. Obviously the Turkic singers had also used this metre for at least two millennia, because of which the adoption of the Russian chastushka was quick and easy.<sup>5</sup> This is absolutely not to suggest that the tune of Fig. 8a is genetically related to the 20th century chastushka.

Fig. 9b represents a tune into which the old genre of incantations has adopted elements from the chastushka. The melody is sung in the Kizhi style, the eight-morae metre governs the poem and the form is made up of double verses. The example shows verses 1–2 and the closing ones 9–10 (Fig. 9b). Each double verse starts and ends with *g* as the Seeker and with the tonic *c* as the closing tone. Even if the poem follows the eight-morae metre in a regular way, the Turkic ideal for treating musical time causes each verse to last a different length. The metric division seems to be as follows and morae 5 and 6 make up one double-mora 5+6 (here are seen verses 1, 6, and 7):

1	2	3	4	5	6	7	8
<i>Pa—lang—</i>	<i>di</i>	<i>tash—ta—</i>	<i>pai</i>	<i>ol</i>	<i>---</i>	<i>al—</i>	<i>sang</i>
<i>βa—lang—</i>	<i>di</i>	<i>al—</i>	<i>sang</i>	<i>ol</i>	<i>---</i>	<i>ko—</i>	<i>yem</i>
<i>n'e—</i>	<i>neng</i>	<i>u—</i>	<i>chung</i>	<i>al—</i>	<i>---</i>	<i>βai—</i>	<i>sung</i>

5. See Leisiö 2001. It is important to understand that Russian culture is a fusion of the Proto-Slavic culture *and* local cultures (Baltic, Finno-Ugric, Arabic, Turkic, Mongolian, Swedish, Dutch, French etc.) which were slowly absorbed into it. In the case of chastushka, the Baltic Finnic source is the most probable. See, however, Zemtsovsky 2000, 768–769.

In some verses the poem is replaced with the seceme  $\psi o$  and the rhythmic treatment varies. In the closing measure of Fig. 9b the number of  $\psi o$ s is correctly 7 because one of them takes the time of a double mora. However, the singer also inserted an extra rest, as a result of which the length of this verse varies from 9/8 to 11/8 instead of 8/8. He even could shorten the line to 6/8.



**Fig. 9a.** At the end of the opening verse there are several tying neurons (C, G, Bb, and F) so that the anchor (NA) is not easy to define. The tying reveals that the C neuron on the left loses its prominence and is briefly replaced by the Bb neuron.

To understand the modal syntax we need to study what occurs at the juncture of the opening and closing verse (Fig. 9a). The C neuron loses its status as tonic because the Bb neuron forms a new anchor on both sides of the barline. When tone  $c$  is the tonic the Seeker is on  $g$ . But when the Bb neuron is the neural anchor, what is the tonic and where is the Seeker?

The answer to these questions needs first the Seeker to be determined. If Bb is the neuronal anchor it also is the tonic, which means that the Seeker is  $f$ . However, this is not possible because the interval

between degrees 5 and 4 below it is always a major second. In this song the interval between *f* and *e* is a minor second. The only solution available is that the melody moves on the tones of an inversion: the tonic *bb* takes the role of the dominant and the hexatonic mode will be constructed *above the tonic*. The inverted mode appears natural (*bb—d-e-f*) but it cannot be natural because the Seeker on *bb* is unable to support the tonic *e*. The theoretical Seeker on *bb* only supports the dominant on *bb*, that is, itself. But what is the mode?

The main mode with *g* as the Seeker cannot be defined because of the lack of the 6th degree. Thus, the tones *c-d-e* are degrees 1-2-3 of the natural alpha allele *g-α*. When the Seeker is *bb* the ascending sung tones are *d<sup>♭</sup>-e<sup>♭</sup>-f<sup>♯</sup>*. In relation to *bb* they are degrees 6-1-2 of the embryo *bb-ζ\*VI* that already has been met with above. In the case of Fig. 9b the hexatonic mode VI is of the form *bb—d-e-f-g-ab-bb*. This way we may define the syntax that controls each double verse: *g-α<sub>5</sub> → bb-ζ\*VI → g-α<sup>1</sup>*. Such syntax is profoundly based on the Kizhi tradition. As an outsider I ponder in which way is this melody related to Russian chastushkas?

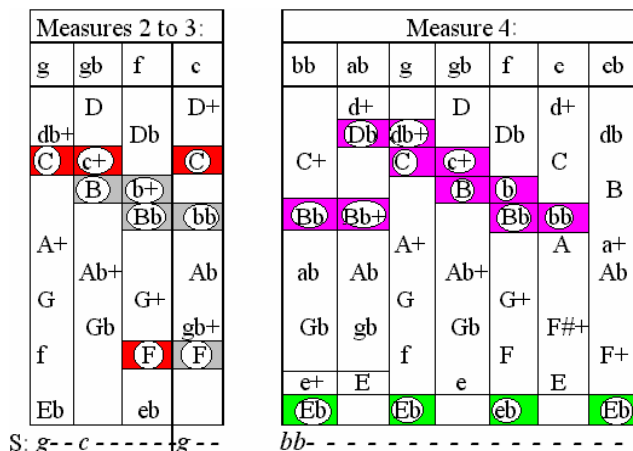
NA: C+G-----Bb-----C+G-----  
 ST: g-----bb-----g-----

Pa-lang-di tash-ta-pai ol al - sang, Ba-lang-di tash-ta bai ol al - sang,  
 A-lang-di al - sang ol go - yöm, ψo ψo ψo ψo ψo ψo ψo

**Fig. 9b.** Opening and closing double lines of a sheep incantation originally published in Kondrat’eva & Mazepus 1993, 46, Ex. 7. NA = neural anchors and ST = Seeker tone.

Fig. 10b is a sheep incantation whose melody was a “borrowed chastushka tune” (Kondrat’eva & Mazepus 1993, 47). It is not clear which melody was borrowed but this tune is no regular tonal tune. The singer used the secremes in the opening verse and added a poem to the closing verse. On the G horizon, verse 1, the main part of verse 2 as well as

verse 3 are based on degrees 5—6-1-2 of beta allele  $g\beta$  because these tones may lead both to  $g$ -I or  $g$ -IV. The problematic phases are the juncture of measure 1 and measure 2, as well the 4th measure. Their neural activation will be studied in Fig. 10a.



**Fig. 10a.** On the left are seen the three last tones  $g^1$ ,  $gb^1$ , and  $f^1$  of measure 1 and the opening tone  $c^2$  of measure 2 in Fig. 10b. The C anchor is briefly changed to F via the descending tying neurons B, Bb, and F. During tones  $gb$  and  $f$  the Seeker (S on the bottom) is transiently  $c$ , which is turned back to  $g$  in the 2nd measure. Measure 4 is presented on the right. The descending series of tying neurons Db-C-B-Bb are in the middle. The Eb neuron is the prominent and tone  $bb$  functions as the Seeker of this 4th measure.

The sequence of the Seekers is  $g$ - $c$ - $g$ - $bb$ . When the Seeker on  $c$  is active tones  $gb$  and  $f$  can only be degrees 2 and 1 of embryo  $c$ -\*V ( $c$ - $eb$ - $f$ - $gb$ - $ab$ ). It is Fig. 10a that defines tone  $f$  as the tonic. The closing Seeker is  $bb$  and, because of tone  $d$  on the lower line, the mode can be defined as the hexatonal mode  $bb$ -II ( $bb$ - $d$ - $eb$ - $f$ - $g$ - $ab$ - $bb$ ). Tones  $gb^1$  and  $e^1$  are auxiliary tones. Perhaps the fourth line was directly adopted from the chastushka written in Eb major. This Kizhi melody as such is not a major tune but has the syntax  $\{g\beta_5 \rightarrow c\text{-}\zeta^*V^1\} \rightarrow \{g\beta^1 \rightarrow bb\text{-}II^1\}$ . An interesting detail is that the upper line comprises descending tones  $c^2$ - $bb^1$ - $g^1$ - $f^1$ . They are not only

protohexatonal but also protopentatonal even if the definition is not possible. They can be either degrees *la-sol—mi re* of embryo  $f^*RE$ , or they can be *re-do—la-sol* of embryo  $f^*SOL$ . Otherwise no trace of pentatonicity was seen in these melodies.



**Fig. 10b.** An Altai Kizhi sheep incantation set to a chastushka melody according to Kondrat'eva & Mazepus 1993, 47, no. 8 but transposed here to the G horizon. Letter S refers to the Seekers. The durations of lines are 5.5 and 5 seconds.

## Reflections on Altai Kizhi syntax

The seven incantations reanalysed are syntactically more homogeneous than first expected (Table 1). The first surprise is the amount of the complex embryo VI appearing in 5 of 7 tunes. Neither was the prominence of alpha allele (5/7) expected. The presence of beta allele in connection with alpha allele (2/7) is encountered in several Siberian melody collections and no wonder that it is also present in these melodies (Fig. 4 and 5). The tonal parallel of the allelic alternation  $\beta \leftrightarrow \alpha$ , found both in the lullaby and cattle incantation, is the modulation from the minor key to the major key.

$g-\beta^1 \leftrightarrow f-\alpha^1$	Lullaby Fig. 4
$g-\beta^1 \leftrightarrow f-\alpha^1$	To sheep Fig. 5a and 5b
$g-\zeta^*VI^{2 \rightarrow 6}$	To sheep Fig. 6a
$g-\zeta^*VI^2 \rightarrow e-\alpha^1$	To cow Fig. 7a and 7b
$\{g-\zeta^*VI^2 \rightarrow e-\alpha^1\} \rightarrow \{g-\zeta^*VI^2 \rightarrow e-\alpha_5\}$	To goat Fig. 8a
$g-\alpha_5 \rightarrow bb-\zeta^*VI \rightarrow g-\alpha^1$	To sheep Fig. 9b
$\{g-\beta_5 \rightarrow c-\zeta^*V^1\} \rightarrow \{g-\beta^1 \rightarrow bb-II^1\}$	To sheep Fig. 10b

**Table 1.** Syntactic presentation of seven Altai Kizhi incantations analysed above.

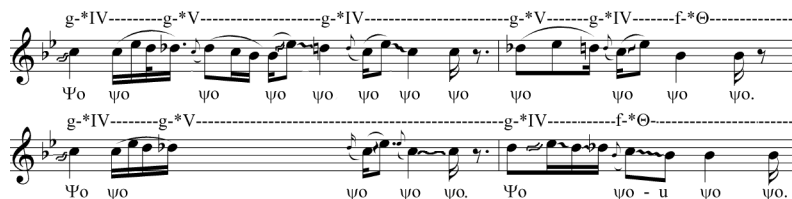
More data is needed from Siberia and Central Asia, but what seems obvious is that Mode II (forerunner of the major mode) is either rare or non-existent, a trait that makes a clear difference between Europe and most of Asia. Mode II only appears once (Fig. 10b). It may be that its presence suggests a 20th century loan from Russian chastushka to Altai Kizhi syntax. If it is excluded, it is possible to state that the essence of their syntax is in the use of embryo VI alone or connected to alpha allele, which, on the other hand, may be connected to beta allele. The syntactic structures are symmetrical in one way or another even if long in structure (see Fig. 8a, 9b, and 10b).

The pentatonic elements seem to be missing but, because of proto-hexatonic embryos  $\zeta^*V$  and  $\zeta^*VI$ , the melodies are based on modal inversions. The question about the position of mode II in the local syntax remains open because alpha allele lacks degree 6 but has the degrees that can lead both to embryos  $*I$  and  $*II$ . However, Mode I is so general in the northern Turkic syntax (such as that of the Yakuts) that the singers treat allele  $g-\alpha$  more probably by adding tone  $bb$  to it than tone  $b$ , the 6th degree of  $g-II$ .

## Four more melodies

The final note example of the original paper is a sheep incantation of the neighbouring people, the Telengits of the Ulagan district (Fig.

11). Kondrat'eva and Mazepus (1993, 48) state that the treatment of rhythm and form as well as the tone collection parallels the Altai Kizhi incantations while the use of glides and mordents is more typical of the Telengit style.<sup>6</sup> However, it is obvious that both traditions spring from the common ancestral style of incantations. When this melody is interpreted with the Seeker tone the following conclusions can be drawn.



**Fig. 11.** Telengit sheep incantation according to Kondrat'eva and Mazepus 1993, 48, no. 9 on the G horizon. The durations of the measures are ca 7+4+4+3 seconds.

The Telengits speak the same southern dialect of Altai-Turkic as do the Kizhis and no wonder that the melodies are closely related. Typical of this tune is a glissando *eb-d-db-c*. When tone *d* is sung as a tone and not as a glide the modal embryo is *g-\*IV*, whose tonic *c* opens the song. When tone *db* is prominent the embryo is *g-\*V*. Tones *d* and *db* alternate swiftly. Each line is composed of two melodic verses. The former is closed with the tonic *c* of *g-\*IV*, while the latter is closed with the tonic *bb* of theta allele *f-Θ*, which may indicate four embryos, *f-\*I*, *f-\*II*, *f-\*III*, or *f-\*IV*.

The lower line of Fig. 11 ends with the tonic *b flat* of muu allele *f-μ* if a listener recognises tone *db* as one pitch. But if *db* is only experienced as a very brief glide from *d* to *db* then the allele is theta allele *f-Θ*. On the basis of this transcription alone it is not possible to come

6. Kondrat'eva has published a detailed study on the Telengit incantations (1990) but I do not have it at hand.

to any firm conclusion. Therefore I assume that the four first tones of the last measure (*d-eb-d-db*) move in  $g\text{-}^*\text{IV}$  while the end of this measure is closed in the same theta allele  $f\text{-}\Theta$  as is the end of the upper line of Fig. 11. Hence, the general definition of the syntax underlying this sheep incantation is:

$$\{g\text{-}^*\text{IV}^1 \leftrightarrow g\text{-}\zeta^*\text{V} \rightarrow g\text{-}^*\text{IV}\} \rightarrow f\text{-}\Theta^1.$$

The syntactic trait that connects this song to Altai Kizhi melodies is the Seeker tone progression  $g^1 \rightarrow f^1$  with the tonics as their final tones. What is different is the appearance of theta allele, which does not belong to Kizhi tunes. Moreover, beta allele of the Kizhis has transformed (enlarged) here to embryo  $^*\text{IV}$ . This means that the Kizhi pattern  $\{g\text{-}\beta_5 \rightarrow c\text{-}\zeta\text{V}^1\}$  of Fig. 10b parallels the Telengit pattern  $g\text{-}^*\text{IV}^1 \leftrightarrow g\text{-}\zeta^*\text{V}$ , and the differences are merely dialectical.

There is a short extract of a Telengit sheep incantation in Fig. 12a. The melody proceeds in the style found in former examples and it keeps the C, Bb and Ab neurons in a state of activation throughout the verse. The D neuron also is active except when tone *bb* is sung. The main activation is on C defining tone *g* as the Seeker tone. Again, because of the lack of the third degree the mode cannot be defined, which leads to the allelic result in analysis. Because *g* is the only Seeker, the syntax is simply  $g\text{-}\beta^{2-1}$ .



**Fig. 12a.** A verse from a Telengit sheep incantation according to Sheykin 2002, 553, No. 47:1. This is now on the G horizon. Allele is  $g\text{-}\beta$ .

The verse from a goat incantation in Fig. 12b is interesting. The sung tones are organised like the descending degrees 3-2-1-4 of embryo



\*III. On the G horizon they are tones  $eb^2$ ,  $d^2$ ,  $c^2$ , and  $b^1$  with  $c^2$  as the tonic. However, there is no stable neural anchor (NA) and the main tying takes place as the alternation of G, Eb and C neurons and it is the G neuron that has the main rate of stimulation. If the melody were composed differently the main rate should be directed to  $c^2$  as is the case in any natural materialisation of  $g$ -\*III. Moreover, the melody is opened and closed with degree 2 ( $d^2$ ). Thus, the tune is constructed in such a way that the dominant  $g^1$  assumes the status of the tonic as is the case in all inversions. This tune also has only one Seeker but it functions differently from Fig. 12a. When the melody is studied one more time it turns out that the mode is inverted only in measures 1 and 4, which lack the tonic. Between them the mode is in its natural form  $g$ -\*III. Thus the syntax is more complex than initially assumed:  $g$ - $\zeta$ \*III<sup>2</sup>→ $g$ -\*III→ $g$ - $\zeta$ \*III<sup>2</sup>. This melody is the only one in this collection in which embryo \*III is to be found.



**Fig. 12b.** Verse from a Telengit goat incantation according to Sheykin 2002, 553, No. 47:2. This is now on the G horizon. The neural anchors (NA) alternate swiftly but tone  $g^1$  remains as the Seeker tone (ST). Symbol  $\zeta g$  means that the mode on  $g$  is inverted.

Kondrat'eva (2004) published one more study on these incantations of the Altai peoples but this time on those of the Kazaks. The Turkic people of the Kazaks belong linguistically to western languages, as does Kyrgyz. The Kazak ethnos emerged after the Golden Horde was divided in three in the 1450's. In those days many Turkic clans (especially the Kypchaks) intermingled with Mongolian and Indo-Iranian elements of the former Horde in Western Asia and the Kazak fusion culture started to develop. Still today, some cultural traits are clearly ancient. For instance, the curvilinear patterns typical of the Altai, Kazak and Kyrgyz saddle blankets can be traced back to the archaeological findings of the

Pazyryk artefacts from the late first millennium BC. (Potapov 1964, 309; Okladnikov 1964, 71.) In the 20th century the Kazaks still sang these incantations to those female cows, sheep, goats and mares who did not feed their offspring or who were restless during milking.

The text of the incantation that Kondrat'eva (2004, 348) published was 'proi, my sheep'. Formally it is quite regular. The glide to  $d^2$  from below continues as a two-tone motive  $c\sharp^2-d^2$ , and the same rhythmic configuration is repeated at the end on tone  $b^1$  *natural*.

A: G-----  
g-\* $\zeta$ VI:  
Psi koi - ym, psi, koi - ym.

A: D-----  
a-\* $\gamma$ : g-\* $\zeta$ VI:  
Psi koi - ym, psi, koi - ym.

A: E-----  
g-\* $\zeta$ VI:  
Psi koi - ym, psi, koi - ym.

A: D#-----  
g#-\*IV: B+E f#-\*I  
Psi koi - ym, psi, koi - ym, psi.

A: G#-----  
g#-\*IV: g-\* $\zeta$ VI:  
Psi koi - ym, psi, koi - ym.

A: G#-----  
a-\* $\gamma$ : g-\* $\zeta$ VI:  
Psi koi - ym, psi, koi - ym.

**Fig. 13a.** A Kazak sheep incantation from southern Altai according to Kondrat'eva 2004, 348 now transposed to the G horizon. See also Fig. 11b.

The main mode is the same as that already found in the Altai Kizhi incantations, embryo  $g\text{-}^*\zeta\text{VI}$  having the structure  $g^1\text{---}b^1\text{-}c\sharp^2\text{-}d^2$ ). In

this light the finale on  $b^1$  is motivated because of the tritonic relation  $g^1—c^{\#2}$  between degrees 5 and 1. However, the position of the brief embellished tone preceding the opening tone changes all the time following the sequence  $b^1-a^1-g^{\#1}-a^1$ . When the singer articulated the opening embellishment  $g^{\#1}$  for the first time in measure 4 the melody of the whole verse changed and so also the modality from  $^*VI$  to  $^*IV$ . Was that a mistake? It is difficult to find any motivation for the transition of the opening tone in the way it goes on in the transcription. If we assume that the opening target tones were not  $b^1-a^1-g^{\#1}-a^1$  but  $b^1$  and  $g^1$ , that is, degrees 6 and 5 of  $g-^*VI$ , then the idea of the song is clear. This assumption may be supported by the pitch of the opening tone of the last verse in which it is only slightly higher than  $g^1$ . If this were the case, the syntax would simply be

$$g-^*VI^6 \rightarrow g-^*VI^5 \rightarrow 6.$$

When the analysis follows the transcription the result reveals that the neural anchor changes repeatedly (Fig. 13b) and the syntax of the tune is complex:

$$\{g-^*VI^2 \leftrightarrow a-\gamma\} \rightarrow g-^*VI \rightarrow g\#-^*IV \rightarrow f-^*I \rightarrow \{g\#-^*IV \leftrightarrow g-^*VI^6\} \rightarrow a-\gamma \rightarrow g-^*VI^6$$

Gamma allele  $a-\gamma$  has the germ to develop either to  $a-^*II$  or to  $a-^*III$ . However, one is forced to ask whether this was the intention of the singer. Specifically the structure of line 4 as well as the fact that other pitches than those of quite brief opening embellishments remain stable strongly suggest that other lines than number 4 share the same embryo no.  $^*VI$ . It only is that the singer articulated the starting pitches arbitrarily. Thus, the syntax can be written as  $g-^*VI^2 \rightarrow \{g\#-^*IV_5 \rightarrow f\#-^*II^1\} \rightarrow g-^*VI^6$ . In this pattern embryo  $g-^*IV$  is an extension of allele  $g-\beta$  and  $f-^*II$  is very rudimentary. Therefore can be said that the Kazak  $g\#-^*IV_5 \rightarrow f\#-^*II^1$  corresponds closely to the Kizhi  $g-\beta^1 \rightarrow bb-II^1$  and these two traits are also present in the Telengit tune in Fig. 11.

1					2&3					4					5&6																								
G-----					D-----					G-----					E-----					D#-----					B-----					G#-----					G-----				
b	d	c#	d	b	a	d	b	g#	e	d#	c#	d#	b	g#	d	c#	d	b																					
	D		D		D	D		D	d+					d+	D		D																						
C#+		C#		C#+			C#+			c#	C#	c#	C#+	C#		C#		C#+																					
	c		c			c		c+	C						c		c																						
B		b		B	B+		B	B		B	b	B	B			b		B																					
	Bb		Bb			Bb			bb+					A#+	Bb		Bb																						
a		A		a	A		a		A	a+	A	a+	a		A		a																						
	ab+		ab+			ab+		Ab		G#		G#		G#	ab+		ab+																						
G	G	g+	G	G	g	G	G			g+			G		G	g+	G	G																					
		F#						gb	f#+		F#			f#		F#																							
				f+	F		f+			F+		F+	f+					f+																					
E	E+		E+	E		E+	E	E	E				E	E	E+		E+	E																					
		D#+			cb+					D#	D#+	D#				D#+																							

**Fig. 13b.** Abbreviated presentation of the neural encoding of the sung tones of Fig. 13a. The alternation of neural anchors (physical tonics) is seen above the table. Corresponding Seeker tones are a fourth below these anchors. The topmost numbers 1–6 refer to lines 1–6 of Fig. 13a.

## Conclusions

From the syntactic point of view these tunes suggest that they are mainly based on protohexatonal inverted embryos  $\zeta^*V$  and  $\zeta^*VI$ . Embryo  $*IV$  does occur while  $*II$  is rare and rudimentary. What is surprising is the lack of embryo  $*I$  ( $g—bb-c-d-e$ ), that otherwise characterises the melodies of Northern Turkic singers. It may be that this embryo is present as beta allele ( $g—bb-c-d$ ), which is used along with alpha allele ( $g—c-d-e$ ). The main point is that the variety of the (pre-)modal elements is small and it is protohexatonal. In spite of the close relations to the Mongols and Chinese the pentatonal elements seem to be lacking. What also is prominently present is the frequent use of inversions. In other Turkic collections there are melodies in which modes other than  $\zeta V$  and  $\zeta VI$  may also be inverted. This is also the case in the Telengit example (Fig. 12b). This, along with the results of an unpublished analysis of Kyrgyz song<sup>7</sup>, appears to mean that inversions are more typical of Turkic syntax

7. This study, “Proto-Turkic and Old-Iranian Basis of Kyrgyz Song”, will be published later.

than of many other populations in Asia. In these melodies Mode III (the root of harmonic minor) appears in quite a rare form. This detail is one that clearly separates Northern Turkic syntax from Southern Turkic syntax in which Mode III is prominent (Fig. 8b). The Altai Kizhi melodies are usually started and ended with the tonic and only occasionally with the dominant. One reason for the latter is the narrow ambit of the tone selections.

If nomadism was established during the first millennium BC among the early Proto-Turkic people (Fig. 1) they may have performed cattle incantations already then. Singing with pre-linguistic *secremes* suggests a possibility that the tradition itself was based on a still older practice. However, we are unable to decide whether this still older practice was Proto-Turkic since they may have adopted it from some other population that cannot be identified any longer. However, the prominence of alleles  $\alpha$  and  $\beta$  as well as the embryos  $\zeta^*V$  and  $\zeta^*VI$  suggests that they have been used for ages. The main function of these melodies was manipulative: The herders aimed to direct the dams to take care of their newborns. We may ask why the Turkic singers had chosen the  $\psi$  'ppppuu' as their main *secreme* in this genre. The association to the bull-roarer may be misleading but to put the relaxed lips vibrate and to use this sound as the main mean of uttering strongly suggests that the Turkic nomads communicated interactively with their cattle. These songs represent a specific pre-linguistic code with and without magical overtones. Perhaps this tradition goes back to the time "when animals could talk".

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