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Labial Attraction in Turkish: an empirical perspective

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This paper investigates a controversial root structure constraint in Turkish. According to Lees (1966b), high back vowels in Turkish are round (violating vowel harmony) when the preceding syllable contains /a/ and the intervening string of consonants contains at least one labial. Although it has fueled subsequent theoretical claims, Lees' "Labial Attraction" constraint admits enough lexical exceptions that some researchers reject it. Based on analysis of a large database of Turkish, this study concludes that Labial Attraction is not supported statistically; moreover, many apparent examples are actually unaltered loans into Turkish. The study does document a tendency to find labial vowels following labial consonants, which appears to reflect a minor historical sound change in Turkish.

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1. Introduction

The goal of this paper is to investigate a curious and controversial morpheme structure constraint in Turkish.¹ Labial Attraction is a generalization about Turkish roots noticed by Lees (1966a, b), who observed that high back vowels tend to be round when the preceding syllable contains /a/ and the intervening string of consonants contains at least one labial. Although the number of lexical exceptions to Labial Attraction has caused some subsequent researchers (e.g. Clements & Sezer 1982 and van der Hulst & van der Weijer 1991) to reject it as part of the synchronic grammar of Turkish, other researchers have continued to assume its existence, using Labial Attraction to draw important theoretical conclusions about feature geometry and the structure of the Turkish lexicon (Ní Chiosáin & Padgett 1993, Itô, Mester & Padgett 1993, Itô & Mester 1995).

Since there are, by definition, no phonological alternations that can show the productivity of a static morpheme structure constraint like Labial Attraction, the analyst is forced to find other means of testing its role (if any) in the grammar. One method that has been tried in the past is psycholinguistic experimentation (Zimmer 1969). The other is statistical analysis of a comprehensive database. This is the method used in the present paper. The database in question is the Turkish Electronic Living Lexicon (TELL), a large database of lexical items under development since 1996 at the University of California, Berkeley.

1.1. Labial Attraction

Labial Attraction is a root structure constraint originally formulated by Lees (1996b). Lees claimed that in disyllabic roots in which an /a/ in the first syllable is separated from a following back high vowel by a labial consonant (which may be part of a cluster including a nonlabial consonant), that high back vowel will be /u/ (1966b:

¹ This paper has benefitted from many conversations with Karl Zimmer, whose original work on and continued interest in the Labial Attraction phenomenon has been an inspiration. We also thank Jaye Padgett for discussing Labial Attraction with us, and an anonymous reviewer for helpful comments. Development of the TELL (Turkish Electronic Living Lexicon) database on which much of this paper is based has been supported by the National Science Foundation (awards #SBR-9514355 and #BCS-9911003 to Sharon Inkelas) and by the Hellman Family Faculty Fund at the University of California, Berkeley. For a description of TELL, see Inkelas et al. (2000).

285-286), rather than the /u/ expected according to Turkish vowel harmony rules. A reformulation of Lees' "labial attraction" constraint is given below:²

(1) Labial Attraction

$$\left[\begin{array}{l} -\text{cons} \\ +\text{high} \\ +\text{back} \end{array} \right] \rightarrow [+rd] / \# C^* a C^* \left[\begin{array}{l} +\text{cons} \\ +\text{labial} \end{array} \right] C^* _ C^* \#$$

Some examples of the sort that inspired Lees' claim (Lees 1966b: 285-286) are given in (2):

(2) Orthography	IPA	Gloss
<i>sabun</i>	sabun	'soap'
<i>maymun</i>	majmun	'monkey'
<i>yavru</i>	javru	'cub'

To put Labial Attraction in context, it is necessary to cover some well-known facts about the phonology of Turkish, starting with the segment inventory. (For general discussion of Turkish phonology, see e.g. Lees 1961, Lewis 1967, Underhill 1976, Clements & Sezer 1982.) The consonant inventory is presented below in both orthography and (in square brackets, where different) IPA.

(3) <i>p</i>	<i>t</i>	ç [tʃ]	<i>k</i>	[k, kʰ]
<i>b</i>	<i>d</i>	c [dʒ]	<i>g</i>	[g, gʰ]
<i>f</i>	<i>s</i>	ş [ʃ]	<i>h</i>	
<i>v</i>	<i>z</i>	j [ʒ]		
<i>m</i>	<i>n</i>			
	<i>l</i>	[l, lʰ]		
	<i>r</i>			
	<i>y</i>	[j]		

² Lees' original constraint doesn't stipulate that the high vowel in question be back. This is because his rule is crucially ordered after "Flatness harmony", which ensures that a vowel will be back following another back vowel (cf. Lees 1966b: 286).

Turkish has an eight-vowel inventory which subdivides symmetrically around the front-back, the high-low, and the round-unrounded parameters:

- (4) i $ü$ [y] $ɪ$ [ɯ] u
 e $ö$ [ø] a [ɑ] o

Labial Attraction competes with the well-known rules of Vowel Harmony in Turkish. Vowel Harmony is a twofold effect consisting of Palatal Harmony and Rounding Harmony.

- (5) a. Palatal Harmony: a vowel agrees in backness
 with the preceding vowel
 b. Rounding Harmony: a high vowel agrees in roundness
 with the preceding vowel

Where Labial Attraction predicts /a...u/, Vowel Harmony – specifically, Rounding Harmony – predicts /a...ɯ/. The domains of application of Labial Attraction and Rounding Harmony are almost disjoint. Vowel Harmony applies productively to a large number of suffixes, e.g. the accusative and plural:³

(6)	Orthography	IPA	IPA	IPA	
	Nominative		Accusative	Nominative plural	Gloss
	<i>fil</i>	fil	fil-i	fil-ler	'elephant'
	<i>gül</i>	gyl	gyl-y	gyl-ler	'rose'
	<i>kız</i>	kuɰz	kuɰz-u	kuɰz-lar	'girl'
	<i>muz</i>	muz	muz-u	muz-lar	'banana'
	<i>el</i>	el	el-i	el-ler	'hand'
	<i>göz</i>	gøz	gøz-y	gøz-ler	'eye'
	<i>at</i>	at	at-u	at-lar	'horse'
	<i>ok</i>	ok	ok-u	ok-lar	'arrow'

³ The IPA transcriptions in (6) do not indicate predictable palatalization of /k/, /g/ and /l/ in the neighborhood of front vowels. Consonant palatalization is indicated only in the neighborhood of back vowels, where it is contrastive.

Labial Attraction does not apply to suffixes, being limited strictly to (disyllabic) roots:⁴

(7)	Orthography	IPA	Gloss
(a)	<i>cam</i>	dʒam	'pane of glass'
	<i>cam-ım</i>	dʒam-um	'glass-1st singular possessive'
	* <i>cam-um</i>	*dʒam-um	
(b)	<i>kitab-ı</i>	kitab-ı	'book-accusative'
	* <i>kitab-u</i>	*kitab-u	

Conversely, Vowel Harmony shows few signs of actively applying within roots, appearing instead to be limited to suffix vowels. Clements & Sezer (1982), noting numerous examples (some of which are given below) of disharmonic roots, hypothesize that Rounding Harmony is simply not applicable root-internally.⁵ Four examples are given below:

(8)	<i>anne</i>	anne	'mother'
	<i>kitap</i>	kitap	'book'
	<i>şoför</i>	şoför	'chauffeur'
	<i>inkılap</i>	inkılap	'revolution'

The problem with restricting Rounding Harmony to suffixes and Labial Attraction to roots is that Labial Attraction admits root-internal exceptions just like Rounding Harmony does. The following roots are just four of the many commonplace counter-examples:

(9)	<i>kapı</i>	kapı	'door'
	<i>sabır</i>	sabır	'patience'

⁴ The convention in this table of giving orthographic representations in the first column, followed by IPA representations in the second column, will be followed without further comment throughout the paper.

⁵ In addition, several suffixes contain vowels that do not harmonize (e.g. the back vowel [o] in the progressive suffix, resulting in disharmonic forms like *gel-iyor* 'is coming', the front vowel [e] in the polygon-naming suffix, resulting in disharmonic forms like *altı-gen* 'hexagon', and the high front vowel [i] in the relativizing suffix, resulting in disharmonic forms like *masa-da-ki* 'table-loc-rel = the one on the table').

<i>camız</i>	dʒamuz	'water buffalo'
<i>tavır</i>	tavur	'mode'

The question of whether Rounding Harmony applies within roots is relatively inconsequential, since suffix alternations clearly establish it as part of Turkish grammar. (See also Zimmer 1969 for experimental validation of its psychological reality in the language.) But in the case of Labial Attraction, roots provide the *only* evidence for its existence. Thus the implications of root-internal exceptions are much greater. Is it reasonable to claim grammatical status for a generalization that is not completely (possibly not even predominantly) true? The range of approaches to this problem in the literature is, as we shall see, heavily influenced by different authors' impressions of the statistical robustness of Labial Attraction. In section 2 we survey these approaches, turning in section 3 to an attempt to resolve the issue by consulting the TELL database.

2. Past studies

Previous work on Labial Attraction has been of two kinds: the reporting of illustrative examples arrived at through introspection or observation, and psycholinguistic experimentation. We begin with the former.

2.1. A tendency toward Labial Attraction

In his original paper on Labial Attraction, Lees (1966b) cites 50 examples of Labial Attraction, which are reproduced below:⁶

(10) <i>avuç</i>	avutʃ	'palm of hand'	p. 285
<i>çabuk</i>	tʃabuk	'quick'	285
<i>çamur</i>	tʃamur	'mud'	285
<i>çapul</i>	tʃapul	'raid'	285
<i>çaput</i>	tʃaput	'rag'	285
<i>çavuş</i>	tʃavutʃ	'sergeant'	285
<i>camus</i>	dʒamus	'water buffalo'	285
<i>davul</i>	davul	'drum'	285

⁶ Lees' original phonetic transcription system is converted here to IPA. The gloss of *camus* is corrected from 'buffalo' to 'water buffalo'; the gloss of *pabuç* is corrected from 'skipper' to 'slipper'. An additional form, *hamur*, which Lees cites elsewhere in the same paper (1966b: 281), is also included in the list.

<i>gâvur</i>	g ^ɟ avur	'infidel'	285
<i>hamul</i>	hamul	'patient'	285
<i>hamur</i>	hamur	'dough'	285
<i>hamut</i>	hamut	'collar of horse'	285
<i>havlu</i>	havlu	'towel'	285
<i>havruz</i>	havruz	'chamberpot'	285
<i>havuç</i>	havutʃ	'carrot'	285
<i>havut</i>	havut	'camel pack-saddle'	285
<i>havuz</i>	havuz	'pond'	285
<i>kabuk</i>	kabuk	'rind'	285
<i>kabul</i>	kabul ^ɟ	'acceptance'	281
<i>kalbur</i>	kalbur	'seive'	285
<i>kalmuk</i>	kalmuk	'Kalmuck'	285
<i>kambur</i>	kambur	'hunchback'	285
<i>kamu</i>	kamu	'all'	285
<i>karmuk</i>	karmuk	'grappling iron'	285
<i>kavuk</i>	kavuk	'hollow'	285
<i>kavun</i>	kavun	'melon'	285
<i>kavur</i>	kavur	'fry'	285
<i>kavuş</i>	kavuş	'come together'	285
<i>kavut</i>	kavut	'ground roasted wheat'	285
<i>marpuç</i>	marputʃ	'tube of narghile'	285
<i>majmun</i>	majmun	'monkey'	285
<i>pabuç</i>	pabutʃ	'slipper'	285
<i>pamuk</i>	pamuk	'cotton'	285
<i>sabuk</i>	sabuk	'astray'	285
<i>sabun</i>	sabun	'soap'	285
<i>sabur</i>	sabur	'patient'	285
<i>samsun</i>	samsun	'mastiff'	285
<i>samur</i>	samur	'sable'	285
<i>şaful</i>	ʃaful	'wooden honey tub'	285
<i>tabur</i>	tabur	'battalion'	286
<i>tabut</i>	tabut	'coffin'	286
<i>tambur</i>	tambur	'guitar'	286
<i>tamu</i>	tamu	'hell'	286
<i>tarbuş</i>	tarbuʃ	'fez'	286
<i>tavuk</i>	tavuk	'hen'	286
<i>tavus</i>	tavus	'peacock'	286
<i>yarpuz</i>	jarpuz	'pennyroyal'	286
<i>yavru</i>	javru	'cub'	286
<i>yavuk</i>	javuk	'token of betrothal'	286
<i>yavuz</i>	javuz	'resolute'	286

Lees (1966b: 286) notes that “There are also some exceptions to this ‘labial attraction’ harmony ... but these are surprisingly rare”, citing only the three counterexamples in (11):

(11)	<i>kamış</i>	kamuʃ	‘reed’	286
	<i>sabır</i>	sabur	‘patience’	286
	<i>tavır</i>	tavur	‘mode’	286

Foster’s (1969) dissertation supports Lees’ claim despite contributing two more counterexamples (*kapı* [kapu] ‘door’ and *kapıç* [kapuʃ] ‘heifer’ (Foster 1969: 210)). Thus the overall ratio for both Lees and Foster of reported forms obeying Labial Attraction to all reported relevant forms is 50/55, or 92%. Based on this figure, the Labial Attraction generalization would appear quite robust.

2.2. Clements & Sezer (1982): Exceptions invalidate Labial Attraction

The picture muddies, however, under the scrutiny of Clements & Sezer (1982), who find multiple reasons to challenge the Labial Attraction generalization. They observe that there are two types of positive exceptions to Labial Attraction, i.e. sequences of /a...u/ which are not attributable to Lees’ original formulation of Labial Attraction. (12) reproduces positive exceptions cited by Clements & Sezer in which a sequence conforms to Labial Attraction but occurs, noninitially, in a polysyllabic root:⁷

(12)	<i>kılavuz</i>	kulavuz	‘guide’	254 fn. 8
	<i>palamut</i>	palamut	‘type of fish’	254 fn. 8
	<i>salamura</i>	salamura	‘brine for pickling’	254 fn. 8
	<i>salapurya</i>	salapurja	‘large boat’	254 fn. 8
	<i>arnavut</i>	arnavut	‘Albanian’	254 fn. 8
	<i>firavun</i>	firavun	‘pharaoh’	254 fn. 8
	<i>telaffuz</i>	tel’affuz	‘pronunciation’	254 fn. 8

More significantly, Clements & Sezer also observe a number of [a...u] sequences which lack an intervening labial consonant. Out of 61 examples that they report finding, Clements & Sezer reproduce the following 24:

⁷ Clements & Sezer’s phonetic representations have been converted to IPA.

(13)	<i>acur</i>	adʒur	'type of cucumber'	225
	<i>acuze</i>	adʒu:ze	'ugly'	225
	<i>aguş</i>	a:guʃ	'bosom'	225
	<i>anut</i>	anut	'sulky'	225
	<i>arzu</i>	arzu	'desire'	225
	<i>aşure</i>	aʃu:re	'kind of dessert'	225
	<i>barut</i>	barut	'gunpowder'	225
	<i>fasulya</i>	fasul ^l ja	'bean'	225
	<i>fatura</i>	fatura	'invoice'	225
	<i>hatun</i>	ha:tun	'lady'	225
	<i>jaluzi</i>	ʒaluzi	'Venetian blind'	225
	<i>kanun</i>	ka:nun	'law'	225
	<i>kazurat</i>	kazu:rat	'feces'	225
	<i>madur</i>	ma:dur	'oppressed'	225
	<i>mahkum</i>	mahk ^l um	'convict'	225
	<i>malup</i>	ma:l ^l up	'defeated'	225
	<i>marul</i>	marul ~ ma:ru ^l	'lettuce'	225
	<i>masum</i>	ma:sum	'innocent'	225
	<i>panjur</i>	pa ⁿ ʒur	'shutter'	225
	<i>sahur</i>	sahur	'meal before dawn'	225
	<i>sardunya</i>	sardunja	'geranium'	225
	<i>vakur</i>	vakur	'grave'	225
	<i>yahudi</i>	ja ^h udi	'Jew'	225
	<i>yakut</i>	ja:kut	'emerald'	225

Clements & Sezer also point out 21 new negative exceptions to Labial Attraction. (Note that nine of these, namely *hafıza*, *kaplıca*, *kızamık*, *münafık*, *muhafız*, *mutabık*, *rabıta*, *sarmısak* and *yapıncak*, are trisyllabic and do not meet the description of Lees' original formulation of Labial Attraction.)

(14)	<i>apış</i>	apıʃ	'crotch'	225
	<i>apışmak</i>	apıʃmak	'to be shocked'	225
	<i>çapkın</i>	tʃapkin	'womanizer'	225
	<i>çarmıh</i>	tʃarmıh	'cross'	225
	<i>damıtmak</i>	damıtmak	'to distill'	225
	<i>damız</i>	damız	'stag'	225
	<i>hafız</i>	ha:fuʒ	'Koran reciter'	225
	<i>hafıza</i>	ha:fuʒa:	'memory'	225
	<i>kabız</i>	ka ^b ız	'constipated'	225
	<i>kamçı</i>	ka ^m tʃı	'whip'	225
	<i>kaplıca</i>	ka ^p lıdʒa	'thermal spring'	225
	<i>kızamık</i>	ku ^z amık	'measles'	225

<i>münafık</i>	myna:fuk	'heretic'	225
<i>muhafız</i>	muha:fuız	'sentry'	225
<i>mutabık</i>	muta:buk	'in agreement'	225
<i>rabıta</i>	ra:bıta	'connection'	225
<i>sabık</i>	sa:buk	'ex'	225
<i>sapık</i>	sapuk	'psychotic'	225
<i>sarmısak</i>	sarmusak	'garlic'	225
<i>yapışmak</i>	yapıŝmak	'to stick to'	225
<i>yapıncak</i>	japıncak	'kind of grape'	225

These new data change the ratio between Labial Attraction-obeying and Labial Attraction-violating forms that had been accumulating in the literature since 1966. If Lees' original formulation of the constraint is maintained, then we add 13 new negative exceptions to the running total, for a new ratio of 50 forms supporting Labial Attraction to 18 against, or a ratio of 74%. If we relax Lees' formulation of Labial Attraction so that it can apply to any pair of adjacent syllables in the same root, then we can add the seven trisyllabic forms in (12) as well as the nine trisyllabic forms in (14) to our running totals, for a new ratio of 56 forms in favor of Labial Attraction to 27 against, or a rate of 67% conformity to Labial Attraction. These figures, coupled with the large number (24) of *positive* exceptions to Labial Attraction in (13), are somewhat less compelling than the original picture presented by Lees (1966b).

Finally, Clements & Sezer (1982) note that the one root-internal alternation which could validate Labial Attraction as an active root structure condition does not support its existence. Turkish CVCC roots in which the final two consonants do not form a possible coda cluster undergo vowel epenthesis in case no vowel-initial suffix immediately follows. The epenthetic vowel is high and normally harmonizes in backness with the preceding vowel (forms are given in IPA):

- (15) /film/ *filim film-i* 'film(-accusative)'
 /kojn/ *kojun kojn-u* 'bosom(-accusative)'

Interestingly, CVCC roots with a round vowel pass that rounding on to the epenthetic vowel, as in *kojn-u*, giving positive evidence that Rounding Harmony is in effect within roots.

Given that Rounding Harmony applies in roots, the scenario potentially exists for a showdown between Rounding Harmony and Labial Attraction. Which generalization will prevail in /CaCC/ roots at least one of whose final consonants is labial? If Labial Attraction is really a root structure constraint, we expect Labial Attraction to apply to the epenthetic vowel, yielding /u/ rather than harmonic /w/.

In the one relevant example cited by Clements & Sezer, the outcome is the opposite of what Labial Attraction would predict. The epenthetic vowel does *not* round (1982: 243):⁸

(16) /sabr/ *sabur* *sabr-u* (**sabr-u*) ‘patience(-accusative)’

In light of this fact and the large number of both positive and negative exceptions to Labial Attraction, Clements & Sezer conclude that “... there is no systematic restriction on the set of consonants that may occur medially in roots of the form /...aCu.../.”

2.3. Psycholinguistic experiment: Zimmer (1969)

In a complementary line of research to those reported above, Zimmer (1969) tested the validity of Labial Attraction by conducting two psycholinguistic experiments. In the first, he presented native speakers with pairs of CVCVC nonsense words differing only in the identity of V2 and asked which item in each pair sounded more likely to be a word that could occur in Turkish. The experiment tested for the effects of Vowel Harmony, by comparing forms obeying Vowel Harmony with forms that violated it, as well as for the effects of Labial Attraction, by pairing forms obeying Labial Attraction with forms violating it. Only the pairs relevant to Labial Attraction are reproduced below (in Zimmer’s orthographic transcription):

(17) Experiment I:

Pair	Preferred variant	Preferred variant	No preference
	conforms to Labial Attraction	violates Labial Attraction	
tamuz-tamuz	3	16	4
tafuz-taftz	3	17	3
tapuz-tapuz	7	9	7
tatuz-tatuz	12	6	5
tavuz-tavuz	9	4	10
tabuz-tabuz	5	12	6
takuz-takuz	15	3	5

⁸ A search of the TELL database reveals six more such forms: *lafız/lafz-ı* ‘word(-acc)’, *nabız/nabz-ı* ‘pulse(-acc)’, *zabıt/zabt-ı* ‘capture(-acc)’, *hazım/hazm-ı* ‘digestion(-acc)’, *vasıf/vasf-ı* ‘description(-acc)’, *kayıp/kayb-ı* ‘loss’.

The second experiment was similar but eliminated the “no preference” option, yielding starker results. Again, only the stimuli relevant to Labial Attraction are reproduced below:

(18) Experiment II:		
Pair	Preferred variant conforms to Labial Attraction	Preferred variant violates Labial Attraction
pamuz-pamız	17	15
tafiz-tafuz	11	21
tapuz-tapız	17	15
tatız-tatuz	20	12
mavız-mavuz	16	16
tabuz-tabız	16	16
takuz-takız	22	10

Zimmer’s analysis of the data led to two conclusions. First, there was a clear difference in the effects of Vowel Harmony vs. Labial Attraction on subjects’ preferences. Vowel Harmony had a statistically significant effect: subjects consistently preferred forms obeying Vowel Harmony over those violating it. By contrast, Labial Attraction was not a statistically significant factor in subjects’ preferences.

Second, and unexpectedly, Zimmer found that some speakers preferred /a...u/ sequences over /a...ı/ ones to a statistically significant degree—*regardless* of the place of articulation of the intervening consonant. This suggests that Labial Attraction might be part of a larger generalization; however, Labial Attraction is not itself the right generalization. Zimmer concluded that there was no evidence for speakers having internalized Labial Attraction as a morpheme structure condition.

2.4. Maintaining Labial Attraction in the face of exceptions

The above discussion shows that the internal evidence for Labial Attraction declines with each successive study published between 1966 and 1982; moreover, Zimmer (1969) was unable to find external evidence for the condition. While these findings have led some researchers (e.g. van der Hulst & van der Weijer 1991) to agree with Clements & Sezer (1982) that Labial Attraction is not a valid component of Turkish grammar, other researchers have found ways to justify treating Labial Attraction as part of Turkish.

In a set of interrelated articles, Ní Chiosáin & Padgett (1993), Itô, Mester & Padgett (1993) and Itô & Mester (1995) resuscitate Labial Attraction by reinterpreting the findings of previous authors. Contending that Labial Attraction is in fact alive and well in the Turkish lexicon, they resolve the problem of exceptionality by postulating that Labial Attraction holds only over a proper subset of Turkish roots.

They avoid circularity by claiming that the relevant stratification of roots is not arbitrary.

According to Ní Chiosáin & Padgett (1993: 22), exceptions to Rounding Harmony “are largely due to borrowings made over a period of hundreds of years, from Persian, Arabic and now certain European languages ...” Labial Attraction is “a valid generalization ... holding over a subpart of the Turkish vocabulary ...”. Itô and Mester (1995: 818) take up the same theme, claiming that “[i]n Turkish (Lees 1961; Zimmer 1969), the Labial Attraction Constraint requiring high vowels to be round after tautomorphemic labial consonants (*armud* ‘pear’, **armid*) holds only for native items”.⁹ Thus, the claim is that Labial Attraction is an active constraint *in the native vocabulary of Turkish*, and that all of the exceptions occur in loanwords.

As it happens, of the eight illustrative examples of Labial Attraction found in the articles by Ní Chiosáin & Padgett, Itô, Mester & Padgett and Itô & Mester, TELL shows three to be loans from Farsi.¹⁰ Eren’s (1999) etymological dictionary, whose information is not yet incorporated into TELL, confirms Farsi as the source of *armut* and *karpuz* and, additionally, traces *avlu* to Modern Greek:

(19) <i>armud</i> [should be <i>armut</i>]	<i>armut</i>	‘pear’	Farsi
<i>avlu</i>	<i>avlu</i>	‘courtyard’	Greek
<i>kabuk</i>	<i>kabuk</i>	‘rind’	
<i>karpuz</i>	<i>karpuz</i>	‘watermelon’	Farsi
<i>maymun</i>	<i>majmun</i>	‘monkey’	Farsi
<i>samsun</i>	<i>samsun</i>	‘mastiff’	
<i>tabur</i>	<i>tabur</i>	‘battalion’	
<i>yavru</i>	<i>javru</i>	‘cub’	

This finding is not entirely unexpected, given that Lees notes in his original article (1966b: 286) that the list of Labial Attraction forms contains both native and bor-

⁹ The intended reference to Lees is presumably Lees (1966a) or Lees (1966b), as Lees (1961) does not mention Labial Attraction; the actual Turkish form for ‘pear’ is *armut*, not *armud*.

¹⁰ The etymological information in TELL is drawn from a variety of Turkish etymological dictionaries and scholarly articles, documented on the TELL web site (<http://socrates.berkeley.edu:7037/TELLhome.html>). The etymological sources used by TELL do not always distinguish ultimate from proximal source; thus, for example, loans identified as Farsi may ultimately derive from Arabic.

rowed morphemes. Lees himself draws no connection between exceptionality to Labial Attraction and nonnative etymological origin.

The fact that some words conforming to Labial Attraction are loans does not, of course, invalidate the claim that the constraint is imposed actively only on native items. However, it makes it all the more important to find out what the connection is between Labial Attraction and the native vocabulary.

In the next sections, we provide systematically gathered data which test both the broader claim of Lees, i.e. that Labial Attraction is a valid generalization overall for Turkish, and the narrower claim of Ní Chiosáin & Padgett, Itô, Mester & Padgett and Itô & Mester, i.e. that Labial Attraction is a valid generalization over native items.

3. TELL: Systematic searchable database for testing claims

While previous work has, out of necessity, relied on anecdotal examples to illustrate intuitions about Labial Attraction's distribution, we can now provide a comprehensive statistical picture by testing Labial Attraction against a comprehensive database of Turkish lexical items. Developed between 1996 and 1999 at the University of California, Berkeley with primary funding from the United States National Science Foundation, version 1.0 of the Turkish Electronic Living Lexicon (TELL) is a database of over 31,000 lexemes extracted from dictionaries, atlases and lists of proper names. TELL reflects not only the dictionary representations of these lexemes but also the pronunciations, by one native speaker, of the over 16,500 lexemes in the database with which that speaker was familiar. Lexemes are encoded using orthography; elicited pronunciations are transcribed phonemically. TELL encodes partial morphological and etymological information about the lexemes as well. For approximately 17,000 of the lexemes a morphological root has been extracted; for almost 11,000 of the lexemes, a source language (e.g. Turkish, Arabic, Farsi, etc.) has been identified.

TELL is accessible over the internet (<http://socrates.berkeley.edu:7037/TELL/home.html>); further information about the database can be found on its web site and in Inkelas et al. (2000).

Because TELL is a comprehensive, if not absolutely complete, representation of literary Turkish vocabulary, and because it also represents what portion of that potential knowledge an actual, representative native speaker embodies, it is the ideal testing ground for statistically questionable generalizations like Labial Attraction. The next sections detail how the testing was carried out.

3.1. Four databases

The variety of data contained in TELL provides multiple arenas for testing the Labial Attraction hypothesis. We defined four samples of TELL, or subdatabases, on which to run statistical tests. Ultimately, all of the samplings of TELL reveal a similar distribution of Labial Attraction, but the differences between them are nonetheless instructive. The four subdatabases are as follows.

(20) Name of subdatabase	Description of contents	Number of items
TELL.DB	All the lexemes in TELL, in orthographic representation	31,236
ELICIT.DB	All the elicited words in TELL, in phonological transcription	16,541
ETYM.DB	All the lexemes in TELL for which etymologies have been researched	10,952
SMARTET.DB	All the monomorphemic lexemes in ETYM.DB containing sequences relevant to Labial Attraction	1,348

TELL.DB contains orthographic representations of all of the lexemes in TELL (dictionary headwords, place names, and personal names). The advantage of TELL.DB is its comprehensiveness. For testing phonological generalizations, however, it has three disadvantages. First, TELL.DB contains many lexemes which the native speaker represented in TELL, and by extension other native speakers, do not know or use. As is typical in languages with a long literary history, Turkish dictionaries are normative and conservative and contain many words that, while found in older literature, are no longer in use. We do not want to base phonological generalizations about Turkish on items unfamiliar to native speakers. Second, many of the lexemes in TELL.DB are morphologically complex. Some are compounds; some contain suffixes. Since Labial Attraction is a supposed root structure condition, TELL.DB is thus an imperfect database on which to test the rule, as many of its vowel sequences contain morpheme boundaries. Third, TELL.DB is etymologically incomplete in that source languages are identified for only about 40% of its lexemes.

ELICIT.DB improves on TELL.DB in the first of these two respects. ELICIT.DB contains that subset of words in TELL.DB that were elicited from a native speaker (and represents that speaker's pronunciations in phonemic transcription). ELICIT.DB is thus a much more accurate picture of the knowledge available to an average native speaker than is TELL.DB. However, like TELL.DB, ELICIT.DB contains morphologically complex words and is etymologically incomplete.

ETYM.DB is that subset of words in TELL.DB for which etymologies have been researched – some 11,000 items. ETYM.DB is the result of scouring various etymological dictionaries and scholarly articles on loanwords in Turkish. (See the TELL web site for a full list.) It is biased in two ways. First, it contains a disproportionately high number of loanwords, as several of the sources on which it is based are dedicated to loanwords. 81% of the etymologically identified lexemes in TELL.DB are loans (from 15 different source languages). This presumably is a higher ratio of loanwords to native words than an etymological picture of the entire lexicon would reveal, though it is hard to know just how different the real figure actually would be. Second, ETYM.DB is biased toward words beginning with the following letters of the alphabet: [a, b, ç, c, e, f, i, ı, j, m, o, ö, p, t, u, ü, v]. This bias arises from the fact that after the comprehensive etymological dictionaries were combed, TELL researchers then set about the more difficult task of searching scholarly articles and regular Turkish dictionaries for etymological origins of the lexemes in TELL.DB that the etymological dictionaries did not cover. As it was clear that this task was too time-consuming to be completed for every lexeme in TELL.DB, words beginning with certain letters were given priority. The idea was to include both words likely (in light of their initial letter) to be loans as well as those likely to be native, and to include a lot of words beginning with labial consonants. For both these reasons, ETYM.DB does not represent a randomly selected sample of data, even though it has more complete information than TELL.DB about the words that it does represent.

SMARTÉT.DB, the last and smallest subdatabase, is a hand-checked subpart of ETYM.DB consisting of those words in ETYM.DB which contain the sequences /a...u/ or /a...uu/ or which have /u/ or /uu/ in their first syllable. The forms in SMARTÉT.DB are also hand-stripped down to their roots, avoiding the problem of morphologically complex forms faced by the other databases.

(21) Summary of databases

	Which lexemes	Checked with native speaker	Etymologies available	Suffixes stripped off	# of items
TELL.DB	all	no	no	no	31,236
ELICIT.DB	all those elicited from a native speaker	yes	no	no	16,541
ETYM.DB	all for which etymological information was retrieved	no	yes	no	10,952

SMARTET.DB	all for which etymological information was retrieved and which contain /abu/, /aBuw/, /aTu/, /aTuw/ or begin with /Bu/, /Buw/, /Tu/, or /Tuw/	no	yes	yes	1,348
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Although there are other imaginable ways of sampling TELL, these four different subdatabases provide a clear and consistent picture of Labial Attraction. The findings are reported in the next section.

4. Detecting Labial Attraction in the four databases

The statistical analysis of TELL had three goals:

- To determine whether Labial Attraction is a valid generalization over the lexicon as a whole
- To establish whether Labial Attraction is a generalization only over native items or whether it holds for the broader lexicon (including loanwords)
- To make sense of the high rate of exceptionality to Labial Attraction

We begin with a statistical survey of Labial Attraction in the four subdatabases defined above.

4.1. Experiment #1: Testing strength of Labial Attraction in general lexicon

The first experiment tested the strength of Labial Attraction throughout the lexicon by establishing the relative frequency of /u/ vs. /uw/ following /a/ in labial and nonlabial contexts. The four subdatabases were searched for the following sequences:

(22) Abbreviation	Description
“aBu”	/a/, followed by a string of consonants including at least one labial, followed by /u/
“aBuw”	/a/, followed by a string of consonants including at least one labial, followed by /uw/
“aTu”	/a/, followed by a string of <i>nonlabial</i> consonants, followed by /u/
“aTuw”	/a/, followed by a string of <i>nonlabial</i> consonants, followed by /uw/
“aCu”	/a/, followed by any string of consonants, followed by /u/
“aCuw”	/a/, followed by any string of consonants, followed by /uw/

All four subdatabases showed similar patterning: /u/ occurred with a higher frequency than /ʊ/ when preceded by “αB”, and /ʊ/ occurred with a higher frequency than /u/ when preceded by “αT”.

(23) TELL.DB	u	ʊ	Total
αB...	378 (60%)	248 (40%)	626
αT...	446 (28%)	1140 (72%)	1586
(24) ELICIT.DB	u	ʊ	Total
αB...	152 (60%)	101 (40%)	253
αT...	265 (13%)	1839 (87%)	2104
(25) ETYM.DB	u	ʊ	Total
αB...	128 (65%)	69 (35%)	197
αT...	109 (19%)	470 (81%)	579
(26) SMARTET.DB	u	ʊ	Total
αB...	98 (67%)	48 (33%)	146
αT...	160 (32%)	333 (68%)	493

These data clearly establish a tendency for high back vowels to be labial following labial consonants, consistent with Labial Attraction. However, Lees' contention that negative exceptions to Labial Attraction are rare can hardly be supported; the exception rate ranges from 33% (SMARTET.DB) to 40% (TELL.DB, ELICIT.DB). It must also be noted that rates of /αTu/ are not negligible, ranging from 13% to 32%. In a grammar containing both Labial Attraction and Rounding Harmony, /αTu/ and /αBu/ sequences are equally unexpected.

4.2. Experiment #2: Testing etymological effects

The second goal of the study was to test the validity of the claim that Labial Attraction holds for native vocabulary only. To this end, SMARTET.DB was searched to discover what effect distinguishing native from loan words would have on the distribution of /u/ and /ʊ/ following a labial consonant:

(27) SMARTET.DB			
Native words (238 = 18%) ¹¹	...u	...w	Total
aB...	12 (52%)	11 (48%)	33
aT...	3 (3%)	101 (97%)	104
Loanwords (1110 = 82%)	...u	...w	Total
aB...	84 (75%)	28 (25%)	112
aT...	168 (52%)	157 (48%)	325

As can be seen in (27), Labial Attraction patterns occur at a nonnegligible rate in both native and nonnative sectors of the vocabulary. However, the percentage of relevant nonnative words which happen to conform to Labial Attraction is actually higher than the percentage of relevant native words which do so, certainly weakening the claims of Ní Chiosáin & Padgett (1993) and Itô & Mester (1995) that Labial Attraction is enforced in—and only in—native vocabulary. It is also obvious from (27) that positive exceptions to Labial Attraction—that is, /aTu/ sequences—occur as often as back harmonic sequences (/aTuw/) in loans, but occur very rarely in native words.

We believe that both patterns yield to the same explanation: aCu sequences are *generally* more common in loans than in native items, regardless of the nature of the intervening consonant, for one simple reason. The languages contributing the loanwords represented in SMARTET.DB, namely Arabic, Farsi, Greek, Italian, French, Mongolian, and English, have /u/ but not /w/ in their inventories. The aCu sequences in these words reflect the phonology of the source languages, not any constraints of Turkish grammar.

This established, the data in (27) still do suggest that /aCu/ sequences occur to a greater degree when the intervening consonant is labial. This residual Labial Attraction effect still requires explanation. To obtain insight into why the effect occurs, we conducted several more searches aimed at testing the relative effects of the various structural conditions in the Labial Attraction rule.

¹¹ Recall that the sources consulted were biased towards loanwords, so this statistic should not be interpreted as reflecting the proportion of native to loanwords in Turkish overall.

4.3. Experiment #3: Decomposing Labial Attraction

Lees' Labial Attraction constraint has two crucial components: the previous vowel must be /a/, and at least one of the intervening consonants must be labial. To explore the relative effects of these conditioning factors, we independently tested the distribution of /u/ and /ʊ/ following /a/ and the distribution of /u/ and /ʊ/ following labial consonants.

The requirement that /a/ precedes a CV sequence in which the C transmits labiality to the following V is a peculiar one. /a/ has no labial features that could assist in such a transmission. One hypothesis is that the apparent effect of /a/ on labialization of a following vowel is simply an artifact of the fact that /a/ is such a commonly occurring vowel in Turkish. Indeed, the following chart confirms that of all the vowels that can precede /u/, /a/ is by far the most common in that position:

- (28) Number of words with all possible VCu sequences in the three largest databases (note: words with *two* sequences of the same type are only counted once)

	TELL.DB	ELICIT.DB	ETYM.DB
aCu	509 (45%)	278 (45%)	190 (54%)
uCu	237 (21%)	131 (21%)	54 (15%)
oCu	150 (13%)	94 (15%)	24 (7%)
eCu	96 (9%)	54 (9%)	46 (13%)
iCu	27 (2%)	15 (2%)	7 (2%)
∅Cu	2 (0%)	1 (0%)	0 (0%)
ʷCu	18 (2%)	7 (1%)	2 (1%)
yCu	85 (8%)	41 (7%)	26 (7%)
Total	1124	621	349

Thus even when the intervening consonant is ignored, /a/ occurs before /u/ about as often as all other vowels combined.

More importantly, the statistical predominance of /a/ is apparently independent of the following vowel or consonant. The following search statistics show that /a/ is the most common word-initial vowel. Its predominance holds up within native items as well as in the lexicon as a whole, and before "B" (labial consonants) as well as before all consonants:

(29) Distribution of [a] vs. other vowels, word-initially:

ETYM.DB #__	#__		#__B	
	All	Native	All	Native
<i>a</i>	1352 (38%)	320 (45%)	179 (36%)	15 (23%)
<i>i</i>	848	64	107	10
<i>e</i>	583	70	105	4
<i>o</i>	244	72	36	8
<i>u</i>	180	96	29	14
<i>ø</i>	146	39	22	8
<i>y</i>	102	32	18	6
<i>u</i>	62	26	2	0
Total	3517 (100%)	719 (100%)	498 (100%)	65 (100%)

Since /a/-initial words constitute 38% of all vowel-initial words and 36% of all vowel-initial words in which a labial follows, and since /a/ is the first vowel in /VCu/ sequences between 45% and 54% of the time, it seems reasonable to conclude that the apparent effect of /a/ on Labial Attraction is an illusion resulting from the disproportionately high representation of /a/ in general.

This leaves us with a simpler Labial Attraction generalization, namely assimilation of a following high back vowel to a preceding labial consonant. Phonetically this generalization is much more reasonable. What evidence exists for it phonologically?

To answer this question, we searched the various TELL subdatabases for labialization in CV sequences. To abstract away from the effects of a preceding vowel, we restricted our search to word-initial syllables. The following tables show the distribution of /u/ vs. /u/ in absolute word-initial position, following a word-initial consonant, and following a word-initial labial:

(30) TELL.DB	u	u	Total
#...	263 (65%)	140 (35%)	403
#T...	1477 (62%)	895 (38%)	2372
#B...	694 (82%)	152 (18%)	846

(31) ELICIT.DB	u	u	Total
#...	196 (74%)	69 (26%)	265
#T...	666 (45%)	829 (55%)	1495
#B...	453 (73%)	167 (27%)	620

(32) ETYM.DB	u	ɯ	Total
#...	198 (70%)	83 (30%)	281
#T...	184 (57%)	141 (43%)	325
#B...	560 (91%)	55 (9%)	615 ¹²
(33) SMARTET.DB	u	ɯ	Total
#...	125 (62%)	76 (38%)	201
#T...	114 (50%)	113 (50%)	227
#B...	509 (91%)	48 (9%)	557

As all four subdatabases (and (30)) reveal, /u/ is more common than /ɯ/ in general, occurring about twice as often in absolute word-initial position. Following a labial consonant, however, the skewing is much more striking. /u/ occurs three to ten times as often as /ɯ/ following a word-initial labial, depending on database, noticeably different from the distribution of /u/ vs. /ɯ/ when no labial precedes.

When broken down by native vs. nonnative items, we see even more aspects of the picture:

(34) SMARTET.DB	#Bu	#Bɯ	#Tu	#Tɯ
Loans:	507 (93%)	38 (7%)	72 (56%)	56 (44%)
Native:	2 (17%)	10 (83%)	42 (42%)	57 (58%)

The surprising effect here is that in native items the labializing influence is so weak. Only 17% of the native items beginning with a labial consonant (“B”) show /u/ instead of /ɯ/. However, the numbers are probably too small to conclude much of anything from this.

In sum, both native and nonnative items show a strong tendency for a high back vowel to be round following a labial consonant. This effect is completely independent of a preceding vowel. The clear conclusion is that modern-day Turkish is exhibiting the effects of a “Labialization” effect (from C to following high back V) throughout the lexicon.

¹² Recall that ETYM.DB and SMARTET.DB are both biased in favor of words beginning with /b/, /p/ and /m/, which is why the number of “B”-initial words exceeds that of “T”-initial words in these two subdatabases.

5. Historical development of labialization in Turkish

We know that Labialization is not productively enforced in Modern Turkish (it applies to no suffix vowels and it is exception-ridden even within roots). It is, however, possible that Labialization was a sound change in the history of the language, whose residual effects are still noticed today. To gain a true understanding of whether Labialization (or for that matter Labial Attraction) occurred as a sound change in the history of Turkish, it is useful to look at the Turkish vowel system, and vowel harmony in particular, from a historical point of view.

Labialization effects are a subtype of Rounding Harmony violation; thus the logical starting point is the history of Rounding Harmony. Rounding Harmony as it exists in Modern Turkish is a fairly recent phenomenon, going back no more than a few centuries. Old Turkic, attested as early as the 7th-8th centuries, had a form of Rounding Harmony, but it seems to have died out in the transition to Ottoman Turkish, only to be reintroduced later in the much fuller and more consistent form it has today. Our discussion, below, draws heavily from Doerfer (1985) and Johanson (1979).

5.1. Old Turkic

Old Turkic is the language of the 8th-9th century Orkhon Inscriptions and of manuscripts in the Uighur, Soghdian, Manichean and Brahmi scripts. The runic alphabet does not distinguish /o/ from /u/ or /ø/ from /y/, and only rarely is a special symbol used for /e/. (Similar, sometimes even more extreme, limitations characterize the Uighur, Soghdian and Manichean scripts.) The Brahmi syllabary is alone in distinguishing between high and mid vowels.

The consensus among scholars as to the vowel system of Old Turkic appears to be roughly the following. From the point of view of their morphophonemic behavior, the vowels of noninitial syllables can be described in terms of the following four underlyingly underspecified segments: non-high /a/, high unrounded /I/, round /U/, and completely unspecified /V/. The high harmonizing vowels of Modern Turkish derive from the last three of these. Underlying /I/ was realized as /i/ or /u/; underlying /U/ was realized as /y/ or /u/. Finally, underlying /V/ was realized as /i/, /u/, /y/ or /u/. Palatal Harmony determined the value of [back] for all noninitial vowels, whereas Rounding Harmony determined the value of [round] for the unspecified vowel /V/. Rounding Harmony was therefore quite restricted, applying only to syllables containing /V/ but not to those containing /I/ and /U/ (or for that matter /a/). Where /I/, /U/ or /V/ occurred in productive suffixes, Palatal and Rounding Harmony resulted in alternations.

- (35) Underlying [+high] morphophonemes in noninitial syllables in Old Turkic (7th-9th c.), with examples from polysyllabic stems and suffixes:
- /I/: realized variously as /i/ or /u/, according to Palatal Harmony
Examples: /bulIt/ 'cloud'; /oqI-/ 'read'; /unIt/ 'forget', /-bIz/, /-sIz/ (encl. pron.); /-I/ (pronom. acc.); /-(s)I/ (3rd poss.); /-mIj/; /-tjI/
 - /U/: realized variously as /u/ or /y/, according to Palatal Harmony
Examples: /ɑyU/ 'poison'; /xatUn/ 'lady'; /-tʃUK/; /-tUr-/ (caus.); /-mUr/; /-dUK/
 - /V/: realized variously as /i/, /u/, /u/ or /y/, according to Palatal Harmony and Rounding Harmony
Examples: /ɑyVz/ 'mouth'; /sekVz/ 'eight'; /toqVz/ 'nine'; /-Vl-/ (pass.); /-Vn-/ (refl.), /-Vm/ (1. sg. poss.); /-Vŋ/ (2. sg. poss.); /-(n)Vŋ/ (gen.); /-sVz/ '-less', /-VG/ (verbal noun); /-IVK/; /-IVG/

Johanson (1979) takes a more cautious view of the phonetic values of /I/, /U/ and /V/ in Old Turkic, arguing that /I/ may have been consistently realized as front /i/, and that /U/ might have been mid rather than high. The latter is arguably true as well of /V/, which in the Brahmi script is frequently rendered as /o/, /ø/ or even /ə/. It is sometimes not written at all, suggesting that it may have been a phonetically reduced vowel (Doerfer 1985).

5.2. From Old Turkic (via Middle Turkic) to Old Ottoman Turkish: Loss of Rounding Harmony

Between Old Turkic and Old Ottoman Turkish, those instances of /V/ occurring in alternation contexts all merged either with /U/ (becoming consistently [+round]) or with /I/ (becoming consistently [-round]). What motivated the direction of merger in each individual case is not clear. Doerfer (1985) suggests that stress may have played a major role; those suffixes that were typically stressed (e.g. the possessive suffixes) underwent /V/ > /U/, while suffixes that were typically not stressed underwent /V/ > /I/. Syllable structure also appears to have had an effect in that /V/ tended to yield /I/ in open syllables but /U/ in closed syllables.

Whatever the cause of the different resolutions of /V/, the result is clear: by the time of Old Ottoman Turkish, alternating suffixes contain either /a/, /I/ or /U/, but no /V/—and hence no Rounding Harmony. (Of course, this is an idealized picture; none of the texts from any period displays such complete regularity.)

5.3. The “seeds” of Labial Attraction in Old / Middle Turkic & Old Ottoman: Violations of Rounding Harmony

The seeds of Labial Attraction can apparently be found as far back as Old Turkic. According to Doerfer (1985: 21), /V/ following a syllable with an unrounded

vowel—where /u/ or /u/ would be the expected realization—is very often represented by a rounded variant *after labial consonants*. The examples he mentions, in both Old Turkic and Old Ottoman, are given below:

(36) Post-labial rounding of /V/ in roots:

	Old/Middle Turkic	Old Ottoman	Gloss
/temVr/ >	temyr	demyr	'iron'
/qapVγ/ >	qapuy	qapu	'door'
/qamVγ/ >	qamuy	qamu	'all'
/semVz/ >	semiz ~ semyz	semiz ~ semyz	'fat'
/japVʃ/ >	japuf-	japuf ~ japuf	'cling to'
/sev-Vn-/ >	sev-in- ~ sev-yn-	sevin- ~ sevyn-	'rejoice'

Another source of Labial Attraction-like patterns is the one attested example of /I/ > /U/. This occurs in the cliticized 1st pl. pronoun {-bIz}, which in Old Ottoman turns up as {-(v)Uz}. The consonant preceding the relevant vowel is labial and is plausibly the cause of the vowel rounding.

Of course, not all sequences of unrounded vowel + consonant + rounded vowel are due to labialization. Underlying /U/ (deriving either from Old Turkic /U/ or /V/) still occurred following nonround vowels, as in the following examples:

(37) Old Turkic suffixes and non-initial root syllables containing /U/ (i.e. /u/ or /y/) following an unrounded vowel:

/αyu/	'poison'
/xatun/	'lady'
/bajut-/	'make rich'
/-tUr-/	caus.
/-mUr/	(as in <i>yaγ-mur</i> 'rain')

The suffix /-mUr/ contained /U/ from the start; thus, words like Modern Turkish /jɑ:mur/ *yağmur* 'rain' are historically *not* due to Labial Attraction, even if they happen to conform to its synchronic description.

5.4. Old Ottoman to Modern Turkish: Rounding Harmony returns

Somewhere between Old Ottoman (which lacked Rounding Harmony, as explained above) and Modern Turkish, Rounding Harmony in its present form was introduced. The details of the chronology are debated, but the result is fairly clear: all productive suffixes that had contained /I/ or /U/ in Old Ottoman developed a vowel which meets the description of underlying /V/, i.e. a high vowel which is unspecified for

[round] and [back], and which alternates according to the rules of progressive Palatal Harmony and Rounding Harmony.

While some polysyllabic stems (many of which are derived, historically) were also subjected to Rounding Harmony, others were not. In addition, numerous Persian and Arabic loanwords, many of which must have been borrowed before Rounding Harmony was reintroduced, retained their original disharmonic vowel patterns. Thus both native and nonnative words exist which exhibit rounding disharmony. A number of these have /u/ instead of what today would be expected to be /u/, following an /a/ in the preceding syllable. As we have seen, in many of these (but not all), an intervening labial consonant happens to be present. In some cases, the labial consonant is plausibly the cause of the labial disharmony (as in modern /demyr/ (proper name *Demür*) ~ /demit/ *demir* 'iron', from Old Turkic /temVr/, or /kapu/ *kapu* (now /kapu/ *kapı* 'door'), from Old Turkic /qapVγ/. In other cases, however, the round vowel has been there ever since Old Turkic (as in modern /ya:mur/ *yağmur* 'rain', from Old Turkic /yaγmUr/, or Ottoman /aγu/ ~ /aγu/ 'poison', from Old Turkic /aγU/).

5.5. Summary of diachronic findings

Reviewing the historical developments discussed above, it appears that we would be justified in assuming a minor and incomplete sound change labializing some vowels (including, but not limited to /u/) following labial consonants. We can call this change Labialization. However, the historical phenomenon of Labialization is neither necessary nor sufficient to account for the documented *synchronic* evasions of the much more robust historical and synchronic pattern of Rounding Harmony.

5.6. Dialectal evidence

Although our findings do not support the existence of Lees' Labial Attraction constraint in modern or earlier forms of Standard Turkish, one may still ask whether any other contemporary dialect of Turkish exhibits the pattern. To answer this question we appealed to Kral's (1980) survey of Turkish dialects.¹³ Two features documented by Kral (whose study in turn draws on earlier work, especially that of Kowalski (1929-1930)) are relevant. One is a split in which northern dialects exhibit /aBw/

¹³ We are grateful to an anonymous reviewer for pointing us in this direction. For those who are interested in but cannot access Kral's thesis, Boeschoten (1991) provides a useful digest of Kral's main findings.

sequences in the same words that in other dialects (including Standard Turkish) have /aBu/ sequences; the other is a split in which essentially the same northern dialects have /aTu/ sequences in words which in other dialects (and Standard Turkish) exhibit /aCu/ (T = all consonants other, apparently, than labials). A reviewer of this paper has suggested that dialectal differences such as these may point to Labial Attraction as having been a dialectal feature of Middle Ottoman. We thus investigated the forms cited by Kral to see what the dialect splits reveal about the original patterns underlying them.

Kral cites 18 forms showing the /aBu/ ~ /aBu/ dialect split (Standard Turkish *avuç, bavul, çabuk, çamur, çavuş, davul, hamur, kabuk, kaburga, kavuk, kavun, kavurmak, kavuşmak, namus, pabuç, sabun, savurmak, tabur*) (1980: 249), and 21 forms showing the /aTu/ ~ /aTu/ dialect split (Standard Turkish *açık, arşın, artık, aşık, ayı, ayrı, baskın, batırmak, çarık, çarşı, dalgın, halı, karşı, kaşık, kazık, sandık, sarı, sarık, yanık, yastık, yazık*) (1980: 244). A search for the etymological origins of the 18 contemporary words illustrating the /aBu/ ~ /aBu/ dialect split turned up historical forms for seven of the 18 forms; all seven contained /u/ rather than /u/ (e.g. Middle Turkish **kāğūn* > *kavun*).¹⁴ Several other of the 18 contemporary /aBu/ ~ /aBu/ forms are loans from languages in which the source vowel was /u/ (e.g. *bavul* (< Italian), *davul* (< Arabic), *pabuç* (< Farsi *pāpūš*)). A similar etymological investigation of the 21 /aTu/ ~ /aTu/ forms reveals that, historically, both /aTu/ (e.g. Middle Turkic **çaruk* > *çarık*) and /aTu/ forms (e.g. Middle Turkish *adığ* (> *ayı*) existed. Thus Standard Turkish appears to have regularized in the direction of vowel harmony, while the northern dialects appear to have merged /u/ and /u/ in the second syllable.

Our conclusion, based on these admittedly incomplete etymological results, is that the etymological findings for the words surveyed by Kral do not support dialectal application of Labial Attraction, since in contemporary /aTu/ dialect forms the innovative /u/ has no labial consonant trigger and in contemporary /aBu/ forms the /u/ appears to be original.

¹⁴ The main sources consulted were Eren (1999) and Püsküllüoğlu (1997); several etymologies were also obtained from TELL, based on the etymological literature cited in the TELL documentation.

6. Conclusion and implications

Searching the TELL database suggests that Lees' rule of Labial Attraction, a cross-linguistically suspicious one, is not a real generalization about the Turkish lexicon. It is not true synchronically, either of native or nonnative items; nor, according to the historical and dialectal literature, does Labial Attraction appear to have been true of any stage of Turkish going back as far as Old Turkic. The only related synchronic generalization in Standard Turkish that does seem to be valid is that there is a strong tendency for /u/ to be favored over /u/ following labial consonants. This is consistent with the documented diachronic tendency for Old Turkic /V/ to be realized as round in Old Ottoman when a labial consonant precedes (Doerfer 1985).

In addition to clearing up a longstanding empirical unclarity regarding Turkish, this study has implications for the methodology of basing theoretical conclusions on subgeneralizations. In the case of Labial Attraction, it was known from the beginning that exceptions existed. Yet, without a detailed empirical study of the sort reported here, which took several years and significant amount of government funding to conduct, the exceptions could easily be ignored in light of what was nonetheless felt to be an interesting pattern. This study shows the pitfalls of proceeding on such a basis and highlights the importance of testing static generalizations against a systematically collected database. We are not necessarily taking the radical position here that some of us have advanced in previous work, namely that the only "safe" generalizations are those accompanied by alternations (Inkelas, Orgun & Zoll 1997). Vowel labialization following labials is not a synchronic alternation in Turkish, yet it (unlike Labial Attraction per se) is a statistically supported tendency worthy of further research. Our point is simply that, in the absence of alternations, it is important to conduct statistical analysis of a large corpus of data in order to make sure the correct pattern is being noticed. In the case of Turkish, the correct pattern statistically, and the apparent one historically, is vowel rounding after labial consonants. It is not Lees' (1966b) Labial Attraction, an illusion apparently arising in part from the statistical frequency of the vowel /a/ in the Turkish lexicon.

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Does Turkish prefer events to states?*

Celia Kerslake

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This article examines the common usage in Turkish of perfect(ive) verbal forms such as *acıktım*, *sevindim*, *kalmadı* to express the onset of a state, as an alternative to the direct expression of the state by a “progressive” verb form or adjectival predicate. Building on Johanson’s (1971) identification of a class of “initiotransformative” lexemes in Turkish, and taking account of the fact that the language does not distinguish between perfect and perfective aspect, it considers what kinds of verbs have this inchoative potential, and investigates the semantic / pragmatic motivations for the presentation of a “state” by reference to the “event” of its onset.

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Events and states

The distinction between events and states, or between “dynamic” and “static” situations, is fundamental to the discussion of the semantic category of aspect. In order to give some precision to a distinction which, as Comrie (1981: 48) observes, “seems reasonably clear intuitively”, we have to find a way of formulating it in terms that are independent of how it may happen to be marked in particular languages. Combining the insights of Comrie and of Smith (1997: 32-35), we can identify a *state* as a situation which

- (i) is durative,
- (ii) has no internal structure, i.e. has no differentiation between its internal stages,
- (iii) continues unless something occurs to bring it to an end.

An *event*, on the other hand,

- (i) may be durative or instantaneous;
- (ii) consists of differentiated stages, which occur at different moments;

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- (iii) may have a natural endpoint (i.e. be telic);
- (iv) if durative, whether or not (iii) holds, continues only as long as it is subject to an input of energy.

Comrie (1981: 48-49) provides the following illustration of the difference between a state and a durative event:¹

- (1) a. John knows where I live.
- b. John is running.

In (1a) all internal stages of the situation are identical. In (1b), on the other hand, different stages of the situation are very different: at one moment John will have one foot on the ground, at another neither foot will be on the ground, and so on. Furthermore, the situation described in (1a) will continue until some event occurs which brings it to an end. For example, it may end if I move house or if John loses his memory. The situation described in (1b), on the other hand, will continue only as long as John puts effort into keeping it going.

Inchoative use of the *-DI* form in Turkish

It is generally accepted that, in Turkish, the *-DI*² past-tense finite verb form normally expresses an event, and presents it as a completed whole. However, there is also an “inchoative” use of *-DI*, expressing entry into a state, as demonstrated by Erguvanlı Taylan (1996: 163) in the following examples drawn from Yavaş (1980):³

- (2) a. *Bu evi çok beğendim.*
 this house:ACC much like:DI.1SG
 ‘I like this house a lot.’
- b. *Bu habere şaşırđım.*
 this news:DAT be surprised:DI.1SG
 ‘I am surprised at this news.’

¹ Comrie actually uses the term “dynamic situation” for the antithesis of “state”. He uses “event” in the more restricted sense of “a dynamic situation viewed perfectly” (1981: 51).

² In the citation of suffixes capital letters indicate consonants or vowels subject to morphophonological alternation. For full details see the abbreviation list at the end of the article.

³ Yavaş (1980) was not available to me during the preparation of this article. The glosses given in (2) have been slightly modified, but the translations are those appearing in Erguvanlı Taylan (1996).

- c. *O çocuğu çok sev-di-m.*
 that child:ACC much like:DI.1SG
 'I like that child a lot.'

It will be noticed that in the English translations of (2) a present-tense verb has been used, expressing the state itself rather than entry into it. Do examples such as these reflect any kind of tendency in Turkish for situations to be presented, where possible, as events rather than as states? (3)-(7) present certain patterns of utterance which are standard in everyday speech, and in which the speaker is using the *-DI* form of a particular verbal lexeme (which may be a lexicalized phrasal verb) to express a state of affairs obtaining at the moment of speech.

- (3) a. *Gelebildiğinize sevindim.*
 come:PO.NZ.2PL.DAT be glad:DI.1SG
 'I'm glad you could come.'
- b. *Annenizin hastalığına üzüldüm.*
 mother:POSS2PL.GEN illness:POSS3SG.DAT be sorry:DI.1SG
 'I'm sorry about your mother's illness.'
- c. *Tanıştığımızıza memnun oldum.*
 meet:NZ.1PL.DAT pleased become:DI.1SG
 'I'm pleased that we've met.'
- d. *Bana kızdın mı?*
 me:DAT get angry:DI.2SG Q
 'Are you angry with me?'
- e. *Canım sıkıldı.*
 soul:POSS1SG squeeze:PASS.DI
 'I'm bored.' (Lit. 'My soul has been squeezed.')
- f. *Utanmadın mı?*
 be ashamed:NEG.DI.2SG Q
 'Aren't you ashamed?'
- g. *Bu havalardan bıktım.*
 this weather:PL.ABL be fed up:DI.1SG
 'I'm fed up with this weather.'
- (4) *Bu renk hoşuma gitmedi.*
 this colour nice:POSS1SG.DAT go:NEG.DI
 'This colour doesn't appeal to me.'

- (5) *Kimseye kapıyı açmamalısın, anladın mı?*
 anyone:DAT door:ACC open:NEG.OBLIG.2SG understand:DI.2SG Q
 ‘You mustn’t open the door to anyone, do you understand?’
- (6) a. *Acıktım.*
 get hungry:DI.1SG
 ‘I’m hungry.’
- b. *Susadım.*
 get thirsty:DI.1SG
 ‘I’m thirsty.’
- c. *Üşüdüm.*
 feel cold:DI.1SG
 ‘I’m cold.’
- d. *Yorulдум.*
 get tired:DI.1SG
 ‘I’m tired.’
- (7) *Ekmek kalmadı.*
 bread remain:NEG.DI
 ‘There’s no bread left.’

The verbs in (3)-(6) fall into a number of clearly recognizable and somewhat related semantic classes. Those in (3), like those in (2), are verbs of emotion or attitude; *hoşUNa git-*, exemplified in (4), conveys an emotion indirectly, by stating the psychological impact that something makes on someone, while the verbs in (5) and (6) denote respectively cognitive faculties and bodily feelings. All of the above verbal lexemes can be said to share the primary function of expressing some kind of subjectively experienced physical or psychological state. The expression of entry into that state may be considered a secondary semantic function, realized by the combination of the lexeme with perfective viewpoint marking. As for *kal-* in (7), this has little in common semantically with the other verbs, except the fact that, in the sense of ‘be left’, its primary semantic function is again to express a *state* of affairs. The “event” content of sentences like (7) is almost imperceptible.

Smith’s two-component theory of aspect

The article by Erguvanlı Taylan mentioned above is an application to Turkish of the framework developed by Smith, which found its fullest exposition in the subsequently published monograph entitled *The Parameter of Aspect* (Smith 1997). Since the present article also takes this framework as a starting point, it will be useful to summarize its main points. In her “two-component theory” Smith distinguishes two types of aspectual meaning: *situation type* and *viewpoint*. Every sentence contains both types of aspectual information, which interact in subtly different

ways in different languages. The distinction between events and states constitutes for Smith the primary division within her category of situation types. She recognizes five situation types, of which states (also referred to as “statives”) are one, and the other four are all subtypes of event. The situation types are distinguished from one another by the combinations in which they possess, or do not possess, the features [DYNAMIC], [DURATIVE] and [TELIC]. The details of this classification are shown in the table reproduced as (8).

(8)	DYNAMIC	DURATIVE	TELIC
State	-	+	-
Activity	+	+	-
Accomplishment	+	+	+
Semelfactive	+	-	-
Achievement	+	-	+

(Adapted from Smith 1997: 20)

Situation types, or the semantic properties which distinguish them, are not marked overtly in the grammars of specific languages, but Smith argues that they deserve to be recognized as linguistic categories because of the way in which they interact with the syntax and semantics of individual languages. Among other things, they interact in complex and subtle ways with the other component of the aspectual system, which Smith calls “viewpoint aspect”, and which she sees as consisting in a basic distinction between perfective and imperfective, with a neutral position also available in some languages. There is not a one-to-one correspondence between lexical verbs and situation types. In any given sentence the situation type realized by a particular verb will depend on a variety of factors, including the nature of its complementation (countable or non-countable), the presence of temporal adverbials, and (in some cases) the choice of aspectual viewpoint. Smith argues convincingly for taking the “verb constellation”, rather than merely the verb, as the basis of classification, defining the verb constellation as the verb and its arguments. She also claims that every verb constellation can be given a “basic-level” categorization as a particular situation type, but that adverbial or other contextual information may trigger a shift into a different categorization, which she terms “derived-level” categorization (Smith 1997: 18).

Inchoatives in Smith’s framework

Particularly relevant to our concerns here is the case of verbs which are stative at the basic level, but can be shifted into an event reading. Smith gives as an example of such a shift the pair of sentences shown in (9).

- (9) a. Bill knew the truth. (Stative)
 b. Suddenly Bill knew the truth. (Achievement)
 (Smith 1997: 18)

She identifies the type of sentence exemplified in (9b) as having an inchoative reading, i.e. as referring to the coming about of a state. In this particular case the trigger for the inchoative reading is the dynamic adverbial *suddenly*. A *when*-clause can have a similar effect, but may leave the stative reading also still available, as in (10).

(10) John was dumbfounded when Harry threw the glass. (Smith 1997: 49)

The event / state distinction in Turkish

In Turkish it is not possible to produce a version of (10) which is open to both readings, because whatever lexical means are chosen to realize the main predicate 'be dumbfounded', the morphology obligatorily marks it with either perfective or imperfective viewpoint:

- (11) a. (Perfective: Event)
Harry bardağı atınca John şaşakaldı.
 glass:ACC throw:CONV be dumbfounded:DI
- b. (Imperfective: State)
Harry bardağı attığı zaman John şaşkındı.
 glass:ACC throw:NZ.3SG time dumbfounded:PST

(11a) uses a verb *şaşakal-* marked for perfective viewpoint by *DI*, whereas (11b) uses the adjective *şaşkın* and the past copula *-(y)DI*. It will be noticed that the converbial form is also different in the two Turkish sentences. The *-(y)IncE* form, which is the most appropriate for the "event" reading, cannot co-occur with a stative main predicate. Smith regards inchoative sentences as expressing derived-level Achievements, i.e. instantaneous telic events involving entry into a state. However, because states have no inherent endpoint, the state into which entry is asserted in sentences like (9b), (10) and (11a) is understood to continue thereafter for some unspecified period. Another Turkish example of the inchoative use of the *-DI* verb form is shown in (12a), which contrasts with (12b) in the same way that (11a) contrasts with (11b).

- (12) a. (Perfective: Event)
Birdenbire Ali'nin öfkesini anladım.
 suddenly Ali:GEN anger:POSS3SG.ACC understand:DI.1SG
 'Suddenly I understood Ali's anger.'
- b. (Imperfective: State)
Ali'nin öfkesini anlıyordum.
 Ali:GEN anger:POSS3SG.ACC understand:IPFV.PST.1SG
 'I understood Ali's anger.'

The English translations in (12) are an exact parallel (albeit presented in reverse order) of Smith's example in (9). Taken together, (9)-(12) clearly demonstrate that in

Turkish the distinction between event and state is marked explicitly in the morphology, through the range of choices presented by the aspectual viewpoint system, whereas in English it has to be inferred from other contextual information. The reason for this lies in the difference between the aspectual systems of the two languages. Whereas Turkish systematically marks the distinction perfective / imperfective, in English the basic distinctions, as recognized by Quirk et al. (1972) are perfect / non-perfect and progressive/non-progressive. The perfective / imperfective distinction is well and truly blurred by the fact that the simple past tense is the means both of expressing states, which are inherently incomplete, and of presenting dynamic situations, i.e. events, as closed and complete.

Perfect aspect in Turkish

Let us now return to the Turkish examples in (2), and consider how they relate to those in (11) and (12). We have seen that not only the three sentences in (2) but also the sentences in (11a) and (12a) represent an inchoative use of the *-DI* form of the verb. However, as is reflected in the English versions of these sentences, the state into which entry is asserted has been interpreted with present time reference in (2) but past time reference in (11a) and (12a). In fact, as will be further discussed below, the choice between present and past, i.e. perfect or perfective readings, in any given utterance is contextually determined. In (2c) the presence of the “remote” demonstrative *o* ‘that’ arguably makes a past reading (‘I liked’) more accessible than the present ‘I like’. In the present-tense readings of (2) we are clearly dealing with a use of the *-DI* form which is analogous to the “perfect of result” in languages which have a present perfect form. Comrie (1981: 56) gives (13a) as an example of a “perfect of result” in English:

- (13) a. John has arrived.
 b. John arrived.

He comments that (13a) “indicates persistence of the result of John’s arrival, i.e. that he is still here”, whereas (13b) does not.

At this point it is necessary to consider how perfect (as opposed to perfective) aspect is expressed in Turkish. The situation is correctly described by Kornfilt (1997: 349), who notes that Turkish does not have a distinct form which expresses the present perfect, although it does have distinct constructions for future perfect and past perfect. As has long been recognized in Turkish teaching manuals and grammars written in English (e.g. Lewis 1953, 1967), the *-DI* form expresses the meanings of both the simple past and the present perfect tenses in English. Kornfilt illustrates this by pointing to the systematic ambiguity of sentences such as (14).

- (14) *Hasan balığı yedi.*
 fish:ACC eat:DI
 (i) 'Hasan ate the fish.' [Simple past]
 (ii) 'Hasan has eaten the fish.' [Present perfect]
 (Kornfilt 1997:349)⁴

Exactly the same aspectual ambiguity is present in the evidentially indirect finite form [verb stem + *mİş*], as seen in (15):

- (15) *Hasan balığı yemiş.*
 fish:ACC eat:mİş
 (i) 'Apparently Hasan ate the fish.' [Simple past]
 (ii) 'Apparently Hasan has eaten the fish.' [Present perfect]

Comrie (1981: 110) has observed that in languages which possess 'inferential' verb forms there is often a close interconnexion between the expression of inferential meaning and that of perfect aspect, and he explains this phenomenon in terms of the fact that "both categories present an event not in itself, but via its results". This is certainly true of the "resultant state" meaning of the Turkish evidential *-mİş*, as discussed in Aksu-Koç (1988: 21-23). But contrary to the claims of Slobin & Aksu (1982), Aksu-Koç (1988) and Erguvanlı Taylan (1996), it does not follow from this that perfect aspect in Turkish is located *only* in the *-mİş* form.⁵ For an event to be presented in terms of its result rather than in terms of its actual occurrence it is not a prerequisite that the event itself should not have been witnessed or experienced by the speaker. If it were, we should have to deny the possibility of a "resultant state" reading to a sentence like (14). We should have to exclude the possibility of the interpretation shown in (14, ii), even if the sentence had been uttered only two minutes after the event by a speaker who had been sitting with Hasan at the table, to a hearer who had just come in expecting to sit down to a nice plate of fish.

It appears that in English the perfect of result does not occur with stative verbs (Smith 1997: 187). This is why, in the English translations of the Turkish sentences in (2a) and (2b), we could not substitute 'I have liked' or 'I have been surprised' without substantially changing the meaning.⁶ However, Turkish is not alone in allowing the use of a past tense verb form, one of the meanings of which is present perfect, to express entry into the very state which itself constitutes the lexical mean-

⁴ The glosses in square brackets have been added.

⁵ Johanson (1971: 280-283) provides a detailed analysis of how *-mİş* contrasts with *-DI* aspectually in narrative sequences, which fall outside the scope of the present article.

⁶ The only interpretation of such forms that would be possible would be that of the "experiential" or "existential" perfect, which "indicates that the situation referred to has held at least once during some time in the past" (Comrie 1981: 58). See also Smith (1997: 107).

ing of the verb. Comrie presents some interesting parallels, and his explanation of the point at issue is worth quoting verbatim:

“The nature of the perfect of result can be examined by comparing translation equivalents across languages where the one uses the Perfect (or, in the absence of a distinct perfect, a past tense) and the other uses the Present of a stative verb (or adjective), i.e. one language expresses this as a (state resulting from a) past action, while the other just expresses it as a present state without any overt mention of how this state came about.” (Comrie 1981: 57)

Comrie says that most of the examples known to him involve a contrast between the use of a stative adjective or verb in English and a perfect or other past-tense verb in the other language. The languages he specifically mentions are Ancient Greek, Swahili, Fante and Kpelle. For example, the perfect form of the Ancient Greek verb *thneiskein* ‘to die’ is used in the meaning of ‘be dead’, and in both Swahili and Kpelle perfect forms of verbs meaning ‘become tired’ are used to express ‘he is tired’. We might add that the Turkish equivalent of ‘The king is dead’ is *Kral öldü* (king die-*DI*).

Johanson’s “initiotransformative” category

The most extensive treatment to date of the subject of aspect in Turkish remains the prodigiously comprehensive monograph by Johanson (1971), which has received little attention in English-language publications on Turkish.⁷ In a much more recent work (Johanson 2000) the aspectual analysis originally devised to account for the data of Turkish is developed into a more general schema which claims to cover the entire range of European (including Caucasian and Turkic) languages. This is an extremely rigorous system, in which traditional terms such as “perfective” and “progressive” are largely abandoned in favour of a new pattern of binary oppositions which capture the intra-linguistic and cross-linguistic semantic nuances more precisely and symmetrically.

One of the ways in which Johanson’s approach differs from other analyses of aspect is that he distinguishes between situation types and the lexical means used to express them. For him an “action” (event or state) may be telic or atelic, whereas an “actional phrase” (Smith’s “verb constellation”) is “transformative” or “nontransformative”. This distinction enables him to identify (1971: 213-224) a class of verbal lexemes in Turkish which he calls *initiotransformative*. A lexeme of this class expresses two consequentially linked situations: an initial telic event is followed by its resultant state. As some of the clearest examples of this class Johanson cites the verbs *dur-* ‘stop’/ ‘stand’, *yat-* ‘lie down’/ ‘lie’, *otur-* ‘sit down’/ ‘sit’, pointing out

⁷ A brief summary of Johanson’s analysis of aspect in Turkish can be found in Kerslake (1988: 151).

that (as shown also in my English translations) many languages possess different lexemes for these two separate phases of the situation in question. It is pertinent to note here Smith's observation (1997: 33) that verb constellations of posture and location (involving verbs such as *sit, stand, lie, crouch*) have special properties in many languages. They "can often appear in both stative and event sentences. As statives they present a position or posture, the result of a change of state; as non-statives the focus is earlier on the causal chain, the change of state".⁸ Johanson presents a list of nearly 30 Turkish verbal lexemes which can be classified as initiotransformative. For each of them he provides at least two German translations, one identified with the initial phase and one with the stative phase; in some cases an additional German translation, not explicitly identified with either phase, is given first; this is presumably to be understood as the basic meaning of the lexeme in question. Some examples (taken from Johanson 1971: 215-218) are given in (16), in which *i* represents the initial phase and *s* the stative phase.⁹

- (16) *anla-* 'verstehen' ['understand']; *i* = 'einsehen' ['see'],
s = 'Bescheid wissen' ['know about']
- git-* *i* = 'sich in Bewegung setzen' ['to start moving'],
s = 'sich bewegen, unterwegs sein' ['move, be on one's way']
- görün-* *i* = 'sichtbar werden' ['become visible'],
s = 'sichtbar sein' ['be visible']
- sevin-* *i* = 'froh werden' ['become glad'], *s* = 'froh sein' ['be glad']
- tanı-* *i* = 'erkennen' ['recognize'], *s* = 'kennen' ['know']
- uyu-* *i* = 'einschlafen' ['fall asleep'], *s* = 'schlafen' ['sleep', 'be asleep']

For several initiotransformative lexemes Johanson explicitly illustrates how a form with an anteriority marker (such as *-DI* or *-mİş*) can be used to describe the same situation as a form without anteriority marking:

- (17) a. *korktum* = *korkuyorum*
 [become afraid:DI.1SG] [be afraid:IPFV.1SG]
 ['I have become afraid'] ['I am afraid']

⁸ See also Talmy (1985: 85-90), which examines the stative / inchoative distinction in relation to lexicalization patterns in different languages.

⁹ In (16) and (17) the glosses and English translations in square brackets have been added.

- b. *artık gittik* = *artık gidiyoruz*
 [at last go:DI.1PL] [at last go:IPFV.1PL]
 'wir haben uns endlich 'wir bewegen uns endlich'
 in Bewegung gesetzt' ['we have started moving at last'] ['we are moving at last']
- c. *anladın mı?* = *anlıyor musun?*
 [understand:DI.2SG Q] [understand:IPFV Q.2SG]
 ['have you understood?'] ['do you understand?']
- d. *şimdi kuşa benzedin* = *kuşa benziyorsun*
 [now bird:DAT] [become like.DI.2SG] [bird:DAT be like:IPFV.2SG]
 'maintenant, tu as pris figure d'oiseau' 'tu ressembles à un oiseau'
 ['now you have become like a bird'] ['you are like a bird']
 (Johanson 1971: 214-216)

On the basis of examples such as these, Johanson presents a diagnostic test for inchoative verbs. In order to qualify for membership of this class, a verbal lexeme must be able to replace *x* in one of the following patterns:

- (18) a. *Saat 1'de x-di, ve on dakika sonra hâlâ x-iyordu.*
 [hour 1:LOC x.DI and ten minute later still x.IPFV.PST]
 ['At 1 o'clock she x-ed, and ten minutes later she was still x-ing.']
- b. *x-di, demek ki şimdi x-iyor.*
 [x.DI that means now x.IPFV]
 ['She has x-ed; that means she's x-ing now.'] (Johanson 1971: 218)

Let us now apply the pattern of (18b) to the verbal lexemes occurring in examples (2)-(7), in which the Turkish *-DI* form was seen to be equivalent to an expression of present state in English.

- (19) a. Lexemes which pass the test:
 (The English equivalents given are for the stative phase)
- | | |
|---------------------|----------------|
| <i>beğen-</i> | 'like' |
| <i>şaşır-</i> | 'be surprised' |
| <i>sevin-</i> | 'be glad' |
| <i>üzül-</i> | 'be sorry' |
| <i>kız-</i> | 'be angry' |
| <i>canlı sıkıl-</i> | 'be bored' |
| <i>utan-</i> | 'be ashamed' |
| <i>hoşUNA git-</i> | 'appeal to' |
| <i>anla-</i> | 'understand' |
| <i>üşü-</i> | 'feel cold' |

b. Lexemes which fail the test:

<i>memnun ol-</i>	'be pleased'
<i>bık-</i>	'get tired of'
<i>acık-</i>	'get hungry'
<i>susa-</i>	'get thirsty'
<i>yorul-</i>	'get tired'
<i>kal-</i>	'remain'

In (20) and (21) I illustrate these judgements by substituting the imperfective form *-(I)yor* for the *-DI* form in a selection of the sentences appearing in (2)-(7):

- (20) a. *Bu evi çok beğendim / beğeniyorum.*
 this house:ACC much like:DI.1SG / IPFV.1SG
 'I like this house a lot.'
- b. *Annenizin hastalığına üzüldüm / üzülüyorum.*
 mother:POSS2PL.GEN illness:POSS3SG.DAT be sorry:DI.1SG / IPFV.1SG
 'I'm sorry about your mother's illness.'
- c. *Utanmadın mı? / Utanmıyor musun?*
 be ashamed:NEG.DI.2SG Q be ashamed:NEG.IPFV Q.2SG
 'Aren't you ashamed?'
- d. *Üşüdüm / Üşüyorum*
 feel cold:DI.1SG / IPFV.1SG
 'I'm cold.'
- (21) a. *Tanıştığımızı memnun oldum / *oluyorum.*
 meet:NZ.1PL.DAT pleased become:DI.1SG / *IPFV.1SG
 'I'm pleased that we've met.'
- b. *Acıktım / *Acıkıyorum.*
 get hungry:DI.1SG / *IPFV.1SG
 'I'm hungry.'
- c. *Yoruldum / *Yoruluyorum.*
 get tired:DI.1SG / *IPFV.1SG
 'I'm tired.'
- d. *Ekmek kalmadı / *kalmıyor.*
 bread remain:NEG.DI / *NEG.IPFV
 'There's no bread left.'

The lexemes listed in (19a) and selectively illustrated in (20) belong, then, to Johanson's initiotransformative class; they are capable of expressing either entry into a state or the existence of that state at a particular moment (in the case of (20), the

moment of utterance). The use of a perfective verb form, such as *-DI* or *-miş*, usually generates a reading in which both the telic phase and the stative phase of the situation are contained. Speakers choose to use a perfective viewpoint when they are expressing a feeling that has been triggered by a particular event (typically seeing something, as in (20a), or hearing a piece of news, as in (20b)). It could perhaps be claimed that the continuation of the state into which entry is asserted is implied rather than directly stated. This is in line with the observation of Smith (1997: 34) that in sentences such as *Mary got angry* or *John became tired* the state is presented “indirectly”. The use of an “inchoative” verb such as *get* or *become* “often allow[s] the inference that the resultant state continues, unless there is information to the contrary”. In Turkish, if a speaker chooses to use the imperfective *-Iyor* form of an initiotransformative verb in preference to the *-DI* form for expressing a current state (as is possible in the examples in (20)), the effect is to present the state described as simply *ongoing* at the moment of utterance. The avoidance of any grammatical reference to the initial onset of a feeling is sufficient to convey the impression that the feeling is not presented as a reaction to a specific event. The lexemes appearing in (19b) and (21), which fail the initiotransformative test, are, in Johanson’s terminology, *finitransformative*. That is to say, the change of state which they express occurs as the final phase, not the initial phase, of the action. The rejected *-Iyor* forms in (21) could in theory indicate that this change of state was in progress at the moment of speech, but in practice, since the onset of an emotion or a bodily sensation is unlikely to be perceived as having duration,¹⁰ the choice of the *-(I)yor* form of any of the verbs in (19b) would usually require a habitual rather than a current-state context, as exemplified in (22).

- (22) a. *Sizin gibi insanlarla tanışınca memnun oluyorum.*
 you:GEN like person:PL.with meet.CONV pleased be:IPFV.1SG
 ‘I am (always) pleased to meet people like you.’
- b. *Sıcak havalarda pek acıkıyorum.*
 hot weather:PL.LOC very get hungry.NEG.IPFV.1SG
 ‘I don’t get very hungry in hot weather.’
- c. *Annem çabuk yoruluyor.*
 mother:POSS1SG quickly get tired:IPFV
 ‘My mother gets tired quickly.’
- d. *Genellikle sabaha ekmek kalmıyor.*
 usually morning:DAT bread remain:NEG.IPFV
 ‘There’s not usually any bread left in the morning.’

¹⁰ This is not, of course, to say that a sensation such as hunger or fatigue may not increase after the initial onset.

There is no verbal equivalent, for the lexemes in (19b), of the *-(I)yor* versions of the sentences in (20), i.e. the means of expressing *as ongoing only* the kind of states whose entry phases the verbs in 19b express. For the purely stative equivalents of the sentences in (21) recourse has to be had to non-verbal predications, as shown in (23):

- (23) a. *Tanıştığımızıza memnunum.*
 meet:NZ.1PL.DAT pleased:1SG
 'I'm pleased that we've met.'
- b. *Açım.*
 hungry:1SG
 'I'm hungry.'
- c. *Yorgunum.*
 tired:1SG
 'I'm tired.'
- d. *Ekmek yok.*
 bread non-existent
 'There's no bread.'

As noted above, there is no one-to-one correlation between verbal lexeme and situation type. In other types of context *yorul-* and *kal-*, for example, can be atelic, expressing Activities rather than Achievements. In this case the *-(I)yor* form can express progressivity, as in (24).

- (24) a. *Niçin bu kadar yoruluyorsun?*
 why this amount exert oneself:IPFV.2SG
 'Why are you wearing yourself out like this?'
- b. *Nerede kalıyorsunuz?*
 where:LOC stay:IPFV.2PL
 'Where are you staying?'

Perfective or Perfect?

Earlier we saw, in (11a) and (12a), that stative verbs in the *-DI* form could be used with an inchoative reading that is past perfective rather than present perfect. (12a) could probably also be uttered with present perfect meaning ('I have suddenly understood ...'), if the speaker were referring to a flash of understanding that she had only just experienced. In (11a), however, the past perfective reading is the only one available, because of the explicit temporal trigger provided by the converb, which implies a narrative context.

Reversing the operation we have just performed on (12a), it is also possible to think of appropriate narrative contexts for the *-DI* and *-miş* forms of most, if not all, of the verbal lexemes appearing in (2)-(7). A few examples are given in (25).

- (25) a. *Dün bana evi gösterdiler. Beğenmedim.*
 yesterday me:DAT house:ACC show:DI.PL like:NEG-DI.1SG
 'Yesterday they showed me the house. I didn't like it.'
- b. *Yeni öğretmenimizi hemen sevdim.*
 new teacher:POSS1PL.ACC immediately love:DI.1SG
 'I liked our new teacher immediately.'
- c. *Filiz'i o halde görünce üzülmüş.*
 Filiz:ACC that state:LOC see:CONV be sorry:mIş
 'Apparently she was sorry when she saw Filiz in that state.'
- d. *Yemekten az sonra yeniden acıktım.*
 meal:ABL little after again get hungry-DI-1SG
 'A short while after lunch I got hungry again.'
- e. *O gün akşama ekmek kalmamış*
 that day evening:DAT bread remain:NEG:mIş
 'Apparently that day there was no bread left in the evening.'

These examples clearly demonstrate that stative verbs are no different from other verbs in Turkish in terms of the opacity of the perfective / perfect distinction.

Conclusion

In comparison with English, there does seem to be a definite tendency for Turkish to articulate the dynamic phase of entry into a state rather than the state itself, both in deictically oriented and in narrative situations. We have seen that this holds across the divide between the finitransformative and initiotransformative classes of verbal lexeme. In other words, it is not affected by whether a particular verbal lexeme is capable also of expressing (through a change of aspectual morphology) the ongoing quality of that state.

A particularly telling illustration of the event-oriented character of Turkish is the list given by Johanson (1971: 286) of *-mIş* forms such as *kızmış* ['angry'], *korkmuş* ['frightened'], *sevinmiş* ['glad'], *şasırmış* ['confused'], *sinirlenmiş* ['irritated'], *utanmış* ['ashamed'], used (many of them repeatedly) throughout the stage directions of a radio play to indicate the emotional state of a character at a particular moment.

It is also worth noting that Turkish has no direct equivalent of the English stative verb 'wear'. As shown in (26), the notion that someone is wearing something is expressed either by a *-mIş* form of the finitranstitive verb *giy-* 'put on', or by a non-verbal, existential sentence.

- (26) a. She was wearing a red cardigan.
 b. *Kırmızı bir hırka giymişti / *giyiyordu.*
 red a cardigan put on:mIş.PST / *IPFV.PST
 ('She had put on a red cardigan.')

- c. *Üstünde kırmızı bir hırka vardı.*
 top:POSS2SG.LOC red a cardigan existent:PST
 ('Upon her was a red cardigan.')

Similarly, the Turkish phrasal verb expressing 'kneel', *diz çök-*, is finitransformative ('go into a kneeling position'), whereas the English verb is initiotransformative, capable of expressing either the going into, or the stative maintenance of, a kneeling position.

However, it seems unlikely that lexicalization patterns, of the kind explored by Talmy (1985), play more than a minor role in accounting for the event-oriented quality of Turkish which is postulated here. The existence of a large class of initiotransformative verbs which can express either the entry phase or the stative phase of a situation indicates that we are dealing more with a question of viewpoint choice than of lexical constraint. In the case of lexemes expressing mental or emotional states, speakers can distinguish clearly between a state of mind triggered by a specific event (e.g. pleasure at meeting someone, happiness or sadness engendered by a piece of news) and one that simply is or was being experienced at some particular time. In the case of descriptions of physical dispositions, such as those in (27) below, a hypothesis that could be advanced is that the choice of a *-miş* form rather than (where available) an *-iyor* form is actually perceived as *enhancing* the static quality of the description. A *-miş* form, after all, expresses the completed adoption of a certain posture or configuration, whose continuance is thereby assured (cf. Comrie's characterization of a state, discussed at the beginning of this article), whereas *-iyor* (in the case of a lexeme which is capable of a dynamic interpretation) inevitably conveys at least the suggestion of an ongoing input of energy, an iterative renewal of the posture or disposition.

What would be needed to substantiate the hypothesis of a Turkish preference for articulating events rather than states is a systematic, quantitative analysis of corpus-based data, supplemented by data from parallel texts in Turkish and English. In order to give just a glimpse of what an investigation of parallel texts might reveal, I close with a pair of excerpts from Selma Ekrem, *Unveiled* (London, 1931), and its recent Turkish translation by Gül Çağalı Güven, *Peçeye İsyan* (İstanbul, 1998). The passage is from a description of a Christmas nativity tableau in Jerusalem in late Ottoman times. The five stative expressions italicized in the English text have all been rendered as *-miş* events in the Turkish version.

- (27) a. "I saw a tiny baby with a serious face and a gold disc behind his head, *leaning* forward, his arms outstretched. He *was seated* in the lap of a lady *in* gay colours, and before them *knelt* many great personages and all around them *were* animals." (Ekrem 1931: 59)
- b. "Başının çevresinde altın bir halka olan ciddi yüzlü minik bir bebek gördüm; bedeni öne doğru *eğilmişti*, kolları iki yana açıldı. Parlak renkli bir elbise *giymiş* bir hanımın kucağında *oturmuştu*. Önlerinde birçok

önemli kişi *diz çökmüştü*; hepsinin çevresini de hayvanlar *almıştı*.”
(Güven 1998: 74)

Literal translation of (b):

‘I saw a tiny baby with a serious face, who had a gold ring around his head; his body *had leaned* forward, his arms were open to both sides. He *had become seated* in the lap of a lady who *had put on* a brightly coloured dress. In front of them many important people *had knelt down*; animals *had surrounded* all of them.’

Abbreviations

ACC	accusative
AOR	aorist
CONV	converb
DAT	dative
-DI	Verbal inflectional suffix combining three components of meaning: past tense, perfective / perfect aspect and factual modality. <i>D</i> is realized as <i>d</i> after vowels and voiced consonants, and <i>t</i> after unvoiced consonants. <i>I</i> is realized as <i>ı</i> , <i>i</i> , <i>u</i> or <i>ü</i> according to the properties of the preceding vowel.
GEN	genitive
IPFV	imperfective
LOC	locative
NEG	negative
NZ	nominalization
-mİş	Verbal inflectional suffix combining three components of meaning: past tense, perfective / perfect aspect and evidentially marked modality (indirect knowledge). For realization of <i>I</i> see - <i>DI</i> .
OBLIG	obligative
PASS	passive
PST	past copula
PL	plural
PO	possibility
POSS	possessive
Q	interrogative
SG	singular

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Plural agreement in Turkish

Mark Kirchner

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The following research discusses some previous papers, studies and remarks on 3rd person plural agreement between subject and predicate in Turkish. It is shown that the position of the subject on the scale of agentivity determines, beside length and vicinity factors, the choice of plural agreement. These general agreement conditions can be overruled in specific text types and contexts. The paper closes with some remarks on Turkish-Persian and Turkic similarities in the field of plural agreement.

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Valuable detailed, but less systematic, observations on 3rd person plural agreement between subject and predicate in Turkish were made in Gencan's "Dilbilgisi" ([1966] 1979: 90-95).¹ Lewis' (1967: 246) description is more structured in claiming that inanimate plural subjects take singular verbs, whereas plural verbs are used "with animate subjects or with inanimates personified". An animate plural subject can take a singular verb if it represents "a number of people acting as one". Furthermore Lewis establishes the distance between subject and predicate as a factor that can override non-agreement. This factor was discussed by Göksel (1987). It was shown "that native speakers are reluctant to omit the third person plural agreement marker in sentences where the subject is separated from the verb by embedded clauses or phrases" (Göksel 1987: 71). Sezer's article "Eylemlerin çoğul öznelere uyumu" (1978) focussed on the semantics of the subject, showing that in addition to the animateness of the subject, its agentivity is a precondition for agreement. Kornfilt (1987: 634-635) treats plural agreement in sentences with overt subject as optional, non-agreement being stylistically preferred. This stylistic preference "strengthens to the point of almost a grammatical prohibition ... when the subject is inanimate." In "Turkish" (1997: 386-387) Kornfilt points to the fact that the acceptability of plural agreement deteriorates according to the animacy scale, that is human, non-human animate, inanimate. The most elaborate study on number-agreement is Schroeder's dissertation on "The Turkish nominal phrase in spoken discourse" (1999) that contains a chapter on "number (non)-agreement" (111-125). Besides treating distinctness

¹ Similar observations in Dizdaroğlu's "Tümcebilgisi" (1976: 68-74).

and humanness in connection with agentivity as factors involved in plural agreement, Schroeder deals with the relationship between discourse topics and subjects and proposes topicality to be of importance for agreement.

In the following I will discuss some of the proposed rules of agreement, in an attempt to arrive at a simplified approach for the understanding of 3rd person plural agreement between subject and predicate in Turkish. After that, it will be shown that there is a considerable variance concerning agreement in different types of spoken and written discourse. This paper will be concluded with some remarks on 3rd person plural agreement from a broader Turcologic and areal perspective.

The point of departure for our discussion is an example quoted by Gencan (1979: 94) and Lewis (1967: 246) that shows plural agreement though its subject is inanimate.

- (1) *Ağaçlar yüzümüze konfeti atıyorlar.*
 tree-PL face-POSS.1PL-DAT confetti throw-PRS.3PL
 ‘The trees are throwing confetti into our faces.’

Subjects of this type are considered a personified inanimate (Lewis 1967: 246) or a “metaphorical extension of the ‘humanness’ parameter” (Schroeder 1999: 118). What actually triggers plural agreement in (1) is the fact that the subject *ağaçlar* has the role of an agent. The question whether the subject is human or not is of secondary importance. In the context of religious legends, for instance, “throwing trees” or even “running trees”, which would be conceived as “personified” inanimates actually act on the same level as human beings and should not be discriminated against by grammatical rules (2).

- (2) *Çünkü Âdem kendüyi ol hâlde gördi yürüdü*
 when Adam REFL-ACC that situation-LOC see-PRT.3SG run-PRT.3SG
ki ağaçlardan yapraq ala. Ağaçlar andan
 in-order-to tree-PL-ABL leaf take-OPT Tree-PL he-ABL
qaçdılar, yapraq vermediler. (Kıyas-ı Enbiyâ, 131)
 flee-PRT.3PL leaf give-NEG-PRT.3PL
 ‘When Adam saw himself in this situation he ran in order to tear off leaves from the trees. The trees fled from him and did not give any leaf.’

In addition, agentivity explains agreement in sentences with subjects such as “planes” or “ships”. Göksel (1987: 70), for instance, needs some additional lines to describe the referent of subjects of that type as “an inanimate entity composed of human beings” or as an entity that “embodies human beings”. Agentivity, especially the position on the scale of agentivity, may also explain plural non-agreement of the second predication in (3).

- (3) *Ekşer gemiler varurlar ol*
 most ship-PL arrive-AOR.3PL that
köyün önünde yatur. (Piri Reis 1, 298)
 village front-POSS.3SG-LOC lie-AOR.3SG
 'Most ships arrive before this village and drop anchor here.'

While the ship's approach of the harbour is a volitional action, riding at anchor has less actionality and control and is therefore low on the scale of agentivity (cf. Givón 1984: 88-89). Agentivity helps to explain several restrictions on plural agreement which are hard to explain on the basis of the humanness-feature. Schroeder points to that and notes that passive sentences in spoken Turkish "never show agreement" because "the subject expresses the patient of the action" (Schroeder 1999: 118):

- (4) *Bu arkadaşlar ... Karaköy*
 this friend-PL Karaköy
piyasasında ... kandırılıyor. (Schroeder 1999: 118)
 market-POSS.3SG-LOC cheat-PASS-PRS.3SG
 'These friends are cheated in the Karaköy market.'

The agentivity claim is strengthened by the fact that petrified passives such as *katılmak*, derived from *katmak*, do not fit this rule:

- (5) *Çocuklar kampanyaya katıldılar.*
 child-PL campaign-DAT take-part(PASS)-PRT.3PL
 'The children took part in the campaign.'

On the other hand the reflexive verb *görünmek* causes a less agentive interpretation of the following sentence from a novel by Yakup Kadri and leads to plural non-agreement:

- (6) *Bütün gezinenler, hattâ eşekler üstünde*
 all stroll-PART-PL even donkey-PL top-POSS.3SG-LOC
koşuşanlar bile mahzun görünüyordu. (Kıralık konak, 62-63)
 ride-PART-PL even sad look(REFL)-PRS.PRT.3SG
 'All those people who were strolling and even those riding donkeys looked sad.'

Plural agreement can be blocked or restricted in sentences without verbal predicate. This is caused by the fact that the subject of these sentences is in most cases a patient-of-state, even when it is animate or human (Givón 1984: 91).

- (7) *Kızlar çalışkan.*²
 girl-PL hardworking
 ‘The girls are hardworking.’

In the discussion of “tense/aspect and mood affinities with respect to agreement and non-agreement”, Schroeder (1999: 119) noticed that the negated aorist has a propensity to non-agreement.³ This is more likely a result of the low agentivity of a subject that does not act than an influence of tense, aspect or mood (8).

- (8) *Velî büyük barçalar girmez.* (Piri Reis 1, 291)⁴
 but large bargia-PL enter-NEG.AOR.3SG
 ‘Large bargias cannot enter it.’

Generally, agentivity is more suitable for explaining plural agreement on the predicate than the humanness- or animateness-feature. Apart from that, several “exceptions” to the agreement rules for passive and nominal clauses, etc. can be explained in a more adequate way using agentivity as the central criterion.

However, it should not be forgotten that the intended interpretation of the plural-marked subject as consisting of distinct referents is a prerequisite for the application of the agentivity rule. While in (9) the referents of the subject may be interpreted as acting collectively, they can be interpreted as acting individually in (10):

- (9) *Lokantacılar zam istiyor.* (Gencan 1979, 94)
 restaurant-keeper-PL mark-up want-PRS.3SG
 ‘The restaurant keepers are calling for a mark-up.’

- (10) *Lokantacılar zam istiyorlar.*
 restaurant-keeper-PL mark-up want-PRS.3PL
 Cf. (9).

Length factors were included in the agreement rules by Lewis (1967) and Göksel (1987), but are not mentioned in recent grammars or studies (Kornfilt 1997, Schroeder 1999). Johanson (1998: 37) refers to a related phenomenon, mentioning “the

² For further discussion cf. Underhill (1976: 33) and Göksel (1987: 73). In this context it should be noted that the existential and non-existential adjectives *var* and *yok* behave differently with regard to plural marking. While *var* generally does not take plural suffixes even when there is no overt subject, this is possible in some contexts for *yok*.

³ In this context Schroeder mentions an “opposition between a tense/aspect marker expressing no definite time space vs. a tense/aspect marker expressing a definite time space”. The proposed opposition may result from a literal understanding of the term “aorist”, but has little to do with the Turkish system of tense and aspect.

⁴ Cf. (3): ... *gemiler varurlar* ...

typical feature” of Turkic languages “to use morphological devices economically and avoid redundancy”. This leads to a “tendency to avoid two plural markers very close to each other” (Johanson 1998: 53).⁵ Vicinity of subject and predicate can be caused, among other things, by a marked constituent order. For instance:

- (11) *Deriyi en çok Romenler alıyor.* (Schroeder 1999: 116)
 leather-ACC SUP much Romanian-PL buy-PRS.3SG
 ‘It’s the Romanians who buy most leather.’

In (11) “the accusative-marked object *deri* ... is the topic. The new information is contained in the subject.” Sentences like this may suggest the interpretation that there is no agreement when “topic and subject do not coincide”, as proposed by Schroeder (1999: 115). In the same way, plural agreement in the following sentence is not supported by the fact that the subject is established “as the discourse topic” (116).

- (12) *İnsanlar sabah kahvaltısının hangi saatte
 person-PL morning breakfast-POSS.3SG-GEN which time-LOC
 olduğunu çok iyi biliyorlardı.* (Schroeder 1999: 117)
 be-NR-POSS.3SG-ACC very good know-PRS.PL.PRT
 ‘The people knew very well at what time breakfast was.’

It is more likely that agreement in (12) is supported by the fact that subject and predicate are separated by an extensive embedded clause (cf. Göksel 1987: 71). However, length and vicinity factors are motivated by the limitation of human memory and by the general tendency of communication systems to avoid an excess of redundancy (and repetition of the same marking devices) and should therefore not be introduced on the same level as the distinctness and agentivity parameter (cf. the discussion in Göksel 1987: 79).

Beside these general tendencies for plural agreement, individual stylistic preferences and text types play an important role in the choice of plural marking on the predicate.⁶ The general agreement conditions can be overruled in specific contexts. Generally speaking, there is a trend toward abundant plural agreement in formal written discourse as compared to informal oral discourse. Turkish dialect texts are a rich source for informal discourse. When we investigate the materials from Kütahya, for example, it becomes evident that plural non-agreement of the predicate with an agentive subject does not automatically imply the interpretation of the referent of the agent as consisting of distinct entities, but still the system functions roughly according to the general rule.

⁵ For Turkish cf. Csató & Johanson (1998: 226).

⁶ According to Kornfilt (1997: 387), “overt plural agreement with non-human third person plural subjects is rejected by many speakers (although not by all)”.

- (13) *Türklē bunū bizden sormaa gelir.* (Kütahya, 151)
 turk-PL this-ACC we-ABL ask-ANOM-DAT come-AOR.3SG
 'The Turks came to ask this from us.'

Conversely, in formal written discourse the opposition between distinctness and non-distinctness can be neutralized, all relevant contexts being marked with the plural marker.

- (14) *İkide bir askere gel derler ve Türkler giderlerdi.* (Tek adam, 162)
 two-LOC one soldier-DAT come(IMP) say-AOR.3PL and Turk-PL go-AOR.PL.PRT
 'Every now and then they wanted them to join the army and the Turks joined it.'

In the same sense, plural agreement in the elaborate language of a conversation about music is not necessarily a means to signal distinctness of the referents of the subject, as argued by Schroeder (1999: 122); it is more likely a strategy that signals formal oral discourse in a marked social context.

- (15) *Aile büyüklerim Türk musikisine yatkınlığımı üç yaşıma götürürler.* (Schroeder 199: 122)
 family elder-PL-POSS.1SG Turkish music-POSS.3SG-DAT devotion-POSS.1SG-ACC three age-POSS.1SG-DAT lead-AOR.3PL
 'My elders attribute my devotion to Turkish music to the time when I was three years old.'

A novel by Yakup Kadri Karaosmanoğlu (Kıralık konak) shows some further peculiarities concerning plural agreement. In this text direct vicinity of plural subject and predicate does not block agreement (16) and some types of nominal sentences are subject to agreement, too (17).

- (16) *Fakat onlar konuşuyorlar ...* (Kıralık konak, 63)
 but he-PL talk-PRS.3PL
 'But they talked together.'

- (17) *Onlar, her şeyden evvel, zamanın icabatına*
 he-PL every thing-ABL before time-GEN requirement-POSS.3SG-DAT
uymaya mecburdurlar. (Kiralık konak, 48)
 conform-ANOM-DAT forced-COP-PL
 ‘They are, first of all, forced to conform to the requirements of present life.’

It is not hard to find texts that even show plural marking with inanimate non-agentive subjects. (18)-(20) are quotations from a cookbook (*Sofra nimetleri*) and from a book about the Turkish language reform (*Dil bahisleri*). Both have in common that inanimate entities are in the foreground of discourse.

- (18) *Bu şekilde kireçli su ile*
 this manner-LOC chalky water with
yapılan kayısılar daha diri, taneli
 make-PASS-PART apricot-PL more fresh full
ve güzel görünümlü olurlar. (*Sofra Nimetleri*, 415)
 and beautiful looking become-AOR-PL
 ‘In this way, apricots prepared with chalky water get a fresher, fuller and more beautiful appearance.’
- (19) *Arapçadan gelen partisipler çok defa*
 Arabic-ABL come-PART participle-PL many time
mânâca gelişerek müstakil
 meaning-ADV develop-CONV independent
*isimler ve sıfatlar olmuşlardır.*⁷ (*Dil bahisleri*, 168)
 noun-PL and adjective-PL become-PERF-PL-COP
 ‘Participles originating from Arabic have often developed
 in respect of their meaning and become independent nouns and adjectives.’

Despite the fact that agreement is usually blocked in these texts in passive sentences, this condition can be overridden, too (20).

- (20) ... **nazır, kâtip gibi kelimeler**
 nazır kâtip like word-PL

⁷ Schroeder (1999: 120) believes the “factitive marker *-dir*, which ... seems to lay more emphasis on the actional character of the event” to be the motivating factor for agreement. The affinity between (*-mly*)-*dir* and plural agreement is more likely a result of their co-occurrence in formal oral or written discourse (Johanson 1998: 214-215).

partisip olarak kullanılmazlar. (Dil Bahisleri, 168)
 participle be-CONV use-PASS-NEG.AOR.3PL
 ‘Words like *nazır* and *kâtip* are not employed as participles.’

The above-mentioned exceptions are restricted to particular text types and do not affect the agreement rules. Thus agreement of the predicate is generally triggered if the referent of the subject is interpreted as consisting of distinct entities and has the role of an agent. However, agreement can be suppressed in the case of direct vicinity of the plural marked predicate and subject or it can be triggered in cases where the subject is separated from the verb by embedded clauses.

It might be interesting to note that the rules for plural agreement on the predicate in contemporary Persian as described by Lazard are very similar to the Turkish rules, though the wording is different. According to Lazard (1992: 178-179): “... the verb is placed in the plural or in the singular according as the subject designates persons or things. With persons, or, more usually, animated beings having will or feeling, the verb is in the plural. ... However, when the subject designates things which are conceived as endowed with a certain activity, or such that there is cause to insist on ... the individuality of each of them, the verb is in the plural. ... Inversely when one speaks of animated beings which are not conceived as the agents of the process or as affected by it ... the verb is readily put in the singular. This happens particularly with verbs of existence”. It becomes evident from this explanation that in Persian also distinctness and agentivity are the relevant factors for agreement. (21) has an inanimate agentive subject and shows agreement; in (22) the non-agentive subject does not trigger agreement on the predicate:

- (21) *In ḥararathā-ye moxtalef ... tağyirāt-e*
 this heat-PL-AT different changes-AT

mohemme toulid mikonand.
 important production make-PRS.3PL
 ‘These different kinds of heat produce important changes ...’
- (22) *Čerāghā xāmuš šod.* (Lazard 1992: 179)
 lamp-PL extinct become-PFT.3SG
 ‘The lamps went out.’

This is not the place for the discussion of whether these similarities between the Persian and the Turkish systems are due to one-sided or to mutual language contact or whether both systems have developed plural agreement according to universal principles of agreement that predict that definite agentive human subjects are more likely to develop grammatical agreement than others (Givón 1984: 364). However, the rules of plural agreement between subject and predicate in the 3rd person plural and the morphemes involved show some variability within the Turkic languages. While some Turkic languages do not show plural agreement at all, e. g. Yellow Uyghur and Kazakh, in Kirghiz plural agreement is marked on the verbal

predicate with the common Turkic reciprocal suffix or with allomorphs of *-lar* on nominal predicates (Gadžieva & Serebrennikov 1986: 90-93). Despite these morphological differences, the rules of agreement show great resemblance to the Turkish system. Thus, the distinctness parameter is coded with the reciprocal suffix (23) and agreement is blocked in passive sentences (24):

(23) *Baldar kelišti.*
 child-PL come-PL-PRT.3SG
 'The children came (as individuals).'

vs. *Baldar keldi.* (Žapar 1992, 83)
 child-PL come-PRT.3SG
 '... (as a group)'

(24) *Ğařtar Biřekke ğiberilgen.*
 youth-PL Bishkek-DAT send-PASS-PRF.3SG
 'The young people were sent to Bishkek.'

Imart (1981: 804-806) notes the tendency towards the generalisation of plural agreement in sentences with plural subjects for Kirghiz under the influence of Russian, especially in translated texts. It would be interesting to examine whether the increased use of plural agreement in Turkish formal written discourse is the result of an analogous influence of French / English on Turkish.

List of abbreviations

ABL	ablative	NR	nominalizer
ACC	accusative	OPT	optative
ADV	adverbializer	PFT	perfect
ANOM	action nominal	PART	participle
AOR	aorist	PASS	passive
AT	attributizer	PERF	perfect
CONV	converb	PL	plural
COP	copula	POSS	possessive
DAT	dative	PRS	present
GEN	genitive	PRT	preterite
IMP	imperative	REFL	reflexive
INF	infinitive	SG	singular
LOC	locative	SUP	superlative
NEG	negative		

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An investigation on linguistic gender differences in the classroom

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It has been claimed that in gender differences of language women's language is different from men's language. Men and women learn different behavior as part of their social differentiation; thus the important point is how this interacts with social identity. The purpose of this study is to determine whether there are linguistic differences between female and male university teachers in face to face interactions during their teaching in class. The teacher-student interactions comprise the data of the study. The results are evaluated according to the 6 universals regarding language and gender formulated by Holmes in 1993.

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1. Introduction

It has been claimed that in gender differences of language, women's language is different from men's language in that men's language is perceived as unmarked, and women's is marked, because women as a social group have their own distinct linguistic domain. However, gender differentiation is not a fixed and pre-existing fact (Eckert & McConnell-Ginet 1992: 485, c. in Bergvall 1999: 280). Men and women learn different behavior as part of their social differentiation (Maltz & Borker 1982; Coates 1993; Tannen 1990; Thorne 1993). Thus, the important point is how this behavior interacts with social identity. Studies of gender differences, therefore, must pay attention to social settings where a multidimensional grid (Tannen 1996: 202) is present, and this grid illustrates hierarchy / equality on one axis and closeness / distance on another. Therefore, as Tannen (1996) puts it, in order to understand language and gender the concept of framing, which is a way of simultaneously balancing the dimensions of status and connection, is particularly important.

2. Purpose of the study

The purpose of this study is to determine whether there are linguistic differences between female and male university teachers in face to face interaction during their teaching in class. As a result of the inequality in class that exists within the hierarchy of a classroom, asymmetric discourse between the teacher and the students is the focus of framing of the survey.

3. Methodology

Two female and two male university teachers, working at Anadolu University, Department of Education participated in the investigation. They were between the ages of 24-40 and had at least 3 years of teaching experience.

The teacher-student interactions comprising the data of the study were recorded during the first 45-50 minutes of teaching. It was the first term, when the teachers were becoming acquainted with the class. The teachers were equipped with color-microphones. The interactions were transcribed and 129 utterances were grouped according to the frequency of the usage of tag questions, back channels, questions, rhetorical questions and addressing of students as 'friends-guys'. Then the results were evaluated according to the 6 universals regarding language and gender formulated by Holmes in 1993 (c. in Bergvall 1999: 281):

- (1) Women and men develop different patterns of language use.
- (2) Women tend to focus on the affective functions of an interaction more often than men do.
- (3) Women tend to use linguistic devices that stress solidarity more often than men do.
- (4) Women tend to interact in ways that will maintain and increase solidarity while, especially in formal contexts, men tend to interact in ways that will maintain and increase their power and status.
- (5) Women use more standard forms than men from the same social group, in the same social context.
- (6) Women are stylistically more flexible than men.

4. Results

4.1.

The frequency of tag questions used by female teachers is 15, whereas by male teachers, it is 8. In equal amounts of female and male utterances, women use more tags than men, which suggests that women are facilitators, that is they feel responsible for ensuring the interaction proceed smoothly.

- (a) – *Ödevlerinizi getirdiniz di mi?*
'You've brought your homework, haven't you?'
- (b) – *Kuram ve yapılar bilgisini hatırladınız de mi?*
'You remembered the theory and the structure, didn't you?'

In this respect female teachers' tags *di mi* and *de mi* are short forms of the same word *değil mi* and are used in an informal style. They have affective function because they express the teachers' attitude towards the students. These tags are addressee-oriented as they support / invite students to participate; and Coates (1993: 122) terms them as "facilitative tags".

On the other hand, tags used by male teachers express modal meaning: they signal the teacher's degree of certainty about the proposition expressed:

- (c) – *Deprem korkusu değil mi?*
'Fear of earthquake, isn't it?'
- (d) – *Neticede çok fazla kişiyle etkileşiyorum, doğru mu?*
'As a result, I interact with too many people, right?'

Such tags are described as "speaker-oriented", (Coates 1993: 120) since the teacher asks the students to confirm his proposition by using the standard forms of tag *değil mi*.

4.2.

The frequency of back channelling in female teachers is 54, and in male teachers it is 0. Female teachers' frequent use of back channelling forms reveals women's tendency to focus on the affective functions of interaction. In Turkish, back channels can be in the form of *hı-hı*, *ha-ha*, which are used to encourage speakers to continue talking. They indicate that the listener is paying attention and is interested in hearing more (Holmes 1993: 56). In most of the studies there is evidence that women use more back channels than men (Hirschman 1974; Leet-Pellegrini 1980; Preisler 1986; Munro 1987; Roger 1989). Also in this survey, female teachers encourage students to continue their talk by explaining something or participating:

- (e) Student – *Mesela açı, açılarla ilgili olabilir.*
'... For example angle, can be related to angles...'
- Female teacher – *Hı, hı açının tanımını verebilmesi...*
'Hı-hı definition of an angle...'
- (f) Student – *... Öğretmenin sınıftaki öğrencilere eşit davranması gerekli.*
'... It is necessary for the teacher to behave equally to

students in class.’
 Female teacher – *Ha- ha evet.*
 ‘Ha- ha- yes.’

On the other hand, male teachers preferred only to listen to the students silently.

4.3.

The frequency of questions asked by female teachers is 30, and 80 by male teachers. Questions are part of the conversational sequencing device Question + Answer. Questions and answers are linked together in conversation: questions demand a response from the addressee. Research findings suggest that women use interrogative forms more than men. However, in asymmetrical discourse, such as teacher-pupil interaction (Barnes & Rosen 1971; Stubbs 1983) it has been shown that questions are used overwhelmingly more by the powerful participants, that is the teachers, in order to elicit responses from students. In this survey male teachers use questions more often than female teachers by giving more importance to the relevant variable occupational status, as confirmed by Barnes (1971) and Stubbs (1983). This indicates that male teachers’ power and status consciousness is more than female teachers’.

4.4.

The frequency of rhetoric questions, used by female teachers is 19 and by male teachers is 50. In asymmetric discourse as in classroom interaction, rhetoric questions are used by teachers in order to repeat, to remind or to explain some information to students. Male teachers used rhetoric questions more often than female teachers, because by means of this device they attract the attention of students for a certain period of time, and keep the students in alert position:

- (g) Male teacher – *Aralarındaki ilişkiyi ortaya koymamız gerekmez mi?*
Evet, gerekir.
 Male teacher ‘Do we have to put forward the relationship between them? Yes, we have to.’
- (h) Male teacher – *Yakın çevre nedir? Yakın çevre arkadaşlar...*
 Male teacher ‘What does near environment mean? Near environment guys...’

Rhetorical questions are used as a way of increasing the chance for uptake of the speaker’s topic. They are not part of an adjacency pair, nor is there a structural reason to induce a response (Fasold 1993: 110). Rhetorical questions point out the ob-

viousness of a current issue (Clark 1996: 377), and the speaker goes on to his / her next utterance without leaving space for an answer. Thus, in classroom discourse, by asking rhetorical questions teachers try to attract the students' attention for a certain period of time. Students know why the teachers do this and try to be more attentive to the current topic. Male teachers' more frequent use of rhetorical questions can be an indication of men's tendency to maintain and increase their authority by keeping students attentive and alert to the lesson.

4.5.

The most striking result of this survey is the male teachers' addressing the students as *arkadaşlar* 'friends'. This term is used twice by female teachers and 17 times by male teachers. This result is also in accordance with the results of the survey conducted in the Faculty of Medicine (Açıkalın 2000).

During a symmetrical discourse, this form of address is normal as gender and education differences are of no importance. In asymmetrical discourse, as in classroom discourse where the teacher's status is higher than the students', this type of address is unusual because teachers can address their students as *arkadaşlar*, but students cannot address their teachers in this way in return. The results show that male teachers are more consistent in using this type of address, which suggests that their choice of addressing serves to forefront their position of power in front of the class.

5. Evaluation of the results

When the results are evaluated according to the six universals regarding language and gender proposed by Holmes (1993), the following conclusions can be reached:

5.1.

This survey contributes to the observation that women and men develop different patterns of language use. Female teachers' usage of back channel forms as opposed to male teachers' non-usage shows that women develop patterns of language use different from those of men.

5.2.

More frequent use of tag questions and back channel forms by women also indicates women's tendency to focus on the affective functions of an interaction. From this point of view, the affective function of interaction strengthens the relationship between teacher and student. Moreover, it makes the student feel more comfortable in front of the teacher and helps him / her to express his / her opinion clearly.

5.3.

Women's more frequent usage of tag questions and back-channel forms also contribute to the hypothesis of women tend to use linguistic devices that stress solidarity. Female teachers, by means of these usages, establish solidarity with students. By the usage of tag questions they seek the acceptance and attendance of students and support them by back-channel forms so that the students' participation can be realized.

Moreover, women's usage of tag questions such as *di mi / de mi* as uttered in informal style indicate female teachers' sincerity in establishing solidarity with their students. Hence, in this way they develop a supportive and facilitative role in classroom discourse.

5.4.

The hypothesis that women tend to interact in ways that will maintain and increase solidarity, while in formal contexts men tend to interact in ways that will maintain and increase their power and status is also verified in this survey. The function of tag questions, which male teachers use to express meaning and signal certainty about the proposition expressed, and their addressing students as "arkadaşlar" contribute to this hypothesis. Tag questions expressing modal meaning such as *doğru mu / değil mi* are speaker-oriented and have the scope of affirmation of the proposition by the students; and this indicates a different function of "model tags" in an asymmetric discourse. Thus, this shows that men, in formal or semi-formal contexts tend to interact in ways that will maintain and increase their power. Men's addressing students as "arkadaşlar" also functions to indicate their power and status in front of the class.

5.5.

The fifth hypothesis, which states that women use more standard forms than men was not the focus of the survey as both female and male teachers are equally educated and use standard Turkish equally well.

5.6.

Female teachers' use of informal style in tag questions contributes to the hypothesis that women are stylistically more flexible than men. Also in asymmetrical discourse, female teachers can show the characteristics related to their gender.

Summary

To sum up, this survey conducted in the Department of Education revealed that the linguistic differences used in classrooms by male and female teachers confirm the hypothesis that female teachers have their own distinct linguistic domain. Female teachers try to establish solidarity in class and enable their students' participation in the interaction by using certain linguistic devices. In contrast, male teachers show more status and power consciousness by indicating the social distance between themselves and their students with the language they use. This study will also be continued in other departments by enlarging participant groups, and the findings will be compared to determine whether gender differences are generalizable across different departments.

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Gagauz right-branching propositions introduced by the element *ani*

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The aim of this article is to describe a set of right-branching dependent clauses based on finite predicates in Gagauz. These clause types have developed, as will be argued, under the influence of Bulgarian and Russian and have displaced the left-branching clauses of the Turkic type. All propositions are introduced by the junctor *ani*, which is used to introduce relative clauses, complement clauses, and clauses of purpose and reason. It is a polyfunctional unit and bears no semantic content. The semantic type of the clause introduced by *ani* thus has to be judged by the type of head it is dependent on and, in the case of clauses of reason or purpose, the mood of the clause's predicate.

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1. Introduction

Gagauz is a Turkish dialect spoken in several countries in South-East Europe. It is one of the official languages of the Republic of Moldova and is spoken there mainly in *Gagauz Yeri*, an autonomous region in the southern part of Moldova, where approximately two-thirds of the Gagauz live. Another large group of Gagauz is living in the Ukraine. A third significant group lives in Bulgaria, from where the ancestors of the Gagauz now living in Moldova and the Ukraine migrated in the late 18th and early 19th centuries. Some small groups are living in Kazakhstan, the Caucasus, Greece and Romania. The total number of Gagauz speakers is about 250,000. Gagauz was established as an official literary language in the former Soviet Union in 1957 and nowadays functions to a certain extent as a written language in the Republic of Moldova.

The ethnogenesis of the Gagauz remains rather unclear. The facts that they are orthodox Christians and that historical sources on them are rare have led to quite different hypotheses. Some scholars claim an Oghuz origin, some a mix of Oghuz and

Kipchak elements. It has even been doubted altogether that the Gagauz are of Turkic origin at all and claimed that they are of Turkified Bulgarian or Greek origin.¹

Linguistically, however, Gagauz clearly belongs to West-Oghuzic and is very close to Turkish. It shows no traces whatsoever of any element that can clearly be linked to the Kipchak language group (see Doerfer 1965 and Mollova 1966).

Due to a long lasting and intensive contact with the socially dominant Slavic languages Bulgarian and Russian, the Gagauz language has developed a set of copied features. This is most obvious on the syntactic level. Among other copied patterns (see Menz 1999) Gagauz has developed a series of right-branching dependent clauses based on finite predicates.

My observations in what follows are mainly based on material from the spoken language. Besides my own material, gathered in the Republic of Moldova especially in the village Tomai in 1995, I have investigated Moškov's texts from Bessarabia published in 1904, and Zajączkowski's material from the late 50s gathered in Bulgaria. To a lesser extent I have used some material from the written language, such as schoolbooks, short stories and the like.²

My description is based on the code-copying model developed by Johanson 1992 and 1993a. Following Johanson's model, I use the term "selective copying" in cases where "one or more selected structural properties of A elements are copied onto B elements" (Johanson 1993a: 202). Globally copied elements, in contrast, are units that are copied as a whole, i.e. their material shape is copied together with their structural properties.

2. Right-branching subordinate clauses in Gagauz

In Turkic languages subordinate clauses are generally constructed on non-finite predicates. These predicates bear converbial, verbal noun, or participial suffixes that function as subordinators. Non-finite subordinate clauses as a rule precede their head.³

In the Gagauz language we find a set of right-branching dependent clauses. These clauses have a finite predicate and are linked to their head by means of various coordinative or subordinative junctors. They thus differ considerably from the genuine Turkic pattern with its left-branching clauses based on non-finite predicates. Moreo-

¹ For a discussion of the various theses regarding the ethnogenesis of the Gagauz people see Özkan (1996: 10-21).

² Sources of examples are indicated by an abbreviation and page number, see Language material. Examples of Cyrillic sources are transliterated.

³ In a variety of Turkic languages, however, finite dependent clauses exist. This is believed to be a contact induced phenomenon. Moreover, in most cases the distribution of such clauses is, compared to their non-finite counterparts, restricted and they cannot be regarded as subordinated, see Johanson (1977: 105-107).

ver, the development of right-branching clauses has led to a significant decrease of clauses of the genuine Turkic type.

Russian and Bulgarian, the socially dominant contact languages of Gagauz, make use mainly of finite dependent clauses. Thus one can readily assume that Gagauz has selectively copied these patterns from the surrounding Slavic languages. Among the subordinate clauses the right-branching type has almost completely displaced the Turkic type of relative and complement clauses. Adverbial clauses based on converbs are somewhat more stable. Nevertheless there is a set of right-branching adverbial clauses, too.

Junctors used to link the dependent clause to its head are in general made of Turkic material onto which functional properties of their Bulgarian or Russian counterparts are copied. Globally copied elements, that is units copied as a whole, are mainly restricted to the area of mere lexical units. This means that globally copied units are generally not used as clause-introducing elements.⁴

Thus, for example, the interrogative element *(h)angī* in modern Gagauz is also used as a relative pronoun. To indicate agreement with the head noun it bears possessive markers in singular or plural. To express the role of the referent of the head noun within the relative clause, case morphology is used. *(H)angī(sī)* thus functions much like the Russian relative pronoun *kotoryj*. Another example is *ačan*, originally the interrogative “when”, which is now exclusively used as a junctor to introduce temporal clauses and clauses of reason. In what follows I will focus on the various functions of the junctor *ani*.

3. *ani*

As Schönig (1995) has shown, *ani* is a derivation of Old Turkic *qa(:)ni* ‘where’ and corresponds to the Turkish question particle *hani* ‘where, where is’, i.e. it is not a phonetic variant of the question-word *(h)angī* as Pokrovskaja (1964: 141) suggests. *Ani* in Gagauz appears as a clause-introducing element in a variety of attributive, complement and adverbial constructions. Its usage as an interrogative, however, is not as common as in Turkish. All clauses under question are based on finite predicates and regularly follow their head. Some types of these clauses can also precede their heads, see below.

⁴ Gajdarži (1981: 94-96) however cites some examples of the usage of *raz* ‘as’ (< Russian *raz*) and *už* ‘as if’ (< Bulgarian *už*) in clause introducing function. Only one of my informants, whose dominant language was Russian used *raz* once, see Menz (1999: 114).

3.1. Attributive constructions

One function of *ani* is to introduce relative clauses. In Zajaczkowski's material from Bulgaria *ani* is the overall⁵ introducer of relative clauses, regardless of which element in the relative clause the head noun corresponds with. Examples (1)-(3) thus show co-reference between first actant, second actant, and circumstantials and the head noun.

- (1) *Čaarmiš veziri ani saray yapmıstı.* Z 120
 call:PF3SG minister:ACCani palace make:PLUP3SG
 'He called the minister who had built the palace.'
- (2) *Da düşündä görer düvesini,*
 and dream:POSS3.LOCsee:PRS 3SG calf:POSS3.ACC

ani vermiş Allax. M 6
 ani give:PF3SG God
 'And he sees his calf, which God had given (him), in his dream.'
- (3) *Güveyin tarafı kalkar sofradan*
 bridegroom:GENside:POSS3SG stand up:AOR 3SG table:ABL

ani yiyerlerdi. Z 94
 ani eat:R-PST3PL
 'The bridegroom's relatives get up from the table where they have eaten.'

Note that the role of the head noun within the relative construction remains unexpressed, i.e. it is neither expressed explicitly nor by usage of a pro-element in the appropriate case. In other Turkish dialects of Bulgaria the role of the head noun in such right-branching constructions is also not expressed by a pro-element, see Németh (1965: 111).

In the modern language of the Republic of Moldova *ani* is only used to introduce relative clauses that show co-reference between first or second actant, or the possessor of the head noun with the head-noun,⁶ see examples (4)-(5). The restriction to co-reference between head noun and first or second actant of the relative clauses also applies to the usage of *čto* as an introducer of relative clauses in Russian.

⁵ I could observe only a few examples with *ne* as introducing element and these are not very clear, see Menz (1999).

⁶ For relative clauses with co-reference between head-noun and third-actant or circumstantials modern Gagauz uses a relative pronoun based on the question-word *angi* 'which'.

- (4) *Onnar alerlar bizim Moldavyanin o šarabini*
 they buy:PRS.3PL our Moldova:GEN that wine:POSS3.ACC

ani biz ičmeriz. Me 170
 ani we drink:NEG.PRS.1PL
 ‘They buy the wine of our Moldova that we don’t drink.’

- (5) *O affikslerä, ani eni maanali laf kurerlar,*
 that affix:PL.DAT ani new meaning:ADJR word build:PRS.3PL

laf düzüğü affiks deniler. GD7, 64
 word forming affix say:PASS.PRS.3SG
 ‘The affixes, which form words with new meaning, are called derivational affixes.’

This type of relative clause thus shows the very same pattern as Russian relative clauses introduced by the particle *čto* ‘what’, using the element *ani* for Russian *čto* or Bulgarian (*g*)*deto*, which, interestingly, is also derived from a question-element ‘where’ (Bulgarian *k’de*). The usage of non-declining elements to introduce relative clauses is very frequent in colloquial speech in Russian and also Bulgarian, which for centuries has been the main source for copying in Gagauz.

In Moškov’s texts from the end of the last century I found some occasional examples showing that this type of relative clause can be prepositive, too. This was, however, absent both in my material and in the various written sources I investigated.

In written language material, however, use of the aforementioned relative pronoun *angi* ‘which’ is much more frequent than that of the particle *ani*, even if the head corefers with the first or second actant of the relative clause.

Left-branching prepositive clauses of the Turkic type based on participles also exist but are very scarce especially in Moldovian Gagauz (for a detailed description of all types of relative clauses in Gagauz, see Menz 1999: 75-100).

3.2. Complement clauses

The second function of *ani* is to introduce complement clauses of verbs of saying, thinking, perception and the like. These clauses are also postpositive and based on finite predicates, see example (6). These right-branching complement clauses again show the same pattern as their Slavic counterparts introduced in Russian by *čto* and in Bulgarian by *če*, etc.

- (6) *Hepsi sevinärdi ani kolxoza girdik.* Me 192
 everybodybe pleased: R-PST3SG ani kolkhos:DAT enter:PST.1PL
 ‘Everybody was pleased that we joined the kolkhos.’

In the spoken language *ani* is optional and can be omitted, but as far as I was able to observe these cases are scarce.⁷ Instead of *ani* it is possible to have *ki* in complement clause-introducing position. The usage of *ki* is, however, not very widespread in the spoken language. Gajdarži (1981: 24) states that it is a feature of the language of the older generation. In the written language *ki* seems to be used for stylistic reasons to avoid an increasing frequency of *ani* in one sentence.

At least in the modern written language it is possible to have two or more complement clauses subordinated to one matrix-predicate coordinated mutually by the conjunctive *xem* ‘and’, see example (7).

- (7) *Kızduyardi ani gözleri yaşlan dolardı,*
 girlfeel:R-PST3SG ani eye:PL.POSS3SG tear:WITH fill:R-PST3SG
xem ani darsä taa bir kerä “boba”,
 and ani say:AOR.COND3SG more one time father
o dayanamayağak !...! AD, 6
 she stand:IMPOS.FUT3SG
 ‘The girl felt that her eyes were filling with tears and that
 if she said “father” again, she wouldn’t be able to stand it !...!’

This represents a remarkable difference between right-branching complement-clauses in Gagauz and *ki*-introduced constructions in Turkish or the Turkic languages of Iran influenced by Modern Persian. Furthermore, with the possibility to coordinate two subordinated constructions, these right-branching complement clauses fulfill one of the criteria for hypotaxis listed by Johanson (1977).

Another significant difference from Turkish *ki*-clauses is that Gagauz complement clauses can precede their main clause, as exemplified by (8):

- (8) *Ani biz rusča konuşyoruz bizä yetejek.* Me 212
 ani we Russian speak:PRS.1PL we:DAT suffice:FUT3SG
 ‘That we speak Russian would be sufficient for us.’

This word order together with the fact that a pause can occur between the head and *ani* in the postpositive position shows clearly that *ani* belongs to the complement clause and not to the main clause as *ki* in Turkish.

Non-finite complement clauses based on verbal nouns are very rare in Moldovian Gagauz. I could detect only three examples, one in my own material and two out of about ten books I consulted. Some examples of this type of complement clause can be found in Zajczkowski’s material for Bulgarian Gagauz.

⁷ To a somewhat larger extent *ani* is omitted after *demää* ‘say’.

3.3. Clauses of purpose

A third function of *ani* is to introduce clauses of purpose.⁸ These clauses are based on non-indicative predicates in either the optative mood or the infinitive. The infinitive is used in cases where the first actant of the matrix clause is co-referentially identical with the first actant of the purpose clause (see example 9).

- (9) *Onu alardik da atardik aazimiza*
 that:ACC take:R-PST.1PL and throw:R-PST.1PL mouth:POSS1PL.DAT
ani ölmemää deyni. Me 190
 ani die:NEG.INF deyni
 'We took it and threw it into our mouths in order not to die.'

When the first actant of the main clause differs from that of the subordinated clause, the predicate of the subordinated clause is in the optative, as in example (10).

- (10) *Centralisovani bir gosudarstva upravlyat etsin bizimnän*
 centralized one state govern AUX.OPT3SG we:WITH

ani biz yaşiyalim deyni. Me 106
 ani we live:OPT1PL deyni
 'A centralized state should govern us so that we can live.'

Sporadically the optative mood is used even if the first actants are co-referential. Normally, however, the distinction between co-referential and non-co-referential first actants in purpose clause and matrix clause by means of the different predicator types is quite clear.

According to my observations of the spoken language, in most cases the purpose-clause predicate is immediately followed by the element *deyni*, which corresponds to Turkish *diye*. Whereas most clauses of purpose in my material employ both *ani* and *deyni*, they can optionally omit *deyni* if the predicate is in the optative, like in example (11), see also Gajdarži (1981: 40). Instead of *ani*, *ki* can take the introducing function in purpose clauses. This is especially frequent in the written language, where most of the purpose clauses are introduced by *ki* (see example (12), originally from a literary text). In my spoken language material, however, as can be seen in examples (9)-(11) *ani* is used almost exclusively in this position.

⁸ This is only one possibility to build clauses of purpose. For other possibilities, see Menz (1999: 101-105).

- (11) *Laflar koyulur ani taa interes olsun.* Me 200
 word:PL put:PASS.AOR3SG ani more interestingbe:OPT3SG
 (Foreign) words are put in to make it (the text) more interesting.

In almost all cases the purpose clause follows the matrix clause. I have found only a few examples in literary texts of the purpose clause preceding its matrix clause, which is demonstrated by example (12).

- (12) *Ki bakmamaa aalemin işinâ deyni,*
 ki look:NEG.INFpeople:GEN affair:POSS3.DAT deyni

o baalamış kendi gözlerini bir boşçaylan. Gajdarži 1981, 40
 he bind:PF3SG own eye:PL.POSS3.ACC one scarf:WITH
 ‘In order not to look at other people’s affairs,
 he bound his own eyes with a scarf.’

Gajdarži (1981: 40) states that there is no stylistic difference between pre- and post-posed purpose clauses. The possibility of preposing the subordinate clause is again one of Johanson’s 1977 criteria for hypotaxis in the Indo-European sense.

3.4. Clauses of reason

Clauses of reason⁹ show structural similarities with clauses of purpose, but their predicate is always in the indicative mood. They can be introduced by *ani* alone but are in most cases introduced by a combination of an interrogative element and *ani* or *ki*, such as *nečin ani*, *nečin ki*, *onuştan ani ki*. Johanson (1993b: 256) claims that Russian *počemu* ‘why’ and *potomu što* ‘because’ served as a model for the selective copying of the reason-clause introducing function onto the combinations *nečin ki* and *nečin ani* ‘because’. These two most frequently introduce clauses of reason in Gagauz.

Ani itself does not convey causal meaning. It only serves to connect the reason clause with its matrix clause. *Ani* in this function can also be combined with the aforementioned element *deyni* following the predicate. The interpretation of a clause of this type with regard to purpose or reason consequently depends on the mood of the predicate.

In most cases the main clause precedes the clause of reason, so that the order is event – reason as in example (13). Note that in Turkish, for example, the “canonical” order is exactly opposite.

⁹ For all different types of clauses of reason in Gagauz see Menz (1999: 108-118).

- (13) *Bana yok bişey ani korkardılar.* Me 144
 I:DATnot existing something ani fear:R-PST3PL
 ‘Nothing happened to me because they feared me.’
 Turkish: *Korktukları için bana bir şey olmuyordu.*

The order can also be reversed, and thus the clause of reason precedes its main clause, as in example (14). However, examples with this reason – event order are of limited frequency.

- (14) *Ani gagauz yinan yok onnara.*
 ani Gagauz confidence not existing they:DAT
 ‘Because they are Gagauz one has no confidence in them.’

Since *ani* lacks an explicit causal meaning, semantically more explicit units are frequently used to stress the causal meaning. As mentioned above, combinations of a (question) adverb and *ani* or *ki* are the most frequently used among them. With these explicit conjunctions the order of clauses is always event – reason, as in example (15).

- (15) *Komunist sistemi yıkıldı.* Me 212
 communist system:POSS3SG break down:PST3SG
neçin ani internacionalism bitti. Me 212
 because internationalism finish:PST3SG
 ‘The communist system broke down because internationalism was finished.’

4. Conclusion

As has been shown, *ani* is a polyfunctional grammatical item, which introduces different types of subordinated clauses. The semantic type of the clause must generally be judged from the surroundings, i.e. whether the clause is subordinated to a nominal or verbal unit, etc. Only in cases of purpose clauses is there a syntactical difference between a subordinated and a main clause marked by the usage of a non-indicative predicate and the optional usage of *deyni*.

Ki can replace *ani* in most of its functions, with the exception of introducing relative clauses. The polyfunctionality and usage of *ani* resembles in certain aspects that of *ki* in the various Turkic languages influenced by Persian, including Turkish. There is, however, in my opinion, a significant difference between Gagauz on one hand and the Iran-Turkic languages and Turkish on the other hand. The difference lies in the aforementioned possibilities of preposing the *ani*-introduced clauses and of coordinating them with each other. Gagauz thus shows evidence of subordination in the Indo-European sense. In Turkish, for example, *ki*-introduced clauses do not fulfill any of the criteria for hypotaxis in the Indo-European sense described by Johanson (1977) and thus are qualitatively not comparable to left-branching genuine

Turkic subordinated clauses. Gagauz right-branching clauses do fulfill at least some of these criteria.

One special usage of *ani* not found in Turkic languages that employ *ki* as a clause-introducing element is as an adverbial meaning *instead of ...ing*. This clause type is always prepositive and its predicate is always modal, either in the optative mood or future tense. The Turkish equivalent of this adverbial clause type uses the prospective participle *-(y)EcEK* + possessive + dative.

(16) *Ani yatağam sizi götüreğem.* (My material, not published)
 ani lie:FUT.1SG you:ACC bring: FUT.1SG
 'Instead of sleeping, I can take you (there).'

(17) *Ani keseğäm, brakarım daa içindä.* M 87
 ani cut: FUT.1SG leave:AOR.1SG forest PP.POSS3SG.LOC
 'Instead of killing her, I'd rather leave her in the forest.'

As for word order within the subordinated *ani*-introduced clauses, there seems at least to be a tendency to place the predicate in the final position, which is opposite to the SVO word order in main clauses.

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Language material

AD = *Ana dili: Literatura okumakları xem grammatika: 6-ğı klass için.* Kişinev, 1991

GD7 = *Gagauz dili: Üürenmāk kiyadı: edingı klass için.* Kişinev, 1988

M = Moškov, V. A. 1904: *Narėčija bessarabskix gagauzov* (= Radloff, W.: Proben der Volksliteratur der türkischen Stämme, X. Theil) St. Peterburg.

Me = Menz 1999.

Z = Zajączkowski, Włodzimierz 1966: *Język i folklor Gagauzów z Bułgarii.* Kraków.

Subject version and object version in Tofa auxiliary verb constructions*

Gregory D. S. Anderson

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One of the most characteristic features of the Tofa verb system is the use of auxiliary verbs to mark the categories of subject version and object version. Subject version marks an action as primarily affecting a subject and object version marks action as primarily affecting a subcategorized object. The former is marked by the auxiliary verb construction *-Ip al-*, the latter by *-Ip ber-*. Cognate systems are found throughout Altay-Sayan Turkic, and in the modern and ancient Turkic languages more generally, suggesting that subject version and object version are old categories in the Turkic language family, possibly dating to Proto-Turkic times.

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0. Introduction

The critically endangered language Tofa, the easternmost representative of the Altay-Sayan Turkic languages, is spoken by fewer than 100 people in a remote section of the Eastern Sayan range of south central Siberia. Despite some obvious shared innovations of non-archaic features diffused from one language of the Altay-Sayan region to another over the course of numerous centuries of shifting tribal and linguistic allegiances (e.g. an unaccomplished aspect in (*)-*GAI AK*, the split between Tofa [and Tuvan], Khakas, and southern Altay (Oyrot) appears to be as great a cleavage within the Turkic language family as those between the southwestern Turkmen-Azeri

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Oghuz, the eastern Uzbek-Uyghur and the northern Tatar-Bashkir groups, although the former groups live in contiguous regions of the Altay-Sayan, while the latter sets are spread out among the great expanses of Central and Northern Eurasia. From a comparative-historical perspective, if features are found spread across the languages of the Altay-Sayan, and are found as well in the other aforementioned groups, and in addition in certain other important, older, or archaic Turkic languages (viz. Yakut [Saxa], Chuvash, Khalaj, or Old Turkic), there is a strong likelihood that the feature(s) in question date back to Proto-Turkic times. Such is probably the case with the characteristically Tofa system of auxiliary verb constructions [AVCs],¹ used to mark the categories of subject version and object version.

While relatively common throughout the languages of the family, Altay-Sayan Turkic languages make perhaps the most extensive use of AVCs. Tofa shows numerous archaisms in its system of AVCs, reflecting in many instances Common Turkic or even Proto-Turkic formations. Just as in English, where one encounters constructions of the type *be* + *-ing* for progressive, *have* + *-ed* for perfect, or *be* + *-ed* for passive, auxiliary verb constructions in Tofa (or [Altay-Sayan] Turkic languages more generally) can be subdivided formally, for example, according to which (converb) form they require the accompanying lexical verb to have. In the majority of (Altay-Sayan) Turkic languages, this is generally either the *-A//y* converb or the *-(I)p* converb.² Thus, one finds such auxiliary verb constructions in Tofa as the formation in *-(I)p tur(u)* marking a (progressive) present or the construction in *-A tüš-* marking an unexpected or sudden action.

¹ Frequently called “postverbs” in the Turkological literature (cf. Johanson 1990, 1991, 1992, 1998; Csató & Johanson 1993; Demir 1993, 1998).

² Less commonly, the accompanying lexical verb is required to be in a particular tense-mood-aspect inflected (or participial) form or, in a small number of cases, an infinitive form of the verb as well; for example, in Khakas or Shor. In the latter, according to Nevskaja (2000), this development is ostensibly attributable to influence from Russian. Note that both variant forms of the intentional mood appear with their lexical verb in the infinitive form in Khakas.

- | | | | |
|------------|-------------------------------------|--------|-----------------------------|
| (i) Khakas | | Khakas | |
| a. | <i>Ya, pIS aliz-aryA it-če-bIS.</i> | b. | <i>Ol ily-iryA čör-dI.</i> |
| | yes we get.married-INF INT-PRES-1PL | | s/he cry-INF INT.II-PAST.II |
| | ‘Yes, we intend to marry.’ | | ‘He intended to cry.’ |
| | Anderson (1998: 68) | | Anderson (1998: 68) |

The auxiliary verb constructions of the Tofa language can be further subgrouped functionally, that is, by the type of verbal category or categories that the AVCs function to mark. These functional AVC groups generally fall into five basic types: complex tense (+aspect) categories, aspectual and *Aktionsart* categories,³ modal categories, categories of verbal orientation or direction, and, finally, so-called version categories—the subject of the present study. Each of these subtypes has parallels in the Turkic family outside the Altay-Sayan areal group, and in older Turkic sources as well.

In this paper, we address the characteristically Turkic auxiliary verb constructions functioning to mark the categories of subject version and object version in Tofa with parallels from both other Turkic languages of the Altay-Sayan (e.g. Khakas, Tuvan, Altay, etc.), as well as languages from the farthest reaches of the Turkic-speaking world, both temporally and geographically, with data from such languages as modern Yakut (Saxa), Turkmen, Uyghur, Tatar, Khalaj and Chuvash, and Old Turkic. Typological parallels to Turkic auxiliary verb phenomena in other languages are offered on occasion, where merited.

In Tofa (aka Tofalar or Karagas), a large number of auxiliary verbs are used, numbering at least twenty. One of the characteristic features of auxiliary verb constructions in Tofa and other Turkic languages is to mark categories of version, in particular, the categories of subject-version and object / other version. Subject version indicates that the action is performed to the benefit of, or otherwise primarily affecting, the subject. Object version marks a verb as primarily affecting a non-subject or (subcategorized) object, often with accompanying benefactive or malefactive semantics.⁴ The former consists of the auxiliary verb construction in *-(I)p al-* while the latter utilizes *-(I)p ber-* in Tofa. As is well known to Turkologists, etymologically *al-* means ‘take’ and *ber-* ‘give’, so their connections to self-benefactive action

³ For a seminal discussion on aspectual and actional or *Aktionsart* categories in Turkish, see Johanson (1971).

⁴ Version categories have been frequently described erroneously as voice distinctions (e.g. Anderson 1998, Anderson and Harrison 1999), labeled self-benefactive voice (the subject version form) and benefactive voice (object version). But unlike voice categories which deal with verb subcategorization, valency or argument structure, the version categories rather deal with the relation of the subject or object to the verbal action in terms of primary affectedness, either positive or negative affectedness.

(or subject version) and benefactive action (or object version), respectively, is relatively straightforward.⁵

1. Subject version

The AVC in *-p al-* in Tofa (tifa dili) marks subject version. It is especially common with certain lexical verbs, e.g. *tɨp-* ‘find’ or *orula-* ‘gather’, but may be used freely with almost any verb. As the action is subject affecting, but not necessarily self-benefactive, as is shown in such examples as (1iii), subject version is regarded as a more suitable name for the category. Therefore, it is glossed SUBJ.VERS in the inter-linear glosses in the examples below. The cognate constructions are called S[elf]BEN[efactive] in Khakas (Khakas tɨɫɨ, tadar tɨɫɨ) by Anderson (1998) and in Tuvan [Tɨva dil] (aka Soyon, Urjangxai, Tyvan, etc.) by Anderson and Harrison (1999).

- (1) i. Tofa
Men monu oruk-ta tup al-di-m.
 I this.ACC road-LOC find.CV SUBJ.VERS-REC.PST-1
 ‘I found this on the road.’ (Rassadin 1978: 154)
- ii. Tofa
Höörük kış-ka kusak-tu
 chipmunk winter-DAT pinecone-ACC

orula-p al-yan.
 gather/store.for.winter-CV SUBJ.VERS-PST
 ‘The chipmunk gathered pinecones to store for winter.’
 (ASLEP field notes)
- iii. Tofa
Küzün, hüggæəri uh’-up čoru-ur kuškaš-tar ble
 during.fall to.south fly-GER AUX.PROG-FUT bird-PL with

⁵ Note that in various non-Turkic languages, e.g. Slave (Athabaskan), Usan (Papuan), Tonkawa (extinct language of Texas), the so-called benefactive or applicative affix itself is etymologically connected with the verb meaning ‘give’ (Anderson 1995).

*čarl-**ip** mendileš-ken-de, boriika ble üšpül*
 part-GER greet-RECP-PST-LOC wood-grouse with hazel grouse

*karaa-n kizi-di iyla-**p** al-γanda,*
 eye-3.ACC turn.red-REC.PST cry-GER SUBJ.VERS-PST-LOC

hek tödü-sü-n kör-gen, diğna-an ergen.
 cuckoo all-3.ACC see-PST hear-PST EVID

'During the fall, the cuckoo must have seen and heard everything when the birds flying south were parting and saying their good-byes, when the wood-grouse's and hazel grouse's eyes turned red from crying.'
 (ASLEP field notes)

iv. Tofa

Süye-sin al-γaš kuduruktuy-lar-ni üzeyttæ-æš šeger-in-ge
 axe-3-ACC take-SS wolf-PL-ACC cut.off-SS ski-3-DAT

*tææ-**p** al-gaš ñan-a ber-di.*
 load-CV SUBJ.VERS-SS return-GER PFV-REC.PST

'He took up his axe, cut the wolves (from the ice), loaded them on his skis and returned home.'
 (ASLEP field notes)

v. Tofa

*Ol it-in edert-**ip** al-γan.*
 that dog-3.ACC take.w/self-CV SUBJ.VERS-PST

'He took that dog of his along with him.'
 (Rassadin 1994: 203)

vi. Tofa

Onu soodavalir.
 s/he-ACC say-GER-SUBJ.VERS-P/F

'(I) will say it (for myself).'
 (ASLEP field notes)

vii. Tofa

Ol kel-geš, iresañ iñja de-yidiri:--
 he come-SS bear thus say-NARR

sen boojala-š-kaš al-ibit-tiñ!
 you bet-RECP-SS SUBJ.VERS-PF-REC.PST-2

'He came and the bear said: "You have won our bet".'
 (ASLEP field notes)

viii. Tofa

Dilyi oluk bar-ıp
fox right.away go-CV

brææ üšpül tüt-kaš al-γan.
one hazel.grouse catch-SS SUBJ.VERS-PST
'Right away the fox caught himself a hazel grouse.'
(ASLEP field notes)

Note that in the final two examples given above, the lexical verb is in a different converb form, the same subject converb in *-GAš*. The converb forms in *-Ip* and *-GAš* show significant functional overlap (for example both occur primarily in same subject constructions), so this variation is not surprising from a Tofa-internal standpoint.⁶ Also, other Turkic languages exhibit variation in converb selection in both this and other AVCs, so such a situation is not overly surprising from a general Turkic perspective either. In addition, some Turkic languages which clearly reflect an original subject version AVC lack the *-Ip* converb altogether, replacing it with the converb element closest in function to the *-Ip* converb in the majority of Turkic languages, e.g. *-An* in Yakut [Saxa] or *-sA* in Chuvash, see below.

Many other Altay-Sayan Turkic languages make use of cognate subject version AVCs. Note the following examples from Tuvan, where, as mentioned above, it is called 'self-benefactive' by Anderson and Harrison (1999).

(2) i. Tuvan

Bižip aldim
write-CV SUBJ.VERS-PAST.II-1
'I wrote (it) (down) for my self.' (Anderson & Harrison 1999: 68)

ii. Tuvan

Sütten ižip al.
milk-ABL drink-CV SUBJ.VERS
'Drink some milk.' (Anderson & Harrison 1999: 68)

⁶ Note also the general functional collapse of originally distinct elements that is characteristic of obsolescing languages like Tofa.

iii. Tuvan

Am čediþ aar men
 now come-CV SUBJ.VERS.PRS/FUT-1
 'I'll come now.' (Anderson & Harrison 1999: 62)

iv. Tuvan

Bižiþ aar men
 write-CV SUBJ.VERS.PRS/FUT 1
 'I'll write it down.' (Anderson & Harrison 1999: 62)

In Khakas, the auxiliary verb construction in *-Ip al-* also functions as a marker of subject version.⁷

⁷ The element *al-* in Khakas appears in numerous constructions and degrees of bondedness with a preceding lexical verb element, in a number of different auxiliary verb constructions, marking subject version as well as capabilitive or even perfective action. In at least the first two functions it may appear not only as a quasi-free standing auxiliary verb element, but also as a bound, affixal auxiliary element. Of course it may also occur as a free-standing lexical verb 'take, get' [LVC] or in a free-standing auxiliary verb form. See examples below.

(ii) a. Khakas [capabilitive AVC]

Ol pu nimenı aliþ alar.
 s/he this thing-ACC take-CV CAP.II-FUT
 'She will be able to take this.' (Field notes, 23 yr. old woman)

b. Khakas [perfective AVC]

Min anda öziþ-teeniþ alyanža polıabin.
 I there grow-CV open-CV PERF.AUX-PAST-P/E be-PAST.I-1
 'I was there until it grew and opened.' (Anderson 1998: 79)

c. Khakas [AFX]

Ol ani al(i)balıyan.
 s/he 3.ACC take-CV-CAP.II-PAST.I
 'She could have taken it.' (Field notes, 18 year old man)

- (3) i. **Khakas**
Min tayya-da čör-čed-ıp, köp čistek teer-ıp al-ya-m.
 I taiga-LOC walk-PRES-CV a lot berry gather-CV **SUBJ.VERS-PAST.1-1**
 ‘While walking in the taiga, I gathered up a lot of berries.’
 (Anderson 1998: 54; Pritsak 1959: 617)
- ii. **Khakas**
Pis köp aŋ-nar at-ıp al-yan-da,
 we a lot animal-PL shoot-CV **SUBJ.VERS-PAST-LOC**
- köp axča al-ya-bis.*
 a lot money get-PAST.1-1PL
 ‘When we shot ourselves a lot of animals, we got a lot of money.’
 (Anderson 1998: 69)
- iii. **Khakas [AVC > AFX]**
Pu kniga-ni tab-ıl-za-m
 this book-ACC find-SUBJ.VERS-CON-1
- min xayda örın-e-m.*
 I oh.boy be.happy-FUT-1
 ‘If I find this book, boy will I be happy.’ (Field notes, 45 yr. old man)

The subject version auxiliary verb construction in North Altay Qumanda-kiži also takes the form *-p al-*. In this language, as in the Khakas form in (3iii), this element may appear in a univerted or fused form.

- (4) i. **Qumanda-kiži [Northern Altay]**
Örö kör-ıp ugla-b-al-di.
 up look-CV cry-CV-SUBJ.VERS-REC.PST
 ‘They looked up and cried.’ (Baskakov 1972: 23)
- ii. **Qumanda-kiži [Northern Altay]**
Süü-ge sal-ara sana-p al-ga-nar.
 water-DAT put-INF think-CV **SUBJ.VERS-PST-PL**
 ‘They considered drowning him.’ (Baskakov 1972: 18)
- iii. **Qumanda-kiži [Northern Altay]**
Mal-i +d’üz-i-ni
 livestock-3 +possession-3-ACC

*kačir-**ip** al-**ip** nan-iy-di.*
 herd-CV **SUBJ.VERS**-CV return-PRF-REC.PST
 'He rounded up his livestock and possessions
 and set off for home.' (Baskakov 1972: 64)

Subject version auxiliary verb constructions are also found in the Southern Altay dialects, the speech of the Altay-kiži, Teleut (including Bachat Teleut) and the Telengit. The subject version construction takes the same form as in the other Altay-Sayan Turkic languages discussed above, namely *-Ip al-*.

- (5) i. Altay-kiži [aka Oyrot, Southern Altay]
*Anda men kürdük ad-**ip** al-di-m.*
 there I capercailzie shoot-CV **SUBJ.VERS**-REC.PST-1
 'I shot myself the capercailzie there.' (Dyrenkova 1940: 191)
- ii. Altay-kiži [aka Oyrot, Southern Altay]
*Men balik tud-**up** al-ga-m.*
 I fish catch-CV **SUBJ.VERS**-PST-1
 'I caught (myself) a fish.' (Dyrenkova 1940: 191)
- iii. Altay-kiži [aka Oyrot, Southern Altay]
*Ol kuučın-di bis ug-**up** al-di-bis.*
 that conversation-ACC we hear-CV **SUBJ.VERS**-REC.PST-1PL
 'We heard that conversation.' (Dyrenkova 1940: 191)

A number of other Turkic languages show cognate constructions with the Altay-Sayan subject version construction.⁸ Thus, auxiliary verb formations of this type may be found in the western Turkic (Oghuz) language Turkmen, far removed from the Altay-Sayan region.

⁸ To be sure, not all uses of *al-* or *ber-* as auxiliary verbs constitute version constructions in these Turkic languages, or even in the Altay-Sayan Turkic languages. However, in the forms presented above and below, their uses in so-called version constructions are clear. Of course, as pointed out by Johanson (1995), in multiple post-verb or auxiliary verb constructions there is systematic ambiguity in the (scope) relations of the various postverbs or auxiliary verbs involved.

(6) Turkmen

Kim gađet oko-yaardi, kim yolloş-i vilen
 who newspaper read-IMPERF who comrade-3 with

gürlöş-yäärdi kim-em maşin-ij
 converse-IMPERF who-EMPH machine-GEN

kaθθa-θi-na köpük taşla-ap,
 money.slot-3-DAT kopeck drop-CV

bilet yirti-iv al-yaardi.
 ticket tear.off-CV SUBJ.VERS-IMPERF

'Some read newspapers, some talked with their comrades,
 some dropped pennies into slot-machines and tore tickets
 from them.' (Hanser 1977: 90)

The eastern Turkic language Uyghur spoken predominantly in Xinjiang Province of western China shows a cognate construction as well. Here, as in the speech of certain Khakas and Qumanda-kiži speakers, it appears as a bound form, although preserving the converb, and thus attesting to its obvious origin in this AVC.

(7) Uyghur

Adris-i-ni yez-iw-al-di-m.
 address-3-ACC write-CV-SUBJ.VERS-PST-1

'I wrote down her address (for my own benefit).' (Hahn 1991: 612)

While indeed subject-affecting or subject-oriented in Uyghur, the construction often has a negative (or "malefactive") connotation.

(8) Uyghur

Qol-um-ni kes-iw-al-di-m
 hand-1-ACC cut-CV-SUBJ.VERS-PST-1

'I got cut on my hand.' (Hahn 1991: 612)

In the northern Turkic language Tatar, a formally and functionally cognate auxiliary verb construction marking subject version is also found; see (9)

(9) Tatar

Alay bul-sa,
 so be-CON

aldayi žomya-ya čaqir-ıp al-ıyq.
 coming Friday-DAT invite-CV SUBJ.VERS-IPL.IMP
 'If that's so, let's invite them (for) next Friday.' (Schönig 1984: 89)

The Central Asian Turkic Kirghiz likewise exhibits the subject version construction in *-Ip al-*.

- (10) Kirghiz
Men oşol jer-den sol-go burul-du-m
 I this.here place-ABL left-DAT revolve-REC.PST-1

da mina mu-nu taap al-di-m.
 and here.is this-ACC find.CV SUBJ.VERS-REC.PST-1
 'I turned from this place to the left and this is what I found.'
 (Zhapar 1992: 279)

In the Caucasian Turkic language Kumyk, a similar subject version construction is also expressed.

- (11) Kumyk
Nina erten ne et-me
 Nina tomorrow what do-NOMLZ

gerek-ni oylaş-ıp al-di.
 NEC-ACC ponder-CV SBEN-REC.PST
 'Nina pondered deeply about what (she) had to do tomorrow'
 (Dzhanmavov 1967: 221)

In fact, some of the most highly divergent and archaic languages of the family reflect this subject version construction as well. While the auxiliary verb element is identical in such important languages as Yakut [Saxa], Khalaj, or Chuvash, the converb element differs. Thus, one finds the functionally cognate construction *-An il-* in Yakut [Saxa] (12), a fused (bound) auxiliary verb construction apparently (synchronically at least) lacking a converb form⁹ in the highly archaic Khalaj language of Iran, i.e. *-al-* (13), or even the form *-sA il-* in Chuvash as in (14).

⁹ Or with a Ø converb form, if one prefers.

- (16) i. Tofa
Boriika ble üšpül eder-e ber-gen-ner.
 wood-grouse and hazel-grouse accompany-CV INCH-PST-PL
 'A wood-grouse and a hazel-grouse set off with them.'
 (ASLEP field notes)
- ii. Khakas
Annaḡar ijem xaxixta-n
 therefore mother-1 be.healthy
- par-ar-ina izen-ıp odır-ya-m.*
 AUX-FUT-3.DAT hope-CV AUX-PAST.I- 1
 'For that reason I hoped that mama will get healthy.'
 (Anderson 1998: 67)

In certain instances, e.g. the Khakas probabilitive AVC, a split inflectional pattern (Anderson 2000) is observed with tense/aspect/mood on the lexical verb and person/number on the auxiliary (17i-ii). Many constructions with the auxiliary verb *pol-* show split inflection: the lexical verb appears with the negative and a tense/mood/aspect form of some type, while the auxiliary verb appears with some (possibly other) tense/mood/aspect marker and the subject suffix (17iii). This pattern is also seen in Tofa, for example, in the counterfactual/irrealis conditional (18).

- (17) i. Khakas
Sin it-ken polar-ziḡ.
 you do-PAST.I PROB-2
 'you probably did it' (Anderson 1998: 60)
- ii. Khakas
Min nime-e čobal-čatxan-ım-ni
 I what-DAT be.sad-PRES.PRTCPL-1-ACC
- sırer pil-če polar-zar.*
 y'all know-PRES.I PROB-2PL
 'You probably know what I am sad about.'
 (Anderson 1998: 60)
- iii. Khakas
Oraylat-pa-jaḡ pol-za-bis
 be.late-NEG-HAB.PAST AUX-CON-1PL
 'If only we hadn't been late.' (Baskakov et al. 1975: 194)

- (18) Tofa
Sen bar-ba-an bol-di-ŋ er-se, ekkı bol-ir iik.
 you go-NEG-PST AUX-REC.PST-2 AUX₂-CON good be-SBJ
 'If you had not gone, it would be good.' (Rassadin 1978: 231)

This pattern is also characteristic of Altay-Sayan Turkic and many other languages with negative forms in AVCs, the negative appearing on the lexical verb and tense/aspect/person/number on the auxiliary verb (19), as well as with various categories in a number of other languages (20).

- (19) i. Tofa
Sooda-ar-ga oŋ čü-nü
 say-PRES/FUT-DAT he what-ACC
- te tüt-pas bol-gan.*
 EMPH hold-NEG.FUT AUX-PST
 'When they spoke, he didn't understand anything.'
 (Rassadin 1978: 221)
- ii. Tofa
Oŋ čoru-veyn oluru
 he go-NEG.CV AUX.PROG.III
 'He is not going.' (Rassadin 1978: 205)
- iii. Tuvan
Men ol nom-nu nomču-vastay ber-di-m.
 I that book-ACC read-NEG.CV INCH-PAST.II -1
 'I stopped reading that book.' (Anderson & Harrison 1999: 46)
- (20) i. Palana Koryak [Chukotko-Kamchatkan; Siberia]
Gämme el e-l'lep-ke t-itə-tkən
 I not NEG-look-NEG 1-AUX-PRES
 'I'm not looking.' (Zhukova 1980: 114)
- ii. Jakaltek (Jacaltec) [Mayan, Kanjobalan; Guatemala]
Šk-ach w-ila.
 Cmpl-ABS2 ERG1-see
 'I saw you.' (Craig 1976: 60)

Note that in addition to Orkhon Turkic, the doubled inflectional pattern occurs in numerous other languages as well, for example, in the South Munda (Austroasiatic) language Gorum (21), or the Nilotic (Nilo-Saharan) language Lango (22).

- (21) i. Gorum (Parengi) [Austroasiatic, South Munda; India]
Mij ne-gaʔ-ru ne-laʔ-ru
 I 1-eat-PAST 1-AUX-PAST
 'I ate vigorously.' (Aze 1973:279)
- ii. Gorum (Parengi) [Austroasiatic, South Munda; India]
Mij ne-adaʔ-ruʔ ne-k-ruʔ.
 I 1-thirst-PAST.AFF 1-AUX-PAST.AFF
 'I was thirsty.' (Aze 1973:296)
- (22) Lango [Nilo-Saharan, Eastern Sudanic, Western Nilotic; Uganda]
Án à-wót-ó à-lob-ò dákô.
 I 1-AUX-PERF 1-follow-PERF woman
 'I followed the woman.' (Noonan 1992: 211)

According to Heine (1993), doubled inflection reflects an earlier stage in the grammaticalization chain from full lexical verb > serial verb > auxiliary verb > affix that typifies developments of auxiliary verb systems. The Old Turkic to modern Turkic developments of the subject version auxiliary verb construction lend support to this idea. From an original pre-Proto-Turkic serialized lexical verb construction, both originally bearing inflection, the second (last) verbal element semantically became bleached but syntactically was elevated to sole head, the lexical verb ultimately getting fixed in a particular converb form. Later this developed into verbal affixes in a number of the modern Turkic languages, e.g. Uyghur, Khalaj, or certain Khakas or Qumanda-kiži varieties.

2. Object Version

The other version category expressed in Tofa through an auxiliary verb construction is object version. This is expressed by a construction in *-p ber-*. This contrasts with the other common, aspectual or *Aktionsart* (perfective/inchoative) uses of *ber-*, which rather requires the lexical verb to be in the *-A//y* converb form, not the *-p* converb form. As its name implies, this is used in constructions placing emphasis on the fact that the action was performed to the benefit of, or otherwise significantly affecting, a non-subject.

- (23) i. Tofa
Men ögle-p ber-dɪ-m
 I make.house-CV OBJ.VERS-REC.PST-1
 ‘I made him a house.’ (Rassadin 1978: 154)
- ii. Tofa
İtik bih^y-ip ber.
 boot cut-CV OBJ.VERS
 ‘Cut me some boots.’ (Rassadin 1978: 154)
- iii. Tofa
Bos-tar boriika-ni haramza-aš,
 wild.duck-PL wood-grouse-ACC feel.sorry-SS

tüg-ün uz-ip ber-gen
 feather-3.ACC pull.out-CV OBJ.VERS-PST
 ‘The wild ducks felt sorry for the wood-grouse,
 so they pulled out their feathers.’ (ASLEP field notes)
- iv. Tofa
İhi iŋja dæ-æn šinnap,
 dog-3 thus speak-PST truly

men se-ŋe ooda ür diŋna-an men,
 I you-DAT very long.time listen-PST 1

ooda ür seŋe aŋna-an men,
 very long.time you-DAT hunt-PST 1

čaraŋaŋ se-ŋe iŋp-kan men, diiŋ se-ŋe
 sable you-DAT find-PST 1, squirrel you-DAT

eer-gen men, köpey aŋ se-ŋe turyuz-up ber-gen men.
 turn-PST 1 many animal you-DAT stop-CV OBJ.VERS-PST 1
 ‘The dog thus spoke: “Truly I listened to you for a very long time, I
 hunted for you a very long time, found sable for you, rounded up
 squirrel for you, I stopped many an animal for you.’
 (Rassadin 1994: 201-202)
- v. *Onu soodap beer be?*
 s/he.ACC say-GER OBJ.VERS.P/F Q
 ‘Should I say it again (for you)?’ (ASLEP field notes)

- vi. *Soodap berdi.*
 say-GER OBJ.VERS-REC/PST
 '(I) just said it (for you).' (ASLEP field notes)

Other Altay-Sayan languages likewise make use of the object version construction. As in Tofa, in Tuvan *ber-* has two common functions as an auxiliary verb, differentiated by the form that the accompanying lexical verb takes; in the case of the aspectual/Aktionsart construction, the form is *-A/I/y ber-*, while the object version construction takes the shape *-p ber-*.

- (24) i. Tuvan
Biži berdim.
 read-CV INCH-PAST.II-I
 'I began to write.' (Anderson & Harrison 1999: 68)
- ii. Tuvan
Bižip berdim.
 write-CV OBJ.VERS-PAST.II-I
 'I wrote (it) for someone else.' (Anderson & Harrison 1999: 68)
- iii. Tuvan
Septe-p tur-up ber-gen.
 repair-CV AUX-CV OBJ.VERS-PAST.I
 'Was doing/used to do repairs.' (Shamina 1995: 27)
- iv. Tuvan
Xlep-ten kezip ber.
 bread-ABL cut-CV OBJ.VERS
 'Cut up some bread.' (Kunaa 1970: 33)

In Khakas, the object version auxiliary verb construction also takes the shape *(-p) pir-*. However, with consonant-final lexical verb stems, as with all Khakas AVCs where the auxiliary verb element begins with an initial consonant, this takes a zero allomorph of the converb, the *-p* only appears after vowel-final lexical verb stems. Note also that the inchoative takes the form *-A/I/y pir-* in Khakas, similar to the construction found in Tofa and Tuvan.

- (25) Khakas
Anaŋ Iken kijee le taŋd-ox
 then Iken yesterday EMPH tomorrow-EMPH

aγil p̄ir-em tip čüs salkovay
bring OBJ.VERS-FUT-1 say-CV 100 ruble

al par-ba-an ma za,
take PRFV.II-NEG-PAST Q EMPH

xaydi tab̄irax tud-in sal-d-ar tip sur-jaŋ-nar.
how quick hold-RFLXV PRFV.I-PAST.II-2PL COMP ask-HAB.PAST-PL
'And then didn't Iken only yesterday, saying "I'll return it tomorrow", take
100 rubles?, "and how quickly you spent it!", they often would say.'
Karpov (1984: 84)

Object version constructions in *-Ip ber-* are also commonly used in Southern Altay.

- (26) i. Altay-kiži [aka Oyrot, Southern Altay]
Men-i uyguz-ip ber
I-ACC wake-CV OBJ.VERS
'Wake me up (early).' (Dyrenkova 1940: 191)
- ii. Altay-kiži [aka Oyrot, Southern Altay]
Uulčak bis-ke d'ol ayd-ip ber-di.
boy we-DAT road tell-CV OBJ.VERS-REC.PST
'The boy showed us the road.' (Dyrenkova 1940: 191)
- iii. Altay-kiži [aka Oyrot, Southern Altay]
Ayd-ip ber.
say-CV OBJ.VERS
'Tell (me).' (Dyrenkova 1940: 226)

Like the subject version construction addressed above, the object version form is similarly found throughout the Turkic languages. Thus, it may be found in Uyghur on the eastern periphery of the Turkic-speaking world. Note that in Uyghur, unlike the subject version construction, the object version element does not occur in a unverbated (fused) form.

- (27) i. Uyghur
Moma-m hikayä eyt-ip bär-di.
grandma-1 story say-CV OBJ.VERS-PST
'Grandma told a story for our benefit.' (Hahn 1991: 613)

ii. Uyghur

U çay-da ata-m
that time-LOC father-1

yärlik bay-ya işlä-p bär-di.
local squire-DAT work-CV OBJ.VERS-PST

'At that time, my father worked for the local squire.' (Hahn 1991: 613)

On the nearly opposite end of the Turkic world in western Central Asia, a cognate construction may be found in Turkmen, also in *-ip ber-*.

(28) Turkmen

Ööđ yađ-an goşgu-lor-ni oko-p ber-ipdir.
own write-PRTCPL poem-PL-ACC read-CV OBJ.VERS-PERF

'He has submitted his own poems to a reading.' (Hanser 1977: 110)

Similarly, Tatar makes use of the object version auxiliary verb construction in *-p bir-*.

(29) Tatar

Şu-ni tiz gëna tärjämä it-ëp bir-ëgëz.
this-ACC speed PP translate AUX.TR-CV OBJ.VERS-PL.IMP

'Please translate this (for me) quickly.' (Schönig 1984: 91)

Although lacking the **-p* converb altogether, Yakut [Saxa] appears to have a cognate construction as well, using the functionally similar *-An* converb form that is characteristic of this Turkic language of the extreme northeastern periphery of the Turkic-speaking world.

(30) Yakut

İnay-ı uu örö teb-en bier-de.
cow-ACC water up throw.up-CV OBJ.VERS-PST

'The water tossed the cow up.' (Korkina et al. 1982: 289) [???

Note also the following forms in Chuvash, which uses the etymologically identical auxiliary verb, but requires the lexical verb to be in the characteristically Chuvash converb form in *-sA*.

- (31) i. Chuvash
kaḷa-sa par-
 tell-CV OBJ.VERS
 'tell' (Skvorcov 1985: 270)
- ii. Chuvash
širēplet-se par-
 prove-CV OBJ.VERS
 'prove (for someone)' (Skvorcov 1985: 270)

In Old Turkic sources, one finds an auxiliary verb construction in *-U ber-*. Rather than an inchoative/perfective form as it is in Tofa, Tuvan, Khakas, Qumanda, etc., its function in Old Turkic is clearly benefactive or object version in the following examples including *ay-u bir-* 'mitteilen im Interesse eines anderen' (von Gabain 1974: 131). However, variation in converb selection is found in Old Turkic sources in the object version or benefactive forms, and an AVC in *-p ber-* is also found; see (33).

- (32) i. Old Turkic
öḡi öḡi kazıanč kilmak ay-u ber-di-ler
 various(.ways) money make describe-CV OBJ.VERS-PST-PL
 'described for him various ways of making money'
 (Clauson 1972: 355)
- ii. Orkhon Turkic [Kül Tegin]
Bökli qaıan-ıa tägi sülä-yü bir-miš
 Bökli qaıan-DAT (up)to wage.war-CV OBJ.VERS-PST.II
 'waged war against (the) Bökli qaıan' (von Gabain 1974: 274 l.17)
- (33) Old Turkic
Oıuz xaıan-ka soyurka-p ber-di.
 Oguz xaıan-DAT show.favor-CV OBJ.VERS-PST
 'He showed favor to (the) Oguz xaıan.' (Clauson 1972: 355)

As is obvious from the second example in (32) above, malefactive meanings also seem to have been associated with the object version AVC in Old Turkic.

3. Conclusions

Given the widespread distribution of subject and object version auxiliary verb constructions across the various modern subgroups of the Turkic language family (e.g. various Altay-Sayan groups, Turkmen, Uyghur, Yakut [Saxa], Khalaj and even Chu-

vash), as well as in Old Turkic sources, it seems reasonable to posit these AVCs as features of the Proto-Turkic verbal system. The former AVC, the subject version construction, used the auxiliary verb *al-* 'take' while the latter was found with *ber-* 'give'. The lexical verb was probably originally (i.e. in Proto-Turkic) fully inflected, yielding the doubled inflectional class discussed above, reflecting its likely origin in a serial verb construction. However, over the course of numerous centuries, these constructions became further grammaticalized, and the lexical verb became fixed in one or another converb form during the development of the various modern Turkic languages. In certain languages, e.g. Uyghur, Khalaj, or certain varieties of Khakas or Qumanda-kizi, the constructions have moved farther along the grammaticalization path and synchronically have become verbal inflectional affixes, fused with the preceding lexical verb. These fit with what is known about both the typology of inflection in AVCs (Anderson 1999) as well as developments and grammaticalization paths of auxiliary verb constructions cross-linguistically (cf. Heine 1993). Unlike the subject version construction, the object version construction appears with the lexical verb in a converb form, not a doubled inflectional form in Old Turkic, suggesting that the object version construction may have been grammaticalized earlier in the development of Turkic than the subject version construction.

Abbreviations used

ABL	Ablative	CON	Conditional
ACC	Accusative	CV	Converb
ACCLTM	Acclimative	DAT	Dative
AFX	Affix	DESID	Desiderative
ALL	Allative	DISC	Discourse
ALMST	Almost.Completed	DS	Different Subject
ATT	Attemptive	DUR	Durative
AUX	Auxiliary	EMPH	Emphatic
AUX.N	Auxiliary Noun	EVID	Evidential
AVC	Auxiliary Verb Construction	FUT	Future
BEN	Benefactive	GEN	Genitive
CAP	Capabilitive	GER	Gerund
CAUS	Causative	IMP	Imperative
CLOC	Cislocative	IMPERF	Imperfect(ive)
CMPLT	Completive	INCH	Inchoative
COMP	Complementizer	ITER	Iterative

LOC	Locative	PROG.I	Progressive
LVC	Lexical Verb Construction	PRS.PRTCPL	Present Participle
NARR	Narrative	PSB	Possibilitive
NEG	Negative	PST	Past
OBJ.VERS	Object Version	REC.PST	Recent Past
P/E	Prosecutive/Equative	RECIP	Reciprocal
P/F	Present/Future	SUBJ.VERS	Subject Version
PASS	Passive	SS	Same Subject
PAST.I	Unmarked Past	TERM	Terminative
PERF	Perfect	TLOC	Translocative
PL	Plural	UNACMPL	Unaccomplished
PRES/FUT	Present/Future	UNEXP	Unexpected
PRETEND	Pretendative	1	First Person
PRFV	Perfective	2	Second Person
PROB	Probabilitive	3	Third Person

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Yakut vowel harmony: An Optimality Theory account

Tomomasa Sasa

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This paper presents an Optimality Theoretic (OT) account of Yakut vowel harmony. I argue that Kaun's 1995 analysis is empirically inadequate and that to overcome this inadequacy, her constraint UNIFORM [ROUND], which prohibits the feature [ROUND] from being linked to slots of different heights, must be split into two constraints: one prohibiting a sequence of high-low round vowels, and one prohibiting a sequence of low-high round vowels. I demonstrate that with these two constraints, Yakut does not require a spreading constraint that specifically refers to non-high vowels. I also consider the issues of Underspecification in OT.*

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1. Introduction

Yakut, a Turkic language of Russia, is spoken in the north eastern part of Siberia, and is estimated to have 240,000 speakers (Oe 1981: 116). As with other Turkic languages, Yakut is known for its vowel harmony. In this paper, I propose an analysis of Yakut vowel harmony in the framework of Optimality Theory (OT) (McCarthy & Prince 1993, 1995; Prince & Smolensky 1993). In addition, I show that Kaun's 1995 analysis of Yakut roundness harmony is inadequate. Specifically, I show that her constraint UNIFORM [ROUND] does not work for Yakut, and that it is not necessary to have an agreement or an alignment constraint that refers to non-high

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vowels, such as Kaun's EXTEND [ROUND] IF [-HIGH]. The outline of this paper is as follows. In Section 2, I give a brief outline of Optimality Theory. In Section 3, I present the data from Yakut to be analyzed in sections 4 and 5.

2. An overview of Optimality Theory

According to Optimality Theory, phonology is characterized by the three assumptions; that a set of constraints, not formal phonological rules, selects the correct output (constraint-based output selection), that constraints are violable, and that constraints are universal and ranked (constraint universality and ranking). Unlike other conceptions of grammar, there are no formal phonological rules in Optimality Theory. Instead of phonological rules, a set of constraints selects the best candidate from among the possible output candidates. Constraints state the relationships between input and output, or requirements on outputs, but there are no constraints that can be stated at the level of underlying representation in Optimality Theory.

OT has basically two kinds of constraints, markedness constraints and faithfulness constraints. Markedness constraints prohibit some marked structures. *FRONT ROUND VOWEL in (1) is an example of a markedness constraint.

- (1) *FRONT, ROUND VOWEL
Front rounded vowels are prohibited.

The other basic constraint type, faithfulness constraints, require that input and output correspondents be identical. IDENTITY INPUT-OUTPUT [Back] and IDENTITY INPUT-OUTPUT [Round] are the examples of the faithfulness constraints.

- (2) IDENTITY INPUT-OUTPUT [Back] (ID-IO [Bk])
Correspondent input and output segments have the identical specification for [back] (McCarthy & Prince 1995).
- (3) IDENTITY INPUT-OUTPUT (ID-IO [Rd])
Correspondent input and output segments have the same specification for [round] (McCarthy and Prince 1995).

The table or "tableau" below is an example of how a set of constraints works to obtain the optimal output. Three constraints are ranked as *FRONT ROUND VOWEL >> ID-IO [BK] >> ID-IO [RD]. Three possible output candidates for an input, /püt/, are (a) *pit*, (b) *püt*, and (c) *put*.

/püt/	*FRONT ROUND V	ID-IO [Bk]	ID-IO [Rd]
ᕈᕐ (a) püt			*
(b) püt	*!		
(c) put		*!	

(Asterisks (*) indicate violation of a constraint and ! marks a fatal violation.)

Since all the constraints are violable in OT, Candidate (a) is not excluded just because it violates ID-IO[Rd], even though candidate (a) and (b) do not violate this constraint. Candidate (b) violates *FRONT ROUND VOWEL, which is ranked highest, and Candidate (c) violates ID-IO[Bk], which is ranked higher than ID-IO[Rd]. These two candidates, (b) and (c), incur more serious violations than Candidate (a) does because *FRONT ROUND VOWEL and ID-IO[Bk] are ranked higher than ID-IO[Rd]. Therefore, Candidates (b) and (c) are excluded, and Candidate (a) is selected as the most harmonic and as the optimal output.

3. Yakut data

Yakut has the eight vowels as in (4) and four falling diphthongs as in (5). Examples of diphthongs are given in (6).

(4)		Front Unround	Front Round	Back Unround	Back Round
	High	<i>i</i>	<i>ü</i>	<i>ĩ</i>	<i>u</i>
	Non-High	<i>e</i>	<i>ö</i>	<i>a</i>	<i>o</i>

(Krueger 1962: 47)

(5)	Front Unround	Front Round	Back Unround	Back Round
	<i>ie</i>	<i>üö</i>	<i>ia</i>	<i>uo</i>

(Kaun 1995: 20)

- (6) (a) *bies* 'fire' (b) *kürüö* 'fence' (c) *tial* 'wind' (d) *uon* 'ten'
(Krueger 1962: 53)

The quality of the vowels in a word depends on that of the first vowel in the word; whether it is front or back, whether round or unround as illustrated in (7). Backness harmony is always observed when a suffix is attached to a root.

- (7)
- | | Root | Plural | Accusative | Gloss |
|-----|---------------|-------------------|------------------|----------|
| (a) | <i>kinige</i> | <i>kinige-ler</i> | <i>kinige-ni</i> | 'book' |
| (b) | <i>aɣa</i> | <i>aɣa-lar</i> | <i>aɣa-ni</i> | 'father' |
- (Krueger 1962: 72-75, 80-82)

Roundness harmony can also be observed in Yakut. The data (8) show that the high suffix vowels are always round when the root has round vowels.

(8)	Root	Accusative	Gloss
	(a) <i>oɣo</i>	<i>oɣo-nu</i>	'child'
	(b) <i>börö</i>	<i>börö-nü</i>	'wolf'
	(c) <i>murum</i>	<i>murum-u</i>	'nose'
	(d) <i>tünnük</i>	<i>tünnük-ü</i> ¹	'window'

(Krueger 1962: 80-82)

In contrast, non-high vowels are round only when they are preceded by non-high round vowels, as illustrated in (9).

(9)	Root	Plural	Gloss
	(a) <i>oɣo</i>	<i>oɣo-lor</i>	'children'
	(b) <i>börö</i>	<i>börö-lör</i>	'wolves'

(Krueger 1962: 72-75)

When a suffix with a non-high vowel is preceded by high round vowels in the root, the vowels in the suffix are not round as illustrated in (10).

(10)	(a) <i>tünnük</i>	<i>tünnük-ler</i>	(* <i>tünnük-lör</i>)	'window-plural'
	(b) <i>tobuk</i>	<i>tobuk-ka</i>	(* <i>tobuk-ko</i>)	'knee-dative'

(Kaun 1995: 23)

Except for diphthongs, the high-round vowel and the low-round vowel co-occur only if the non-high one precedes the high one.

When a root is followed by two or more suffixes as in (11), the roundness of the vowel in the suffix is determined by the roundness of the vowel in the syllable which directly precedes the suffix. Therefore, the non-high vowels in the dative suffix in (11) are not round because the non-high vowels are preceded by the high round vowels.

¹ The nasal [n] of the accusative suffix is deleted if a root ends with a consonant.

(11)	Root	1st.pl.poss.	1st.pl.poss.dat.	Gloss
(a)	<i>tünnük</i>	<i>tünnük-püt</i>	<i>tünnük-püt-üger</i>	'window'
(b)	<i>kötör</i>	<i>kötör-püt</i>	<i>kötör-püt-üger</i>	'bird'
(c)	<i>ohox</i>	<i>ohox-put</i>	<i>ohox-put-ugar</i>	'stove'

(Krueger 1962: 104-105)

When a root is followed by the purposive suffix /-(A)rI/, the first [-high] vowel of the suffix, not the root vowel, determines the roundness quality of the [+high] vowel of the purposive suffix. This [-high] vowel of the purposive suffix is called connective vowel, but this connective vowel does not always surface. In (12), for example, the [-high] connective vowel does not surface because the root ends with the [-high] long vowel. In (12), the [-high] long vowel of the root, which directly precedes the purposive suffix, determines the roundness quality of the [+high] vowel of the suffix.

(12)	Root	Purposive	Gloss
(a)	<i>baraa</i>	<i>baraa-ri</i>	'go'
(b)	<i>oloroo</i>	<i>oloroo-ru</i>	'live'
(c)	<i>tölöö</i>	<i>tölöö-rü</i>	'cry'

(Krueger 140-141; 1962)

If a root ends with a consonant, as in (13), the [-high] connective vowel surfaces, and the roundness quality of the [+high] vowel of the purposive suffix is determined by the connective vowel. Connective vowels harmonize with the root vowel in roundness when a root has a [-high, round] vowel, as in (13a), and consequently, the [+high] suffix vowel is also round. In (13b), on the other hand, the [-high] connective vowel is not round because it is preceded by the [+high, round] vowel of the root. Since the connective vowel is not [round], the [+high] vowel of the purposive suffix is not [round] in (13b).

(13)	Root	Root + a connective vowel	Gloss
(a)	<i>kör-</i>	<i>kör-ö</i>	<i>kör-ö-bün</i> (1st.sg.pres.) 'see'
(b)	<i>tüs-</i>	<i>tüs-e-</i>	<i>tüs-e-ri</i> (purposive) 'fall'

(Krueger 1962: 124, 141)

As shown in (14), the first part of the diphthong determines the roundness of the vowel in the suffix, that is, as far as rounding harmony is concerned, diphthongs behave as if they were high vowels. Hence, a non-high round vowel is prohibited following a diphthong just as it is prohibited in the forms in (10).

- | | | | | |
|------|-------------|---------------|------------------------------------|--------|
| (14) | Root | Accusative | Dative | Gloss |
| (a) | <i>üör</i> | <i>üör-ü</i> | <i>üör-ge</i> (* <i>üör-gö</i>) | 'herd' |
| (b) | <i>muos</i> | <i>muos-u</i> | <i>muos-ka</i> (* <i>muos-ko</i>) | 'horn' |
- (Krueger 1962: 140-141)

4. Kaun's 1995 analysis

Kaun 1995 proposes three constraints, EXTEND [ROUND], UNIFORM [ROUND], and EXTEND [ROUND] IF [-HIGH] to account for Yakut vowel harmony.

- (15) Extend [Round] (Extnd [Rd])
The autosegment [round]² must be associated to all available vocalic positions within a word.
- (16) UNIFORM [ROUND] (Uni [Rd])
[Round] may not be multiply linked to slots if slots are different in height.
- (17) EXTEND [ROUND] IF [-HIGH] (Extnd [Rd] if [-Hi])
[Round] must be associated to all available vocalic positions within a word when simultaneously associated with [-high].

In tableaux (18) though (21), (18b) is excluded by EXTND [Rd] because the roundness feature of the high vowel in the root is not associated with the following high vowel. (19b) and (21b) are excluded by EXTND [Rd] if [-Hi] because the suffix vowel is not [round] when a root has a non-high [round] vowel. (20b) is excluded by Uni [Rd] because three [round] vowels in (20b) do not agree in height. Tableau (20) shows that Uni [Rd] must be ranked higher than EXTND [Rd], and (21) shows that EXTND [Rd] if [-Hi] must be ranked higher than Uni [Rd].

EXTND [Rd] if [-Hi] >> Uni [Rd]
Uni [Rd] >> EXTND [Rd]

² Kaun treats the feature [round] as binary, and uses [+round] in her definition of EXTND [Rd]. In this paper, I assume the feature [round] to be privative, and I use [round] in the definition rather than [+round], which Kaun uses.

	Extnd [Rd] if [-Hi]	Uni [Rd]	Extnd [Rd]
(18) /tünnük-pit/			
(a) ☞ <i>tünnük-püt</i>			
(b) <i>tünnük-pit</i>			*!
(19) /börö-ler/			
(a) ☞ <i>börö-lör</i>			
(b) <i>börö-ler</i>	*!		*
(20) /tünnük-ler/			
(a) ☞ <i>tünnük-ler</i>			*
(b) <i>tünnük-lör</i>		*!	
(21) /kötör-bit/			
(a) ☞ <i>kötör-böt</i>		*	
(b) <i>kötör-bit</i>	*!		*

However, the constraint, Uni [Rd] is problematic if it is assumed in Yakut. (22) shows that the ranking from (21) does not work. The correct candidate is (22b), but according to the ranking from (21), the optimal candidate is (22a). A bomb (☞) in tableaux indicates the candidate that is wrongly selected by the constraints and the ranking of the constraints.

(22) /kötör-bit-iger/ – kötür-büt-üger

/kötör-bit-iger/	Extnd [Rd] if [-Hi]	Uni [Rd]	Extnd [Rd]
(a) ☞ <i>kötör-büt-ügör</i>		**	
(b) <i>kötör-büt-üger</i>	*!		*

Tableau (22) shows that Uni [Rd] needs to be ranked higher than EXTND [Rd] if [-Hi] to select the correct candidate, (22b). (21) shows, however, EXTND [Rd] if [-Hi] has to dominate Uni [Rd] to select the correct candidate, (21a). Therefore, as seen in 21 and in 22, there is a ranking paradox if EXTND [Rd] if [-Hi] and Uni [Rd] are used in Yakut.

5. Analysis

5.1. Constraints on rounding harmony

I suggest that Kaun's Uni [Rd] should be split into two constraints, *_{H-L} ROUND in (23) and *_{L-H} ROUND in (24), and in Yakut, the half of Uni [Rd] which is *_{H-L} ROUND is ranked higher than *_{L-H} ROUND. I also suggest that Kaun's EXTND [Rd] if [-Hi] can

be replaced by a more general constraint such as AGREE or SPREAD [ROUND]. In the analysis, I assume SPREAD [ROUND], but nothing crucial depends on this assumption.³

- (23) NO HIGH-LOW ROUND (*H-L Round)
If the feature [round] is linked to a high vowel, it may not be linked to a non-high vowel in the following syllable (No *u-ö / u-o*).
- (24) NO LOW-HIGH ROUND (*L-H Round)
If the feature [round] is linked to a non-high vowel, it may not be linked to a high vowel in the next syllable (No *ö-u / o-u*).
- (25) SPREAD [ROUND] (SPR [Rd])
The feature [Round] must be linked to all vowels (Padgett 1995).

Tableaux (26) through (29) show how these two constraints, *H-L ROUND and SPR [Rd], work to select the correct candidates.

	*H-L Round	SPR [Rd]	*L-H Round	ID-IO Round]
(26) /tünnük-pit/				
(a) ɤ <i>tünnük-püt</i>				*
(b) <i>tünnük-pit</i>		*!		
(27) /börö-ler/				
(a) ɤ <i>börö-lör</i>				*
(b) <i>börö-ler</i>		*!		
(28) /tünnük-ler/				
(a) ɤ <i>tünnük-ler</i>		*		
(b) <i>tünnük-lör</i>	*!			*
(29) /kötör-bit/				
(a) ɤ <i>kötör-büt</i>			*	*
(b) <i>kötör-bit</i>		*!		

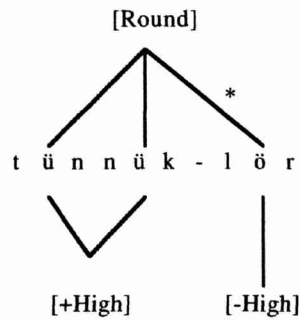
Candidates (26a), (27a), and (29a) do not violate *H-L ROUND because they do not have a high round vowel followed by a non-high round vowel. *H-L ROUND only excludes the combination of a high round vowel followed by a non-high round vowel.

³ I doubt the universality of Agree [Round] since the Agree constraint does not work if a language has a neutral vowel. See Kallestinova 2001 for an argument from Bashkir vowel harmony, showing that Spread is superior to Agree.

Note also that (29a) would have been excluded by Kaun's Uni [Rd]. (26), (27), and (29) also show that the forms (26b), (27b), and (29b) can be excluded by SPR [Rd].

Candidate (28b) incurs a violation under *H-L ROUND because, as the figure (30) shows, the non-high round vowel in the suffix is preceded by the high round vowel in the root. The roundness feature of the high vowel in the root is associated with the non-high vowel in the suffix.

(30) *tünnük-lör*



For the same reason, (31b), which was problematic in Kaun's analysis, can be excluded by *H-L ROUND as tableau (31) shows.

(31) /*kötör-bit-iger*/ – *kötör-büt-üger*

/kötör-bit-iger/	*H-L Round	SPR [Rd]	*L-H Round
(a) <i>kötör-büt-üger</i>		*	**
(b) <i>kötör-büt-ügör</i>	*!		**

Tableaux (28) and (31) show that in Yakut, *H-L ROUND must be ranked higher than SPR [Rd].

Since the combinations, [ö-u] and [o-u], are allowed in Yakut, *L-H ROUND has to be low-ranked in Yakut. Tableau (29) shows that *L-H ROUND has to be ranked lower than SPR [Rd], otherwise, candidate (29b) is selected as optimal.

*H-L Round >> SPR [Rd]

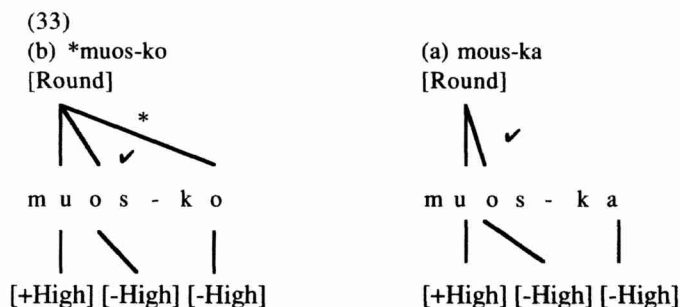
SPR [Rd] >> *L-H [Rd]

The established ranking, *H-L Round >> SPR [Rd] also works when a root has a round diphthong as seen in tableau 32. Although the combination of a [+high, round] vowel followed by a [non-high round] vowel is prohibited in Yakut, that combination is allowed in diphthongs, as pointed out in 14, in Section 3.

(32) /muos-ka/ – muos-ka

/muos-ka/	* _{H-L} Round	SPR [Rd]
(a) muos <i>muos-ka</i>		*
(b) <i>muos-ko</i>	*!	
(c) <i>muas-ka</i>		**!

Candidate (32c) incurs more violations under SPR [Rd] than candidate (32a), and therefore, is excluded by SPR [Rd]. Candidate 32a does not violate *_{H-L} ROUND because the rounding feature of [u] is linked only to the non-high vowel in the same syllable. Candidate (32b), on the other hand, violates *_{H-L} ROUND since the rounding feature of [u] is linked not only to the non-high vowel in the same syllable but also to another non-high vowel in the different syllable. This is shown in figure (33).



5.2. Constraints on backness harmony

Besides SPR [Rd], another spread constraint, SPREAD [BACK] is also assumed because regardless of the height or the roundness, all the vowels in a word must have the same backness as the first vowel of the root.

(34) SPREAD [BACK] (SPR [Bk])

The feature [Back] must be linked to all vowels in a word (Padgett 1995).

5.3. Faithfulness constraints

When the backness feature or the roundness feature are associated with all vowels in a word to satisfy SPR [Rd] and SPR [Bk], some segments in the output may not be exactly the same as their input correspondents. In such cases, the identity constraint, ID-IO[Back] or ID-IO[Round] is violated. Therefore, the occurrence of harmony shows

that segments must be unfaithful, that is either ID-IO[Back] or ID-IO[Round]⁴ is violated in actual forms.

In addition to ID-IO[Back] and ID-IO[Round], another faithfulness constraint, ID-IO $\sigma 1$ ⁵ is necessary because the first vowel of a word determines the quality of the following vowels in Yakut. The faithfulness constraint ID-IO $\sigma 1$ guarantees that the first vowel in the input is the same as in the output.

(35) IDENTITY INPUT-OUTPUT $\sigma 1$ (ID-IO $\sigma 1$)

Segments in the first syllable of a word must have the same specifications for all the features as their input correspondent (Beckman 1997, 1998).

Tableau (36) shows how ID-IO $\sigma 1$, SPR [Bk], and ID-IO[Bk] work to select a correct candidate.

In (36), I assume that the input for the high suffix vowel is /i/ and that for the non-high suffix vowel it is /e/. However, nothing depends on this assumption.

(36) /bar-ee-ri/ – bar-aa-ri

/bar-ee-ri/	ID-IO $\sigma 1$	SPR [Bk]	ID-IO [Bk]
(a) bar bar-aa-ri			***
(b) bar-ee-ri		*!***	
(c) ber-ee-ri	*!		*

Tableau (36) shows that both ID-IO $\sigma 1$ and SPR [Bk] must be ranked higher than ID-IO[Bk].

ID-IO $\sigma 1$, SPR [Bk] >> ID-IO [Bk]

Tableau (37) also shows that ID-IO $\sigma 1$ should be ranked higher than *H-L ROUND, and that *H-L ROUND and SPR [Rd] have to be ranked higher than ID-IO[Rd].

⁴ See 2 and 3 in 2. An overview of OT.

⁵ From the data I have, there is no basis for using ID-IO $\sigma 1$ rather than ID-IO root. ID-IO $\sigma 1$ suggests no disharmonic roots while ID-IO root allows disharmonic roots. I have no relevant data for disharmonic roots.

(37) /*üör-i/* – *üör-ü*

/ <i>üör-i/</i>	ID-IO σ 1	*H-L Round	SPR [Rd]	ID-IO [Rd]
(a) üör-ü		*		*
(b) <i>üör-i</i>		*	*!	
(c) üer-i	*!		**	*

ID-IO >> *H-L Round, SPR [Rd] >> ID-IO (Rd)

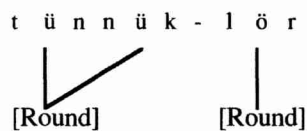
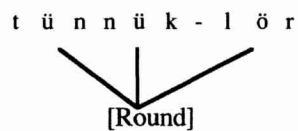
5.4. Input with round vowels

Because of the assumption of the Richness of the Base in OT, a possible output must result no matter what input is assumed. In (38), for example, the suffix of the input has a non-high round vowel. (38a) and (38b) are different in that in (38a), the roundness of the non-high vowel is independent of the roundness of the high round vowel in the root as the figure (39) shows.

(38) /*tünnük-lör/* – *tünnük-ler*

/ <i>tünnük-lör/</i>	*H-L Round	SPR [Rd]	ID-IO [Rd]
(a) <i>tünnük-lör</i> (1)		**!*	
(b) <i>tünnük-lör</i> (2)	*!		
(c) tünnük-ler		*	*

(39)

tünnük-lör (1)*tünnük-lör* (2)

Candidate (38a) does not incur a violation under *H-L ROUND since the roundness feature of the non-high vowel is independent of that of the high vowels in the root. However, (38a) is excluded by SPR [Rd] because (38a) incurs more violations than (38c) does under SPR [Rd].

SPR [Rd] also excludes (40a), which has a high round vowel in the suffix in input.

(40) /*dʒie-nü/* – *dʒie-ni*

/ <i>dʒie-nü/</i>	*H-L Round	SPR [Rd]	ID-IO [Rd]
(a) <i>dʒie-nu</i>		*!*	
(b) dʒie-ni			*

Tableaux (38) and (40) show that SPR [Rd] must be ranked higher than ID-IO[Rd].

SPR [Rd] >> ID-IO[Rd]

5.5 Input with unspecified vowels

Many have suggested that input vowels in Turkic languages, including Yakut, are unspecified. Krueger 1962 uses *A* for [-high] vowels and *I* for [+high] vowels unspecified for backness and roundness. Given the Richness of the Base of OT, the inputs with unspecified vowels need also to be considered.

Stanley 1967 discusses two conventions for applying a rule to the representation specified for a feature *F* when that representation is unspecified for *F*. On one interpretation, the rule applies to *F* (distinctness), and on the other, the rule does not apply (submatrix). In considering a constraint that refers to a feature *F* unspecified in a candidate, there are two possibilities; a candidate unspecified for *F* satisfies the constraint (Convention A) or violates the constraint (Convention B). For example, if there is an identity constraint to require that input and output have the same specification for *F*, and the input is unspecified for *F* ($[\emptyset F]$), then, that identity constraint is either satisfied or violated by the output candidate $[\alpha F]$. This is shown in 41.

(41)

(Convention A)	ID-IO (F)	(Convention B)	ID-IO (F)
$[\emptyset F]$ (input)		$[\emptyset F]$ (input)	
αF (output)	✓ (satisfied)	αF (output)	* (violated)

There are two possible assumptions about GEN; either GEN produces only fully specified outputs, or GEN allows unspecified outputs. Consider first the possibility that no $[\emptyset F]$ is allowed in an output. If GEN does not produce unspecified vowels in output, the two conventions, A and B, do not make a difference, that is, the same result occurs, as illustrated in (42) and (43).

(42) /kInIgA/ (Convention A)

/kInIgA/	ID-IO $\sigma 1$	SPR [Bk]	ID-IO [Bk]
(a) <i>kinige</i>	✓	✓	✓
(b) <i>kīnīga</i>	✓	✓	✓

(43) /kInIgA/ (Convention B)

/kInIgA/	ID-IO $\sigma 1$	SPR [Bk]	ID-IO [Bk]
(a) <i>kinige</i>	*	✓	***
(b) <i>kīnīga</i>	*	✓	***

Under the Convention A, [back] vowels are not considered to be different from [+back] or [-back] vowels, and hence, in (42), neither (42a) nor (42b) violates ID-IO σ 1. They also tie under ID-IO [Bk], and consequently, there is no way to determine which one is the optimal candidate.

Even though unspecified vowels are treated differently from fully specified vowels under Convention B, the two candidates in tableau (43) also tie. Both (43a) and (43b) incur the same number of violations under ID-IO σ 1 and ID-IO[Bk], and neither one of them is excluded. This suggests that if unspecified vowels are not allowed in outputs, markedness constraints will choose the optimal candidate.

(44) **i*
[+high, +back, -round] vowels are prohibited.

(45) **e*
[-high, -back, -round] vowels are prohibited.

In (46), **i* is assumed to be higher-ranked than **i*, and in (47), **e* is assumed to be higher-ranked than **a* because the vowel [i] is more marked than [i], and [a] is assumed to be less marked than [e], but nothing depends on this assumption here.

(46) /kInIgA/ (Convention A)

/kInIgA/	ID-IO σ 1	SPR [Bk]	* <i>i</i>	* <i>e</i>	ID-IO [Bk]
(a) kinige				*	
(b) <i>kinīga</i>			*!*		
(c) <i>kiniga</i>		*!***			

(47) /AγA/ (Convention A)

/AγA/	ID-IO σ 1	SPR [Bk]	* <i>i</i>	* <i>e</i>	ID-IO [Bk]
(a) aγa					
(b) <i>eγe</i>				*!*	
(c) <i>aγe</i>		*!*		*	

With the markedness constraints, **i* and **e*, a relatively unmarked candidate, *kinige* is selected in (46) and *aγa* is selected in (47).

Even when [back] is considered to be distinct from [+back] or [-back], the result is the same, as illustrated in (48).

(48) /kInIɣA/ (Convention B)

/kInIɣA/	ID-IO $\sigma 1$	SPR [Bk]	* <i>i</i>	* <i>e</i>	ID-IO [Bk]
(a) ⦿ <i>kinige</i>	*			*	***
(b) <i>kiniɣa</i>	*		*! <i>i</i> *		***
(c) <i>kiniga</i>	*	*! <i>i</i> **			***

Based on the reasonable assumption that [i] is more marked than [e], it is assumed that the markedness constraint, **i*, is ranked higher than **e*.

$$*i \gg *e$$

Keating (1988), Cohn (1990), and Ringen & Heinämäki (1999) have suggested that unspecified segments may occur in outputs. If unspecified vowels are allowed in outputs, and Convention A is assumed, then, an incorrect output results. As illustrated in (49), an input with unspecified vowels will never result in an output with fully specified vowels for Yakut.

(49) /kInIɣA/ (Convention A)

/kInIɣA/	ID-IO $\sigma 1$	SPR [Bk]	* <i>i</i>	* <i>e</i>	ID-IO [Bk]
(a) ⦿ <i>kInIɣA</i>					
(b) <i>kinige</i>				*!	
(c) <i>kiniɣa</i>			*! <i>i</i> *		

Both candidates (49b) and (49c) are excluded by the markedness constraints and the candidate with unspecified vowels is selected as optimal.

Another problematic case with Convention A is feature deletion. In tableau (50), all the vowels in the input are specified for all binary features. Since [øF] and [αF] are not distinct under Convention A, candidate (50b), with unspecified vowels, does not violate any faithfulness constraints. Consequently, (50b) is selected over (50a), the actual surface form, because (50a) violates the markedness constraint **e*.

(50) /kinige/ – kinige (Convention A)

/kinige/	ID-IO $\sigma 1$	SPR [BK]	* <i>i</i>	* <i>e</i>
(a) <i>kinige</i>				*!
(b) ⦿ <i>kInIɣA</i>				

As seen in tableau (51), feature deletion does not cause a problem under Convention B because (51b), with unspecified vowels, violates ID-IO $\sigma 1$, and this candidate is excluded by this faithfulness constraint.

(51) /kinige/ – kinige (Convention B)

/kinige/	ID-IO $\sigma 1$	SPR [BK]	* <i>i</i>	* <i>e</i>
(a) kinige				*
(b) <i>kInIgA</i>	*!			

Under Convention B, [\emptyset F] and [α F] are distinct and the unspecified vowel in the first syllable of candidate (51) is not faithful to its input correspondent segment. Thus, this candidate is excluded by the faithfulness constraint ID-IO $\sigma 1$.

Since there is no reason to assume that any unspecified vowel occurs in Yakut,⁶ the constraint, SPECIFY, has to be high-ranked in Yakut so that the candidates with unspecified vowels be excluded.

(51) SPECIFY (SPEC)

Segments must be specified for all the binary features (Kaun 1995).

The constraint, SPEC, which requires that outputs be fully specified, only works with Convention B. If Convention A is assumed, then, a candidate with [\emptyset F] will incorrectly satisfy any constraint referring to F, such as SPEC. Consequently, if GEN allows unspecified vowels in outputs, Convention B has to be assumed, otherwise, SPEC will not exclude unspecified vowels.

Tableau (52) shows how SPEC and the markedness constraint **i* work to select a less marked candidate.

(52) /kInIgA/ (Convention B)

/kInIgA/	SPEC	ID-IO $\sigma 1$	SPR [Bk]	* <i>i</i>	* <i>e</i>	ID-IO [Bk]
(a) kinige		*			*	***
(b) <i>kInIgA</i>	*!***					
(c) <i>kiniġa</i>		*		*!*		***

Since [+back] and [-back] are distinct from [back], candidates (52a) and (52c) incur violation under ID-IO $\sigma 1$. Candidate (52b) incurs three violations under SPEC because (52b) has three unspecified vowels. Thus, as tableau (52) shows, SPEC has to be ranked higher than ID-IO $\sigma 1$; otherwise, (52b), with unspecified vowels, would be selected as an optimal candidate.

SPEC >> ID-IO $\sigma 1$

⁶ Neutral vowels is one of the reasons for assuming unspecified output vowels. See Ringen & Vago (1998), and Ringen & Heinämäki (1999).

These constraints as well as the ranking from (48) and (52) also work when the input has unspecified vowels in suffixes.

(53) /*aya-blIt-IgAn*/ (Convention B)

/aya-blIt-IgAn/	SPEC	ID-IO σ 1	SPR [Bk]	* <i>i</i>	* <i>e</i>	ID-IO [Bk]
(a) aa <i>aa-bit-iyān</i>				**		***
(b) <i>aya-blIt-IgAn</i>	*!***		**			
(c) <i>aya-bit-igan</i>			*!***			***

(54) /*kinige-lAr*/ (Convention B)

/kinige-lAr/	SPEC	ID-IO σ 1	SPR [Bk]	* <i>i</i>	* <i>e</i>	ID-IO [Bk]
(a) kinige <i>kinige-ler</i>					**	*
(b) <i>kinige-lAr</i>	*!		****		*	
(c) <i>kinige-lar</i>			*!***		*	*

Candidates (53b) and (54b) are excluded by SPEC. Although candidate (53c) does not have any marked vowels, it is excluded by SPR [Bk] because the vowels do not share the same backness feature. For the same reason, candidate (54c) is excluded, even though (54c) has only one marked vowel while (54a) has two marked vowels.

Tableaux (53) and (54) show that the markedness constraints **i* and **e* have to be dominated by SPR [Bk].

SPR [Bk] >> **i*, **e*

6. Conclusion

In this paper, I have outlined an account for the vowel harmony of Yakut in OT. The ranking of these eight constraints is; SPEC >> ID-IO σ 1 >> **H-L ROUND* >> SPR[Bk], SPR[Rd] >> **i* / **e* >> ID-IO[Bk], ID-IO[Rd].

Most of the constraints used in this paper have been suggested in other OT analyses, but I have shown that Kaun's Uni [Rd] needs to be split into **H-L ROUND* and **L-H ROUND*. I have shown that **H-L ROUND* is higher ranked than **L-H ROUND* in Yakut. Once **H-L ROUND* is adopted, it becomes apparent that Yakut does not require a spreading constraint that specifically refers to non-high vowels, such as Kaun's EXTND [RD] IF [-HI].

I have also shown how inputs with unspecified vowels can be handled depending on whether or not unspecified vowels are allowed in output. If GEN does not produce any unspecified vowels in outputs, markedness constraints select a relatively unmarked candidate. If, on the other hand, unspecified vowels are allowed in outputs, the constraint, SPEC, has to be high ranked in Yakut so that outputs with unspecified

features are excluded. However, SPEC works only if a constraint which refers to F is violated by a candidate with F unspecified, that is Convention B.

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