

On the evolution of irregular word stress: Morphologization in Turkish

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1. Introduction

Within morpheme-based grammaticalization theory, several interdependent phonetic, morphosyntactic and functional processes are associated with the gradual progression of a content item into a grammatical marker (Heine & Reh 1984; Heine, Claudi & Hünnemeyer 1991; Hopper & Traugott 1993; Lehmann [1982] 1995; Croft 2003: 253ff.). Morphosyntactic processes, such as, for instance, cliticization and compounding, are thus said to go hand in hand with phonetic erosion and semantic bleaching (cf. Bybee, Perkins & Pagliuca 1994's *Parallel Reduction Hypothesis*). Provided that form and meaning co-evolve, this framework raises the expectation that the different sub-processes of grammaticalization will take the same amount of time in actual diachronic change. Accordingly, the degree of grammaticalization should be equal across the different levels of linguistic structure at a given diachronic stage.

Tracing two morphologization processes in the attested history of Turkish, this paper presents data that run counter to these expectations. It will be argued that morphophonological irregularities at a given diachronic stage may indeed mirror different degrees of grammaticalization in prosody and morphology. Whereas the encliticization of postponed subject pronouns and the univerbalization of converb complexes gave rise to new bound morphological markers, the grammaticalized forms are still characterized by imperfect prosodic integration into the word stress domain and thus constitute instances of irregular non-final stress.

To unfold the argument, Section 2 first of all describes the principles of word stress assignment in Turkish, situating the encliticization and univerbalization constructions in the broader context of deviations from regular final stress. Section 3 focuses on the relevance of prosodic domains in the phonology of grammaticalization and introduces Prosodic Phonology as the choice analytic framework. Diachronic data on the two case study constructions will be presented in 4. This section will also demonstrate that prosodic domains are more

conservative compared to morphosyntactic domains. Section 5 concludes the paper by summarizing the main points and by spelling out its major implications.

2. Stress assignment in Turkish

In the default, Turkish words are stressed on the final syllable. Accordingly, monomorphemic words receive stress on the stem-final syllable (1a). If further syllables are added to a stem in the course of suffixation, stress moves to the last syllable of the suffix string (1b-d).

- (1) Final word stress in Turkish (Lewis 2000: 19-20)
- | | | |
|----|---------------------------|-------------------|
| a. | <i>çö'cuk</i> | ‘child’ |
| b. | <i>çocuk-'lar</i> | ‘children’ |
| c. | <i>çocuk-lar-ı'mız</i> | ‘our children’ |
| d. | <i>çocuk-lar-ı'mız-ın</i> | ‘of our children’ |

However, with respect to monomorphemic forms, deviations from this final word stress can be found in several parts of the lexicon (Lewis 2000: 20-22). Turkish place names are mostly stressed on their initial syllable. Polysyllabic, non-Turkish place names retain their original accentuation, cf. *A'nadolu* ‘Anatolia’, *İs'tanbul*, *'Paris*, *'Zonguldak*, *'Misir* ‘Egypt’, *'Sirkeci*, *'Bebek*, *'Karaman*, *'Ordu*, *İngil'tere* ‘England’, *İs'panya* ‘Spain’, *An'talya* and *Ma'latya*. The donor language’s stress assignment is also preserved in loan words, such as *lo'kanta* ‘restaurant’, *'olta* ‘fishing-line’, *'radyo* ‘radio’, *'taksi* ‘taxi’, *'kokteyl* ‘cocktail(-party)’ and *ga'zete* ‘newspaper’. Some kinship terms and nouns denoting living creatures also deviate from final word stress: *'anne* ‘mother’, *'abla* ‘elder sister’, *gö'rümce* ‘husband’s sister’, *'yenge* ‘brother’s wife’, *'hala* ‘paternal aunt’, *'teyze* ‘maternal aunt’, *'amca* ‘paternal uncle’, *çe'kirge* ‘grass-hopper’, *ka'rınca* ‘ant’ and *ko'karca* ‘pole-cat’. Adverbs are usually stressed on their first syllable (*'şimdi* ‘now’, *'sonra* ‘after’, *'evvalâ* ‘firstly’, *'ansız* ‘suddenly’ and *'ancak* ‘only’). In compounds, stress is assigned to the first member, for instance in *'baş* ‘head’ + *ba'kan* ‘minister’ > *başbakan* ‘prime minister’ and *'bir* ‘a’ + *ta'kim* ‘set’ > *birtakım* ‘several’. Diminutives in *-cik* are also initially stressed, e.g. *'ufacık* ‘tiny’ and *'evcik* ‘little house’. The same holds true for interjectives (*'haydi* ‘come on!’) and vocatives (*'garson* ‘waiter!’). Some of these deviations are captured by Sezer’s stress rule, which states: “If the antepenultimate syllable is heavy and the penultimate syllable is light, stress the antepenultimate syllable;

otherwise stress the penultimate syllable” (Kabak & Vogel 2001: 317). This rule, however, needs to be constrained in such a way that it only applies to the sub-part of the lexicon which shows this subregularity.

Whereas the deviations discussed in the previous paragraph concern certain stems, there are also several bound morphemes that contribute to stress placement in non-trivial ways. Polysyllabic suffixes, such as, for instance, those in *gi'd-ince* ‘having gone’ or *ya'p-arak* ‘by doing’, are always stressed on their initial syllable. So-called ‘enclitic suffixes’ are never accented, but throw the word accent to the syllable immediately preceding them, e.g. *o-nun-la* ‘with him/her’ and *ya'z-ar-kan* ‘while writing’. ‘Enclitic words’, finally, exhibit the same accentual behavior and often surface as either bound or free forms: *arkada'sım idi* or *arkada'sım=di* ‘he was my friend’, etc.

Whereas several aspects of Turkish stress, such as its very origin and nature (Johanson & Csató 1998) and its formal representation (Kabak & Vogel 2001, Inkelas & Orgun 2003), are still under debate, the following sections will focus on its relevance for the study of the evolution of irregular word stress (Kabak & Revithiadou 2009). In this context, the origin of the morphologically conditioned deviations from word final stress mentioned above will be traced in their diachronic development.

3. Phonology in grammaticalization

Compared to the morphosyntactic and functional sub-processes, the phonology of grammaticalization has received less attention in the pertinent literature. While most authors make do with stressing the central role of erosion, Heine & Reh (1984: 17-25) present a more elaborate overview of the phonological processes attested in the context of grammaticalization phenomena. At the highest level of their taxonomy they make a principled distinction between adaptation and erosion. Whereas the former encompasses assimilation, junctural adaptation and dissimilation, the latter is further subdivided into junctural, syllabic, peripheral and non-segmental erosion. At a more abstract level, they also establish a link between the weakening and finally deletion of word boundaries and the morphosyntactic processes of cliticization and compounding.

In what follows, the phonology of grammaticalization will be analyzed with appeal to the prosodization of the respective constructions in the Prosodic Hierarchy (Selkirk 1984;

Nespor & Vogel 2007). Under this approach, cliticization, as exemplified by the Georgian data in (2), is conceived of as an instance of prosodic integration¹ (Schiering 2006, 2010).

(2) Procliticization in Georgian (Harris 2002: 236)

- a. merab-i ekim-i 'ar 'aris
 Merab-NOM doctor-NOM **NEG** he.be
 ‘Merab is not a doctor.’
- b. puli **ara**=‘m-akvs
 money **NEG**=1sg.OBL-have
 ‘I don’t have any money.’
- c. puli 'ara=m-akvs
 money **NEG**=1sg.OBL-have
 ‘I don’t have any money.’

Georgian words, such as the verb *aris* in (2a), are stressed on their initial syllable. The preverbal particle in this example also carries initial stress. The negator-verb combination can thus be analyzed as being prosodized as two prosodic words (ω), which are grouped under a phonological phrase node (P), i.e. [*(ar)* ω (*aris*) ω]_P. In (2b), the negative particle remains unstressed and word stress is only realized on the initial syllable of the verbal host word. The proclitic can accordingly be said to adjoin to the following prosodic word, i.e. [*(ara)* (*m-akvs*) ω]_P. Finally, *ara* is prosodically integrated into the word domain of its host in (2c), i.e. [*(ara m-akvs)* ω]_P. Since stress is assigned only once within a prosodic word, stress is placed on the initial syllable of the entire string, which happens to be the first syllable of the cliticized negative marker. This synchronic variation in the prosodization of host-clitic combinations is highly suggestive of a gradual prosodic cline whose stages can be represented as in (3).

(3) Prosodic domain structures in cliticization (Selkirk 1995)²

S-structure: [Fnc Lex]

¹ This term is also used by Booij (1996). Note, however, that neither Booij nor Selkirk interpret the prosodization options under discussion as evolutionary steps in the gradual prosodic integration of clitics.

² The following abbreviations are used in the formal representations: S-structure = morphosyntactic representation, P-structure = phonological representation, Fnc = function word, Lex = lexical word, ω = prosodic word, P = phonological phrase.

P-structure:	(a)	$((fnc)_\omega (lex)_\omega)_P$	<i>Prosodic Word</i>
			<i>Prosodic Clitics:</i>
	(b)	$(fnc(lex)_\omega)_P$	<i>free clitic</i>
	(c)	$((fnc lex)_\omega)_P$	<i>internal clitic</i>
	(d)	$((fnc(lex)_\omega)_\omega)_P$	<i>affixal clitic</i>

In this terminology, the Georgian negative marker is prosodized as a prosodic word in (2a) viz. (3a), as a free clitic in (2b) viz. (3b), and, finally, as an internal clitic in (2c) viz. (3c).

Additionally, cliticization may be accompanied by the segmental processes which apply within the domain the clitic forms with its host. The table in (4) presents a taxonomy of such segmental effects of cliticization.

(4) Segmental effects of cliticization (Schiering 2006: 82ff., 2010)

	Junctural	Syllabic
Structure preservation	No rules applies or the application of rules is blocked	
Assimilation	e.g. CC assimilation	e.g. Vowel harmony
Weakening	e.g. Cluster simplification	e.g. Vowel reduction and deletion
Strengthening	e.g. Epenthesis	e.g. Vowel lengthening

In Turkish, the re-organization of prosodic domain structure in the course of grammaticalization entails several phonological concomitants. On the one hand, it affects the stress assignment in the grammaticalizing construction. On the other hand, it lays ground for the application of the syllabic assimilation process of vowel harmony.

4. Morphologization in Turkish

We will examine two cases of grammaticalization in Turkish³, namely the cliticization of personal pronouns which led to the evolution of subject agreement marking (Givón 1976) and

³ All information and data on Old Turkic and Modern Turkish have been taken from the following reference grammars: Gabain (1950), Erdal (2004), Kornfilt (1997) and Lewis (2000).

the univerbalization of verbal complexes which led to the elaboration of aspect-tense marking (Lehmann [1982] 1995).

4.1. Cliticization of subject pronouns

In Old Turkic, sentences with pronominal subjects were formed with a postponed pronoun at the end of the non-verbal or verbal predicate. For the sake of emphasis or contrast, another personal pronoun could be placed in preverbal position (5).

- (5) Postponed subject pronouns in Old Turkic (Adamović 1985: 27, Gabain 1950: 183)
- | | |
|--|---|
| a. <i>(ben) bay ben</i> ‘I am rich’ | <i>(ben) kelür ben</i> ‘I am coming’ |
| b. <i>(sen) kiři sen</i> ‘you are a man’ | <i>(sen) kelür sen</i> ‘you are coming’ |
| c. <i>(ol) ädgü Ø ~ ol</i> ‘he is good’ | <i>(ol) qilur Ø ~ ol</i> ‘he is doing’ |

In thirteenth century texts, the postponed pronouns in predicate-final position appear cliticized to the preceding word. Symptoms for the phonological bonding come from sandhi rules which apply at the morpheme boundary, for example *b > v*-sandhi in the first person singular, cf. *ben > van ~ ven*, and vowel harmony processes which span the host-clitic combination. Representative paradigms for non-verbal and verbal predicates are given in (6).

- (6) Cliticized subject pronouns in 13th century Turkish (Adamović 1985: 27f., 48ff.)
- | | |
|--|--|
| a. <i>(ben) bay-van ~ bay-am</i> ‘I am rich’ | <i>(ben) diler-ven ~ diler-em</i> ‘I am wishing’ |
| b. <i>(sen) bay-sin</i> ‘you are rich’ | <i>(sen) gelür-sin</i> ‘you are coming’ |
| c. <i>(ol) bay-durur</i> ‘he is rich’ | <i>(ol) gelür</i> ‘he is coming’ |
| d. <i>(biz) bay-uz</i> ‘we are rich’ | <i>(biz) bilür-üz</i> ‘we are knowing’ |
| e. <i>(siz) bay-siz</i> ‘you are rich’ | <i>(siz) diler-siz</i> ‘you are wishing’ |
| f. <i>(anlar) bay-durur(lar)</i> ‘they are rich’ | <i>(anlar) gelür(ler)</i> ‘they are coming’ |

In Modern Turkish, the cliticized subject pronouns have developed into the *z*-paradigm of subject agreement marking, cf. (7).

- (7) Forms of the *z*-paradigm in Modern Turkish (Lewis 2000: 93f., 117f.)
- | | |
|---|-----------------------------------|
| a. <i>(ben) hazır-ım</i> ‘I’m ready’ | <i>(ben) gelir-im</i> ‘I come’ |
| b. <i>(sen) hazır-sın</i> ‘you are ready’ | <i>(sen) gelir-sin</i> ‘you come’ |

- | | |
|---|-------------------------------|
| c. (o) hazır(-dır) ‘he is ready’ | (o) gelir ‘he comes’ |
| d. (biz) hazır-ız ‘we are ready’ | (biz) gelir-iz ‘we come’ |
| e. (siz) hazır-sınız ‘you are ready’ | (siz) gelir-siniz ‘you come’ |
| f. (onlar) hazır(-dır)-lar ‘they are ready’ | (onlar) gelir-ler ‘they come’ |

By distributional criteria, the forms of the *z*-paradigm still behave as clitics, since they show low selectivity with respect to their host, they do not exhibit morphological idiosyncrasies and they can be dropped in “conjunction reduction“ (cf. Kornfilt 1996, Good & Yu 2005). Whereas preverbal subject pronouns constitute words of their own, i.e. they receive stress, the postponed pronouns appeared unstressed in postverbal position ever since. This prosodic behavior is regular in terms of phrasal stress assignment in Turkish: in phonological phrases containing two words, the first word receives phrasal stress. Arguably, this phrasal stress pattern has been reinterpreted as an instance of irregular word stress in Modern Turkish in which the enclitic constitutes an unstressed syllable that leans on the preceding verbal host:

- (8) Development of the stress domain
- S-structure: [Lex Fnc]
- P-structure: ((ke'lür)_ω (sen)_ω)_P
- ⇒ ((ge'lir)_ω-sin)_P

With respect to the word-level process of vowel harmony, however, the enclitic is prosodically integrated into the domain of its host word. Accordingly, the clitic vowel /i/ in the last line of (9) harmonizes with the stem vowel /e/ with respect to the features [front] and [unrounded].

- (9) Development of the vowel harmony domain
- S-structure: [Lex Fnc]
- P-structure: ((ke'lür)_ω (sen)_ω)_P
- ⇒ ((ge'lir-sin)_ω)_P

Due to the different degrees of prosodic integration evidenced for the two prosodic processes, multiple word domains need to be postulated in the synchronic analysis (10). The stress domain turns out to be the most conservative, since it does not fully integrate the

grammaticalizing form, leaving it unstressed at the right margin of the construction. This incomplete prosodic integration thus results in a deviation from word-final stress.

(10) Multiple word domains

- S-structure: [Lex Fnc]
 P-structure (stress): ((ge'lır)_ω-sin)_P
 P-structure (vowel harmony): ((ge*lir*-sin)_ω)_P

4.2. Univerbalization of verbal complexes

Another morphologization process which can be traced throughout the documented history of Turkish has its origin in a converb construction which consists of a non-finite verb marked by a converb marker and a finite verb marked for aspect, tense, mood, person and number (cf. Heine & Kuteva 2002). The examples in (11) illustrate Old Turkic converb constructions which have been grammaticalized to express actionality, intention, ability and version (Erdal 1979; Johanson 1998; Ağcagül 2004).

(11) Verbal complexes in Old Turkic (Gabain 1950: 129, Adamović 1985: 116ff.)

- a. *gel-i yür-ür* 'he is coming' (yür-i- 'to go, walk')
 b. *kör-ü bil-* 'to know how to obey' (*bil-* 'to know')
 c. *qıl-u u-* 'to be able to do' (*u-* 'be able')
 d. *ay-u bir-* 'communicate' (*bir-* 'to give')
 e. *alta-yu tur-* 'to keep cheating' (*tur-* 'to stand')
 f. *kü-yü tut-* 'to keep guarding' (*tut-* 'hold')

Although the converb marker changed in some cases, the construction itself is still in use in Modern Turkish. With respect to their grammatical status, the various forms vary in such a way that they can be interpreted as representing different stages of morphologization on a grammaticalization cline. At least *-Iyor-* 'progressive' (12a) and *-(y)Abil-* 'potential' (12b) can now be considered disyllabic suffixes, since they are completely desemantized and form a cohesive morphological word with their base. Additional evidence for the different degrees of grammaticalization comes from the possibility of inserting the clitic =*dA* 'and, also, too' between the converb marker and the second verb stem. This seems to be possible with *-(y)A-*

dur-, less acceptable with *-(y)Abil-*, e.g. *yapmaya-da-bilirim* ‘or I could NOT do it’, and presumably ungrammatical with *-Iyor-* (see also Bainbridge 1988).

(12) Univerbalized verbal complexes in Turkish (Lewis 2000: 106f., 153, 190f.)

- a. *gel-iyor-um* ‘I am coming’ (*yor-* ‘to go, walk’)
- b. *gel-ebil-ir-im* ‘I can come’ (*bil-* ‘to know’)
- c. *neler çek-e-gel-di* (*gel-* ‘to come’)
 ‘what things he has always suffered’
- d. *onu kaldır-ı-ver-elim* (*ver-* ‘to give’)
 ‘let’s quickly remove it’
- e. *söylen-e-dur-ur* (*dur-* ‘to stand’)
 ‘he keeps grumbling’

Although the word boundary gets deleted in the course of this morphological reanalysis, the prosodic domain structure still mirrors the phrasal origin of the construction. Stress assignment, crucially, continues to refer to the right word boundary of the former converb, such that the dysfunctionalized converb marker receives stress and not the final syllable of the entire string, cf. (13).

(13) Development of the stress domain

- S-structure: [Lex Fnc]
- P-structure: ((*ge'l-i*)_ω (*yür-ür*)_ω)_P
- => ((*ge'l-i*)_ω*yör-um*)_P

With respect to vowel harmony, the former word boundary still delimits two prosodic domains, such that the stem and the suffix morpheme that originates from the second verb stem in the converb construction initiate their own vowel harmony domains. Whereas the first suffix vowel /i/ in the last line of (14) shares the features [front] and [unrounded] with the stem vowel /e/, the vowel of the first person singular marker *-(y)Im* assimilates to the features [back] and [rounded] of the second suffix vowel of *-Iyor*.

(14) Development of the vowel harmony domain

- S-structure: [Lex Fnc]
- P-structure: ((*ge'li*)_ω (*yür-ür*)_ω)_P

$$\Rightarrow ((ge'l-i)_{\omega}(yor-um)_{\omega})_P$$

Despite the fact that the morphological structure changes in the course of this grammaticalization process, the organization of prosodic structure is more conservative again, such that the grammaticalizing forms are not fully integrated into the domains for word stress and vowel harmony. The multiplicity of word domains attested in this case not only evidences another deviation from word-final stress, but also an exception to the word-spanning syllabic assimilation process of vowel harmony.

(15) Multiple word domains

S-structure: [Lex Fnc]

P-structure (stress): $((ge'l-i)_{\omega}yor-um)_P$

P-structure (vowel harmony): $((ge'l-i)_{\omega}(yor-um)_{\omega})_P$

5. Summary and conclusions

This paper traced two morphologization processes in the attested history of Turkish, arguing that morphophonological irregularities at a given diachronic stage may mirror different degrees of grammaticalization in prosody and morphology. Whereas the encliticization of postponed subject pronouns, e.g. Old Turkic *kelür sen* > Modern Turkish *gelir-sin* ‘you come’, is accompanied by prosodic integration into the vowel harmony word domain, cf. $((ge'lir-sin)_{\omega})_P$, the morphemes are not integrated into the word stress domain, but adjoin to the prosodic word as unstressed syllables, cf. $((ge'lir)_{\omega}-sin)_P$. This development thus leads to an instance of irregular non-final stress. In the case of the univerbalization of converb complexes, e.g. Old Turkic *gel-i yür-ür* ‘he is coming’ vs. Modern Turkish *gel-iyor-um* ‘I am coming’, the highly morphologized construction still constitutes two vowel harmony word domains, cf. $((ge'l-i)_{\omega}(yor-um)_{\omega})_P$. For the sake of stress assignment, the former phrasal stress pattern with final stress on the first member of the verbal complex is retained in another deviation from final stress, cf. $((ge'l-i)_{\omega}yor-um)_P$.

The results of this case study imply that, in principle, grammaticalization on the different levels of linguistic structure may be less dependent on one another as often thought. Prosodic domains, in particular, seem to be more conservative compared to morphosyntactic domains. Even within prosody, the phonological concomitants of grammaticalization may

vary across grammaticalization paths (cliticization of subject pronouns vs. univerbalization of converb constructions) and across phonological tiers (word stress vs. vowel harmony). Different degrees of prosodic integration thus lead to the multiplication of prosodic word domains and ultimately to irregularities in word-prosodic rules, such as stress assignment.

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