Prosodic Movement

Brian Agbayani, Chris Golston, and Dasha Henderer

California State University, Fresno

1. Introduction

A basic assumption in generative grammar is that all movement is syntactic. This paper proposes that hyperbaton in Classical Greek, Latin and Colloquial Russian involves post-syntactic movement of prosodic constituents to prosodic edges. We are led to this conclusion by four major observations about hyperbaton: it moves prosodic constituents (ω and φ) while ignoring syntactic constituency, and respects prosodic constraints such as the OCP while ignoring syntactic constraints like the CSC or the LBC. We propose that this is just what we should find with prosodic movement: sensitivity to prosodic constituency and prosodic constraints and insensitivity to syntactic constituents and syntactic constraints.

2. Prosodic constituency of the fronted string

Previous analyses (e.g., Devine & Stephens 2000, 2006) have missed a critical observation, that the fronted material in hyperbaton—typically local fronting of discourse prominent material—is always a prosodic constituent. Examples (1)-(3) from Latin show that extracted material need not form a syntactic constituent; each element of these disjointed strings belongs to a different syntactic constituent. Prosodically, however, each fronted string forms a prosodic word (ω) with its lexical head right aligned with the word boundary. Less commonly, the fronted strings form phonological phrases (φ) as in (3) and (4). Here, lexical XPs are right aligned with the right edges of φs.

(1) afferre [ad [communem fructum]]

(2) (ad communem) afferre fructum

to communem contribute to fruit

‘to contribute to the common good’ (Cicero, Pro Archia 12)
3. Fronting of prosodic constituents

In (5)-(7) extracted material is fronted to the left edge of its prosodic phrase. Devine and Stephens (2000) argue that this kind of fronting results from local syntactic movement of a complement to the specifier of the selecting lexical head. But their syntactic analysis is problematic for a number of reasons. First, it moves syntactic non-constituents, as we have just seen. Second, it appears to be insensitive to anti-locality conditions that restrict movement from the complement to the specifier of a single XP (Grohmann 2001; Abels 2003):¹

Hyperbaton is not always extremely local, so not all cases violate anti-locality. (8)-(10), for instance, involve long-distance hyperbaton, where a ω is fronted to the left edge of its intonational phrase.

¹ In Abel’s proposal, the anti-locality constraint holds of Phase heads (C and v), though see Grohmann (2001) for a more generalized, domain-based approach.
4. Fronting obeys the Obligatory Contour Principle

Hyperbaton is sensitive to prosodic well-formedness, as we might expect of movement that is prosodic rather than syntactic. Hyperbaton is blocked when movement would result in homophonous function words within the same prosodic word (Golston 1995), an instantiation of the Obligatory Contour Principle (OCP). In Classical Greek, where possessors are commonly fronted to a position between determiner and noun (11), movement is not possible when it would bring together homophonous articles (12). Fronting is permitted, however, when something appears between the homophonous articles (13). Note that in (13), hyperbaton must front the Det-N string to the left of the entire possessed DP to avoid the restriction on adjacent homophonous function words.

(11) *(tòn tôn Gergit'ion) pólin
   the NOUN the Gergitian NOUN the city
   ‘the city of the Gergithians’ (Xenophon, Hellenica 3.1.22) Greek

(12) *(tòn tôn têoûn) onomáton
    the NOUN the NOUN the NOUN the NOUN
    ‘of the names of the gods’ (construct) Greek

(13) (tôn têoûn) (tôn onomáton) onomáton
    the NOUN the NOUN the NOUN the NOUN
    ‘of the names of the gods’ (Plato, Cratylus 400d) Greek

Similarly, movement in Latin is blocked when it brings together homophonous complementizer cum ‘when’ and preposition cum ‘with’ (14), though PP fronting like this is very common in subordinate clauses. Such movement is freely allowed when another word appears between the homophonous function words (15).

(14) *cum cum sicario ...
    when with murderer ...
    ‘when with a murderer...’ Latin

(15) cum loquerer cum Phania
    when speak with Phania
    ‘when I was speaking with Phania’ (Cicero, ad Familiares 3.5.1) Latin

In Russian, fronting is blocked when it brings together homophonous function words čto ‘what’ in nominative and accusative cases and complementizer čto ‘that’ (16-17). Fronting is allowed when something appears between the homophonous function words (18-19).
(16) *čto čto obuslovilo
what_{n} what_{as} conditions
‘What conditions what?’ (Bošković 2002)  

(17) *ja priznaju čto čto ja sdelal bylo sdelano…
I admit that what I did was done
‘I admit that what I did was done…’

(18) čto neprestano čto obuslovilo
what_{n} constantly what_{as} conditions
‘What constantly conditions what?’

(19) ja priznaju čto to čto ja sdelal bylo sdelano…
I admit that this (thing) I did was done
‘I admit that this (thing) I did was done…’ (NRC 2003)

5. Fronting disobeys syntactic island constraints

A major problem with syntactic analyses of hyperbaton is that it exhibits insensitivity to a number of syntactic islands, including the Coordinate Structure Constraint (Ross 1967). In each of the following examples, the first conjunct is extracted out of its coordinate structure.

(20) polémou péri kai aspaleias
war_{nps} about and safety_{fgs}
‘about war and safety’ (Thucydides 5.11.4)  

(21) sapientiae laudem et eloquentiae
wisdom_{fgs} reputation_{nps} and wisdom_{fgs}
‘a reputation for wisdom and eloquence’ (Cicero, de Oratione 2.363)  

(22) perila takije xorošije sdelani i stupen’ki
rails_{agp} such_{up} good_{up} made and steps_{agp}
‘Made such good rails and steps’ (RNC 2005)

Hyperbaton is also insensitive to the Left Branch Condition, which prohibits fronting of left branch elements that strand their complements (Ross 1967).

(23) pasin ēreske taúta tóis állois prēsbēsin
all_{ndp} pleased these the_{ndp} other_{ndp} ambassadors_{ndp}
‘these things pleased all the other ambassadors’ (Demosthenes 19.157)  

(24) multas adferunt causas
many_{fap} to.bring_{fap} reasons_{fap}
‘they bring up many reasons’ (Caesar, BG 6.22)  

(25) čiyu ty vstretyl ženu?
whose you met wife
‘Whose wife did you meet?’ (Zavitnevich 2001:13)
Hyperbaton ignores so-called Freezing Islands (Wexler & Culicover 1980) as well. In (29) ἀντ' ῥοποι ἑστοίς καὶ ποτόισιν 
*hósois ‘whatever’ moves from an object that has itself been moved and in (30)-(31) nullam ‘no’ and 
kakix ‘such’ have been fronted out of constituents that have themselves been fronted. 

Hyperbaton also ignores lexical integrity, splitting compounds and proper names that consist of 
two or more prosodic words. Names can be split in all three languages: 

**Greek**

(32) Ἐπιόντος Ἀθηναίου τὴν γνώμην 
after Solon-the-Athenian had spoken his opinion’ (Aeschines 3.108; D&S 2000, 93)

(33) Exploranda Cornelia 
‘exploring Camp Cornelia’ (Caesar, Bello Civili 2.24; D&S 2006, 275)

(34) Gal’na Smirnova iz Jerevana. 
‘Gal’a Smirnova came from Jerevan.’ (RRR 1973)

**Latin**

(30) Vide (gravem) subesse causam 
‘I see there to be no serious reason.’ (Cicero, Epistulae ad Atticum 1.10.2)

(33) Exploranda Cornelia 
‘exploring Camp Cornelia’ (Caesar, Bello Civili 2.24; D&S 2006, 275)

**Russian**

(34) Gal’na Smirnova iz Jerevana. 
‘Gal’a Smirnova came from Jerevan.’ (RRR 1973)

Russian allows compounds to be split as long as each member of the compound is a prosodic word:
(35) \((v \ vocab)_{\omega} \) ona xodila \( -restoran \) obedat’
  to car she went dining to.eat
  ‘She went to the dining-car to eat.’ (RRR 1973:390) \( \text{Russian} \)

(36) \((plat’je)_{\omega} \) ona sebe \( -s\text{sila} \) \( -kostjum \)
dress\( _{\text{nas}} \) she to.self sewed suit\( _{\text{nas}} \)
  ‘She sewed herself a dress-suit.’ (RRR 1973:390) \( \text{Russian} \)

Such splitting of compounds is marginal in Latin, where it only occurs in poetry:

(37) \((septem)_{\omega} \) subiecta \( -trioni \)
  seven under oxen\( _{\text{nudis}} \)
  ‘under the SevenOxen (constellation)’ (Vergil, Georgics 3.381) \( \text{Latin} \)

Greek compounds form single prosodic words and therefore cannot be split by hyperbaton.

7. Fronting is semantically vacuous

Another strong argument for the prosodic nature of hyperbaton is its semantic vacuity. Fronted reflexive and reciprocals are interpreted as if they were \textit{in situ}, following their antecedents.

(38) ei dé ge medamòù \( heautôn \), aèpokrúptoito \[ ho poiètess] ,
  if and prt never himself\( _{\text{mas}} \) conceal\( _{\text{b, opt}} \) the\( _{\text{mn}} \) poet\( _{\text{mn}} \)
  ‘and if the poet should never conceal himself’ (Plato, Republic 393c11) \( \text{Greek} \)

(39) \( se \) Milo, continuit
  self Milo\( _{\text{mas}} \) restrained\( _{\text{s,}} \)
  ‘Milo restrained \textit{himself}’ (Cicero, Pro Milone 15.40) \( \text{Latin} \)

(40) \( seb’ a, \) oni, ubirat’ ne budut
  themselves\( _{p} \) they get.rid not will
  ‘They are not going to get rid off themselves.’ (RNC 2003) \( \text{Russian} \)

8. Analysis

Following Agbayani & Golston (2010), we assume a three-part serial model of grammar where syntax feeds an interface module, which, in turn, feeds phonology. In this model, the role of syntax is limited to determining dominance relations and has no say in linear precedence relations whatsoever. Thus, the syntax shapes the hierarchical structure of sentences, but it is phonology that determines the left/right order of words.
The syntax determines the sisterhood relations of \( \text{ék} \) 'has' and \( \text{pû} \) 'fire' but it does not decide which of them linearly precedes the other. The interface module creates prosodic constituency and determines linear precedence relations by right-aligning syntactic edges to prosodic edges. Thus, in the case of \( \text{ék} \) \( \text{pû} \) the interface determines that \( \text{ék} \) and \( \text{pû} \) are each a \( \omega \), that the XPs headed by \( \text{ék} \) and \( \text{pû} \) are each a \( \phi \), and that the word order is \( \text{ék} \) \( \text{pû} \) rather than \( \text{pû} \) \( \text{ék} \) because XPs like \( \text{pû} \) 'fire' right align with \( \phi \)s. We assume the following universally undominated constraints:

(42) Universally undominated constraints (Selkirk 1995)

| Layeredness | No \( C_i \) dominates a \( C_j \), \( j > i \). |
| Headedness  | Any \( C \) must dominate a \( C^{+1} \). |

The crucial constraints that determine left/right order in the Agbayani & Golston model are just those independently needed for the creation and alignment of prosodic structure:

(43) AlignR(\( X^o \), \( \omega \)): The right edge of every lexical \( X^o \) is aligned with that of a \( \omega \).
AlignR(\( \omega \), \( X^o \)): The right edge of every \( \omega \) is aligned with that of a lexical \( X^o \).
AlignR(XP, \( \phi \)): The right edge of every lexical XP is aligned with that of a \( \phi \).

These constraints are simultaneously responsible for assigning prosodic edges and for (right-)aligning syntactic heads and phrases to those edges. As the following shows, ‘head-initial’ \( \text{ék} \) \( \text{pû} \) ‘has fire’ is preferred to ‘head-final’ \( \text{pû} \) \( \text{ék} \) simply due to alignment: the former right-aligns every XP with a phonological phrase edge \( \phi \), which the latter fails to do:

(44) Lexical XP: \( \text{ék} \) \( \text{pû} \) ‘has fire’

<table>
<thead>
<tr>
<th>[( \text{ék} \text{ei}, \text{pû} \text{r} )]_{vP}</th>
<th>AlignR(( X^o ), ( \omega ))</th>
<th>AlignR(( \omega ), ( X^o ))</th>
<th>AlignR(XP, ( \phi ))</th>
</tr>
</thead>
<tbody>
<tr>
<td>( a. (\text{ék} \text{ei}, \text{pû} \text{r})_{\phi} )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( b. (\text{pû} \text{r}, \text{ék} \text{ei})_{\phi} )</td>
<td></td>
<td></td>
<td></td>
</tr>
<tr>
<td>( c. (\text{ék} \text{ei}, \text{pû} \text{r})_{\phi} )</td>
<td></td>
<td></td>
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<tr>
<td>( d. (\text{pû} \text{r}, \text{ék} \text{ei})_{\phi} )</td>
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<tr>
<td>( e. (\text{ék} \text{ei}, \text{pû} \text{r})_{\phi} )</td>
<td></td>
<td></td>
<td></td>
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<tr>
<td>( f. (\text{pû} \text{r}, \text{ék} \text{ei})_{\phi} )</td>
<td></td>
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</tr>
<tr>
<td>( g. (\text{ék} \text{ei}, \text{pû} \text{r})_{\phi} )</td>
<td></td>
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<tr>
<td>( h. (\text{pû} \text{r}, \text{ék} \text{ei})_{\phi} )</td>
<td></td>
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</table>

AlignR(\( X^o \), \( \omega \)) aligns lexical heads \( \text{ék} \text{ei} \) and \( \text{pû} \) with a prosodic word boundary (44 a-b). AlignR(\( \omega \), \( X^o \)) determines head-initial order and rejects the head-final status of (44b). (44c-h) are rejected because one of the lexical words is parsed as a syllable.
To keep the output of the postlexical phonology similar to the input, Agbayani & Golston propose three faithfulness constraints.

\[(45) \quad \text{STAY}_\omega \quad \text{No daughter of } \omega \text{ moves.}\]
\[(46) \quad \text{STAY}_\phi \quad \text{No daughter of } \phi \text{ moves.}\]
\[(47) \quad \text{STAY}_1 \quad \text{No daughter of } 1 \text{ moves.}\]

Here is how these constraints maintain faithfulness to the input. Below is an example with the prosodic structure and linear order already defined by the interface constraints.

\[(46) \quad \text{(apoktéinantes}_\omega \text{ (mou tòn pàída}_\omega)_\phi \]
\[\text{killing}_{\text{gmp}} \quad \text{my}_{\text{mmp}} \quad \text{the}_{\text{mmt}} \quad \text{child}_{\text{mmt}} \]
\[\text{‘killing my child’(Antiphon, Tetralogia 3.7.1)}\]

<table>
<thead>
<tr>
<th>Candidate</th>
<th>(apoktéinantes)_ω (mou tòn pàída)_ω )φ</th>
<th>STAYω</th>
<th>STAYφ</th>
</tr>
</thead>
<tbody>
<tr>
<td>a.</td>
<td>(apoktéinantes)_ω (mou tòn pàída)_ω )φ</td>
<td></td>
<td></td>
</tr>
<tr>
<td>b.</td>
<td>((mou tòn pàída)_ω (apoktéinantes)_ω )φ</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>c.</td>
<td>((apoktéinantes)_ω (mou pàída, tòn)_ω )φ</td>
<td>*!</td>
<td></td>
</tr>
<tr>
<td>d.</td>
<td>((apoktéinantes)_ω pàída, mou, tòn)_ω )φ</td>
<td><em>!</em></td>
<td></td>
</tr>
</tbody>
</table>

No constraints are violated in (46a) since nothing moved within a ω or a φ. Candidate (b) violates STAYφ by moving leftward a daughter of φ, (apoktéinantes)_ω. Candidate (c) violates STAYω because (apoktéinantes)_ω, a daughter of ω, moved to the left.

Hyperbaton typically involves fronting of discourse prominent material. We assume that longer movement correlates with increased prominence in Classical Greek. To account for short and long distance movement we propose the following constraints (47) under which prominent material moves across only one element to the left of its interface position (short fronting), while what we call ‘maximally prominent’ material moves all the way to the left edge of an intonational phrase 1 (long fronting). The case of short fronting is shown in the tableau for example (48). Here (48a) is the winning candidate because it does not violate PROML, while minimally violating lower ranked STAYφ.

\[(47) \quad \text{PROML} \quad \text{Prominent material occurs to the left of its interface position.}\]
\[\text{iPROM} \quad \text{Maximally prominent material is initial in } i.\]

\[(48) \quad \text{tà dè toíáuta tòn helkéon tomès: déìtai}
\text{the}_{\text{gmp}} \quad \text{and such}_{\text{gmp}} \quad \text{the}_{\text{gmp}} \quad \text{wounds}_{\text{gmp}} \quad \text{incision}_{\text{gmp}} \quad \text{require}_{\text{gmp}} \]
\[\text{‘and such kinds of wounds require incision’ (Hippocrates, Headwounds 13.35)}\]
The case of long fronting is shown in the tableau for example (49). Here, the constraint \( \pi \text{PROM} \) plays a role in ensuring that maximally prominent material undergoes long distance movement at the expense of lower ranked \( \text{STAY} \phi \). Candidate (a) wins because it moves ‘maximally prominent’ material long distance, to the left edge of the intonational phrase.

(49)  tà epì deksià  ho spasmòs epilambánei
the on right nap the mns spasms seize

‘the spasm seizes the (parts) on the right’ (Hippocrates, Headwounds 13.48)

Finally, the OCP effects discussed in section 4 would result from the following undominated constraint (adapted from Yip 1993):

(50)  *ECHO No phonologically identical syllables occur within a \( \omega \).

The constraint rules out identical function words which occur within the same phonological word.

9. Conclusion

In this paper we proposed that hyperbaton in Classical Greek, Latin and Colloquial Russian involves post-syntactic movement of prosodic constituents to prosodic edges. We were led to this conclusion by four major observations about hyperbaton: it moves prosodic constituents (\( \omega \) and \( \phi \)) while ignoring syntactic constituency, and it respects prosodic constraints such as the OCP while ignoring a host of well-known syntactic constraints. This is just what we should find with prosodic movement: sensitivity to prosodic constituency and prosodic constraints and insensitivity to syntactic constituents and syntactic constraints.

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