

Keeping Sisters Straight

Kyle Johnson
 University of Massachusetts at Amherst
 kbj@linguist.umass.edu

How Many Mothers?
 25 June 2023

warning: citations criminally partial!

I have two goals.

- (1) a. Lay out some reasons for treating Movement with Multidominance
- b. Sketch a linearization scheme that aims to produce strings from multidominant phrase markers.

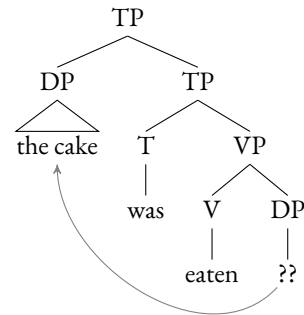
Fundamental properties of the phenomena that movement models.

- (2) A term is in two places.

a. Syntactically

Topicalization is only for phrases:

- i. It's [VP eating the cake] that Mary was.
- ii. *It's [V^o eating] that Mary was the cake.
- iii. It's eaten that the cake was.



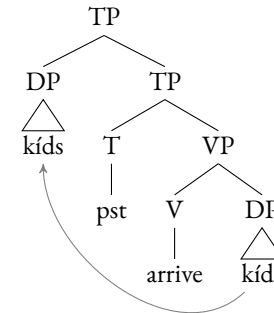
b. Prosodically

Focus Projection

- i. α_F must dominate phrasal stress.
- ii. Don't phrasally stress something unless necessary.

subject/object asymmetry for "focus projection."

- iii. What happened?
- iv. [Kids ate cake]_F.
- v. *[Kids ate cake]_F.
- vi. *[Kids jumped]_F.
- vii. [Kids arrived]_F.



- (3) Semantically

- a. Which picture of himself₂ does this indicate that no one₁ should bring?

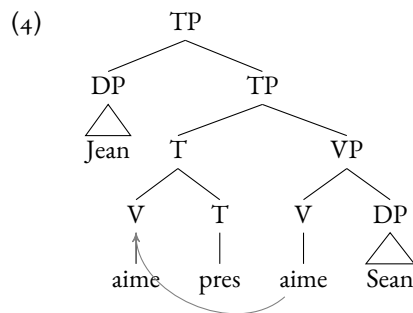
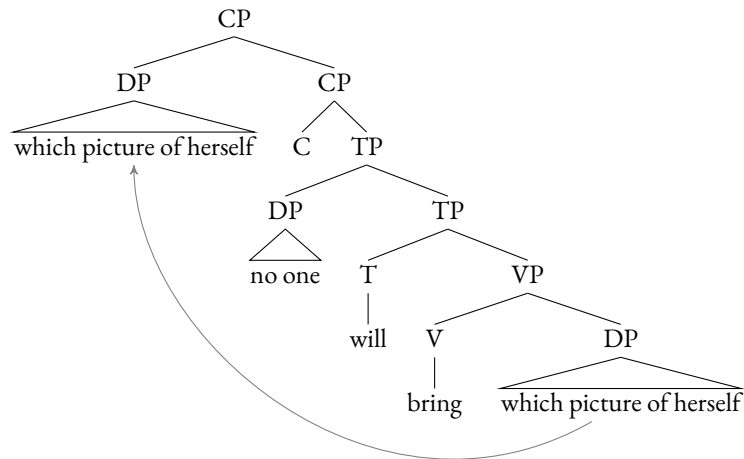
compare:

- b. This indicates that no one₂ should bring that picture of himself₂.
- c. *Which picture of himself₂ does the thing no one₂ heard about indicate that I should bring?

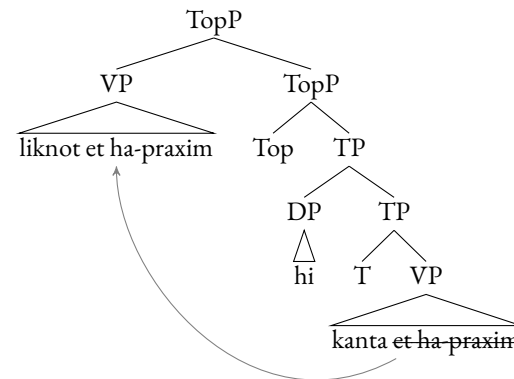
compare:

- d. The thing no one₂ heard about indicates that I should bring that picture of himself₂.

- e. Which picture of her₁ should no woman₁'s father bring?
compare:
- f. No woman₁'s father should bring that picture of her₁.
- g. *Which picture of herself should no woman's father bring?
compare:
*No woman₁'s father should bring that picture of herself₁.



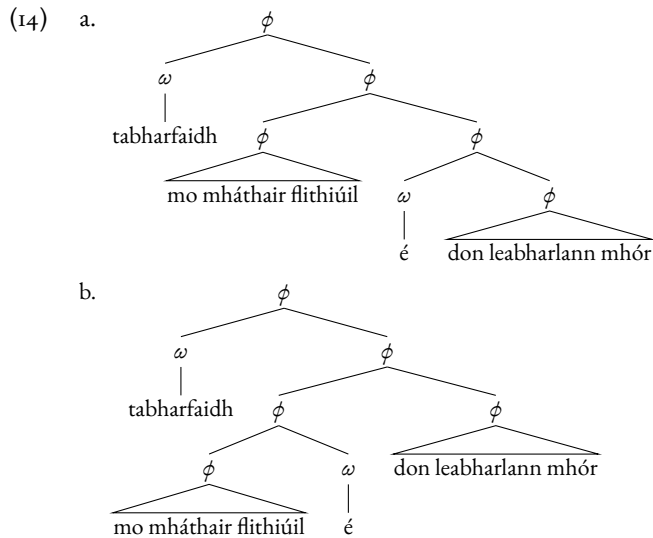
- (5) Morphologically
 - a. ngōnō ò wà nā ò kà ngónò à (Vata)
sleep you want NA you FUT-A sleep Q
'Do you want to sleep?'
(Koopman, 1984)
 - b. liknot et ha-praxim, hi kanta.
to-buy ACC the-flower, she bought
'As for buying the flowers, she bought.'
(Landau, 2006)
 - c. Rira adie ti Jimo o ra adie
buying chicken TI Jimo HTS buy chicken
'the fact/way Jimo bought a chicken.'
(Kobe, 2006)



These are all data that support some version of the copy theory of movement. We need a theory of movement that explains:

- (6) If α and β are related by movement, then:
 - a. α and β must share the same material, and
 - b. the shared material can coexist with non-shared material in the α or β position.

Multidominance is a way of modeling (6a). The need for (6b) in the semantics arises when one of the two terms binds the other as a variable. I've suggested (7) for that.



To capture the general fact that ϕ corresponds to XPs in Irish, Elfner uses a constraint devised by Elizabeth Selkirk, called “Match.” Here is Elfner’s formulation of this constraint.

- (15) Match ϕ
 Let XP exhaustively dominate a set of one or more terminal nodes α . Assign one violation mark if there is no phonological phrase (ϕ) in the phonological representation that exhaustively dominates the phonological exponents of the terminal nodes in α .

Elfner, 2012, based on (19): 28

A syntactic node α exhaustively dominates a set of terminal nodes β iff α dominates all and only the terminal nodes in β .

(Elfner, 2012, (17): 27)

The prosody in (14a) obeys Match ϕ , but the prosody in (14b) doesn’t. No other prosodies are allowed, so we need to understand what allows the deviation from the expected prosody in just the direction indicated by (14b). Elfner suggests another of Selkirk’s constraints:

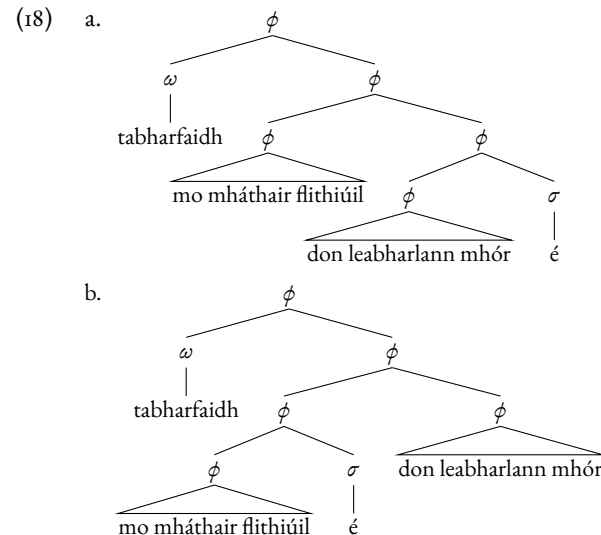
- (16) Strong Start
 Assign one violation mark for every prosodic constituent whose leftmost daughter is lower in the Prosodic Hierarchy than its sister.
 Prosodic Hierarchy: $\iota \gg \phi \gg \omega \gg \sigma$

(14a) violates Strong Start, while (14b) doesn’t. Elfner devises a system that allows these two constraints to (essentially) have the same strength.

Now, interestingly, pronouns in Irish come in two prosodic weights. In addition to the one we’ve seen – which forms a prosodic word – there is another pronoun that is prosodically “reduced.” It has the prosody of a mere syllable. When the pronoun is reduced in (11), the prosody in (14b) remains available, but (14a) is blocked. So there must be something that is stronger than Strong Start which prevents (14a). Let’s call this stronger constraint: Super Strong Start.

- (17) Super Strong Start
 Assign one violation mark for every prosodic constituent whose leftmost daughter is a syllable.

Interestingly, there is another way of pronouncing this structure with a reduced pronoun, but it involves a different word order! The two outcomes are:

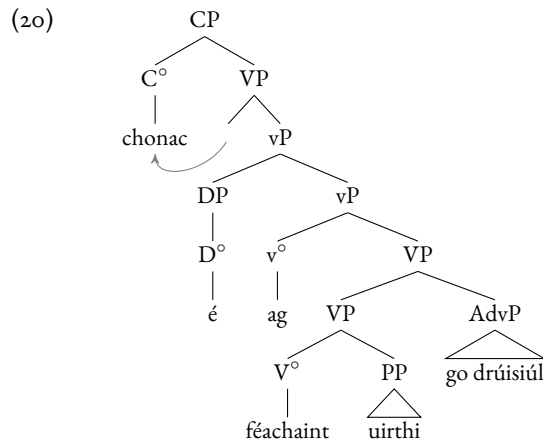


Maybe what we’re seeing here is a rightward movement rule that fixes whatever constitutes the bad prosody of starting a VP with something that is just a σ . But

Elfner (2012) and Bennett, Elfner, and McCloskey (2016) provide compelling arguments against an account that involves movement. One of those from Bennett, Elfner, and McCloskey (2016) is based on (19).

- (19) Chonac ag féachaint uirthi é go drúisiúl.
 I.saw PROG look on.her him lasciviously
 ‘I saw him looking at her lasciviously.’
 (Bennett, Elfner, and McCloskey, 2016, (27): 182)

The reduced pronoun in this example is the subject of a small clause. The structure they provide is roughly (20).

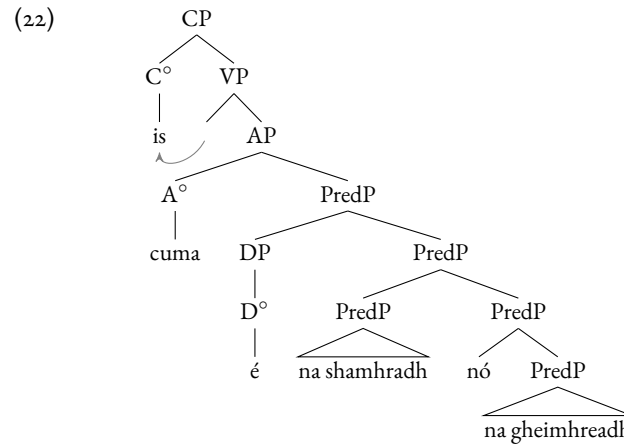


For rightward movement of the pronoun to produce the string in (19) from (20) would require either that it move downwards or that the pronoun move upwards, and to the right, with the adverbial phrase *go drúisiúl* moving farther rightwards, a movement that the authors claim there is no independent evidence for. Similarly, movement of *ag féachaint uirthi* leftwards, which is the other way (19) could be manufactured, would violate the generalization that movement only targets constituents.

A similar kind of challenge is posed by (21).

- (21) Is cuma 'na shamhradh é nó 'na gheimhreadh.
 COP.PRES no.matter PRED summer it or PRED winter
 ‘It doesn’t matter whether it’s summer or winter.’
 (Bennett, Elfner, and McCloskey, 2016, (29): 183)

The syntax Bennett, Elfner, and McCloskey (2016) suggest for (21) is roughly (22).



The reduced pronoun *é* in (22) is an expletive that is in the subject position of a small clause formed by coordinating two predicate phrases. To get the string in (21) through movement would either involve moving *é* downwards, to the right edge of the first conjunct perhaps, or moving *na shamhradh* leftwards in violation of the Coördinate Structure Constraint. Neither of these kinds of movement operations are attested elsewhere.

The different positions that reduced object pronouns may take in Irish do not appear to conform to the generalizations that we have seen hold of movement relations. Indeed, there is no other method I know of that would sensibly relate two syntactic structures in a way that produces the requisite strings. It does not look like these word order alternations can be expressed in a general way with syntax.

The reduced pronoun in these circumstances can be found in a variety of places to the right of where we’d expect it.

- (23) a. Fuair an sagart é óna dheatháir an lá cheana.
 got the priest it.MASC from.his brother the day other
 b. Fuair an sagart óna dheatháir é an lá cheana.
 got the priest from.his brother it.MASC the day other
 c. Fuair an sagart óna dheatháir an lá cheana é.
 got the priest from.his brother the day other it.MASC
 ‘The priest got it from his brother the other day’
 (Elfner, 2012, (72a-c): 273)

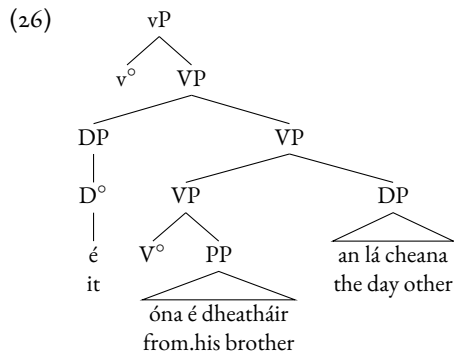
But not all possibilities exist:

- (24) a. *Fuair an sagart óna é dheatháir an lá cheana.
 got the priest from.his it.MASC brother the day other
 b. *Fuair an sagart óna dheatháir an é lá cheana.
 got the priest from.his brother the it.MASC day other
 c. *Fuair an sagart óna dheatháir an lá é cheana.
 got the priest from.his brother the day it.MASC other
 ‘The priest got it from his brother the other day.’
 (Elfner, 2012, (72d-f): 273)

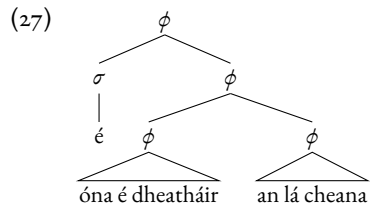
Elfner argues that we can understand this pattern if the position to which the reduced pronoun is found is determined wholly by virtue of prosody. The pattern is:

- (25) A reduced pronoun must be the right edge of a ϕ .

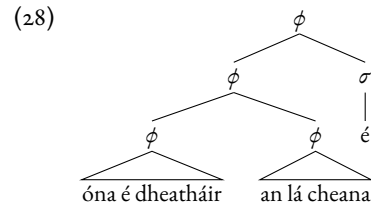
Let’s see how this works. Assume:



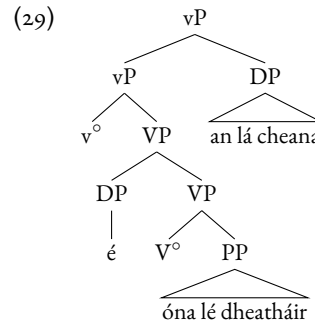
From this syntax, the prosodic grouping in (27) results in no violations of Match ϕ .



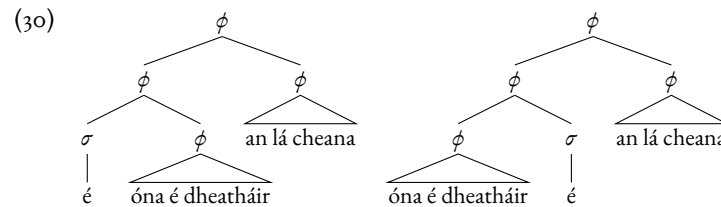
This violates Super Strong Start, though, and so loses to (28).



Assume that another way of parsing the sentence is:



Which Match ϕ wants to give one of the two prosodies:



Only the second of these satisfies Super Strong Start.

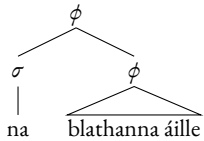
Super Strong Start is, as it should be, blind to the category of the phrase. It can block reduced DPs, as in the pronoun case, but also reduced PPs:

- (31) a. Labharfaidh mé leis ar an Chlochán Liath amárach.
 speak.FUT I with.him on Dunloe tomorrow
 ‘I’ll speak to him in Dunloe tomorrow.’
 b. Labharfaidh mé ar an Chlochán Liath amárach leis.

(Bennett, Elfner, and McCloskey, 2016, (74): 205)

But it is NOT blind to the difference between X° and XP, as it does not prevent reduced heads from starting the prosodic phrase they are in. This can be seen in definite DPs in Irish; the definite determiner is prosodically a syllable.

- (32) na blathanna áille
 the.PL flowers beautiful.PL
 the beautiful flowers



How are we to account for this?

Kusmer (2020) proposes that the linearization algorithm interacts with these prosodic constraints. In particular, violations of Super Strong Start take precedence over some, but not all, of the conditions that fix a linear order. Doing considerable violence to his ideas, he suggests that the linearization principles fall into two groups:

- (33) a. Head First/Head Final
 b. Specifier First/Specifier Final

Super Strong Start outranks (33b), but not (33a). Thus the head initial nature of DPs in Irish is preserved even at the cost of a violation of Super Strong Start. But the Specifier initial position that objects normally occupy is sacrificed in order to obey Super Strong Start.

We've seen two things here.

- (34) a. XPs are sometimes, but not always, isomorphic to ϕ .
 b. Prosodic Constraints can control how the linearization of a tree goes.

Let's apply these to (9), which, recall, expresses the trend that a term in two positions is linearized according to only one of those positions. I'm going to reframe Match ϕ , so that it works better with multidominance. I begin with a condition that ensures that everything in a phrase marker with phonological information gets into the string that is pronounced.

- (35) Totality
 If α has phonological information, then there must be a prosodic unit containing α .
- (36) Containment
 There must be a syntactic node that immediately dominates α , which corresponds to a prosodic unit containing α .

I mean α to be a phonologically overt morphological formative or a prosodic unit. Containment requires one of the syntactic nodes that immediately dominates α to be a prosodic unit that contains α . These constraints are intended to apply "recursively." They require an X° to be a prosodic unit if it immediately dominates a morphological formative that has phonological content and there is no other X° that immediately dominates that formative. They require that a (non-trivial) XP be a prosodic unit that contains a string of prosodic units it immediately dominates, if there is no other XP that immediately dominates that string. Totality does the work that Kayne's totality did: it requires every phonologically equipped thing in a sentence to be part of the string that corresponds to that sentence. Containment is the syntax-to-prosody part: it requires the phonological unit that satisfies Totality to include a term that immediately dominates the material with phonological content. I separate these very similar constraints because we will see that Containment can fail, without a violation of Totality. In a multidominant tree, where things can have two mothers, Containment requires only one of those mothers to be the prosodic unit that satisfies Totality. This is where the action is.

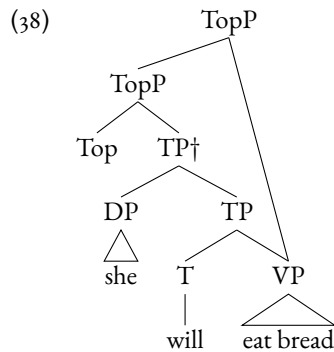
I'll express Selkirk's Match ϕ with:

- (37) Match ϕ
 If α and β are prosodic units, and α immediately dominates β , then α is a ϕ .

This version of Match ϕ does not relate syntactic information to prosodic information. Containment does that. This version of Match identifies the prosodic unit that satisfies Containment and Totality as a ϕ . It does that when the prosodic unit is a phrase (defined here by virtue of dominating another prosodic unit).

I hope what I've done here is merely redistribute the information in Selkirk's Match constraints into a series of separate conditions. I want this system to behave the same in phrase markers that don't have multidominance as Selkirk's system did.

Let's consider how these work in a case of movement. Consider VP topicalization, and imagine it has the shape in (38).



Totality and Containment are satisfied for the string *eat cake* by the VP that dominates it. Match ϕ requires this VP to be a ϕ .

Consider now TP. The phonological material in T, namely *will*, is immediately dominated by TP, and it is the only phrase immediately dominating T. TP must be a prosodic unit that contains *will*, if Totality and Containment are to be satisfied. But that's not true of the phonological material in VP. Because there is another phrase that immediately dominates it, Totality and Containment can be satisfied by letting either, or both, of the immediately dominating phrases be the prosodic unit that expresses it. For this reason, Totality/Containment are satisfied if *eat cake* is not part of the prosodic unit that is TP. It can instead be part of the prosodic unit that is TopP. That is, indeed, what happens in English. Alternatively, it could be expressed as the prosodic unit that is TP, but not the prosodic unit that is TopP. That is what happens if VP Topicalization happens covertly.

But Totality/Containment are also satisfied if *eat cake* is part of the prosodic units that are both TP and TopP. If we factor in the linearization constraints on English, we might expect this to yield:

(39) Eat bread she will eat bread.

This is what we see in Yoruba, but this is rare. It's not what English does. What blocks this?

I want to suggest that this string has no prosodic unit corresponding to *eat bread*. Let me make that clear by revealing a well-formedness condition on prosodic units: they are contiguous strings with edges.

(40) Edges

A prosodic unit, α , must have a left and right edge.

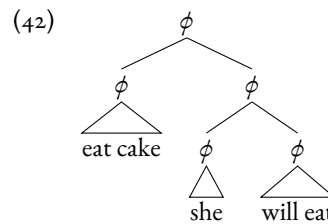
- a. The left edge of α is π if π is dominated by α and precedes everything else in α ,
- b. The right edge of α is γ if γ is dominated by α and is preceded by everything else in α .
- c. If ξ precedes γ and follows π , ξ must be in α .

This is how prosodic units are individuated. They are contiguous strings with edges. There is no well-formed ϕ corresponding to *eat bread* in (39). The left edge of *eat bread* is the first occurrence of *eat* and the right edge is the second occurrence of *bread*. All of the things between those two do not constitute the phonological phrase that *eat bread* must match. This is how I suggest we block the pronunciation of a thing in two places. This is another example of the laws of prosodification controlling linearization. It's like what happens with exceptionally light object pronouns in Irish. A thing can't be pronounced in the place it actually is because that would wreak havoc with the prosody.

But what of the exceptions? In Hebrew, for instance, we saw that the equivalent of (38) could involve speaking (a form of) the verb in both the lower and the higher positions. There should be a route for getting the equivalent of (41) out of (38).

(41) Eat cake she will eat.

I want to suggest that this happens with the prosody, or morphology, overrides the linearization requirements we've just rehearsed. Imagine that the contents of T had a requirement that could only be satisfied by the prosodification in (42).



This would be a violation of Containment, but not Totality. If the requirement that is satisfied by this prosodification is more important than Containment, then this should be licit. In Hebrew, the lower verb inflects with tense morphology, whereas the higher one is in an infinitival form. The requirement that might force a violation of Containment in Hebrew could be Totality's grip on tense morphology: it needs to be prosodified with the verb that expones it. This, I suggest, is parallel to what we see

with those object pronouns in Irish that aren't prosodically weak. They get parsed into a prosodic phrase that violates Containment, but obeys an equally powerful prosodic constraint.

References

- Bennett, Ryan, Emily Elfner, and James McCloskey (2016). "Lightest to the Right: An Apparently Anomalous Displacement in Irish". In: *Linguistic Inquiry* 47.2, pp. 169–234.
- Elfner, Emily (2012). "Syntax-Prosody Interactions in Irish". PhD thesis. University of Massachusetts at Amherst.
- Kobele, Gregory Michael (2006). "Generating Copies: An investigation into structural identity in language and grammar". PhD thesis.
- Koopman, Hilda (1984). *The Syntax of Verbs*. Foris Publications.
- Kusmer, Leland Paul (2020). "Optimal Linearization: Word-Order Typology with Visible Constraints". In: *Syntax* 23.4, pp. 313–346. DOI: <https://doi.org/10.1111/synt.12197>.
- Landau, Idan (2006). "Chain Resolution in Hebrew V(P)-fronting". In: *Syntax* 9.1, pp. 32–66.