Interface constraints for nuclear stress assignment under broad focus in Western Armenian vs. Turkish and Persian

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Abstract

Western Armenian is an understudied Indo-European language. We document the distribution of nuclear stress under broad focus for Western Armenian, and contrast the data against Turkish and Persian. We capture the distribution and cross-linguistic differences by defining a set of constraints that reference head-complement relations, directionality in ditransitives, and the stressability of manner adverbs and definite objects. These constraints and their ranking allow definite objects to be stressed in Armenian and Turkish, but not in Persian. We argue that the differences in the placement of nuclear stress across the three languages cannot be completely boiled down to just syntactic differences, but must reference arbitrary constraints on the syntax-phonology interface.

Keywords: Armenian, Turkish, Persian, nuclear stress, phonology-syntax interface

1. Introduction

Nuclear stress is the perception of the most prominent prosodic constituent in a sentence. This paper documents the distribution of nuclear stress in Western Armenian. Armenian is an Indo-European language with two standard lects: Western (WA) and Eastern (EA). There is scant documentation on the assignment of nuclear stress in Armenian. This paper focuses on broad focus contexts, meaning sentences where all information is considered new information without narrow focus or contrastive focus. Armenian is an SOV language, and nuclear stress is immediately preverbal for most cases. We look at constructions utilizing simple SOV orders, complex predicates, object dropping, bare vs. definite objects, ditransitives, and low adverbs.

Throughout this paper, I regularly discuss the Armenian data in contrast to Turkish (TU) and Persian (PA), two languages that have been in contact with Armenian. We find that the Western Armenian data is more similar to Turkish than to Persian. For example, like Turkish, Western Armenian assigns stress to the rightmost argument in ditransitive constructions. Armenian likewise distinguishes morphologically simple vs. complex low adverbs, such that only the simple ones can take stress. The simple adverbs likewise have strict restrictions on where they can appear in a sentences. In contrast, Persian bans assigns leftmost stress in ditransitives, and it does not distinguish morphologically simple vs. complex adverbs.

The most significant aspect of this paper concerns definite objects. We argue that they can carry nuclear stress in Turkish and Western Armenian, but not Persian. We argue that this cross-linguistic contrast is not due to any differences in the syntax of these languages. All three languages are reported to treat definite objects as higher than bare objects.

For work on the syntax-phonology interface, there is a wealth of formal devices for the assignment of nuclear stress under broad focus. But many of these have been developed based on Romance and Germanic data, which has markedly different syntax from Armenian and thus doesn’t neatly fit with the Armenian data (Adger 2007; Bresnan 1971; Chomsky & Halle 1968; Cinque 1993; Zubizarreta 1998). Furthermore, although there is more cross-linguistic work on using optimality constraints for nuclear stress (Féry 2013; Samek-Lodovici 2005), most work concerns the acoustic and syntactic effects of narrow focus, not broad focus sentences. Thus, I developed my own constraints to describe the various factors that affect the placement of
nuclear stress. The rankings of these constraints can capture subtle variations across Armenian, Turkish, and Persian. These constraints are listed below and they encapsulate parameters on nuclear stress placement, such as parameters on head-argument relations and directionality.

(1) Parameter-like constraints for nuclear stress under broad focus

a. **COMP**: Stress is on the complement of the verb.

b. **STR-VP**: Stress is within the verb phrase.

c. **SPEC-D0**: Stress is not on definite direct objects.

d. **L-ARG OR R-ARG**: Stress is on the leftmost or rightmost argument in VPs with multiple arguments.

e. **MADV**: Stress is on manner adverbs.

This paper is organized as follows. §2 provides background information on Armenian syntax and prosody. §3 describes stress assignment in simple SOV sentences, with bare or indefinite objects (§3.1), complex predicates (§3.2), and object dropping (§3.3). §4 discusses definite objects which can be stressed in Western Armenian and Turkish, but not Persian. §5 discusses ditranstives, §6 handles adverbs, and conclusion are in §7.1

2 Background on Armenian

This section gives overviews of work on Armenian syntax and prosody, both in Western Armenian and Eastern Armenian, with some known contrasts against Persian and Turkish.

On the syntax side, there is some work on Western Armenian (Khanjian 2013; Sigler 1997) and Eastern Armenian (Apresjan & Polinsky 1996; Hodgson 2019b; Megerdoomian 2009; Tamrazian 1994; Yeghiazaryan 2010). For the prosodic system, there is some work on finding the acoustic cues of lexical and sentential prominence in Western (Athanasopoulou, Vogel, & Dolutian 2017) and Eastern Armenian (Hagverdi 2016). There is likewise work on the acoustics of intonational contours in Western (Toparlak 2019) and Eastern Armenian (Skopeteas 2019; Volskaya & Grigoryan 1999, 2000).2 In terms of rhythm, some studies describe Armenian as syllable-timed, both for Eastern Armenian (Bagdasaryan & Vanyan 2015; Mirakyan 2016; Vanyan 2015) and for Western Armenian (Vogel & Athanasopoulou, 2018).

But to my knowledge there is no explicit discussion on the assignment of nuclear stress in different types of syntactic constructions in Western Armenian. Furthermore, the bulk of intonational and prosodic data on Armenian concern constructions which have contrastive or narrow focus (Dum-Tragut 2009; Johnson 1954). Some Soviet grammarians imply that, in broad focus, Armenian lacks sentential stress (Abegyana 1933:23–4). To my knowledge, the largest body of work on nuclear stress in Armenian concerns the correlation between nuclear stress and auxiliary placement in Eastern Armenian (Comrie 1984; Hodgson 2019a, 2019b; Kahnemuyipour & Megerdoomian 2011, 2017; Megerdoomian 2009; Tamrazian 1994).

In contrast, there is a wealth of syntactic and prosodic literature on Turkish and Persian. Armenian has had millennia of language contact with both languages, and this had led to many syntactic and prosodic parallels across the three languages (Danabedian & Sitaridou 2021). For instance, all three languages are SOV and

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1 I thank Nazila Shafiei for Persian judgments, and Yâgmar Sağ for Turkish judgments. I thank Arsalan Kahnemuyipour, Beste Kamali, and Oner Özçelik for discussion. Transcriptions are in IPA for Armenian, orthography for Turkish, and transliterated for Persian. For Armenian, we transcribe the segments /ɑ,ɛ,ɔ,ɾ,χ,ʁ,r/ as a,e,o,r,x,ɣ,ṙ; we do not mark aspiration on consonants. Armenian citations are Romanized based on the ISO 9985 transliteration system.

2 There are also some early structuralist grammars which provide juncture-based analysis of Armenian intonation (Fairbanks 1948; Johnson 1954). There is some Soviet literature on Eastern Armenian intonation (T’oxmaxyan 1971, 1975, 1983), surveyed in Dum-Tragut (2009:47ff).
Interface constraints for nuclear stress assignment under broad focus in Western Armenian vs. Turkish and Persian primarily suffixing. Turkish and Armenian have more similarities because both are agglutinative and have case-marking. In terms of morphological structure, Armenian utilizes an intricate paradigm of possible ways to mark degrees of definiteness on nouns. In object position, the object can be morphologically bare, marked definite, or marked indefinite. The indefinite morpheme is generally restricted to singular nouns; though plurals can take it as long as there’s a sense of the nouns being indistinct (Sigler 1997:104).

(2) a. WA: jes kirk unim c. WA: jes kirk-mə unim
   I book have I book-INDEF have
   ‘I have books.’ ‘I have a book.’

b. WA: jes kirk-ə unim d. WA: jes kirk-er-mə unim
   I book-DEF have I book-PL-INDEF have
   ‘I have the book.’ ‘I have some (random) books.’

As a case of phonologically-conditioned allomorphy, the definite suffix is -ə after consonants, and -n after vowels. Both nominative and accusative are covert, while dative is overt -i or -u. Western Armenian utilizes (variable) differential object marking on human objects by marking them as dative (Nilsenova 2002).

(3) a. WA: jes kirk-ə desa
   I book-DEF saw
   ‘I saw the book.’

b. WA: jes marjam-i-n desa
   I Mariam-DAT-DEF saw
   ‘I saw Mariam.’

In terms of prosodic phonology, all three languages have lexical stress on the final vowel in the general case, but with specific classes of exceptions. In Armenian, stress is on the rightmost non-schwa vowel; final schwas cause stress to appear on the non-final syllable. The morphological word thus forms a single prosodic word (PWord, w) (Dolatian 2020, 2021a). Throughout this paper, I underline the stressed syllable, whether for lexical, phrasal, or sentential stress.

(4) a. TU: (kirmızı)w
   b. PA: (qirmızı)w
   c. WA: (garmir)w
      ‘red’
   d. WA: (garmir-ə)w
      red-DEF
      ‘The red one’

The languages start to diverge though as we go to higher levels of morphosyntactic and prosodic structure. Compounds form single prosodic words in Persian and Armenian, as evidenced by final stress. Morphologically, compounds in Armenian are formed by concatenating stems with a linking vowel (LV) -a- (Dolatian 2021b; Donabédian 2004). In contrast, Turkish treats compounds as two PWords with stress on the left member.

(5) a. TU: (açı)w (olc-er)w
    angle measure-AOR
    ‘protractor’ (from Kabak and Vogel (2001:337))

3 Eastern Armenian also utilizes a combination of both definite and indefinite marking in order to create ‘specific indefinites’. This leads to analyses that treat ‘definite marking’ in Eastern Armenian as actually being specificity marking (Megerdoomian 2009; Scala 2011; Tamrazian 1994).

4 This is a phonological trigger for non-final stress in Armenian. Morphological triggers of non-final stress abound in Turkish and Persian (Inkelas & Orgun 2003; Kabak & Vogel 2001; Kahanemuyipour 2003).
b. PA: \((\text{ketâb-xu})\)
book-house
‘library’ (from Kahnemuyipour (2003:340))
c. WA: \((\text{don-a-žar})\)
holiday-LV-tree
‘Christmas tree’

At the level of prosodic phrases, both Turkish and Persian are reported to place phrasal stress on the leftmost member.\(^5\) In contrast, there is little work on Armenian phrasal stress. In my judgments, Western Armenian places phrasal stress on the rightmost member in a prosodic phrase.\(^6\)

(6) a. TU: \((\text{bu})\)\((\text{kitap})\)
this book
(from Goad and White (2009:4))
b. PA: \((\text{in})\)\((\text{ketâb})\)
this book
(from Kahnemuyipour (2003:342))
c. WA: \((\text{ajs})\)\((\text{kirk-ə})\)
this book-DEF
‘This book’

For Armenian, it is often reported that phrasal stress falls on syntactic heads (Abeğyan 1933:33). Because Armenian is right-headed, this implies that prosodic phrases are generally right-headed (Abeğyan 1933:25).\(^7\) Stress clash repairs can apply in prosodic phrases (Abeğyan 1933:28). Fairbanks (1948:24-7) gives fairly detailed descriptions of stress clash resolutions and phrasal stress in Western Armenian. These are summarized in Vaux (1998:59,145).

In terms of sentential or nuclear stress, there are many studies on the assignment of nuclear stress in Turkish (İşsever 2003, 2006; Üntak-Tarhan 2006) and Persian (Kahnemuyipour 2009). There is likewise ample work on the acoustic cues for sentential prominence in Turkish (Güneş 2015; Kamali 2011; Özge & Bozsahin 2010) and Persian (Hosseini 2014; Mahjani 2003; Rahmani 2019; Sadat-Tehrani 2007). The same can’t be said for Armenian. However, it seems that Armenian has (generally) preverbal stress like Turkish (Göksel & Özsoy 2000). Like both Turkish and Persian, Armenian also utilizes post-focal compression or deaccenting (Xu 2011) to mark nuclear stress (Western Armenian: Toparlak 2019; Persian: Abolhasanizadeh, Bijankhan, and Gussenhoven 2012; Taheri-Ardali, Rahmani, and Xu 2014; Turkish: Ipek 2011, 2015).

Given that Western Armenian differs from the other two languages in compound and phrasal stress assignment, the next few sections will document how Western Armenian generally matches the other two languages in terms of sentential or nuclear stress assignment, with limited but systematic places of divergences. My judgments are impressionistic judgments of my own speech of Western Armenian as spoken in Beirut,\(^8\)

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\(^5\) Although Kahnemuyipour (2003) reports that prosodic phrases in Persian have initial stress, Rahmani (2019:ch3.4) provides counter-evidence.

\(^6\) For Eastern Armenian, Kahnemuyipour (2009:11) and Kahnemuyipour and Megerdoomian (2011:159) provide evidence that phrasal stress is assigned on the leftmost lexical word in Tehrani Eastern Armenian (1a).

(1) a. Tehrani Eastern Armenian
(me hat metz muk)
‘one CL big mouse’

b. Western Armenian
(medz mug-ma)
‘A big mouse (indefinite, nonspecific)’

This is possibly restricted to Tehrani Eastern Armenian due to influence from Persian. Soviet grammars of Eastern Armenian (as spoken in Armenia) are generally vague on nuclear stress, but their data suggests that phrasal stress is on the final element, usually the head of the phrase. I have similar judgments for final phrasal stress in Western Armenian (1b). However, Sigler (1997:87) reports initial phrasal stress in Western Armenian; but I disagree with those judgments.

\(^7\) However, there are reports of adpositional phrases variably forming left-headed prosodic phrases in Eastern Armenian (Margaryan 1997:78; Bagdasarian and Vanyan 2011). I leave the documenting the larger set of possible prosodic phrases to future work.
Lebanon. To maximize comparability of Armenian to Turkish and Persian, I tried to use the same sentences across the three languages, and I elicited judgments from native speakers. When in doubt, I checked for post-focal compression on Praat.

3 Stress assignment in simple SOV sentences

This section describes preverbal stress in simple SOV sentences with a bare or indefinite object (§3.1). When a complex predicate is used, stress is on the object if present: SOXV, else on the preverbal member of the complex predicate: SXV (§3.2). If a sentence dropped the object, then stress is on the verb: SV (§3.3). I capture these facts using constraints on head-complement relations and on stress placement within the VP.

3.1 Head-complement relations in bare objects

As a basic sentence, consider an SOV sentence with a bare object. The following sentence is elicited in a broad focus context, such as in response to the question “What happened?” Here, the preverbal object lacks any morphological markers for definiteness or specificity. Nuclear stress is on the stress syllable of the object.

(7) S DO V
a. PA: Ali  ke tâb xund
   Ali  book  read
b. TU: Ali  ki tap okudu
   Ali  book  read
c. WA: Ali-n kirk gartaṭ
   Ali-DEF  book  read
   ‘Ali read books.’

Across the three languages, the bare object acts as number-neutral and is interpreted as a generic noun (Persian: Modarresi 2014; Western Armenian: Sigler 1997; Turkish: Aydemir 2004; Kamali 2015). Syntactically, the bare object is argued to be pseudo-incorporated (Massam 2001) in all three languages (Sağ 2019), including Eastern Armenian (Crum 2020; Yeghiazaryan 2010).

A similar construction is using an indefinite object. Here, the object has some indefinite morpheme and it still carries nuclear stress. The object is interpreted as indefinite non-specific for Turkish and Persian. For Armenian, the object is either specific or non-specific indefinite, with larger bias towards a non-specific reading (Sigler 1997:90ff).

(8) S DO V
a. PA: Ali  ye ketâb xund
   Ali  INDF  book  read
b. TU: Ali  bir kitap okudu
   Ali  book  INDF  read
c. WA: Ali-n kirk-ma gartaṭ
   Ali-DEF  book-INDF  read
   ‘Ali read a book.’

The placement of nuclear stress on the preverbal object is cross-linguistically expected. As a semantic correlation, it is a common tendency for the verb (as a predicate) to assign stress or prominence on its argument (Schmerling 1973). It is also cross-linguistically common for prominence to be sensitive to head-complement relations (Donati & Nespor 2003; Nespor & Vogel 1986). There is likewise a common syntactic tendency for
the most embedded constituent in the sentence to carry stress, e.g., a bare object in an SOV sentence (Cinque 1993). To recapitulate this generalization, I define the following constraint COMP. This constraint requires that, given some head H, prominence is assigned to the complement of H. I assume that the head of the sentence is the verb.

(9) a. COMP: Assign a violation if the head of the sentence (V) has a complement (argument), but stress is not on the complement (argument).

b. Deriving object stress in the three lects

<table>
<thead>
<tr>
<th>S DO V</th>
<th>COMP</th>
</tr>
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<tbody>
<tr>
<td>a. S DO V</td>
<td>*!</td>
</tr>
<tr>
<td>b. ᅠS DO V</td>
<td></td>
</tr>
<tr>
<td>c. S DO V</td>
<td>*!</td>
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</table>

The above constraint is descriptive in that it merely recapitulates this cross-linguistic generalization. However, this constraint is surface-true.

Another instance of this constraint comes from bare locatives which are preverbal in Turkish and Western Armenian, but often postverbal in Persian. They are stressed. The syntax must be assumed to treat these locatives as arguments instead of adjuncts.

(10) a. PA: raftam xu
    went     home
    ‘I went home.’ (adapted from Folli, Harley, and Karimi (2005:1389))

b. TU: eve gittim
    home went
    ‘I went home.’

c. WA: dun katsi
    home went
    ‘I went home.’

3.2 Transitive placements of stress in complex predicates

The effects of head-complement relations are visible in more complex types of constructions, such as in complex predicates. In all three languages, a complex predicate is a construction that combines two elements to create a verbal predicate. When these complex predicate take a bare object, stress is on the object.

(11)  S DO X V

a. PA: Ali miz tamiz kard
    Ali table clean made

b. TU: Ali hasta muayene etti
    Ali patient examine did
    ‘Ali examined patients.’ (adapted from Öztürk (2005:57))

c. WA: Ali-n jerk mədig orav
    Ali-DEF song listen did
    ‘Ali listened to songs.’

When there is no object, stress on the first element of the predicate.
(12) S X V
   a. PA: Ali tamiz kard
       Ali clean made
       ‘Ali cleaned (tables).’
   b. TU: Ali muayene etti
       Ali examine did
       ‘Ali examined (patients).’
   c. WA: Ali-n modig arav
       Ali-DEF listen did
       ‘Ali listened (to songs).’

In a complex predicate, the second element is a semantically bleached verb or a light verb. This verb carries all verbal inflection. The first element can be a freely-occurring word in the language, or a word that’s restricted to appear in these complex predicates. For example, the Western Armenian complex predicate modig anel ‘to listen’ consists of two words: modig and anel. The second word is the light verb ‘to do’, while the first word is a meaningless word that is only found in this construction.

Complex predicates abound in Persian and are subject to systematic restrictions on their semantics and syn-tactic cohesion (Megerdoomian 2009, 2012). Complex predicates are likewise found in Turkish, especially in predicates that involve Arabic borrowings as the first element. Complex predicates are rarer in Western Armenian, but they exist. In Armenian, many cases of complex predicates arise from calque formation, such as p(o)rint anel ‘to print’ (literally ‘print do’).

Stress assignment with complex predicates follows from the constraint Head. The head of the sentence is the light verb. I assume its complement is the constituent formed by the object and preverb. The complement of the preverb in turn is the object. Transitivity then places stress on the object if present, else on the preverb.

(13) a. Deriving object stress in the three lects

<table>
<thead>
<tr>
<th></th>
<th>S DO X V</th>
<th>Comp</th>
</tr>
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<tbody>
<tr>
<td>a.</td>
<td>S DO X V</td>
<td>**!</td>
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<tr>
<td>b.</td>
<td>S DO X V</td>
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<tr>
<td>c.</td>
<td>S DO X V</td>
<td>*!</td>
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<tr>
<td>d.</td>
<td>S DO X V</td>
<td>**!</td>
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</table>

b. Deriving stress on the complex predicate without objects

<table>
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<th>S X V</th>
<th>Comp</th>
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</thead>
<tbody>
<tr>
<td>a.</td>
<td>S X V</td>
<td>*!</td>
</tr>
<tr>
<td>b.</td>
<td>S X V</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>S X V</td>
<td>*!</td>
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</table>

3.3 Verb phrase as the domain of stress in object dropping

The languages likewise utilize object dropping. If the context permits, the object of the sentence can be dropped. The dropping happens when the knowledge of the object is already known to the speakers in the discourse. When the object is dropped, stress is placed on the verb, not the subject.
(14) S (DO) V
   a. PA: Ali xund
       Ali read
   b. TU: Ali okudu
       Ali read
   c. WA: Ali-n gartats
       Ali-DEF read
       ‘Ali read (books).’

The constraint HEAD cannot describe why stress is placed on the verb, not the subject. To describe this dichotomy, I define a constraint Str-VP which requires that stress stays within the verb phrase. This constraint recapitulates the common dichotomy between subject as external arguments vs. objects as internal arguments, such that the latter forms a tight syntactic unit with the verb (Kratzer 1996).

(15) a. Str-VP: Assign a violation if stress is outside the verb phrase
   b. Deriving verb stress when the object is dropped

<table>
<thead>
<tr>
<th>S (DO) V</th>
<th>Str-VP</th>
<th>Comp</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. S (DO) V</td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>b. ☛ S (DO) V</td>
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</table>

The analysis requires that subjects have raised out of VP. This means that subjects that stayed inside the VP should be able to take nuclear stress under broad focus. This is true. Evidence comes from agent pseudo-incorporation in Turkish (Öztürk 2009:335) and Western Armenian, whereby the subject stays inside the VP while the object is raised. The pseudo-incorporated subject is morphologically bare, non-referential, and lacks any overt definiteness or indefiniteness marking. Stress is on the subject (see Özçelik and Nagai 2011 for similar behavior of Turkish indefinite subjects).

(16) DO S V
   a. TU: Ali-yi ari soktu
       Ali-ACC bee stung
   b. WA: Ali-ji-n meyu xajjets
       Ali-DAT-DEF bee stung
       ‘Ali got bee-stung.’

This requires the ranking of Str-VP over Comp for at least Turkish and Western Armenian. The agent is low in the syntax inside the VP and it is treated as a complement of the verb. The object still is an argument of the verb, but it is not within the VP.\(^8\)

(17) a. Str-VP: Assign a violation if stress is outside the verb phrase
   b. Deriving verb stress when the object is dropped

<table>
<thead>
<tr>
<th>DO S V</th>
<th>Str-VP</th>
<th>Comp</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. DO S V</td>
<td></td>
<td>*!</td>
</tr>
<tr>
<td>b. ☛ DO S V</td>
<td></td>
<td></td>
</tr>
<tr>
<td>c. DO S V</td>
<td></td>
<td>*!</td>
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</table>

\(^8\) Comp is satisfied as long as one of the complements/arguments of the verb is stressed. Our definition of Comp is based on semantic arguments or complements. If we defined Comp as based solely over the syntactic tree, then the stressed DO here would violate Comp. The object would not be a syntactic complement, only the subject would be.
4 Stress and syntactic structure of definite objects

So far, we have not documented any divergences across the three languages when it comes to nuclear stress. Differences start once we use definite objects. They are stressed in Western Armenian and Turkish, but not Persian (§4.3). The same dichotomy is found in inherently-definite objects (§4.2). We describe this generalization in terms of a superficial constraint (§4.1). We argue that this difference cannot be blamed on the different syntax between the languages (§4.4). All three languages seem to treat definite objects in the same way when it comes to syntactic behavior.

4.1 Stress assignment in definite objects

All three languages utilize special marking to designate an object as definite. This is done via using the accusative marker -I in Turkish, the -râ clitic in Persian, and the definite suffix -ə/-n in Armenian. For Turkish and Armenian, stress is still on the object. But in Persian, stress is now on the verb. Specific indefinites behave the same; these often have the meaning of a partitive (Enç 1991).

(18) S DO V, or S DO V

a. Definite object
   i. PA: Ali ketâb-râ xund
      Ali book-râ read
   ii. TU: Ali kitab-t okudu
      Ali book-ACC read
   iii. WA: Ali-n kirk-ə gartâts
      Ali-DEF book-DEF read
      ‘Ali read the book.’

b. Specific indefinite object
   i. PA: Ali yek ketâb-râ xund
      Ali INDF book-râ read
   ii. TU: Ali bir kitab-t okudu
      Ali INDF book-ACC read
   iii. WA: Ali-n kirk-mə gartâts
      Ali-DEF book-INDF read
      ‘Ali read a book (from a set).’

For Persian, it is a systematic fact in the language that objects marked with -râ never receive nuclear stress under broad focus (Kahnemuyipour 2009). The -râ suffix is often considered a specificity marker (Karimi 2003), with quite complex semantics (Ghomeshi 1997; Jasbi 2020). For Turkish, the reported facts are more controversial. Earlier work in Turkish argued that definite objects don’t carry nuclear stress under broad focus (Orgun & Inkelas 2005). But more recent work has reported that these objects can indeed carry stress (Kamali 2011; Nakipoğlu 2009, 2019; Üntak-Tarhan 2006). Similarly for Western Armenian, the little work which exists also reports that definite objects are unstressed (Sigler 1997:86), but I disagree in these judgments.9

For Turkish, the problem is that contexts which can elicit definite objects can often involve treating the object as some type of given constituent. Thus, the main difficulty in eliciting definite objects is to contrive of dialogues or contexts where the definiteness of the object is both new and felicitous. Nakipoğlu (2009) documents a set of such contexts. One such dialogue is presented below, translated from Nakipoğlu (2009:1270)’s case study on Turkish.

(19) Dialogue to elicit definite objects as new information

a. Dialogue
   • A: What is happening? What is this noise?
   • B: Last night it snowed a lot. The municipality is plowing the road.

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9 For Eastern Armenian, Megerdoomian (2009) and Kahnemuyipour and Megerdoomian (2011) report that definite objects are unstressed in Megerdoomian’s Tehrani lect. Given the paucity of work on this topic, it is possible that definite objects are never stressed in (Tehrani) Eastern Armenian; this would make the Eastern data align with Persian. Or, it is possible that definite objects can be stressed in Eastern Armenian, but that more minute types of contexts are needed (Hodgson 2019a).
b. *Loose translation of the last clause in B*

   i. PA: Shahrdari dare rah-râ tamiz mikone
       municipality have road-râ clean doing
   
   ii. TU: Belediye yol-u açıyor
       municipality road-ACC opening
   
   iii. WA: kayabetjun-ə ʒampa-n əmekre=gɔr
       municipality-DEF road-DEF clean=PROG
       ‘The municipality is plowing/cleaning/opening the road.’

In the dialogue above, the object ‘road’ is definite and is treated as new information. It takes stress in Turkish and Western Armenian, but not Persian. The object is new information, but its definiteness is felicitous because as Nakipoğlu (2009:1270) explains for Turkish:

“A’s question about the noise and B’s reply about heavy snowfall immediately give rise to the construal of snow covered roads and a snowplow pushing snow off a certain road. The activation of such a construal relates the definite object with a specific road; hence the referent of the road becomes identifiable to the hearer during this brief exchange.”

In contrast, consider the dialogue below. Here, the object is given information and it is unstressed in all three lects. The object is treated as given information by B because “A’s sentence presupposes the proposition... [that r]oads may be snow covered due to the heavy snowfall” (Nakipoğlu 2009:1273).

(20) *Dialogue to elicit definite objects as given information*

   a. Dialogue

      • A: Last night it snowed a lot. Probably I can’t go to work by car.
      • B: The municipality is cleaning the road. You can go by car.

   b. Loose translation of the first clause in B

      i. PA: Shahrdari dare rah-râ tamiz mikone
          municipality have road-râ clean doing
      
      ii. TU: Belediye yol-u açıyor
          municipality road-ACC opening
      
      iii. WA: kayabetjun-ə ʒampa-n əmekre=gɔr
          municipality-DEF road-DEF clean=PROG
          ‘The municipality is plowing/cleaning/opening the road.’

The above dialogues show that definite objects, when new information, are stressed in Armenian and Turkish, but not Persian. Unsurprisingly, deaccenting is found when the object is given information.

4.2 *Inherently-definite objects and datives*

The generalization so far is that, as new information, definite objects are stressed in Turkish and Western Armenian, but unstressed in Persian. This section establishes the two main components to this generalization: 1) the constituent is semantically definite, and 2) it must be syntactically treated as a direct object.

For the first component, the object has to be semantically specific. One could argue that the reason why the languages diverge in their stress patterns is because the definite-marking morphology carries different
nuances of definite semantics across the languages. This would at first make sense, but it has problems with inherently-definite objects. Consider proper nouns or names. These are semantically and inherently definite. They are morphologically marked as definite in all three lects. As before, stress is on the object in Turkish and Armenian, but not in Persian.

(21) **Stressability of inherently-definite direct objects**

a. PA: Ali Mariam-râ  did
   Ali Mariam-râ  saw
b. TU: Ali Mariam-i     gördü
   Ali Mariam-ACC saw
c. WA: Ali-n marjam-i-n desav
   Ali Mariam-DAT-DEF saw
   ‘Ali saw Mariam.’

The proper noun data thus suggests that, for objects, it is the directly the semantic property of being definite that causes the stress contrast.\(^{10}\)

The second component of the generalization is that the object has to be treated as a direct (accusative) object by the morphosyntax. To understand this point, consider dative objects. In all three languages, the argument of the verb ‘to look at’ takes dative case. The dative is formed via dative suffixes in Turkish and Armenian, while it uses a preposition in Persian. In all three lects, stress is on the dative argument even if it’s definite.

(22) **Stress on definite dative arguments**

a. PA: Ali be kötab  negah kard
   Ali to book   look   make
b. TU: Ali kita  b-a baktı
   Ali book-DAT look.at
c. WA: Ali kirk-i-n  najetsav
   Ali book-DAT-DEF look.at
   ‘Ali looked at the book.’

Thus, the above data suggests that for Persian, the object argument is unstressed when it is both definite and marked accusative. In contrast in Armenian and Turkish, the object argument is stressed as long as its definite.

4.3 Describing the generalization

The generalization so far is that definite objects are stressed in Turkish and Armenian, while they are unstressed in Persian. To capture this dichotomy, I first use a descriptive constraint. I then argue that it is unclear how one can replace this constraint by just using enriched syntactic structures.

For the simple data from §4.3, the constraint HEAD would assign stress on the definite object in all three languages. To capture the difference between Persian and Armenian, I use an additional constraint *SPEC-DO which is violated by a stressed direct object that is morphosyntactically accusative and marked as specific. This constraint is low-ranked in Armenian and Turkish, thus licensing stress on the object. In Persian, this constraint outranks HEAD, thus licensing stress on the verb.

---

\(^{10}\) The same stress behavior is also found in other inherently-definite objects, like possessed nouns or demonstratives.
(23) a. \textbf{*SPEC-DO}: Assign a violation if the definite object is specific, accusative, and stressed  
b. 

\textbf{Allowing stress on definite objects in Turkish and Western Armenian}

\begin{center}
\begin{tabular}{|c|c|c|}
\hline
 & S Def-DO V & *Spec-DO \\
\hline
a. & S Def-DO V & *!
\hline
b. & S Def-DO V & *!
\hline
c. & S Def-DO V & *!
\hline
\end{tabular}
\end{center}

c. \textbf{Blocking stress on definite objects in Persian}

\begin{center}
\begin{tabular}{|c|c|c|}
\hline
 & S Def-DO V & *Spec-DO \\
\hline
a. & S Def-DO V & *!
\hline
b. & S Def-DO V & *!
\hline
c. & S Def-DO V & *!
\hline
\end{tabular}
\end{center}

This constraint likewise captures the differences across the three languages when it comes to stressing specific but indefinite objects. This constraint is a surface-true description of the facts. It likewise has cross-linguistic support from discourse transitivity (Hopper & Thompson 1980). Briefly, definite objects tend to correlate with backgrounded information.

4.4 Difficulty in position-based analysis

Based on the data so far, one could alternatively argue that perhaps definite objects in Western Armenian and Turkish have a different position than in Persian. Specifically, one could argue that both bare and definite objects are low in the VP (or phasal vP) for Western Armenian and Turkish. In contrast, the Persian bare object would be low in the VP, while the definite one would be higher, and outside of the syntactic domain of stress assignment.

(24) \textbf{Syntax-based alternative: two-slots for Persian, one slot for Turkish and Western Armenian}

a. Persian 

b. Turkish and Western Armenian

This argument has been explicitly argued for Persian because of the strict prosodic difference between bare and definite objects. The two argument-slot has empirical motivation in Persian due to constraints on word order and reference (Kahnemuyipour 2009). A common analysis is to treat the bare object as within the VP in its base position, while the definite object is raised to spec-vP. But the issue here is that the same syntactic differences between bare and definite objects in Persian likewise exist in Turkish and Western Armenian (Enç 1991; Öztürk 2005; Sigler 1997). This means that besides their prosodic differences, it is unclear if there is any systematic and relevant \textit{syntactic} differences between Persian on the one hand, and with Turkish and Armenian on the other.

For example, earlier work in Turkish and Western Armenian argued that definite objects are always unstressed. As syntactic correlations, there are many reports of syntactic asymmetries between bare and definite
objects in terms of word order, number neutrality, reference, scope, scrambling, telicity, among other properties (Enç 1991, among many others). To capture both these syntactic and (alleged) prosodic differences, earlier models utilized two slots for bare vs. definite objects. The bare object would be in its base position inside the VP while the definite object would raise to a higher position like spec-vP, AgrOP (Sigler 1997), or ThemeP (Öztürk 2005).

However, as described before in this paper, these earlier judgments on stress had confounds, and thus definite objects can be stressed in Turkish and Armenian. This means that if we try to connect the prosodic differences across the three languages to syntax, then we need to argue that definite objects raise to spec-vP in Persian, while they raise to a lower position in Armenian and Turkish, such as a spec-AspP (Kamali 2011; Üntak-Tarhan 2006:49). Bare objects would stay in their base position inside the VP. This analysis would create a set of three possible slots for objects.

(25) Three-slot analysis with Persian definite objects at spec-vP, while Turkish and Western Armenian at spec-AspP

But the problem with this analysis is that, to my knowledge, there have not been reports of syntactic differences between definite objects in Persian vs. Turkish and Armenian. For example, if definite objects raise to spec-AspP in Turkish and Armenian, but not in Persian, then this suggests that we should find some telicity differences across the three languages. But to my knowledge, no such contrasts have been discovered so far in the literature. It seems that definite objects can be telic in all three languages. This means that using an intermediate syntactic slot for definite objects in Turkish and Armenian is circular, because the motivation for this slot placement is only prosodic without any syntactic ramifications. See Nakipoğlu 2019:271:f10 for a brief critique along these lines.

As a further demonstration of this problem for the two-slot and three-slot analyses, Tehrani Eastern Armenian is reported to block stress on definite objects. The language likewise utilizes many syntactic contrasts between bare and definite objects, thus meriting a two-slot analysis (Megerdoomian 2009). However, these contrasts are likewise found in Western Armenian (Sigler 1997), even though definite objects can take stress. Furthermore, there is empirical evidence that the two-slot analysis may be too strong of a claim for even Persian (Faghiri 2016). Specifically, the various syntactic diagnostics that distinguish definite vs. bare objects are more likely to be gradient than categorical (Faghiri & Samvelian 2015, 2016, 2020; Faghiri, Samvelian, & Hemforth 2014).

In sum, definite objects are stressed in Armenian and Turkish but not Persian. Based on all the above problems, this difference is likely **not** due to any syntactic differences, but due to an arbitrary constraint on the syntax-phonology interface.
5 Directionality in ditransitive constructions

So far, the main divergence we have seen so far is for definite objects. Another area of divergence comes from ditransitive constructions which have leftmost stress in Armenian and Turkish, but rightmost stress in Persian.

In ditransitive constructions in the three lects, there is debate over the default ordering over the direct object (DO) and indirect object (IO). The ordering between them depends on information structure and on the definiteness of the arguments (Persian: Faghiri 2016; Turkish: İşsever 2006; Kamali 2015; Nakipoğlu 2019; Eastern Armenian: Polinsky 1996). As a base sentence, consider a ditransitive where both the DO and IO are indefinite. In Persian, the preferred ordering would be DO+IO. Stress is on the leftmost argument (the IO). In contrast for Turkish and Western Armenian, the preferred ordering is IO+DO, but DO+IO ordering is permitted. Regardless of ordering though, Turkish and Western Armenian place stress on the rightmost argument.

(26) S DO IO V, or S DO IO V
a. PA: Ali ye ketab be ye madrase-i dâd
   Ali INDF book to INDF school-INDF gave
b. TU: Ali bir ketap bir okul-a verdi
   Ali INDF book INDF school-DAT gave
c. WA: Ali kirk-mə təbroğ-i-mə dəvav
   Ali-DEF book-INDF school-DAT-INDF gave
   ‘Ali gave a book to a school.’

To capture the above dichotomy, the generalizations seems to be that of directionality (Sato 2012; Shaw 2009). We formulate the following constraints which require stress on either the leftmost-argument (L-Arg) or the rightmost argument (R-Arg). Persian ranks L-Arg above R-Arg, thus licensing leftmost stress. While Turkish and Western Armenian have the reverse ranking, thus licensing rightmost stress.

(27) a. Constraints on directionality
   • L-Arg: Assign a violation if the leftmost argument is not stressed
   • R-Arg: Assign a violation if the rightmost argument is not stressed

b. Deriving stress on the left argument in Persian ditransitives
   L-Arg >> R-Arg

<table>
<thead>
<tr>
<th></th>
<th>S Indf-DO Indf-IO V</th>
<th>COMP</th>
<th>L-Arg</th>
<th>R-Arg</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>S Indf-DO Indf-IO V</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>b.</td>
<td>S Indf-DO Indf-IO V</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>S Indf-DO Indf-IO V</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

c. Deriving stress on the right argument in Turkish and Western Armenian ditransitives
   R-Arg >> L-Arg

<table>
<thead>
<tr>
<th></th>
<th>S Def-DO V</th>
<th>COMP</th>
<th>R-Arg</th>
<th>L-Arg</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>S Indf-DO Indf-IO V</td>
<td></td>
<td>*</td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>S Indf-DO Indf-IO V</td>
<td></td>
<td></td>
<td>*</td>
</tr>
<tr>
<td>c.</td>
<td>S Indf-DO Indf-IO V</td>
<td>*</td>
<td>*</td>
<td>*</td>
</tr>
</tbody>
</table>

When the IO is definite, while the DO is indefinite, our Persian speaker preferred the order IO+DO with stress on the DO. It seems though that this ordering likewise treated the IO as given information, thus causing deaccenting. We set this nuance aside for future research.
As elaborated by Sato (2012), SOV languages with stress on the rightmost argument (preverbal stress) would correspond to a syntactic analysis based on stressing the deepest constituent within a syntactic domain (Cinque 1993). In contrast, SOV languages with stress on the leftmost argument (like Persian) would correspond to a syntactic analysis where stress is on the highest constituent within that domain (Kahnemuyipour 2009).

There are of course other potential orderings when one or both of the objects are definite. For Turkish and Western Armenian, any ordering of definite DO and definite IO will cause rightmost stress. For Persian, the ordering DO+IO causes rightmost stress because definite objects are always unstressed. The ordering IO+DO in Persian gives a reading of givenness for both the IO and DO, thus causing stress on the verb.\(^{11}\)

(28) a. S Def-DO Def-IO V
   i. PA: Ali ketâb-râ be madrase dâd
      Ali book-râ to school gave
   ii. TU: Ali ketab-ı okul-a verdi
        Ali book-ACC school-DAT gave
   iii. WA: Ali-n kirk-ə təbrots-i-n davav
          Ali-DEF book-DEF school-DAT-DEF gave
     ‘Ali gave the book to the school.’

   b. S Def-IO Def-DO V
      i. PA: Ali be madrase ketâb-râ dâd
          Ali to school book-râ gave
      ii. TU: Ali okul-a ketab-ı verdi
           Ali school-DAT book-ACC gave
      iii. WA: Ali-n təbrots-i-n kirk-ə davav
             Ali-DEF school-DAT-DEF book-DEF gave
        ‘Ali gave the book to the school.’

6 Manner adverbs and morphosyntactic complexity

So far, we have seen that Turkish and Western Armenian always pattern together to the exclusion of Persian. This is not surprising because Western Armenian has been in longer and more intense contact with Turkish than with Persian. But one area of divergence between comes from adverbs.

All three lects distinguish between at least two syntactic-semantic categories of adverbs: temporal adverbs (TAdv) vs. manner adverbs (MAdv). Temporal adverbs are TP-level high adverbs, while manner adverbs are VP-level low adverbs. TP-level adverbs like ‘yesterday’ are placed more towards the edges of the sentence, and they do not take nuclear stress.

(29) a. S TAdv DO V
   i. PA: Ali diruz ketâb xund
        Ali yesterday book gave
   ii. TU: Ali dün kitap okudu
        Ali yesterday book read
   iii. WA: Ali-n jereg kirk gartats
          Ali-DEF yesterday book read
     ‘Ali read books yesterday.’
Manner adverbs are however more complicated. In Persian, manner adverbs can precede a rather large VP, one that includes the verb and its arguments. Kahnemuyipour (2009:ch4.6)’s generalization is that Persian manner adverbs are placed at the left-edge of the vP. They take stress.

(30) PA: Ali  xu₂ tub be Hassan  dād
Ali  well  ball  to Hassan  gave
‘Ali assisted Hassan in the (football) game well.’
(Lit. ‘Ali gave ball to Hassan well.’) from Kahnemuyipour (2009:94)

Manner adverbs in Turkish and Western Armenian though are different. Both languages distinguish between two kinds of manner adverbs. One class of manner adverbs are morphologically simplex. Another class of adverbs are morphologically complex, whether via suffixation or reduplication.

(31) Classes of manner adverbs in Turkish and Western Armenian

<table>
<thead>
<tr>
<th></th>
<th>Armenian</th>
<th>Turkish</th>
</tr>
</thead>
<tbody>
<tr>
<td>Simple Root</td>
<td>arak</td>
<td>hızlı</td>
</tr>
<tr>
<td>Complex via:</td>
<td></td>
<td>‘fast’</td>
</tr>
<tr>
<td>Reduplication</td>
<td>arák arák</td>
<td>hızlı hızlı</td>
</tr>
<tr>
<td>Derivational Suffixation</td>
<td>arák-oren</td>
<td>hızlı-ca</td>
</tr>
<tr>
<td>Inflectional Suffixation</td>
<td>arák-mə</td>
<td>N/A (glossed as fast-INDF)</td>
</tr>
</tbody>
</table>

Simple manner adverbs (S-MAdv) are stressed and generally preverbal. Complex manner adverbs (C-MAdv) are unstressed and have freer word order. They can be placed in any of the same locations as TP-level adverbs.

(32) S Def-DO S-MAdv V

a. PA: Ali  (*hızlı) kitab-ı  hızlı okudu
Ali  (fast)  book-ACC  fast  read

b. TU: Ali  (*arak) kirk-ə  arak gartats
Ali  (fast)  book-DEF  fast  read
‘Ali read the book fast.’

(33) S C-MAdv Def-DO V

a. TU: Ali  hızlı-ca kitab-ı  okudu
Ali  quickly  book-ACC  read

b. WA: Ali  arak-oren kirk-ə  gartats
Ali  quickly  book-DEF  read
‘Ali read the book quickly.’

In Turkish, the simple MAdv can be easily placed before the bare object. In Western Armenian though, it is generally difficult to place the simple manner before the bare object. A complex MAdv is preferred instead. Before a bare object, a S-MAdv is licit if the sentence has a habitual or ability reading.

(34) a. TU: Ali  hızlı kitap  (*hızlı) okudu
Ali  fast  book  (fast)  read

b. WA: Ali-n  (?arak) kirk  (*arak) gartats
Ali-DEF  (fast)  book  (fast)  read
‘Ali read books quickly.’

In Western Armenian at least, if the simple adverb is not preverbal then it is interpreted with narrow focus, but still feels worse than a complex adverb.
The generalization across the three languages is that manner adverbs take stress. I describe this phenomenon with a constraint \( M_{Adv} \). Persian syntax places them freely at the edge of the vP. The constraint for stressing manner adverbs is high-ranked, and outranks the constraints \( Comp \).

(35) a. **\( M_{Adv} \)**: Assign a violation if a manner adverb is not stressed

b. **Deriving adverb stress in Persian**

\[
\begin{array}{|c|c|c|}
\hline
\text{S MAdv DO V} & \text{MAdv} & \text{Comp} \\
\hline
\text{a. S MAdv DO V} & *! & \text{*} \\
\text{b. S MAdv DO V} & \text{*} & \text{*} \\
\hline
\end{array}
\]

Turkish and Armenian however distinguish between morphologically complex vs. simplex adverbs. Only the simplex ones can be stressed. The syntax places them in different syntactic positions. Specifically for Turkish, simplex manner adverbs are VP-internal (Üntak-Tarhan 2006; Kamali 2011:46; Nagai and Özçelik 2012), while complex MAdv are VP-external. I argue for the same syntactic structure for Armenian.\(^{13}\)

Prosodically, simplex MAdv get stressed instead of the rightmost argument, thus \( M_{Adv} \) outranks \( R-Arg \).

(36) Deriving adverb stress in Turkish and Western Armenian

\[
\begin{array}{|c|c|c|c|}
\hline
\text{S [S-MAdv DO V]}_{VP} & \text{STR-VP} & \text{MAdv} & \text{Comp} & \text{R-Arg} \\
\hline
\text{a. S S-MAdv DO V} & \text{!} & \text{*} & \text{*} \\
\text{b. S S-MAdv DO V} & \text{*} & \text{*} & \text{*} \\
\hline
\end{array}
\]

\[
\begin{array}{|c|c|c|c|}
\hline
\text{S C-MAdv [DO V]}_{VP} & \text{STR-VP} & \text{MAdv} & \text{Comp} & \text{R-Arg} \\
\hline
\text{a. S C-MAdv DO V} & \text{*} & \text{*} & \text{*} \\
\text{b. S C-MAdv DO V} & \text{*} & \text{*} & \text{*} \\
\hline
\end{array}
\]

\( R-Arg \) is violated by adverb stress because adverbs are modifier adjuncts, not complement arguments.

Note that when the object is definite, the syntax places the adverbs in the right location. The constraint then places stress on the simplex adverb. I do not assume that the definite object has raised out of the VP because of the presence of the simplex adverb.

(37) a. **Stressing simplex manner adverbs around definite objects**

\[
\begin{array}{|c|c|c|c|}
\hline
\text{S [Def-DO S-MAdv V]}_{VP} & \text{ STR-VP} & \text{MAdv} & \text{Comp} & \text{R-Arg} \\
\hline
\text{a. S Def-DO S-MAdv V} & \text{!} & \text{*} & \text{*} \\
\text{b. S Def-DO S-MAdv V} & \text{*} & \text{*} & \text{*} \\
\hline
\end{array}
\]

\( R-Arg \) is violated by adverb stress because adverbs are modifier adjuncts, not complement arguments.

Note that when the object is definite, the syntax places the adverbs in the right location. The constraint then places stress on the simplex adverb. I do not assume that the definite object has raised out of the VP because of the presence of the simplex adverb.

(37) a. **Stressing simplex manner adverbs around definite objects**

\[
\begin{array}{|c|c|c|c|}
\hline
\text{S [Def-DO S-MAdv V]}_{VP} & \text{ STR-VP} & \text{MAdv} & \text{Comp} & \text{R-Arg} \\
\hline
\text{a. S Def-DO S-MAdv V} & \text{!} & \text{*} & \text{*} \\
\text{b. S Def-DO S-MAdv V} & \text{*} & \text{*} & \text{*} \\
\hline
\end{array}
\]

\(^{13}\) I am unsure though how complex adverbs are VP-external yet are still able to affect the meaning of the VP as manner adverbs. This might be a syntax-semantics bracketing paradox.
b. Blocking stress on complex manner adverbs

<table>
<thead>
<tr>
<th>Structure</th>
<th>Stress on VP</th>
<th>Stress on ADJ</th>
<th>Comp</th>
<th>R-Arg</th>
</tr>
</thead>
<tbody>
<tr>
<td>a. $S \ C-MAdv \ [Def-DO \ V]_{vp}$</td>
<td>*</td>
<td>*</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b. $S \ C-MAdv \ Def-DO \ V$</td>
<td>*</td>
<td>*</td>
<td>*</td>
<td></td>
</tr>
</tbody>
</table>

7 Conclusion

This paper documents the distribution on nuclear stress in Western Armenian in contrast to Turkish and Persian. We find that nuclear stress is generally preverbal in Armenian. Definite objects are stressed in Armenian and Turkish, not Persian. This difference isn’t due to diverging syntactic structures, but to an interface constraint against stressed definite objects that’s active in Persian but not Armenian or Turkish. These and other constraints were proposed to handle the placement of nuclear stress in transitive, ditransitive, and adverb constructions.

References


Crum, J. (2020). Eastern Armenian pseudo-incorporation. (Unpublished manuscript)


Kamali, B. (2015). Caseless direct objects in Turkish revisited. (Universitätsbibliothek Johann Christian Senckenberg)


syllable of a negation prefix is likewise reported in Persian (Kahnemuyipour 2003). The ‘no’ word votʃ form its own intonational phrase, thus it sometimes has its own steep rise and steep fall.6

(4) a. i. Q: gin-ə təkal uni ↗ ii. A: votʃ gin-ə təkal tʃ-uni
   woman-D spoon has no woman-D spoon NEG-has
   ‘Does the woman have a spoon?’ ‘No, the woman doesn’t have a spoon.’

   b. F1-26

4.2 Focus in polar questions

In a typical polar question or yes-no question, the pitch rise is on the verb. The meaning is that the general truth of the sentence is being questioned. However, polar questions can be formed by questioning a specific constituent in the sentence. For example, in the dialogue below, the pitch rise is on the subject in the question. This pitch rise is interpreted as contrastive focus on the subject.7

(5) a. i. Q: amanda-n nabastaɡ uni ↗ ii. A: votʃ marja-n nabastaɡ uni
   Amanda-D rabbit has no Maria-D rabbit has
   ‘Does AMANDA have a rabbit?’ ‘No, MARIA has a rabbit.’

   b. F1-26

In the question, there is a pitch-rise on the subject which continues throughout the sentence up until the sentence-final L%. This contour constitutes a high plateau. The verb in these questions is perceived as having a L% because the fall starts somewhere before the midpoint of the final vowel. In contrast, for typical polar questions with a final H% (§4.1), there is a perceived rise on the verb because the eventual pitch-fall happens much later in the final vowel. Based on similar high plateaus in English (Ueyama & Jun 1996), a more exact transcription for the above high plateau can be to place H- after the H*, and then place H at the beginning of the sentence-final syllable before the L%: H*)(H- .... H L%).

In the answer, a different subject is provided. So there is a pitch rise on the focused subject in the answer, and subsequent deaccenting.

If the answer did not provide a different subject, there wouldn’t be a pitch-rise on the answer’s subject. For example, in the dialog below, the answer is in the positive. The object takes nuclear stress under broad focus.8

---

6 Other dialogues include F1-29 with subject focus in the question, and stress on a negated verb in the answer. F1-29.2 and F1-29.3 have subject focus in the question, while object focus in the answer.

7 Another similar dialogue is F1-27, with narrow focus on the subject in both the question and answer.
5 Wh-questions and narrow focus

This section reports on wh-questions. A wh-question includes a wh-word which carries nuclear stress. Armenian allows in-situ wh-words. The question ends in a rising intonation: H%. In the answer sentence, narrow focus is placed on the new information, i.e., the constituent which replaces the wh-word. We find post-focal deaccenting. These patterns are found both for object focus (§5.1) and subject focus (§5.2).

5.1 Object focus

In a typical wh-question with object focus, the wh-word is in a preverbal position. Movement to a sentence-initial position is not required. In the answer to this question, narrow focus is on the object. The object stays preverbal.9

(7) a. i. Q: ɡinə intʃ uni ii. A: ɡinə tanaɡ uni woman-D what has woman-D knife has ‘What does the woman have?’ ‘The woman has a knife.’

b. F1-31

Perceptually, nuclear stress is on the wh-word object. Acoustically, it has a pitch rise in both the question and the answer. The subsequent verb is deaccented and there is a steep fall from the O to the V. In the question, there is additionally a pitch rise at the end of the sentence, on the verb. Post-focal deaccenting of the verb can be transcribed with a L tone at the beginning of the verb, after the object’s H*, e.g., as H*)(L ... H%) for the question and H*)(L ... L%) for the answer.

Note that the subject in the above dialogue has stress on the penultimate vowel, before a schwa: ɡinə ‘the woman’. The rise starts in the stressed syllable, and it seems to continue onto the schwa.

As before, if the focused object is branching, then the intonation contours are essentially the same. Focus is on the preverbal noun.10

---

9 Other example dialogues include M2-21, F1-21.2, and F1-31.2.

10 In a comparable dialogue, M2-27 for some reason places narrow focus on the adjective in the answer, with subsequent deaccenting.
(8) a. i. Q: marja-ŋ intʃ has Maria-D what has ‘What does Maria have?’
    ii. A: marja-ŋ teyin bɔ́ybej-mə uni Maria-D yellow pepper-INDF has ‘Maria has a yellow pepper.’

b. F1-25

(9) a. i. Q: intʃ uni gin-ə what has woman-D ‘What does the woman have?’
    ii. A: gin-ə tanaq uni woman-D knife has ‘The woman has a knife.’

b. F1-30

In the above dialog, the question is OVS while the answer is SOV. In the question, there’s a pitch rise on the focused object, and the VS sequence is deaccented. There is a pitch-rise on the final syllable of the question. We again see the effects of a schwa after penultimate stress in the subject gɪnə ‘the woman’.

Alternatively, in the synonymous dialogue below, the answer can use OVS order. The object keeps narrow focus on it. As before, the focused material has a pitch-rise, and we find subsequent deaccenting. The question has a final pitch rise.

(10) a. i. Q: intʃ uni gin-ə what has woman-D ‘What does the woman have?’
    ii. A: tanaq uni gin-ə knife has woman-D ‘The woman has a knife.’

b. F1-30.2

A much more marked alternative is to use SVO order in the answer. The object is still perceived as the most prominent constituent with a H* tone followed by sentence-final L%. The SV sequence can be interpreted as somewhat topicalized.

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11 Other example dialogues include M2-22, M2-32.
12 Other example dialogues include F2-22.
13 Our Eastern Armenian informant produced OVS and SOV questions. She did produce SOV answers, but she more often produced SVO answers.
(11) a. i. Q: gin-ə intʃ uni  
woman-D what has  
‘What does the woman have?’
ii. A: gin-ə uni tanag  
woman-D has knife  
‘The woman has a knife.’

b. M2-34.2

What is unattested however is a question or answer with OSV or VSO order. That is, the focused object must stay adjacent to the verb.

5.2 Subject focus

The above data concerned wh-questions where the object is the wh-word. Here, we consider wh-questions where the subject is the wh-word. In the wh-question below, the subject is a wh-word and it has narrow focus. The default sentence order is SOV. In the answer, focus is again on the subject, and the word order is SOV.\(^\text{14}\)

(12) a. i. Q: ov tutag-mə uni  
who parrot-INDF has  
‘Who has a parrot?’
ii. A: samwelə tutag-mə uni  
Samuel parrot-INDF has  
‘Samuel has a parrot.’

b. F1-23

Perceptually, nuclear stress is on the subject in both the question and answer. Acoustically, there is a pitch rise on the subject. The subsequent OV sequence is deaccented in both the question and answer. In the question, there is a final pitch-rise on the sentence-final syllable.

If object is branching, the same intonational contours are found. Focus stays on the subject, and the word order stays SOV.\(^\text{15}\)

(13) a. i. Q: ov garmir bəɣbeɣ-mə uni  
who red pepper-INDF has  
‘What does the woman have?’
ii. A: amanda-n garmir bəɣbeɣ-mə uni  
Amanda-DEF red pepper-INDF has  
‘Amanda has a red pepper.’

b. F1-24

\(^{14}\) Other example dialogues include M2-24.

\(^{15}\) Other example dialogues include M2-26 and M2-26.2.
6 Choice or alternative questions

This section reports on choice questions or alternative questions, whereby some constituent in the question is part of a disjunction. The answer has to pick one of the two disjuncts. As before, we find that narrow focus in the question and answer is marked by a pitch-rise, and then post-focal deaccenting.

In the dialogue below, the question asks which of the two objects is correct. The objects are coordinated with the disjunctive morpheme te. The te morpheme induces the meaning of a choice question.\(^\text{16}\)

\[(14)\]  
\[\text{a. i. Q: marja-n nabastaş te tutaq uni} \quad \text{ii. A: marja-n nabastaş uni} \]

\[\text{Maria-D rabbit or parrot has} \quad \text{Maria-D rabbit has} \]

\[\text{‘Does Maria have a rabbit or a parrot?’} \quad \text{‘Maria has a rabbit?’} \]

\[\text{b. F1-24} \]

\[\text{i. \quad marian \quad nabastag \quad te \quad tutag \quad uni} \quad \text{ii. \quad marjan \quad nabastag \quad uni} \]

In the question, there is a rise on both objects, and the verb is deaccented. The first object has a significantly higher rise than the second object. There is a final rise on the sentence-final syllable. In the answer, the object has a rise, and there is subsequent deaccenting.\(^\text{17}\)

A choice question also can provide alternatives for the subject. In the dialogue below, both the question and answer are SOV. In the question, the subject is a disjunction of two items.

\[(15)\]  
\[\text{a. i. Q: gin-ə te mart-ə tanag uni} \quad \text{ii. A: gin-ə tanag uni} \]

\[\text{woman-D or man-D knife has} \quad \text{woman-D knife has} \]

\[\text{‘Is it the woman or the man who has a knife?’} \quad \text{‘The woman has a knife.’} \]

\[\text{b. F1-24} \]

\[\text{i. \quad gina \quad te \quad marta \quad tanag \quad uni} \quad \text{ii. \quad gina \quad tanag \quad uni} \]

In the question, the two subjects each have a pitch-rise. The first subject has a higher pitch rise than the second. There is subsequent deaccenting, and then a H\% tone on the final syllable. In the answer, the subject has focus and a pitch-rise, followed by deaccenting.\(^\text{18}\)

When the object is branching, our female speaker preferred to place the branching object before the subject in both the question and answer.\(^\text{19}\)

\[(16)\]  
\[\text{a. i. Q: garmir boğbey-ə amanda-n te marja-n uni} \quad \text{ii. A: garmir boğbey-ə amanda-n uni} \]

\[\text{red pepper-D Amanda-D or Maria-D has} \quad \text{red pepper-D Amanda-D has} \]

\[\text{‘Is it Amanda or Maria who has the red pepper?’} \quad \text{‘Amanda has the red pepper.’} \]

\[\text{b. F1-24} \]

\[\text{i. \quad garmir bəğbeɣ-ə amanda-n \quad te \quad marja-n \quad uni} \quad \text{ii. \quad garmir bəğbeɣ-ə amanda-n \quad amanda-n \quad uni} \]

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\(^\text{16}\) Other example dialogues include M2-38.

\(^\text{17}\)Our EA informant produced the answer with SVO ordering.

\(^\text{18}\)Other dialogues include F1-33.2 and M2-36.

\(^\text{19}\)Our EA informant also used OSV ordering in the question and answer.
b. F1-28.2

The initial branching object can be considered topicalized. It has a slight pitch rise on the two stressed syllables, due to lexical stress. As before, the question has a rise on both subjects, more so on the first subject. The verb is deaccented, and there is a final rise on the sentence-final verb.

Our male informant also placed the branching object before the subject in the question form. But in the answer, he used default SOV ordering. The subject is focused, and the rest of the sentence is deaccented.20

(17) a. i. Q: garmir böybey-ə amanda-n te marja-n uni ii. A: amanda-n garmir böybey-ə uni red pepper-D Amanda-D or Maria-D has Amanda-D red pepper-D has ‘Is it Amanda or Maria who has the red pepper?’ ‘Amanda has the red pepper.’

b. M2-30

7 Multiple wh-question

Multiple wh-questions are rather simple to construct. In the question form, both the subject and object are wh-words that are in-situ with a pitch-rise. But the answer to a multiple wh-question can have different structures.

For example, in the dialogue below, the question is SOV. But in the answer, the informant produced two SOV clauses in a sequence.21

(18) a. i. Q: ov infj uni who what has ‘Who has what?’

ii. A: gin-ə tanag uni mart-ə təkal uni woman-D knife has man-D spoon has ‘The woman has a knife; the man has a spoon.’

b. F1-32

Acoustically, there is a rise on both wh-words in the question. There is a sentence-final rise on the verb. In the answer, there is a rise on the two subjects and the two objects. The first clause’s verb has a rise to indicate that the sentence will continue onto the next clause. The second clause’s verb is deaccented.

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20 Another example dialog is M2-30.2.
21 Another example dialogue is F1-34, F1-32.2, and M2-37.
Alternatively, the answer can use an SVO clause, followed by an SO clause with an elided verb. The first VO clause would have no accent on the verb, while there’s a clause-final H% on the object. The second clause’s SO construction would have a rise on the subject, but the conjunction of a rise H* and sentence-final fall L% on the object.22

(19) a. i. Q: ov ʃ uni
    who  what  has
    ‘Who has what?’

    b. M2-30

    ii. A: ɡin-ə uni tanag mart-ə təkal
        woman-D has  knife  man-D spoon
        ‘The woman has a knife; the man a spoon.’

8 Generalizations and summary

In this section, we summarize the various data points on lexical stress, broad focus, narrow focus, and word order.

Lexical stress is cued by a H* rise on the stressed syllable. For example, amandán ‘Amanda’ can be broadly transcribed as having an H* on the syllable [dán]. In a narrow transcription, we could alternatively transcribe this word as a (L ... LH*) sequence where the L is on the first syllable [a], and the LH* is on the stressed final syllable [dán]. The LH* would have L anchored to the beginning of the stressed syllable while H* anchored to the end of the stressed syllable.

If the word ends in a schwa like ɡina ‘the woman’, it seems that the rise tends to start on the stressed syllable and continue onto the schwa. We annotate this by placing H* on the stressed penultimate syllable [gi´].

In terms of sentential stress, broad focus is cued by the H* from lexical stress, followed by post-focal deaccenting. Similarly, narrow focus is marked by a H*, followed by post-focal deaccenting. Thus, a significant role is played by post-focal deaccenting or compression (Xu 2011). Similar facts are reported for Turkish (Ipek 2011; Ipek & Jun 2013, 2014; Kamali 2011) and Persian (Rahmani 2019; Sadat-Tehrani 2007; Taheri-Ardali, Rahmani, & Xu 2014). These similarities are not surprising because Western Armenian syntax has been heavily affected by Turkish contact (Adjarian 1909; Donabédian 2018; Khanjian 2013; Sigler 1997), and to some extent Iranian contact (Donabedian & Sitaridou 2021).

Essentially all types of questions end in a H% tone, including polar questions, wh-questions, choice ques-tions, and multiple wh-questions. The data is partially similar to both Turkish (Göksel, Kelepir, & Üntak-Tarhan 2009; Kamali 2014) and Persian (Sadat-Tehrani 2007). Polar questions have H% in both Western Armenian and Persian, but not Turkish (which uses L%). Wh-questions have H% in both Western Armenian and Turkish, but not Persian (which uses L%). Furthermore, wh-words carry nuclear stress in wh-questions in Armenian, as well as in Persian and Turkish.

For polar questions in Armenian, the final H% is on the verb in SOV orders, but it can also be on the subject in OVS orders. The only type of interrogative that doesn’t have a H% tone is a SOV polar question with focus on a subject; instead, such a question has a rise that continues from the subject until the sentence-final

22 Our EA informant would often utilize SVO ordering in her answers, such as SVO-SVO.
L%, i.e., a high plateau. To our knowledge, high plateaus have not been reported for contrastive focus in polar questions in Turkish (Kamali 2014) or Persian (Sadat-Tehrani 2011:125).

Furthermore, nearly all types of declarative sentences end in a L% tone. The exception is a sequence of two clauses in an answer to a multiple wh-question. There, the first clause would end in a H% tone to mark continuation.

In terms of word order, the basic word order for WA questions and answers was SOV, similar to Turkish (Göksel & Özsoy 2000). SOV order was found for broad focus, object focus, and subject focus. Some alternations to SOV order were found, usually due to topicalizing either the object or the subject. The sentence-final position was often used for placing topicalized elements in WA. Similar behavior is reported for EA (Giorgi & Haroutyunian 2016; Tamrazian 1994) and Turkish (İşsever 2003).

Under object focus, OVS orders were likewise sometimes found for object focus, and very rarely SVO order. The subject in OVS order in this situation was treated as backgrounded. As for subject focus, sometimes we found OSV order when the object is branching. The initial object in this position can be considered topicalized.

This paper is however preliminary and we open up a set of viable future research questions. These questions require a larger corpus of speakers and data.

(20) Open questions for Western Armenian

a. What are the actual acoustic values for the different types of pitch rises?
b. What is the intonational structure of multi-word phrases?
c. Is there evidence for systematic declination either within phrases or across a sentence?
d. What is the intonational structure of polar questions where the verb is sentence-medial?
e. What is the intonational structure of polar questions with narrow focus on objects or verbs?
f. What is the intonational structure of topics, whether sentence-initial or sentence-final?
g. What is the intonational structure of words with non-final stress?
h. What is the intonational structure of sentences with clitics?
i. What is the intonational structure of sentences with exclamations or vocatives?

One analytical issue that the authors disagree on is how to interpret the intonational structure of nuclear stress under broad focus. In an SOV sentence under broad focus, the second author interprets the stressed object as having a slight but perceptible rise: [L ... H*]. The slightness is due to phonetic declination. The first author instead interprets the object as being a flat contour: [L... L*]. This second interpretation would make the Armenian data align more with Turkish for nuclear stress under broad focus, such that the Turkish equivalent would have a flat f0 contour over the stressed object, but a steep rise on the preceding subject (a boost) (Ipek 2015; Ipek & Jun 2013). But under this interpretation, Armenian would still differ from Turkish because Armenian would use rises for nuclear stress under narrow focus in declaratives, unlike Turkish which uses flat contours for nuclear stress in any type of declarative. A larger corpus is needed to distinguish these two interpretations.

Another open question concerns intonational differences between Western and Eastern Armenian. For example, although wh-questions take a sentence-final rise H% in Western Armenian, it is reported that they take a sentence-final fall L% in Eastern Armenian (Johnson 1954:15; Gowkasyan 1990). Some Eastern sources likewise report no high plateaus and a L% for polar questions with focus on a sentence-medial word (Gowkasyan 1999). Verifying and discovering more of such divergences is left for future work.
9 Conclusion

Armenian is an Indo-European language with two standard varieties: Western (WA) and Eastern (EA). In this paper, we documented the prosodic characteristics of Western Armenian. Primary stress is generally associated with the final syllable with a full vowel, i.e., a non-schwa.

So far, we have analysed lexical stress, broad focus, narrow focus, question-formation and their relation with word order. Both polar questions wh-questions are categorized by a final H%. Post-focal deaccenting is a common strategy after the focused item.

Taking into account the various data on Western Armenian (from this work) and on Eastern Armenian from previous research, we have concluded that Western Armenian follows a different strategy for focus projection than Eastern Armenian. Further work should be held to answer the questions above and to conduct comparative research on intonation for both dialects.

References


