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ON PROSODIC SIGNALLING OF FOCUS IN TUNDRA YUKAGHIR¹

1. Introduction

It is commonly assumed in the theoretical literature on focus that there is an intimate relationship between prominent pitch accents and focus. This belief is exemplified in a number of rules and principles aiming to capture this assumed universal correspondence. The following list is a selection of more prominent focus-accent rules:

- (1) **Basic Focus Rule:** An accented word is F(ocus)-marked.
[Selkirk 1995: 555]

Stress-Focus Correspondence Principle: The focus of a clause is a(ny) constituent containing the main stress of the intonational phrase, as determined by the stress rule. [Reinhart 1995: 62]

Focus: A Focus-marked phrase contains an accent.
[Schwarzschild 1999: 1730]

Stress-Focus: A focused phrase has the highest prosodic prominence in its focus domain. [Féry & Samek-Lodovici 2006: 135–6]

Focus Prominence: Focus needs to be maximally prominent.
[Büning 2010: 178]

The variation of focus readings depending on the position of the main stress is shown by the following Russian sentences, which differ

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only in the assignment of the main pitch accent (small caps indicate the position of the main stress):

- (2) a. *Мальчик съел ЯБЛОКО.* (*Что мальчик съел?*)
- b. *Мальчик СЪЕЛ яблоко.* (*Что сделал мальчик с яблоком?*)
- c. *МАЛЬЧИК съел яблоко.* (*Кто съел яблоко?*)

From the point of view of familiar European languages the rules in (1) may indeed seem to hold true universally. However, a broader look at the world's languages uncovers that the stress-focus correspondence is far from universal. In a considerable number of cases, it is not the sentence stress (i.e. the most prominent pitch movement in the clause) that indicates the position of focus, but rather some other prosodic feature. Thus, in many tone languages, it is not the assignment of the pitch accent that is relevant for focus interpretation, but rather the local changes in the pitch range, as demonstrated by Xu [Xu 1999] for Mandarin Chinese and by K  gler and Genzel [K  gler, Genzel 2009] for Akan. Many languages use intonational phrasing in order to indicate focus, which is thus independent from pitch movements (cf. e. g. [Pierrehumbert, Beckman 1988] for Japanese, [Kanerva 1990] for Chiche  wa, [Koch 2008] for Thompson River Salish, [Helmuth 2009] for Egyptian Arabic). There are also other types of focus marking which are not based on pitch prominence [Selkirk 2004].

More important for our present purpose, there are languages in which there is no correlation whatsoever between focusing and prosody. The most famous case of complete dissociation of focus and prosody is certainly Wolof, as described by Rialland and Robert [Rialland, Robert 2001]; other cases include Navajo [McDonough 2002], Kuot [Lindstr  m, Remijsen 2005], Sotho [Zerbian 2007], and, in certain contexts, Hausa [Hartmann, Zimmermann 2007]. It is striking that most of the languages without the focus-prosody correlation are to a larger or smaller extent equipped with various types of focus morphology — this holds true for Wolof, Navajo, and Hausa, among others. The question that naturally arises in this context is whether in languages in which focus is marked morphologically, the correlation between focus and prosodic prominence tends to be weak or absent, i. e. whether some kind of linguistic economy prevents double marking of one semantic/pragmatic

value, focus, by means of both morphemes and pitch movements or other prosodic means².

One purpose of this paper is to test this tendency in a language with a highly complex morphological focus system, Tundra Yukaghir (TY). The focus marking in TY is mixed: in some cases it includes dedicated focus morphology, in others not (cf. Section 2 for details). It is therefore an ideal testing ground for the hypothesis of language economy preventing the co-existence of prosodic and morphological focus marking. If this hypothesis is on the right track, the prosody should play a role only in those cases where no focus morphology is used; if it turns out that this is not the case, we must allow for the simultaneous and redundant existence of multiple focus encoding strategies in a language.

Yet another, perhaps more important goal is to contribute to the understanding of the prosodic properties of this moribund language: TY has only few speakers left (see below), and it is essential to document all aspects of its linguistic system as extensively as possible.

The paper is organised as follows. Sections 2 and 3 contain basic data on Tundra Yukaghir and its focus system and the description of the experiment used to elicit data. The results are presented in Section 4 and commented upon in Section 5, which also contains some tentative conclusions.

2. Tundra Yukaghir focus system

Together with the now practically extinct Kolyma Yukaghir (3 full speakers as of 2011, fielddata DM), Tundra Yukaghir is the only remnant of what used to be one of the dominant languages/language families of north-eastern Siberia, spreading from the River Anadyr in the east to the River Lena in the west. On the basis of the meagre evidence of early sources, it can be assumed that there existed a Yukaghir dialect continuum, with what is today TY and KY at the extremes [Nikolaeva 2006, 2008].

² Note that even in those languages with focus morphology in which certain prosodic correlates of focus have been identified, such as Akan in Kügler and Genzler's [2009] interpretation, these correlations tend to be weak: K&G [2009: 18] notice that the F0 range lowering, the supposed correlate of morphological narrow foci in Akan, is statistically insignificant.

Currently, Tundra Yukaghir is spoken in the tundra west of the lower reaches of the Kolyma River by ca. 60 people³.

Yukaghir languages are well known for their elaborate focus systems [Krejnovič 1958, 1982, Comrie 1992, Fortescue 1998, Maslova 2005]. Somewhat simplified, the system looks as follows.

Focused core arguments, direct objects and subjects of intransitive verbs, are obligatorily marked with a dedicated focus case suffix (-*le*(*ŋ*) or -(*e*)*k*) and special sets of object-focus and subject-focus agreement suffixes on the verb, as illustrated in (3) and (4):

- (3) *Neme-leŋ iŋe:-meŋ?*
 what-FOC fear-OF.1/2SG
Labunme-leŋ iŋe:-meŋ.
 ptarmigan-FOC fear-OF.1/2SG
 ‘What do you fear?’ — ‘I fear ptarmigans’. [Kurilov 2005: 240]
- (4) *Mon-ŋi tet-ek werwe-l.*
 say-INTR.3PL you-FOC be.strong-SF
Ele:ŋ, köde-leŋ werwe-l.
 no man-FOC be.strong-SF
 ‘They say that YOU are strong.’ — ‘No, it’s the man that is strong’. [Kurilov 2005: 242]

The same strategy seems to be used in wide focus contexts, when the whole VP (i.e. the object and the verb, cf. (5)) or the clause (i. e. the subject and the verb, cf. (6)) is focused:

- (5) [What do you do for living?]
Met qajser-leŋ wie-nun-meŋ
 I ski-FOC make-HAB-OF.1/2SG
 ‘I make skis’. (fielddata DM 2010)
- (6) [What is going on?]
Ilje-leŋ werwe-mu-l!
 wind-FOC be.strong-INCH-SF
 ‘The wind has got strong!’ (fielddata DM 2009)

³ Villages of Andryushkino and Kolymskoe: 45–50 speakers, village of Chersky: 9 speakers, Yakutsk: 3 speakers (fielddata CO & DM 2010).

If the verb is focused, the strategy is different: there is no focus marking on core constituents, the verb has the so-called neutral agreement set, and the proclitic particle *me(r)=* is attached to the verb:

- (7) *Eld'e, tuŋ köde el=amud'i:-mek?*

DP this man NEG=love-TR.2SG

Mer=amud'i:-ŋ.

VF=love-TR.1SG

‘What, you don’t like that man?’ — ‘I do like him’.

[Kurilov 2005: 304]

If an oblique argument or an adjunct is focused, core arguments do not get focus marking, the verb carries neutral agreement suffixes, but lacks the particle *me(r)=*, and the focused argument/adjunct is usually in the immediately preverbal position [Comrie 1992, Fortescue 1998]:

- (8) *Qaduŋudenŋ kew-ej?*

whither go-PF(3SG)

Moskva-ŋiŋ kew-eč.

Moscow-DAT go-PF.INTR(3SG)

‘Where did he go?’ — ‘He went to Moscow’.

(fielddata DM 2008)

The main features of this intricate system are summarized in Table 1⁴.

Table 1: Morphosyntax of the Tundra Yukaghir focus system

	focus case + focus agreement	neutral agreement	particle <i>me(r)=</i>
Focus on S/O	+		
Broad focus VP/cl.	+		
Focus on oblique		+	
Focus on verb		+	+

⁴ Narrow focus on the subject of transitive verbs is characterized by zero marking of the subject and zero agreement on the verb [Krejnovič 1958, 1982]. This focus type is subject to various idiosyncratic variations in TY, and the speakers are often unsure about its proper use. Our data on this structure is thus still incomplete and it will not be dealt with in this paper.

The question we are addressing in this paper is whether the elaborate morphosyntactic marking of focus in Tundra Yukaghir is paired with prosodic means, and what these prosodic means are. In order to investigate this, a production experiment was devised and performed with a number of speakers of Tundra Yukaghir in the villages of Andryushkino and Chersky. The details of the experimental setup are explained in Section 3.

3. Experiment

The experiment is based on contextualised question-answer (Q-A) pairs constructed so as to represent the five basic formal types of focus marking in TY: subject, object, and broad VP/sentence focus, (focus case, focus agreement), verb focus (particle *me(r)=*, neutral agreement), and focus on an oblique (no special marking, neutral agreement). The additional variable of contrast is introduced via context manipulation: all types appear in two variants, with a contrastive and a non-contrastive context. In this way, the number of focus types covered amounts to ten (subject focus non-contrastive, subject focus contrastive, object focus non-contrastive, etc.). For all ten types, 3 or 4 Q-A pairs were constructed. The stimulus material thus comprises the total of 33 Q-A pairs.

Four speakers of TY, between 55 and 65 years old, were chosen for the experiment. They were all born in the tundra in the families of native speakers of TY. All four speakers are literate in TY and fully master the skills of reading, writing, speaking and understanding. They live in their native environment. A potential problem for the experiment is that all TY speakers are at least bilingual and often use Yakut or Russian in daily conversation. In order to counter the potential impact of other languages, speakers were asked to tell a short story in TY before the actual recording, so that they could completely switch to TY pronunciation and prosody. The text of Q-A pairs was presented on a computer screen and read twice. If hesitations occurred, speakers were asked to read the pair again. It was only the second, more fluent and natural recording that was subject to the analysis (cf. [Zerbian 2007] and [Himmelmann, Ladd 2008] on the use of reading in intonation experiments).

Recordings were made with an Edirol R-9 recorder at a sample frequency of 44KHz (CD-quality) and a high-quality Samson QV cardioid directional headset-microphone. They were measured for pitch and analysed by means of software packages for speech processing *Praat*, version 5.1.31

(2010, Paul Boersma and David Weenink, www.fon.hum.uva.nl/praat), and *Gipos* v2.3 (2001, Leo Vogten and Ercan Gigi, former Institute for Perception Research, TU Eindhoven/NatLab Philips). The description of perceptual pitch prominence is based on the instrumental analysis of the utterances. Pitch contours were investigated for abrupt changes or more salient movements than in the surrounding words.

A word on notational conventions: configurations of pitch movement ‘rise&fall’ or ‘fall&rise’ occur in the same syllable, whereas ‘rise and fall’ or ‘fall and rise’ occur in different syllables.

4. Results

The stimulus material used in the experiment allows for generalisations across different focus marking types, their scopal properties and their sensitivity to the explicit limitation of the number of alternatives (contrast). In the present paper, we shall confine ourselves to shedding some light on two major questions, leaving the scopal and other questions for future research. These questions are:

- A Do foci which are rendered prominent via morphological marking also display redundant prosodic prominence?
- B If the answer to A is affirmative, is the type of prosodic prominence identical across different focus markings (focus case, verbal particle, zero marking)?

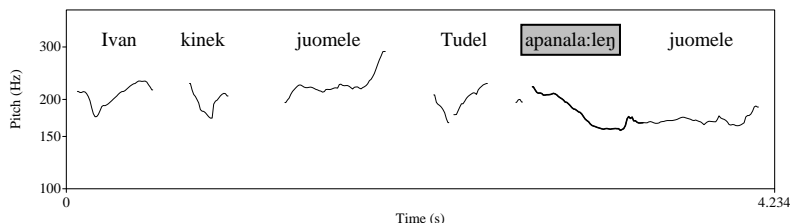
In order to answer these questions, we will discuss the prosody of the three major focus marking categories — focus case (focused S’s and O’s), particle *me(r)=* (focused verbs), and zero marking (focused obliques).

4.1. Focus case: focused objects and subjects

As described in Section 2, focused objects and subjects carry focus case morphemes *-le(ŋ)* or *-(e)k*; the verb agreement is of the object or subject focus type. In our experimental material, objects with focus case marking are regularly associated with a clearly audible pitch prominence. There is first a sharp fall of F0 on the object; this falling pitch is followed by low level pitch. This is illustrated in the following example, involving focus on the word *apanala*: ‘old woman’:

- (9) *Ivan kin-ek juo-mele?*
 Ivan who-FOC see-OF.3SG
Tude-l apanala:-leŋ juo-mele.
 3SG-NOM old.woman-FOCsee-OF.3SG
 ‘Who did Ivan see?’ — ‘He saw the old woman’.

Figure 1: F0 contour of (9) with focus on the object *apanala:leŋ*

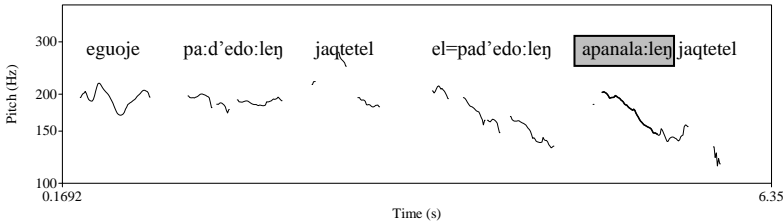


Focused object *apanala:leŋ* is acoustically the most prominent segment in the answer; the prosodic pattern it displays is a steep fall (highlighted segment in Fig. 1) followed by low level pitch.

This type of prosodic marking — prominent fall followed by low level pitch — occurs not only on focus-marked objects, but also on focus-marked subjects. Consider example (10), with the same word form, *apanala:leŋ* (old.woman-FOC), in the role of the focused subject of an intransitive verb:

- (10) *Eguojie pa:d'eduo-leŋ jaqte-te-l?*
 tomorrow girl-FOC sing-FUT-SF
El=pa:d'eduo-leŋ, apanala:-leŋ jaqte-te-l.
 NEG=girl-FOC old.woman-FOC sing-FUT-SF
 ‘Will the girl sing tomorrow?’ — ‘Not the girl, the old woman will sing’.

Figure 2: F0 contour of (10) with focus on the subject *apanala:leŋ*⁵

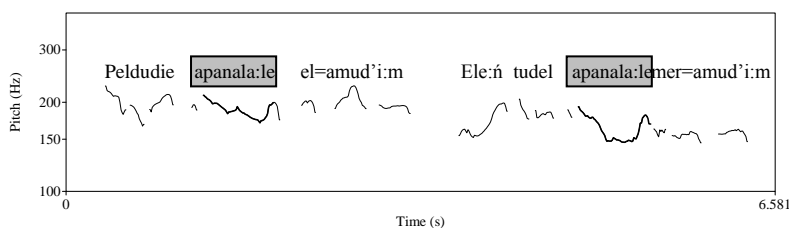


Focus-marked subjects, as is visible in Fig. 2, display the same prosodic pattern as focus-marked objects — acoustic prominence, pitch fall on the focus followed by low level pitch (observe also the identical contour on the subject *el=pa:d'eduoleŋ*, the contrastive counterpart of *apanala:leŋ*).

In order to count as focus marking proper, i. e. as a dedicated prosodic means to mark focus, the pitch properties of focus-marked subjects and objects must differ from the prosodic characteristics of subjects and objects which have no focus marking. We have tested this with examples containing the same word, *apanala:*, in the role of a non-focus-marked subject/object. Consider example (11):

- (11) *Peldudie apanala:-le el=amud'i:-m?*
 old.man old.woman-ACC NEG=love-3SG.TR
Ele:ŋ, tude-l apanala:-le mer=amud'i:-m
 no 3SG-NOM old.woman-ACC VF=love-3SG.TR
 'The old man doesn't love the old woman?' — 'No, he does love the old woman!'

⁵ Pitch could not be measured in the final syllables of *jaqtetel* as it was pronounced in an almost creaky voice.

Figure 3: F0 contour of (11) with the non-focus-marked object *apanala:le*

The pitch movements on non-focus marked *apanala:le* in (11) (both Q and A; highlighted) are strikingly different from those on focus-marked *apanala:leŋ* in (9) and (10): whereas the latter have the form of a continuous pitch fall followed by low level pitch, the former, non-focal pitch movements, surface as a fall&rise in the second-to-last syllable and lack acoustic prominence characteristic for focus-marked core arguments. In other words, prominent falling pitch does indeed seem to be a dedicated prosodic marker of focus with focus marked subjects and objects.

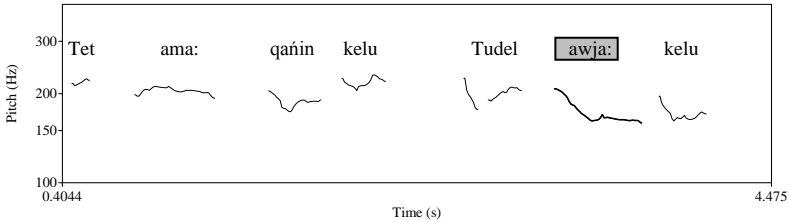
4.2. Focused obliques

The first question to which this paper attempts to answer, that of redundant prosodic marking of focus-marked subjects and objects, is thus resolved: morphological and prosodic means of focus marking are not mutually exclusive in TY; arguments marked with the focus case *-le(ŋ)/-(e)k* are also marked with a prominent pitch fall.

Our second question pertains to the generality of the prosodic focus marking across different morphological focus marking types: How are zero-marked and verb-particle-marked foci realised prosodically, and in what relation does their prosodic realisation stand with the prominent falling pitch of foci with focus case? In what follows, we shall first deal with the cases of zero marking, i. e. those with focus on oblique arguments and adjuncts, which neither carry the focus case suffix nor are combined with the focus agreement morphemes on the verb. The prosodic properties of these elements are illustrated with examples containing focused and non-focused instances of the word *awja*: ‘yesterday’. Consider first a focused *awja*:

- (12) *Tet ama: qan'in kelu?*
 2SG father when arrive(3SG.INTRG)
Tude-l awja: kelu-j.
 3SG-NOM yesterday arrive-3SG.INTR
 'When did your father arrive?' — 'He arrived yesterday'.

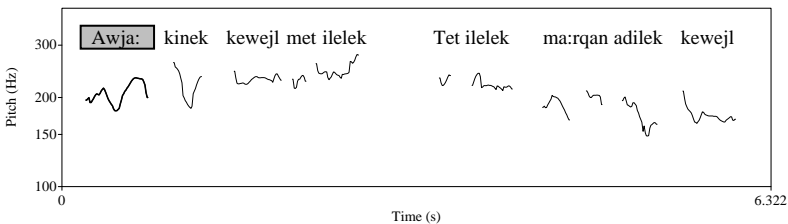
Figure 4: F0 contour of (12) with the zero-marked focused adjunct *awja:*



Zero-marked focused *awja:* has the same kind of pitch prominence as focus-marked S/O's, realised with the salient fall followed by a low level pitch. For comparison, an instance of non-focused *awja:* is given in the question part of (13):

- (13) *Awja: kin-ek kewe-j-l met ile-lek?*
 yesterday who-FOC leave-SF 1SG reindeer-INST
Tet ile-lek ma:rqa-n adil-ek
 2SG reindeer-INST one-ATTR young.man-FOC
kewe-j-l
 leave-SF
 'Who left on my reindeer yesterday?' — 'A young man left on your reindeer'.

Figure 5: F0 contour of (13) with the non-focal adjunct *awja:*



In contrast to the focal oblique with its prominent pitch fall, the non-focal *awja:* is realised with a non-salient rise on the stressed syllable. Non-prominent rise or fall&rise are regular pitch realisations of non-focused obliques. Focused obliques, while morphologically zero-marked, are in our stimulus material invariantly pronounced with the contour illustrated in (12), a prominent fall with the following low level pitch. This prominent pitch movement is identical to that occurring with focus-marked core arguments (cf. examples (9) and (10)). In other words, irrespective of the type of morphological focus marking (focus case vs. zero), focused elements of TY clauses receive the same type of prosodic prominence.

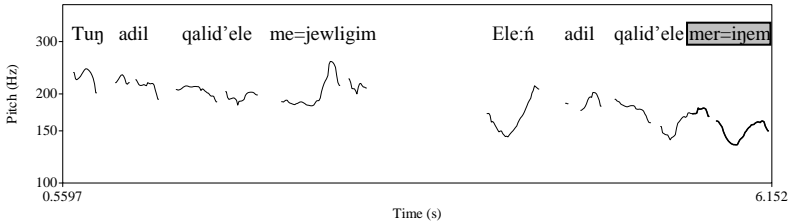
4.3. Focused verbs

The last focus marking type we discuss in this paper are focused verbs, whose focal status is morphologically marked with the proclitic particle *me(r)=*. Since TY is a verb-final language, focused verbs tend to occur on the right edge of the utterance and are therefore the primary carriers of boundary tones. This makes their analysis in terms of focus prosody somewhat less straightforward than in the previous two cases. However, we were able to disentangle the pitch movements related to verb focus from the default boundary tone, at least in declarative sentences. The relationship of boundary tones and focus prosody in polar questions is more intricate and will be the object of a later study.

According to our analysis, the boundary tone in declarative clauses, or, more precisely, in non-contrastive answers to questions, is invariably a rise, occasionally followed by a half fall; in polysyllabic words (i. e. almost all TY verb forms), this rise is realised on the last syllable. Consider example (14):

- (14) *Tu-ŋ adil qa:lid'e-le me=jewligi-m?*
 dem-ATTR young.man wolf-ACC VF=like-3SG.TR
Ele:ń, adil qa:lid'e-le mer=inje-m.
 no young.man wolf-ACC VF=fear-3SG.TR
 'Does the young man like wolves?' — 'No, he is afraid of the wolves'.

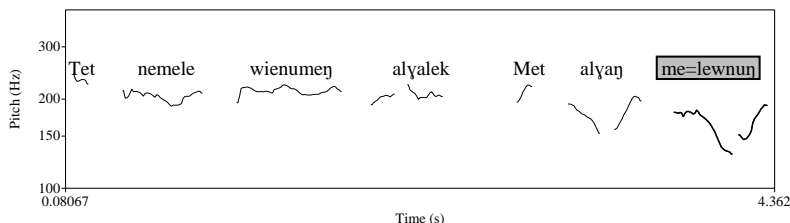
Figure 6: F0 contour of (14) with a *me(r)*-marked focused verb in the answer



The last syllable of the verb form *mer=iniem* is characterised by a rise&half fall, spread over the syllable *niem*. The same type of pitch movement on the final syllable of the utterance can be seen in examples (9) and (12), as well as in (15) and (16) below. What is of interest here is that the first two syllables of the verb (*me.ri.*), most notably the second (*ri.*), carry the same prominent pitch movement that has been observed with marked S/O foci and with non-marked oblique foci: a steep prominent fall. We thus tentatively propose to treat the fall and rise and half fall contour on *mer=iniem* in (14) (highlighted) as consisting of two distinct prosodic units: the focus-marking fall on the first two syllables and the boundary-marking rise&half fall on the last syllable. This hypothesis is strengthened, first, by the occurrence of the rising pitch with an optional half fall on clause boundaries independently of the type of focus marking in the clause, and second, by the absence of the prominent pitch fall on the first syllables of verbs without the particle *mer=*, i. e. without a focus on the verb. Both of these points are illustrated by examples (15) and (16):

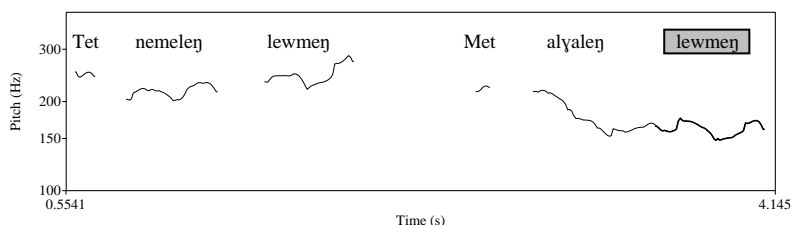
- (15) *Tet neme-le wie-nu-men alya-lek?*
 2SG what-FOC do-PROG-OF.1/2SG fish-INST
Met alyan me=lew-nu-η.
 1SG fish VF=eat-PROG-1SG.TR
 ‘What are you doing with the fish?’ — ‘I am eating the fish’.

Figure 7: F0 contour of (15) with the *me(r)*-marked focused verb *lew-* in the answer



- (16) *Tet neme-leŋ lew-meŋ?*
 2SG what-FOC eat-OF.1/2SG
Met aly-leŋ lew-meŋ.
 1SG fish-FOC eat-OF.1/2SG
 ‘What did you eat?’ — ‘I ate fish’.

Figure 8: F0 contour of (16) with the non-focused form of the verb *lew-* in the answer



In both examples, the last syllable of the verb *lew-* ‘eat’ (*.nuŋ* in (15) and *.meŋ* in (16)), despite different focus structures of these two sentences, is realised with a rising pitch, with or without a half fall. This contour thus seems to be independent of information structure and is probably best viewed as a kind of boundary tone. The pitch of the first syllables of *lew-*, however, differs considerably. In (15), where *me(r)*= unequivocally marks the verb as focused, the pitch on the first two syllables, *me.lew.*, displays an acoustically prominent steep fall of the focus-marking type. No such movement is audible in the first syllable of the non-focused *lewmen* in (16). We may therefore deduce

that the pitch fall in the first syllable(s) of sentence final verbs is indeed a focus marker observed with other focus types.

In sum: focused verbs marked with *me(r)*= display the same kind of prosodic focus marking as focused S/O's with focus case and focused obliques without morphological focus marking; in all of these cases, the prosodic focus marker is a prominent pitch fall. This prosodic marking occurs without exceptions in all sentences produced by our speakers in the experiment.

5. Discussion and tentative conclusions

The experimental data strongly suggest that TY has a dedicated prosodic marker of focus in the form of a prominent falling pitch on the focused element. The realisation of this prosodic marker is independent of the way the focus is marked morphologically: it appears invariantly with all three major formal types of focus in TY (focus case, particle *me(r)*=, zero marking), and on all kinds of constituents. Functionally, this prosodic signal appears to be redundant both in those cases in which focus is signalled with an overt morphological marker, as with focused core arguments and verbs, and in those cases where it is zero marking that unequivocally locates the focus, as with oblique foci.

Before attempting to draw some tentative conclusions from our findings, we must emphasise that the results presented in this paper are restricted both in terms of focus types taken into account and in terms of phonetic parameters of prominence measured. We have limited ourselves to narrow foci and have paid no attention to the variable of contrastiveness; the only phonetic value considered is pitch, while duration and intensity have been largely ignored. A full assessment of the prosodic correlates of focus in TY is thus still far from completed. What we have found out is that narrow foci in this language tend to be realised with prosodic prominence and with a distinct pitch movement; what the exact status of this phenomenon in the overall system of the TY intonation is remains to be investigated.

Despite their limited scope, we believe that our findings can contribute to the general typological picture of the distribution of formal means of focus marking. In Section 1, a number of approaches to focus have been briefly discussed which attempt to establish a universal one-to-one relationship between focus and prosodic prominence. Evidence from

languages lacking this purported universal correlation was adduced in order to show that this position is empirically untenable.

The fact that most of the languages without prosodic marking of focus possess developed morphological focus systems raises the question of the compatibility of morphological and prosodic means of marking focus. The idea behind this question is obviously that of linguistic economy: if a language has the grammatical category A in order to express focus, the principles of language economy should prevent it from using another grammatical category, B, to perform the same function. Tundra Yukaghir redundant prosodic focus marking clearly disconfirms this simple equation: a language with a morphological focus system can at the same time use prosodic prominence to signal the focal status of various sentence elements, and in a rather systematic way. This should come as no surprise in view of multiple redundancies attested in human languages in many grammatical subsystems, and in particular in the encoding of information structure: as Van Valin notes, in order to mark focus, languages can rely solely on word order, solely on intonation, or they can freely combine word order and prosodic signals [Van Valin 1999]. There is no principled reason for other combinations of marking devices not to be attested in natural languages, the combination of morphology and prosody documented in this paper being probably only one of them.

Abbreviations

1, 2, 3 — first, second, third person; ACC — accusative; ATTR — attributive; DAT — dative; DP — discourse particle; FOC — focus; FUT — future; HAB — habitual; INCH — inchoative; INST — instrumental; INTR — intransitive; INTRG — interrogative; NEG — negation; NOM — nominative; OF — object focus; PF — perfective; PL — plural; PROG — progressive; SF — subject focus; SG — singular; TR — transitive; VF — verb focus.

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