

Chapter 3

Post-predicate prosody in OV languages

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This article examines the prosodic properties of post-predicate material in OV languages of the Western Asian Transition Zone. The core question is whether the right edge of the predicate is associated with the edge of a prosodic domain. The facts reported for these languages are summarized in two major phenomena that reveal an asymmetry between the material at the left and right side of the predicate. In some languages (e.g., in Standard Turkish), the nuclear stress must be realized within the domain preceding the right edge of the predicate, that is the pre-predicate material or the predicate itself. In some languages (e.g., in Georgian), the post-predicate material is separated from the predicate with a prosodic event that demarcates a prosodic constituent. Both phenomena provide evidence for a syntactic constituent that is mapped on prosody and separates the post-predicate elements from the core clause.

1 Introduction

In a study on the punctuation of the Georgian translation of the *Physiologus* (11th c. CE), Boeder (1991) reports that scribes often used punctuation within clauses indicating – or possibly prescribing – the prosodic phrasing of subclausal units. The use of punctuation in this manuscript revealed an interesting asymmetry between material at the left and the right side of the verb: setting clitics aside, arguments or adjuncts following the verb were often separated by punctuation, as indicated by the colon in (1), but this did not apply when the same elements appeared preverbally.



- (1) Old Georgian (*Physiologus* 6.177.29, edited by Marr 1904; cited from Boeder 1991)
da sameupo-s i-ṗov-eb-in : kalandr-i igi
 and realm-NOM PASS-[3SG]find-SM-PASS charadrius-NOM DEM.REM
 ‘and it is found in the realm, that charadrius (bird).’

The asymmetry between the left and the right side of the predicate, as reported in Boeder (1991), opens an interesting agenda: is there a difference between pre-predicate and post-predicate elements regarding their prosodic properties? Under which conditions does the post-predicate material appear outside the phonological domain that contains the predicate? In particular for languages with OV properties, a reasonable hypothesis is that the prosodic separation of the post-predicate domain may reflect properties of a predicate-final constituent structure. In many languages, prosodic structure is used for the demarcation information structural domains. At the empirical side, the challenge is to disentangle effects of constituent structure and effects on information structure. At the analytical side, the interesting question is whether the information structural options of a language can be partially predicted from the array of possible prosodic structures in this language.

In order to tackle these questions, the present study examines selected OV languages of the Western Asian Transition Zone, which comprises the area of Northern Iran, Northern Iraq, Eastern Turkey and the Caucasus (Stilo 2015: 350); see Chapter 1, this vol. The languages in this area are not syntactically uniform, but most languages generally share several “OV” properties, such as preverbal placement of bare objects and auxiliaries following the lexical verb, which at least distinguish them from VO languages. The contextual conditions of OV and VO differs very much between languages, as established by various studies (Stilo 2018, Haig et al. In press, Chapter 1, this vol.), which will be one of the main issues in the following discussion (see Section 2).

The primary data discussed in the present study was elicited with native speakers of Turkish, Georgian, Caucasian Urum, Eastern Armenian, and Persian. The aim of this elicitation was to obtain comparable data that illustrate the phenomena at issue; however, the main source of the discussed generalizations is the available research on these languages.¹ Information about further languages of

¹The data were collected in qualitative interviews with native speakers, who were raised in the object language and currently use it in their everyday life. Beyond their native language, these speakers were also competent in English or German. The Caucasian Urum speaker was also native in Russian and Georgian; the further speakers did not speak other languages of the area. The speakers prepared the sentences in collaboration with the instructor and were instructed to imagine a conversation in which the scripted utterances are performed as answers to context questions. They were free to repeat their performance until they were confident that it corresponds to a natural way to produce the target utterance in the given context.

this area is drawn from the available research. The majority of the available sources is based on controlled data, either scripted speech or controlled speech-production tasks. This method comes with limitations in the generalizability of the findings, which should not be neglected.

Based on the available comparisons between spontaneous and controlled data in the phenomena under consideration, the major issue is that elicited data may present “idealizations” of what happens in real discourse. A comparison between scripted speech and semi-spontaneous narratives in Georgian reports that post-predicate elements are often separated by a high prosodic boundary from the predicate in either type of data: spontaneous narratives differ from controlled speech in that they display greater variability (Skopeteas et al. 2018: 44). This means that controlled data present an “idealization” of patterns that are learnt in real life (Stokhof & van Lambalgen 2011). Idealization of phonological events may have the form of hyper-articulation, e.g., expansion of the pitch range of tonal events that are less salient in spontaneous speech. In a study on Persian, spontaneous data were found to be often under-specified in comparison to controlled data: since prosodic demarcation is often not necessary for conveying the intended content, it is expected that real communication will be less rich in prosodic marking than the performance in careful speech (Sadat-Tehrani 2017: 28–31). Finally, the difference does not only lie in the clarity of signaling a certain information structure, but also in the intention of the speaker to convey the information structure of the utterance or not. Information structure is not an automatic reflex of the context, which often results in discrepancies between the intuitions of the speakers and what we find in corpora. For instance, Forker & Belyaev (2016: 243) report that some speakers of Tsakhur do not accept postverbal objects in narrow focus (with reference to Testelefs 1999), but postverbal objects appear in Tsakhur texts as answers to questions that license a narrow focus on the object. This discrepancy may have two explanations: (a) the speakers report wrong generalizations about their native language; (b) since the information structure of the answer is made clear through the context, an answer that does not necessarily mark narrow focus is fully adequate in view of the communicative goals. Hence, these cases involve the challenge of identifying the intention of the speaker in producing an utterance in a certain context. This is not trivial of course, but it is relevant for the interpretation of the facts – if we do not assume that the relation between context and target utterance is deterministic. Finally, either type of speech production may be influenced by phenomena that are not related to the matter at issue: scripted speech may be performed with listing intonation (i.e., continuation rises at the end of declarative clauses), if the native speakers are not instructed to realize the utterances as complete discourse

units; spontaneous data often show reflexes of speech planning, e.g., hesitation pauses, which lead to shorter intonational units than in controlled settings (Sadat-Tehrani 2017: 31-33).

With this background, the goal of the present study is to identify prosodic properties of post-predicate elements in the available data and to set up hypotheses about their relation to syntax and/or information structure. The properties of post-predicate elements are not uniform across constructions: at least in many Iranian languages, the verb governs direct objects on its left and oblique objects (especially Goal arguments) on its right side, as it has been demonstrated with rich data in Haig & Rasekh-Mahand (2019), Haig et al. (In press), and Rasekh-Mahand et al. (2024 [this volume]). This difference is also reflected in the focus options and prosodic properties of the different classes of complements (Sadat-Tehrani 2007: 138–139), which means that post-predicate elements form different types of domains with the predicate, which are also reflected in prosody. In order to restrict the sources of variation, we will only examine preverbal and postverbal direct objects in the present study.

The following exposition starts with an overview of the variation between languages in the information structure of post-predicate objects; see Section 2. After a short summary of the necessary assumptions for prosodic description in Section 3, the core part of the study is organized around the information structure of post-predicate objects. The basic distinction is whether the post-predicate object is part of the partition of the utterance that is focused (i.e., the focus domain) or not. In the former case, it can be part of a larger focus domain that contains the post-predicate and the predicate: these are instances of “broad focus,” that may contain a VP or an entire sentence (see Section 4). Alternatively, the focus domain of the utterance may be exactly the post-predicate object; these are cases of “narrow focus” (i.e., a focus domain only containing a simple lexical projection such as a noun phrase) (see Section 5). Finally, the post-predicate object may be outside the focus domain (or simply “out of focus”), in which case it is background information (see Section 6). Based on the properties introduced in these sections, Section 7 draws conclusions about the interaction between syntax and prosody in the realization of post-predicate elements.

2 Focus options

V-final languages of the Western Asian Transition Zone differ regarding the focus possibilities of post-predicate objects. They either cannot be focused (Turkish), or they can be part of a narrow/broad focus domain (Georgian) or of a broad focus domain only (Persian).

Post-predicate elements in Modern Standard Turkish can be either background information (discourse given information that is outside the focus domain of the utterance) or afterthoughts (discourse new information that completes the utterance) (see Taylan 1984: 50–56, İşsever 2003, Kilicaslan 2004: 727–728). Afterthoughts are a different type of phenomenon since they were not part of the sentence plan at the critical time point that the speaker selected the linearization of her utterance. Leaving afterthoughts aside, post-predicate elements in this type of language cannot be focused. This phenomenon is reported for Western Armenian (Donabedian-Demopoulos 2018: §2.7), Laz (Lacroix 2019: 852), and Balochi (Delforooz 2010: 66–68). Northwest Caucasian languages presumably belong to this group as well – at least those languages like Ubykh in which postverbal constituents are rare (Forker 2021: 977).

In a second type of languages, post-predicate objects are contextually unrestricted. In Georgian, postverbal objects can be either part of a broad focus (e.g., a focus domain encompassing the entire clause) or a narrow focus (e.g., focus on the postverbal object) (Skopeteas & Fanselow 2010, Gosby 2016: 170, Borise 2019: 106, 235, Chapter 10, this vol.). Similar facts are reported for Mingrelian and Svan (Forker 2021: 994), Caucasian Urum (Schröter 2017: 221), Ossetic (Erschler 2012: 686), and at least some Nakh-Daghestanian languages (see summary in Forker 2021: 977). In Eastern Armenian, the same flexibility of the post-predicate domain applies to synthetic verbs (in contrast to periphrastic verbs, in which case the auxiliary cliticizes to the element bearing the nuclear stress, such that the material following the auxiliary is de-accented (Comrie 1984, Kahnemuyipour & Megerdumian 2011, Samvelian et al. 2023).

The difference between languages with and languages without postverbal foci is well established in the research on V-final languages. Interestingly, there is a third pattern that deserves more attention. Forker & Belyaev (2016: 243) (with reference to Testelefs 1999) report that some speakers of Tsakhur accept postverbal objects in broad focus, but not so in narrow focus. A similar asymmetry is gathered through speaker judgments in Persian: *specific* objects can follow the predicate when they are part of a broad focus domain, but they are judged to

be impossible in narrow focus (see Karimi 2003: 115 and Sadat-Tehrani 2007: 68, 138–139 for the latter statement); see (2)²

(2) Persian (Y. Sanei, p.c.)

a. Broad focus (entire clause)

A: ‘What happened?’

B: *Nâzanin livân-am-o var-dâšt.*

Nazanin glass-POSS.1SG-RA up-have:PST[3SG]

‘Nazanin picked up my glass.’

B’: *Nâzanin var-dâšt livân-am-o.*

Nazanin up-have:PST[3SG] glass-POSS.1SG-RA

‘Nazanin picked up my glass.’

b. Narrow focus (on the object)

A: ‘What did Nazanin pick up?’

B: *Nâzanin livân-am-o var-dâšt.*

B’: *#Nâzanin var-dâšt livân-am-o.*

OV languages of this region share some properties in this respect. First, postverbal arguments can be background information. Furthermore, in all these languages there is evidence for a preverbal position for narrow focus, which is immediately left adjacent to the verb: Turkish (Göksel & Özsoy 2000), Laz (Lacroix 2019: 852), Georgian (Borise 2019: 235), Chechen (Komen 2013: 322), Nakh-Daghestanian (in general) (Forker 2021: 977), Northwest Caucasian (in general) (Forker 2021: 986), Ossetic (Erschler 2012: 686, Borise & Erschler 2023), Eastern Armenian (Comrie 1984: 19, Samvelian et al. 2023: 464–467), Persian (Kahnemuyipour 2001). Beyond the preverbal option, there is a lot of variation regarding

²These intuitions imply that speakers will use a preverbal object whenever they intend to signal that this constituent is narrowly focused. The prediction for corpus observations is that preverbal objects are *more likely* in contexts licensing a narrow focus on the object than in contexts licensing a broader focus domain including the object (assuming that a subset of the data from speech production are under-specified for information structure). The only corpus study that offers data for this comparison is a small-size corpus study on written Persian, showing that SVO appears rarely in sentence/predicate focus and never in narrow focus (Majidi & Dabir Moghaddam 2012: 861) – but the size of the corpus does not allow for strong statements. The corpus study by Roberts (2009: 139–141) on written/oral Persian shows that postverbal specific objects may be part of the focus domain, but does not consider instances of narrow focus. Forker & Belyaev (2016: 243) present examples with postverbal objects in Tsakhur that are answers to questions licensing a narrow focus on the object, which contradict the speakers’ intuitions, but without excluding that these answers are underspecified for information structure since this is clearly indicated by the context (see discussion in Section 1).

the exact focus options in the preverbal domain, e.g., whether the preverbal elements can be marked for focus in their canonical position, whether contrastive foci may have an effect on linear order, as in Persian (Karimi 2003: 92), which is out of the scope of the present study. In contrast to preverbal foci, postverbal foci are not restricted to a certain position that is designated to focus: any element within the post-predicate domain can be focused by prosodic means.

The language types presented so far are summarized in Figure 1. The first node contains the already established distinction between languages in which the post-predicate domain cannot be focused and languages allowing for focus on post-predicate elements. Within the latter type, there is a distinction between languages that allow for any type of focus and those that only allow for broad focus in the post-predicate domain.

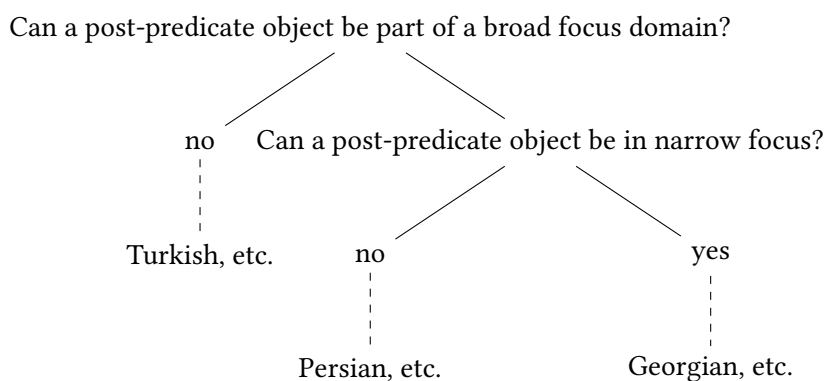


Figure 1: Focus options of post-predicate objects in OV languages of the Western Asian Transition Zone

Note that Figure 1 reveals an implicative relation between the focus options of post-predicate objects, since no language in this sample expresses narrow but not broad focus in the post-predicate domain (see 3).

- (3) Between focus options of post-predicate objects
 Broad focus ← Narrow focus

The origin of this asymmetry will be discussed in Section 7.2 in the light of the prosodic properties of the languages at issue, which are examined in the subsequent sections.

3 Prosodic assumptions

The description of the collected data in the following sections is built upon some basic assumptions about the relevant prosodic events and the syntax-prosody interface, that are introduced in the following. Prosodic constituents form a prosodic hierarchy such that constituents of higher layers optionally contain constituents of lower layers. The correspondence between prosodic constituents and syntactic constituents is roughly as follows: prosodic words (ω) correspond to morphological words including clitics; phonological phrases (φ) correspond to syntactic phrases; intonation phrases (ι) to clauses (Selkirk 2011: 437). These correspondences are modulated by purely phonological rules (e.g., constraints on the size of prosodic constituents), by other functions reflected in prosodic phrasing (e.g., focus) and by aspects relating to speech performance, such as speech tempo and hesitation breaks. For instance, the expression of focus may create prosodic constituents that do not correspond to syntactic phrases; see $(SV)_{\varphi}$ in example (7b) below. We assume that prosodic constituents allow for recursion, such that φ -phrases can be embedded in other φ -phrases as in $(\alpha (\beta)_{\varphi})_{\varphi}$ (see discussion in Ladd 1986, Selkirk 2011: 455, Féry 2018: 78–85).

The pitch track annotations in the following examples follow the conventions of the Autosegmental-Metrical framework (Pierrehumbert 1980). Tonal events represent the assumed phonological entities that underlie the pitch contour – and not every peak or dip in the pitch excursion. The labels indicate the scaling of tonal targets with respect to their environment (H for ‘high’, L for ‘low’, L+H for ‘rise’, etc.), and for their association with two classes of entities: (a) edge tones are associated with the edges of prosodic constituents (H_{φ} : is a high tone associated with the right edge of a φ -phrase, $_{\varphi}H$ is a high tone associated with the left edge of a φ -phrase) and (b) pitch accents are associated with stressed syllables (H^* is a high tone associated with the stressed syllable; L+ H^* is a rise, whose H-target is associated with the stressed syllable). Languages often mark the constituent that hosts the nuclear stress of the intonation phrase (i.e., the constituent that is perceived with maximal prominence) with different tonal events from the prosodic constituents that precede or follow it (“prenuclear” or “post-nuclear” prosodic constituents).

The phonetic cues of prosodic constituents are language specific. Prosodic constituents may be demarcated by tonal events or breaks at their edges as well as by effects on the duration of edge syllables (e.g., final lengthening). Further evidence for prosodic constituents comes from register lowering: the pitch scaling of tonal events at sister constituents incrementally decreases (Ladd 1988, Féry 2013).

4 Broad focus

A broad focus encompassing the entire utterance is elicited with a context question that does not introduce any presuppositions, such as ‘What happened?’. Figure 2 illustrates the contrast between the SOV and the SVO order in this context in Georgian. The SOV utterance (LEFT PANEL) is realized with a series of rising contours (φ L...H φ), stretching from a low target at the left edge to a high target at the right edge of the φ -phrase (see various analyses in Skopeteas et al. 2009, Vicenik & Jun 2014, Skopeteas et al. 2018, Borise 2021a). The second H φ is scaled lower than the first H φ . The final verb is realized with low intensity and creaky voice, which results to a fragmentary pitch signal and ends with a final lowering, represented by the L target at the right edge of the ι -phrase (L ι). The SVO realization (RIGHT PANEL) differs (see detailed discussion in Skopeteas & Féry 2010, Skopeteas et al. 2018): the subject and the verb are integrated in a single phonological domain that is determined by a φ H tone at the left edge and a H φ tone at the right edge. Crucially, the latter phrase tone is not lowered with reference to the former one.³

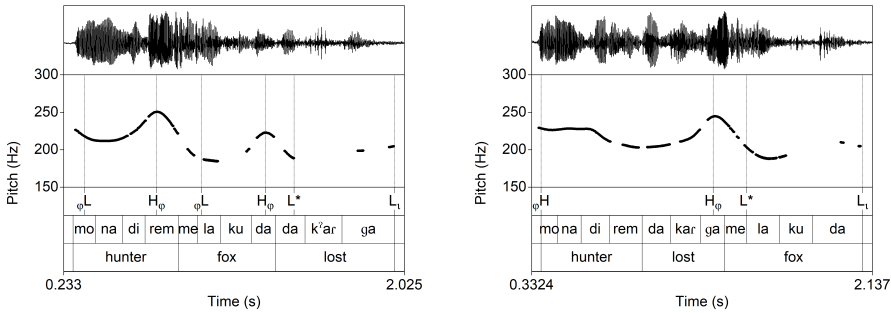


Figure 2: Broad focus in Georgian; answers to ‘What happened?’, LEFT PANEL: SOV; RIGHT PANEL: SVO; morphemic transcription in (4)–(5)

The register lowering of the second H-target in the SOV order (Figure 2/LEFT PANEL) is compatible with two alternative analyses, see (4): (a) the H-targets can be associated with the right edge of two sister φ -phrases that are mapped onto the preverbal arguments; (b) alternatively, the second φ -phrase can be associated with a φ -phrase mapped onto the object, that is nested within the φ -phrase of the

³The figures in this article contain an oscillogram (TOP) and a track of the f0 (MIDDLE) temporally aligned with the phonetic transcription of the utterance (BOTTOM); created in Praat (Boersma & Weenink 2023).

VP. Register lowering applies to this case too, since the φ -phrase of the VP is a sister constituent to the φ -phrase of the subject. Hence, both prosodic structures in (4) are possible and the realization of the example does not provide any further cues that would support the one or the other structure.

- (4) Georgian (D. Kakashvili, p.c.)

φ L	H_φ φ L	H_φ	L_t
((monadire- m_ω) $_\varphi$)	(melakuda $_\omega$) $_\varphi$	da-k'arg-a $_\omega$) $_t$
((monadire- m_ω) $_\varphi$)	((melakuda $_\omega$) $_\varphi$)	da-k'arg-a $_\omega$) $_\varphi$) $_t$
hunter-ERG	fox[NOM]	PFV-loose-AOR.S.3SG	

'The hunter lost the fox.'

In the SVO utterance (Figure 2/RIGHT PANEL), the verb and the preverbal material are phrased as a single prosodic constituent. The left edge of this constituent is demarcated with a high phrase tone (φ H), while the two phrase tones (φ H and H_φ) are just interpolated. The relevant issue is that the predicate is phrased together with the preceding material and forms a separate prosodic constituent from the post-predicate. Quantitative studies on controlled and spontaneous data show that the high phrase tone at the right edge of the verb is a frequent (but not necessary) correlate of verb-medial orders (Skopeteas & Féry 2010, Skopeteas et al. 2018).

- (5) Georgian (D. Kakashvili, p.c.)

φ H	H_φ	L_t
((monadire- m_ω da-k'arg-a $_\omega$) $_\varphi$)	(melakuda $_\omega$) $_\varphi$) $_t$
hunter-ERG	PFV-loose-AOR.S.3SG	fox[NOM]

'The hunter lost the fox.'

The special role of the predicate in phrasing is also reported for other languages (see Borise 2021b: 771, 780 for a summary of earlier mentions in Adyghe, Circassian, and Chechen; see Hasan 2012: 275 on preverbal and postverbal quotations in Kurmanji), but more data is required in order to qualify these reports. However, this phenomenon does not apply to all OV languages of the area, as illustrated below for Persian.

The available accounts on Persian prosody do not predict a high phrase tone at the right edge of the verb for independent reasons: the nuclear φ -phrase cannot be after the predicate (except for Goal arguments) and this phrase normally ends with a low phrase tone (Sadat-Tehrani 2007: 9, 68).⁴ Prenuclear φ -phrases are

⁴This does not mean that a high phrase tone at the right edge of the verb is impossible (see an example in Mahjani 2003: 54).

realized with rising contours that reach a H-target within the stressed syllable (i.e., a L+H* pitch accent). This pitch accent is followed by a phrase tone (H_φ) in prenuclear φ-phrases (Sadat-Tehrani 2007: 9, 42, 68) and is tonally compressed or totally erased in postnuclear φ-phrases (Abolhasanizadeh et al. 2012). The reflexes of this pitch accent are illustrated in Figure 3 with specific objects, which may precede or follow the V in Persian. The L+H* pitch accent is aligned with the stress, which is final with nouns (see *Nāza'nin* ‘Nazanin’) or falls on an earlier syllable in the presence of clitics (see *li'vân-am-o* ‘glass-POSS.1SG-RA’) or in the verb complex (see *ne'gâh kard* ‘look do:PST[3SG]’⁵). Prenuclear and nuclear pitch excursions differ with respect to the presence of a H_φ phrase tone. In prenuclear φ-phrases, the pitch excursion rises up to the right edge of the phrase (see *li'vân-am-o* ‘glass-POSS.1SG-RA’ in the LEFT PANEL); in nuclear φ-phrases, the rising in the stressed syllable (L+H*) is followed by a falling pitch excursion (see *ne'gâh kard* ‘look do:PST[3SG]’ in the RIGHT PANEL), while the postnuclear domain is tonally compressed (Sadat-Tehrani 2007: 7–8, Ardali & Xu 2012). Nuclear rises are scaled lower than prenuclear rises and their H-target (H*) is aligned with the middle of the stressed syllable while the H-target of phrase tones (H_φ) is aligned with the right edge of the word (Sadat-Tehrani 2009, Hosseini 2014: 104–107).

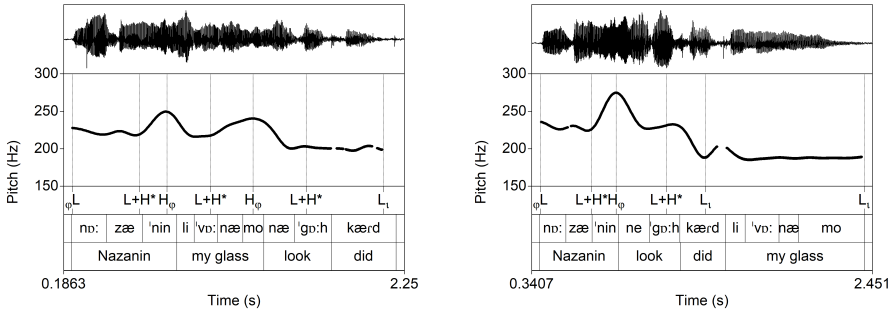


Figure 3: Broad focus in Persian; answers to ‘What happened?’, LEFT PANEL: SOV; RIGHT PANEL: SVO; morphemic transcription in (6)

In the SOV order with a specific object (LEFT PANEL), the nuclear stress falls on the verb and the φ-phrase of the object precedes the nucleus and is enclosed by a H_φ phrase tone (as expected for specific objects and in contrast to bare objects (Hosseini 2014: 81); see (6a)). In the SVO order (RIGHT PANEL), the nuclear stress

⁵Word stress is located on the final syllable of nouns/adjectives with the exception of unstressed enclitics; with complex verbs, the stress falls on the embedded non-verbal element that expresses the lexical content and not on the light verb (Kahnemuyipour 2003).

is again realized within the verb (as indicated by the absence of a H_φ), while the post-predicate domain is realized as a low plateau without any tonal events; see (6b). This realization follows from a general property of Persian prosody: (to the exception of Goal arguments) the nuclear stress cannot be realized in the domain following the predicate (Sadat-Tehrani 2007: 9, 68). Since the domain of the nuclear stress is the intonation phrase, we conclude that the low edge tone is associated with the right edge of an intonation phrase (L_t).

(6) Persian (Y. Sanei, p.c.)

- a. L_φ $L+H^*$ H_φ $L+H^*$ H_φ $L+H^*$ L_t
 ((*nâza'nin* _{ω}) _{φ} (*li'vân-am-o* _{ω}) _{φ} (*ne'gâh* _{ω} *kard* _{ω}) _{φ}) _{t}
 Nazanin glass-POSS.1SG-RA look do:PST[3SG]
 'Nazanin watched my glass.'
- b. L_φ $L+H^*$ H_φ $L+H^*$ L_t L_t
 (((*nâza'nin* _{ω}) _{φ} (*ne'gâh* _{ω} *kard* _{ω}) _{φ}) _{t} (*li'vân-am-o* _{ω}) _{φ}) _{t}
 Nazanin look do:PST[3SG] glass-POSS.1SG-RA
 'Nazanin watched my glass.'

In sum, the examples of broad focus illustrated two distinct phenomena:

- In Georgian, post-predicate objects are prosodically separated from the predicate (by a φ -phrase boundary).
- In Persian, post-predicate objects are outside the phonological domain (presumably an ι -phrase) that may host the nuclear stress.

5 Narrow focus

In some languages, the post-predicate domain can host a narrow focus (see Section 2). Since all these languages also have a preverbal position hosting narrow foci (see 2), the relevant question is whether these options differ prosodically. The data presented in this section show that preverbal foci are prosodically integrated to the phonological constituent that contains the verb, while postverbal foci are prosodically separated from verb.

Caucasian Urum is an Anatolian dialect of Turkish spoken by a population that migrated to the Small Caucasus from Kars/Erzurum in the 19th century (Skopeteas 2016). Similar to the Anatolian vernaculars of Turkish – and in contrast to Standard Turkish – Urum allows for postverbal foci (Schröter 2017). Similarly to Turkish, prenuclear phrases are realized with rising contours delimited

by a low target at their left edge and a high target at their right edge ($_{\phi}L...H_{\phi}$). A falling pitch accent (H^*+L) appears in the stressed syllable in nuclear ϕ -phrases or when the word stress precedes the final syllable (e.g., in case of compounds or unstressed enclitics); cf. Kamali (2011: 93), Güneş (2013), Féry (2018: 250–257). In Figure 4/LEFT PANEL, a high phrase tone (H_{ϕ}) separates the preverbal focus from the preceding material; the focus is marked with a falling accent (H^*+L), while the postnuclear domain (the verb) is de-accented. The postverbal focus (Figure 4/RIGHT PANEL) does not essentially differ: it is separated from the verb by a high phrase tone (H_{ϕ}), while the clause-final nuclear stress is marked with a low pitch accent (L^*).

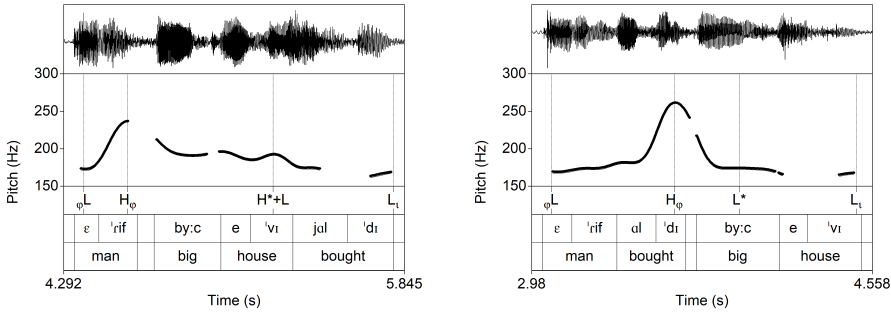


Figure 4: Narrow focus in Caucasian Urum; answers to ‘What did the man buy?’, LEFT PANEL: SO_FV; RIGHT PANEL: SVO_F; morphemic transcription in (7)

There are several indicators of phrasing in the examples of Figure 4. The SOV order (LEFT PANEL) displays a break between the S and O and the SVO order (RIGHT PANEL) between V and O. The epenthetic [j] between *ev-i* and *al-di* in the SOV order is inserted to avoid the hiatus, which indicates that there is no ϕ -phrase boundary between O and V. Furthermore, the H_{ϕ} phrase tones are aligned with the right edge of the subject in SO_FV and of the verb in SVO_F. These facts suggest a phrasing $(S)_{\phi}(O_FV)_{\phi}$ for preverbal and $(SV)_{\phi}(O_F)_{\phi}$ for postverbal foci; see (7).

(7) Caucasian Urum (V. Moisiidi, p.c.)

- a. $_{\phi}L$ H_{ϕ} H^*+L L_i
 ((*erif* _{ω}) _{ϕ}) (*büyük* _{ω} *ev-i* _{ω} *al-di* _{ω}) _{ϕ}) _{i}
 man[NOM] big house-ACC buy:PST[3]
 ‘The/a man bought the/a big house.’

- b. φ L H_{φ} L^* L_t
 ((erif_ω al-di_ω)_φ (büyük_ω ev-i_ω)_φ)_t
 man[NOM] buy:PST[3] big house-ACC
 ‘The/a man bought the/a big house.’

The prosody of Eastern Armenian has very similar properties: prenuclear φ -phrases are rising contours with φ L and H_{φ} tones at their edges – independent of word stress (see Toparlak 2019: 61–81 for a pitch-accent based account). Prenuclear φ -phrases show exactly this pattern in Figure 5: see the contour of the subject before a preverbal focus (LEFT PANEL) and the contours of the subject and the verb preceding a postverbal focus (RIGHT PANEL). Nuclear accents have the form of falling contours in declarative clauses (Dum-Tragut 2009: 53), differing from prenuclear accents in that (a) the peak of the H^*+L accent is aligned earlier in the stressed syllable than the peak of the H_{φ} phrase tone and (b) the nuclear accents are aligned with the stressed syllable and not with the final syllable in words with non-final stress, e.g., with unstressed enclitics; see Dolatian (2020: 864) on stress. In Figure 5, the nuclear accents (H^*+L) are aligned with the stressed syllable of the narrow focus, either preverbal (LEFT PANEL) or postverbal (RIGHT PANEL).

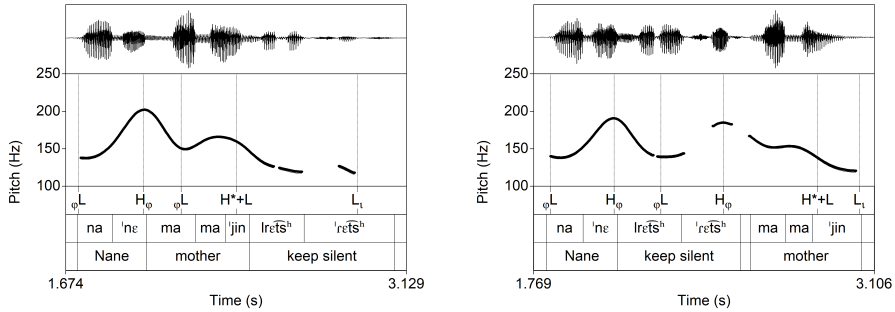


Figure 5: Narrow focus in Eastern Armenian; answers to ‘Whom did Nane keep silent?’, LEFT PANEL: SO_FV; RIGHT PANEL: SVO_F; morphemic transcription in (8)

The prosodic excursions of Figure 5 also differ with respect to the relative pitch scaling of the H-targets: register lowering applies to the second H-target of the LEFT PANEL but not to the second H-target of the RIGHT PANEL. The absence of register-lowering in the latter case is evidence that the right edge of the φ -phrase mapped on the verb is not a sister constituent to the φ -phrase of the subject, but it is a higher prosodic constituent; see ((S)_φ(V)_φ)_φ in (8b).

(8) Eastern Armenian (H. Hovhannisyan, p.c.)

- a. φL $H_\varphi \varphi L$ H^*+L L_l
 ((*nane*_ω)_φ) (*mama-i-n*_ω) (*lrre-c'r-ec'*_ω)_φ)_l
 Nane[NOM] mother-DAT-DEF silent-CAUS-AOR.3SG
 'Nane kept mother silent.'
- b. φL $H_\varphi \varphi L$ H_φ H^*+L L_l
 ((*nane*_ω)_φ) (*lrre-c'r-ec'*_ω)_φ)_φ (*mama-i-n*_ω)_φ)_l
 Nane[NOM] silent-CAUS-AOR.3SG mother-DAT-DEF
 'Nane kept mother silent.'

The same difference between preverbal and postverbal foci is found in Georgian; see Figure 6. In the preverbal focus (LEFT PANEL), the prenuclear φ -phrase of the subject is separated from the focus with a high phrase tone – similar to the pattern observed in Caucasian Urum and Eastern Armenian. The initial syllable of the focus is realized with a steep fall towards a low target that is reached within the first syllable (L^*). The material after this syllable is realized with low intensity (see oscillogram), very low pitch and creaky voice, which results into inaccurate pitch measurements (the real pitch level is much lower than the displayed pitch level in the pitch track). In contrast to the broad focus in Figure 2/LEFT PANEL, the material after the stressed syllable of the focus is de-phrased such that there is no H_φ at the right edge of the focused object. In the postverbal focus in Figure 6/RIGHT PANEL, the prenuclear domain is mapped on a single φ -phrase, delimited by two high targets and a pitch excursion interpolating between the high edge events. After the high phrase tone at the right edge of the verb, the pitch is falling towards a low target within the first syllable of the focus, while the remainder is realized with a radical intensity drop and creaky voice (see earlier descriptions in Vicenik & Jun 2014: 177, Skopeteas & Féry 2010, Borise 2019: 291).

In either case (preverbal and postverbal focus), the intonational nucleus (i.e., the φ -phrase in narrow focus) is separated by a high phrase tone (H_φ) from the prenuclear material on its left side. This is a robust property of focus expressions in Georgian (Skopeteas & Féry 2010, Féry 2013: 711–713, Borise 2021a, Vicenik & Jun 2014: 181). It results in a difference in phrasing between preverbal and postverbal foci: while the former are phrased together with the verb, the latter are prosodically separated from the verb; see (9).

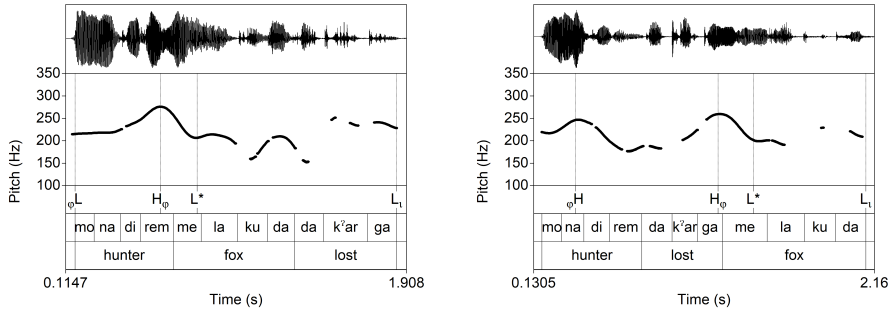


Figure 6: Narrow focus in Georgian; answers to ‘What did the hunter loose?’, LEFT PANEL: SO_FV; RIGHT PANEL: SVO_F; morphemic transcription in (9)

(9) Georgian (D. Kakashvili, p.c.)

- a. φL H_φ L^* L_t
 ((monadire- m_ω) $_\varphi$ (melakuda $_\omega$ da-k’arg-a $_\omega$) $_\varphi$) $_t$
 hunter-ERG fox[NOM] PFV-loose-AOR.S.3SG
 ‘The hunter lost the fox.’
- b. φH H_φ L^* L_t
 ((monadire- m_ω da-k’arg-a $_\omega$) $_\varphi$ (melakuda $_\omega$) $_\varphi$) $_t$
 hunter-ERG PFV-loose-AOR.S.3SG fox[NOM]
 ‘The hunter lost the fox.’

The examples of this section demonstrate that preverbal foci are integrated into the φ -phrase of the predicate, while postverbal foci are separated by H_φ phrase tones from the predicate. Crucially, the high φ -phrase tone does not depend on the syntactic category of the material preceding the focus: in the examples discussed so far, it appears on the right edge of S in SO_FV and the right edge of V in SvO_F. When a postpredicate focus is not adjacent to the verb, the phrase tone just appears at the right side of the preceding φ -phrase, as in Figure 7, with an adverb intervening between the V and the narrow focus. In the broad focus realization (LEFT PANEL), the first φ -phrase is determined with H phrase tones at its left and right edge; the next H_φ at the right edge of the adverb is lowered with reference to the earlier H_φ . The final object is realized with low pitch and a drop in intensity that renders the pitch indefinable after the stressed syllable. Crucially, when the final object is focused (RIGHT PANEL), the final object is preceded by a high boundary at the right edge of the prenuclear prosodic constituent that contains all material preceding the focus.

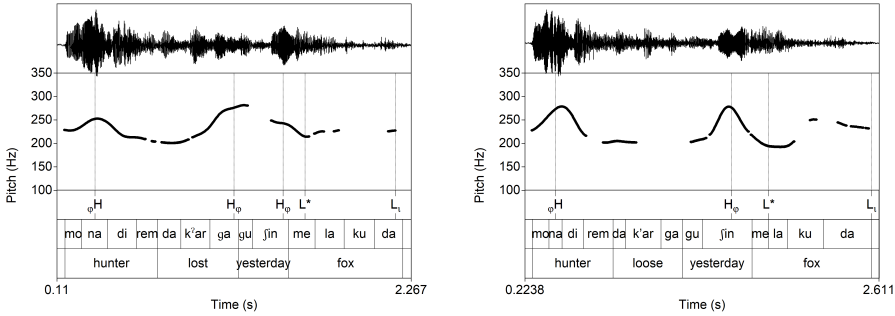


Figure 7: SVAdvO in Georgian; LEFT PANEL: broad focus, answer to ‘What happened?’; RIGHT PANEL: narrow focus, answer ‘What did the hunter lose yesterday?’; morphemic transcription in (10)

In the broad focus realization (LEFT PANEL), the predicate is phrased together with the preceding material, as in (10a), which confirms the observations in broad focus; compare phrasing in (5). Narrow focus on the clause-final object (RIGHT PANEL) induces a major ϕ -phrase boundary preceding the focus, as in (10b).

(10) Georgian (D. Kakashvili, p.c.)

- a. ϕ H H ϕ H ϕ L* L_t
 ((monadire-m_ω da-k'arg-a_ω) ϕ (gušin_ω) ϕ (melakuda_ω) ϕ)_t
 hunter-ERG PFV-loose-AOR.S.3SG yesterday fox[NOM]
 ‘The hunter lost the fox yesterday.’
- b. ϕ H H ϕ L* L_t
 ((monadire-m_ω da-k'arg-a_ω gušin_ω) ϕ (melakuda_ω) ϕ)_t
 hunter-ERG PFV-loose-AOR.S.3SG yesterday fox[NOM]
 ‘The hunter lost the fox yesterday.’

In sum, preverbal foci are phrased together with the predicate, while postverbal foci are prosodically separated. It is crucial that postverbal foci are separated from the prefocal material of any category, e.g., from a prefocal adverb in (10b). Hence, we are dealing with a prosodic property of focus that does not refer to the constituent structure. In all these languages, the left edge of the focus is aligned with a ϕ -phrase boundary at its left edge (see typology in Féry 2013), whose exponent is a high phrase tone at the right edge of the preceding ϕ -phrase. This phenomenon is independent of the syntactic category preceding the focus.

6 Out of focus

In all languages that allow for post-predicate elements, the post-predicate material can be background information, which is outside the focus domain of the utterance. Studies on the languages of the area conclude that the material following the nuclear stress (including post-predicate elements) is de-accented, which means that the tonal events are eliminated; see Persian in Ardali & Xu (2012), Sadat-Tehrani (2007: 7), and Rahmani et al. (2018),⁶ and Turkish in Ipek (2011), Özge & Bozsahin (2010: 144), and Kamali (2011: 34), while de-accenting is reported to be optional in Georgian (Skopeteas et al. 2009: 115, Vicenik & Jun 2014: 177).

The question is whether the predicate has particular effects on prosodic phrasing when the post-predicate material is outside the focus domain. For instance, it is reported for Western Armenian – which belongs to the languages that use post-predicate material only for background information – that constituents following the verb are separated from it by a prosodic break (Donabedian-Demopoulos 2018: §2.7).

Similar phenomena apply to Standard Turkish, which is a further language that only allows background information to follow the predicate, as illustrated in the following. The nuclear stress cannot be realized after the predicate (Taylan 1984: 51, Göksel 1998: 103, Özge & Bozsahin 2010: 148–152). This limitation restricts the focus options in this language, as demonstrated with focus-sensitive particles in (11), whose scope depends on the focus (Kural 1992: 24). The focus particle *yalnızca* ‘only’ can be placed in the postverbal domain. With neutral intonation, the nuclear stress falls on the preverbal object, which is then interpreted as being in the scope of ‘only’. Changing the position of the nuclear stress changes the scope of the focus, e.g., on the subject or on the verb. However, one reading is excluded: the nuclear stress – and correspondingly the scope of ‘only’ – cannot fall on a postverbal element.

(11) Turkish (Kural 1992: 24)

Ahmet o kitab-ı göster-miş yalnızca Berna’-y-a.

Ahmet[NOM] this book-ACC show-PST.EVID[3] only Berna-Ø-DAT

‘Ahmet must have shown only THIS BOOK to Berna.’ (with nuclear stress on *kitab-ı*)

‘Only AHMET must have shown this book to Berna.’ (with nuclear stress on *Ahmet*)

⁶A different result is presented in Abolhasanizadeh et al. (2012) on Persian: tonal events associated with the stress (pitch accents) are tonally compressed but still recognizable after the nuclear stress. However, the conclusions of this study are refuted by Rahmani et al. (2018).

‘Ahmet only must have SHOWN this book to Berna.’ (with nuclear stress on *göster-miş*)

‘Ahmet must have shown this book only to BERNA.’ (not possible)

These examples show that the nuclear stress of the intonation phrase must be realized within the phonological domain that ends at the right edge of the verb. We conclude from this fact that the verb determines the right edge of an intonation phrase. The Turkish examples in Figure 8 illustrate the difference between V-final utterances in broad focus and non-V-final utterances with postverbal background information. In the broad focus realization (TOP PANEL), the utterance is realized as a series of rising contours mapped onto the preverbal constituents. Constituents with final stress (*maymu-’nu* ‘monkey-ACC’) are realized with a rising pitch excursion stretching from their left to their right edge (φ L...H φ); non-final stress (*A’lanya-lı-lar* ‘Alanya-NMLZ-PL’, *cu’ma-rtesi* ‘Friday-after’, *ar-ı’yor-muş* ‘look-PROG-PST.EVID[3]’) is associated with a falling accent

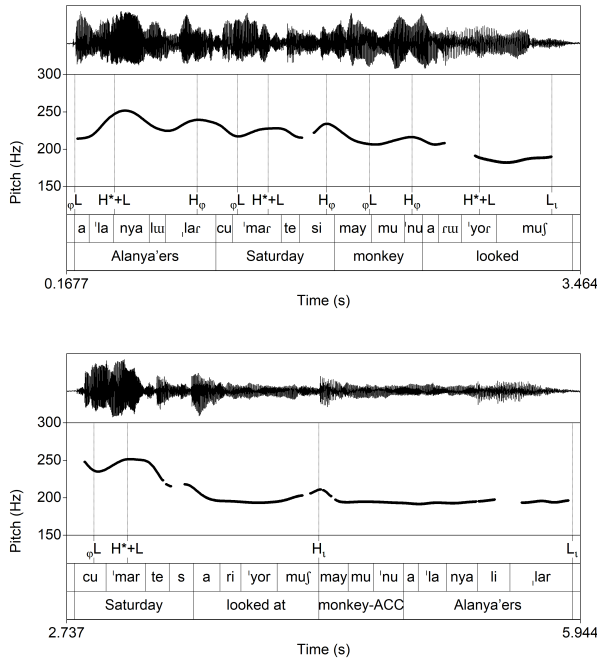


Figure 8: Broad focus vs. background information in Standard Turkish: TOP PANEL [SAdvOV]_F, answer to ‘What happened?’; BOTTOM PANEL: Adv_FVOS, answer to ‘When did the Alanya'ers seem to have watched a monkey?’; morphemic transcription in (12)

(H*+L) (see Kamali 2011: 93, Güneş 2013, Féry 2018: 250–257). When the narrow focus is preverbal, it is realized with a falling pitch accent (H*+L), late aligned with the stressed syllable (see *cu'ma-rtesi* ‘Friday-after’ in the BOTTOM PANEL). There is no φ -phrase boundary between the focus and the verb, which is shown by the fact that the final /i/ is elided (apocope) to avoid the hiatus. The material following the focus is de-accented, that is, the falling pitch accents in stressed syllables are erased: compare the realization of *A'lanya-lı-lar* ‘Alanya-NMLZ-PL’ in the TOP and BOTTOM PANEL.

Crucially, the postfocal domain is de-accented, but not fully de-phrased: a (compressed) rise is aligned with the right edge of the verb. The tonal events that are associated with stress (pitch accents) are eliminated, but the events that relate to phrasing are tonally compressed. Since the phonological domain that contains the nuclear stress is an intonation phrase, we assume that the right edge of the predicate is aligned with an ι -phrase boundary.

(12) Turkish (D. Balıkcıoğlu and S. Seyis, p.c.)

- a. φ L H*+L H_{φ} φ L H*+L H_{φ} φ L H_{φ}
 ((*alanya-lı-lar* _{ω}) _{φ}) (*cuma-rtesi* _{ω}) _{φ} (*maymun-u* _{ω}) _{φ}
 Alanya-NMLZ-PL[NOM] Friday-after monkey-ACC
 L_{ι}
ar-ıyor-muş _{ω}) _{ι}
 look-PROG-PST.EVID[3]
 ‘The people from Alanya seem to have watched a monkey on Saturday.’
- b. φ L H*+L H_{ι}
 (((*cuma-rtesi* _{ω}) _{φ}) *ar-ıyor-muş* _{ω}) _{ι}) (*maymun-u* _{ω}) _{φ}
 Friday-after look-PROG-PST.EVID[3] monkey-ACC
 L_{ι}
alanya-lı-lar _{ω}) _{φ}) _{ι}
 Alanya-NMLZ-PL[NOM]
 ‘It was on SATURDAY that the people from Alanya seem to have watched a monkey.’

In this section, we demonstrated two prosodic properties of post-predicate elements. For some languages that do not have postverbal foci, it is reported that post-predicate elements are separated by a prosodic boundary from the predicate (Western Armenian). Anecdotal data from Turkish show that the right edge of the predicate may be aligned with a tonally compressed high tone boundary, even if

this tonal event is within the de-accented domain that follows the nuclear stress. Second, in some languages, the post-predicate domain cannot bear the nuclear stress and can only contain information outside the focus domain of the utterance – as demonstrated for Standard Turkish.

7 Outlook

7.1 Left-right asymmetries

The prosodic facts presented in sections 4-6 reveal two major asymmetries between the left and the right side of the predicate in languages with OV properties. The typology must refer to constructions (instead of languages), because these observations do not necessarily generalize for all constructions of a language (see discussion about postverbal objects and obliques in Persian in Section 1).

- **LEFT-RIGHT ASYMMETRY IN PROMINENCE**

In some constructions, the nuclear stress cannot be hosted by elements after the predicate.

- **LEFT-RIGHT ASYMMETRY IN PHRASING**

In some constructions, post-predicate material is prosodically separated from the predicate, while pre-predicate material is not.

The **LEFT-RIGHT ASYMMETRY IN PROMINENCE** is consistently reported in earlier research on Standard Turkish (Taylan 1984, İşsever 2003, etc.) and Persian (Karimi 2003, Sadat-Tehrani 2007, to the exception of postverbal goals). The fact that the nuclear stress cannot follow the predicate excludes any element that needs to be accented from this domain: bare objects, focused constituents, *wh*-pronouns in ordinary questions, etc. If these elements do not bear the nuclear stress, they may follow the predicate: bare objects can follow the predicate if the focus is on the verb in Turkish (İşsever 2003: 1047); polar questions with fronted verbs (i.e., nuclear stress on the verb) may have postverbal bare objects in Persian (Karimi 2003: 123).

The limitation on nuclear stress placement indicates that post-predicate elements belong to a phonological domain whose potential nucleus cannot take scope over the core clause. This view does not exclude that an accent follows the predicate (this can be the case in afterthoughts for instance), but a post-predicate accent cannot be the nuclear stress of the intonation phrase encompassing the predicate and the material preceding it. In terms of prosody-syntax mapping, this

phenomenon implies that post-predicate elements are outside the core clause in these constructions, that is, they are right dislocated, as schematically represented in (13).

$$(13) \quad ((SV)_I \quad O)_I \\ \quad \quad \quad [[SV]_{\text{core}} \quad O]_{\text{clause}}$$

The LEFT-RIGHT ASYMMETRY IN PHRASING between the left and the right side of the predicate has been observed in contexts in which the predicate and the post-predicate elements are both part of the same information structural domain (broad focus or out of focus):

- In Old Georgian manuscripts, the verb is often separated by a colon from the post-predicate material; see Section 1 (Boeder 1991);
- In Modern Georgian, the right edge of the verb is often aligned with the boundary of a prosodic constituent, reflected in a high phrase tone that is not within the domain of register lowering of earlier high tones; see Section 4.
- Anecdotal evidence from Turkish shows that when the postnuclear material is not completely de-phrased, the right edge of the predicate is a natural way to split a background domain in prosodic constituents; see Section 6.
- For various languages of the area, it is reported that non-final verbs appear with phonetic cues (tonal events or breaks) indicating a prosodic boundary at their right edge: Western Armenian (Donabedian-Demopoulos 2018) as well as Adyghe, Circassian, and Chechen (summaries in Borise 2021b); see sections 4 and 6.

The prosodic separation of the predicate from post-predicate elements cannot be accounted for by information structure, since in all these cases the predicate and the post-predicate material are part of the same information-structural domain (e.g. a broad focus domain or a domain of background information). There are two possible ways to account for this data.

It may be that this phrasing pattern stems from purely phonological rules that are accidentally correlated with the right edge of the predicate. For instance, it may be that the phrasing of the final element in Georgian SVO clauses is just an indicator of a nuclear stress hosted by the final object. This hypothesis would apply to a part of the data (only broad focus) but is fatally defeated by the prosodic realization in Figure 7/LEFT PANEL, since this example does not involve a major

phrasal boundary between the V and the material following it, while the nuclear φ -phrase does not immediately follow the predicate.

An alternative hypothesis is that the phrasing of the verb reflects the V-final properties of these languages. The post-predicate material is part of the domain that can host the nuclear stress in languages such as Georgian, which means that there is no reason to assume a lower domain for ι -phrases in this case; compare (13) and (14). Consequently, the φ -phrase containing the material preceding the verb can only be accounted for by assuming a syntactic phrase containing the subject and the predicate – to the exclusion of the object. We label this constituent as a projection expanding the verb (V). This conclusion follows from the assumptions introduced so far, but the reasoning behind this constituent structure needs to be supported by independent evidence.

- (14) $((SV)_{\varphi} \quad (O)_{\varphi})_{\iota}$
 $[[SV]_{V \text{ expansion}} \quad O]_{\text{core clause}}$

7.2 Prosody and focus options of post-predicate elements

The prosodic properties of the post-predicate domain offer a partial explanation of the cross-linguistic differences in focus options in Figure 1. In prosodic view, if post-predicate elements can host the nuclear stress, they can be used for (narrow/broad) focus, as in Georgian, Armenian, Caucasian Urum and probably many Nakh-Daghestanian languages; see Figure 9 and discussion about the languages in Section 2. If post-predicate elements cannot host the nuclear stress,

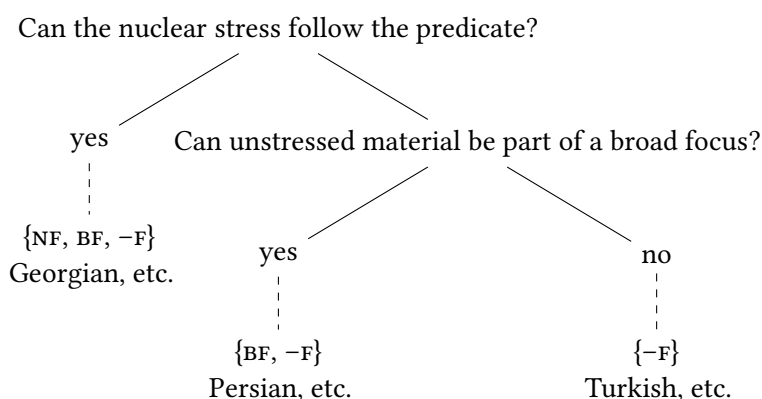


Figure 9: Focus options of post-predicate objects by prosodic properties (NF: narrow focus; BF: broad focus, -F: out of focus)

then they cannot be narrowly focused, as in Persian, Turkish, Western Armenian. Within this group of languages, there is a further differentiation that cannot be accounted for by prosodic differences. In some languages (and at least at some level of meta-linguistic reflection), it is possible to use in broad focus certain constructions with post-predicate elements that do not bear the nuclear stress (see discussion about Tsakhur and Persian in Section 2). In Persian, this possibility appears with nuclear stress on the verb, which applies to constructions with (preverbal/postverbal) specific objects (see Modarresi 2014: 133–134 on Persian). The nuclear stress must be hosted by the specific object if it is in narrow focus and it is exactly this focus option that is banned from the post-predicate domain. This reasoning accounts for the facts from Persian, but does not offer an explanation why the same flexibility does not hold true in Turkish. The crucial issue is that there is nothing in the prosodic structure that would hinder a specific object from being postverbal under broad focus in these languages. Whether a language uses this construction (as Persian) or not (as Turkish) is an independent distinction that cannot be accounted for by prosody alone.

7.3 Prosody and postverbal narrow foci

Narrow foci come with an asymmetry in phrasing, such that preverbal foci are phrased together with the predicate, while postverbal foci are separated from the predicate with a prosodic break (see Section 5). This asymmetry follows from an independent phonological property of focus in these languages, namely that the left edge of the focus domain is aligned with a prosodic boundary, separating the focus domain from the prefocal material (see Féry 2013 for a typology in these lines). There is no evidence for a difference in the interpretation of preverbal and postverbal foci in languages that allow for both options: e.g., there is no difference in the interpretation of either option in Georgian (Skopeteas & Fanselow 2010).

An interesting question is whether the preference to align the left edge of the focus with the left edge of a prosodic constituent (which applies to all examined languages) correlates with the evolution of a preverbal focus position in these languages. If the underlying principle is to phrase the focus together with the predicate, the prediction is straightforward: languages with an immediately-preverbal focus are expected to insert a prosodic boundary at the left side of the focus (see Georgian, Eastern Armenian and Caucasian Urum in Section 5), while languages with an immediately-postverbal focus are expected to demarcate the focus by means of a prosodic boundary on its right. Languages of the

latter type are less frequent, but at least Zulu – that has been the object of extensive investigation in this respect – confirms this prediction: narrow focus is right adjacent to the predicate and the focus is aligned with a boundary on its right (Cheng & Downing 2012). However, there are various counterexamples to this putative generalization: various languages of India are reported to have preverbal foci and to align the right edge of the focus with a prosodic boundary; see Bengali (Selkirk 2008), Konkani (Féry 2013: 709). This left/right asymmetry suggests a bias towards aligning the left edge of the focus with a prosodic boundary, which is not surprising: postfocal material is de-accented in most languages, which means that prosodic events following the focus are less likely to appear in general.

Abbreviations

3	3rd person	PASS	passive
ACC	accusative	PFV	perfective
AOR	aorist	PL	plural
CAUS	causative	POSS	possessor
DAT	dative	PROG	progressive
DEF	definite	PST	past
DEM	demonstrative	RA	<i>ra</i> (Persian)
ERG	ergative	REM	remote
EVID	evidential	S	subject
IO	indirect object	SG	singular
NMLZ	nominalizer	SM	series marker
NOM	nominative		

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