The Role of Syntax in Semantics-Prosody Misalignments*

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1 Introduction

1.1 "Focus"

In many languages, focus interpretations are signaled phonetically (e.g., with amplitude, pitch movement, prosodic phrasing...)

- Thus "focus" is defined both for form and meaning
- In fact, we distinguish three types of grammatical representations of "focus", specific to different modules of grammar:
  - Prosodic Focus (**P-Focus**): a PF feature, which directly corresponds to focus realization in phonetics
  - Semantic Focus (**S-Focus**): an LF feature, which directly corresponds to focus alternatives in the interpretation
  - Syntactic focus marking (**F-marking**): Syntactic focus marking, which marks a constituent with a grammatical F-feature
- Here is an example:

(1) What we will discuss today will be $[\![\,[\text{some grammatical properties of } \underline{\textbf{FÓC}}\text{us}]_{F}\,]\!]_{FOC}$

  - What (1) says is that the syntactic constituent that is $[\textbf{F-marked}]_{F}$ is the same constituent that is $[\![\,\textbf{S-Focused}\,]\!]_{FOC}$ and the first syllable of "*focus*" is **P-FOCUSED**

Basic question: How do these different senses of focus relate to one another in the grammar?

1.2 Aligning Domains of Focus

It is widely held that **P-Focus tends to align with the S-Focus**, and that this is mediated by syntax

- (e.g., Halliday 1967, Rooth 1992, Selkirk 1995, Truckenbrodt 1995, Krifka 2004, Büring 2016)
- This is why (2), with P-Focus indicated, cannot have an interpretation where alternatives to "*dogs*" are considered

(2) Dogs **CHÁSED** the mailman

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- If "*dogs*" were the S-Focus, then the P-Focus marker would need to occur on "*dogs*", as in (3):

(3) **DÓGS** chased the mailman

- When P-Focus and S-Focus align in this way, the acoustics indicates what is interpretively focused
  - We call cases like (2) and (3) a case of "**perfect alignment**" between semantics and prosody: realization of P-Focus exhausts the domain of S-Focus (a single syllable expones the S-Focus, and it is P-Focused)
- The tendency for such alignment has been used to argue for a syntactic representation of focus (e.g., Jackendoff 1972, Selkirk 1984)
  - Under strict modularity, if LF and PF conspire for a particular phenomenon, they must have received their instructions from syntax

But importantly, perfect alignment between P-Focus and S-Focus is not always possible

- This is due to the fact that **P-Focus domains and S-Focus domains are defined differently**[1]
  - The domain of S-Focus is apparently only bounded by F-marking (as far as we know)
  - But the domain of P-Focus varies across languages, e.g.:
    - English P-Focus requires a syllable (cf. Liberman and Prince 1977)
    - Irish P-Focus requires a ϕ with two ωs (cf. Bennett et al. 2019)

Given these different definitions, perfect alignment isn't achievable in English **when an F-marked constituent maps onto phonological structure containing multiple syllables**

- A well-researched question: In such cases, which syllable does P-Focus get aligned to?
  - P-Focus is aligned to a particular syllable within the S-Focus domain, as in (4)

(4) Dogs chased $[\![$ the **MÁIL**man $]\!]_{\text{FOC}}$

  - Moreover, it is very well documented that the same syllable may serve as the domain of P-Focus for multiple S-Focus domains; compare (4) with (5)

(5) Dogs $[\![$ chased the **MÁIL**man $]\!]_{\text{FOC}}$

    - One could consider this as a kind of "**imperfect alignment**" between semantics and prosody
    - The domain of P-Focus is sometimes necessarily smaller than the domain of S-Focus, so they can't align perfectly

So the grammar clearly doesn't require perfect alignment.

- It's impossible when the domain of S-Focus is realized with multiple potential phonological hosts for P-Focus (qua syllables)
- A generalized version of the operations/constraints argued for in the literature is given in (6):

(6) **Generalization on Aligning P-Focus and S-Focus (GAPS)**
For a given F-marked XP in the syntax D_Σ, there is a S-Focus domain in the semantics D_λ and P-Focus domain in the prosody D_ϕ. These align in that $\mathbf{D}_\phi$ **occurs within** $\mathbf{D}_\lambda$ (more precisely: within the phonological structure that corresponds to D_λ).

    - (cf. Jackendoff 1972:(6.58), Selkirk 1984:(5.1), Truckenbrodt 1995:§4.3(17), Büring 2016:§4.1(2))

[1] Not only differently, but in different terms; P-Focus deals in PF-based terms, while S-Focus deals in LF-based terms.

- A lot of work attempts to specify which syllable P-focus is realized on; this isn't our goal, and we won't do justice to this literature
  - (*Two prominent options: P-Focus placement is determined focus projection rules (cf. Selkirk 1995), or P-Focus placement is determined by general principles on the location of greatest prominence in the S-Focused constituent (cf. Büring 2006)*)
- GAPS is compatible with all the types of (im)perfect alignments we have seen so far, and appears to presupposed by many researchers

A new question: **What happens when** (the phonological content that corresponds to) **the domain of S-Focus is prosodically too small to contain the domain of P-Focus?**

1.3 Today's goals

Show that the grammar can generate semantics-prosody misalignments

- Yielding **counterexamples to GAPS** (6)

Demonstrate that such misalignments are apparently quite widespread

- In addition to Irish, we will introduce examples from Afrikaans, Basque, English, Hungarian, and Italian.

Argue that these disparate-looking examples of misalignment are all configurationally similar

- S-Focus corresponds to phonological content that can't support P-Focus
- This configuration is expected if F-marking (feeding both S-Focus and P-Focus) applies with no regard to phonological size
  - (because it is syntactic, and thus ignorant of phonological content under a late insertion model)

Sketch out some ways of interpreting these **counterexamples**

- Our goal today isn't to commit to any particular analysis;
- Rather, we want to add such cases to the research agenda for those working on both s- and p-sides of focus theory.

2 When Meeting GAPS is Impossible

If English P-Focus requires a syllable, what happens when the S-Focused item is smaller than a syllable?

- It would be impossible to have P-Focus occur within the domain defined by S-Focus
- One possibility is that such derivations simply can't converge
  - Perhaps it would require some sort revision to the lexical items used
  - (*In fact this sort of resolution is attested; see Appendix D*)

But often this leads to **counterexamples to GAPS in the form of semantics-prosody misalignments**

- This is what we find in (7), with S-Focus on the sub-syllabic English plural morpheme:

(7) [*Homer Simpson climbs a ladder to a treehouse, but is refused entry. He is pointed to a sign saying "No Homers Club"; he complains that Homer Glumplich was let in. The justification lies in the plural.*]
It says: no Ho**MÉR**$[\![\ \mathbf{S}\ ]\!]_{\text{FOC}}$. We're allowed to have one! (The Simpsons, S6 Ep12)

Misalignments of this sort are not limited to English

- In Irish, when the verb is under S-Focus, P-Focus occurs on the weak subject pronoun

(8) A: Cuir síos é.
send down it
'Drive it down.'
B: Ní ⟦rachaidh⟧$_{FOC}$ **SÉ** síos.
NEG.FIN go.FUT it down
'It won't ⟦**GO**⟧$_{FOC}$ down.' (Bennett et al. 2019:(26a))

- The Irish P-Focus falls on the subject pronoun, which is completely outside of the domain of S-Focus

Misalignment cases like this can be found **regularly** in a range of constructions, and can easily be found readily **across languages**

- Semantics-prosody alignments were used to argue in favor of syntactic F-marking...
- ...so do these misalignments constitute evidence that we shouldn't have F-marking in the syntax?

Our conclusion: NO. In fact, **misalignments of this sort can strengthen the case for syntactic F-marking**

- Misalignments can arise because phonology generates P-Focus, semantics generates S-Focus, and they do so independently of one another on the basis of syntactic F-marking
- In fact, these misalignments furnish a new argument in favor of syntactic representation of focus, and an architecture where semantics and phonology do not interface directly with one another

3 Some case studies in semantics-prosody misalignments

3.1 Irish Verum/Verb Focus

Bennett et al. (2019:§4) describe this phenomenon in Irish, in clauses with emphatic polarity and verbal focus

- In such cases, a (discourse-given) weak pronoun unexpectedly hosts P-Focus

(9) A: 'nois, bain giota dó 'na bhaile
now take.IMP bit of-it home
'Now, head off home.'
B: Tá **MÉ** a' gabhail 'na bhaile.
be I PROG go home
'I **AM** going home.'

Bennett et al.: the Irish verb incorporates up through Pol^0, the head that is under S-Focus

- The weak pronoun is also incorporated into the verbal complex[2]
- Rules of Irish prosody put the realization of P-Focus on the part of the prosodic constituent that the pronoun happens to occupy (the rightmost syllable of the focus-containing ϕ)
  - BIN-FOC: P-Focused constituents should contain at least two prosodic ωs
  - HD-R: P-Focus should realize on the rightmost element of a prosodic constituent
    - Thus, the pronoun hosts the realization of P-Focus not as a pronoun *per se*, but rather just as a segmental piece of the 2-ω constituent containing the S-Focus (Pol^0)
- The same effect can be observed when the V^0 itself is S-Focused (as seen in §2)

[2]This isn't head incorporation, but prosodic incorporation. This distinction is crucial for Bennett et al., as it means the pronoun isn't incorporated until after the verbal complex is built, explaining both its linear order and its prosodic properties. This component of their proposal strikes us as ripe for reanalysis, but we leave this aside here.

(8) A: Cuir síos é.
send down it
'Drive it down.'
B: Ní rachaidh **SÉ** síos.
NEG.FIN go.FUT it down
'It won't **GO** down.'

- For this, Bennett et al. extend their analysis for Pol^0-focus, which is also a head in the same verbal-complex
  - So focus marking lands on the rightmost element of the 2-ω constituent containing Pol^0

This is summarized below:

Semantic Focus	**Prosodic Focus**
Pol^0 / V^0	Subject pronoun

What's S-Focused in Irish (Pol^0, V^0) doesn't have enough prosodic structure to support P-Focus

- So general aspects of Irish prosodic phonology kick in, and place the realization of P-Focus in a phonological constituent (V-complex) that contains the S-Focus (Pol^0, V^0)

In this way, **prosodic phonology (operating on morphosyntactic output) can yield a semantics-prosody misalignment**

3.2 Basque Verum Focus

Basque exhibits a nearly identical phenomenon involving a semantics-prosody misalignment:

- It also arises in contexts with emphatic polarity (*retorts*: Sailor 2014), and the wayward P-Focus realization is hosted by the given subject
- However, unlike Irish, the P-Focus realization in Basque can appear on a full DP subject (I. Laka, p.c.; ex. adapted from Laka 1990:86, 105):

(10) A: Irune ez da etorri.
Irune NEG has arrived
'Irune has not arrived.'

B: Irune **BA** da etorri.
Irune AFF has arrived
'(Actually,) Irune has **SO** arrived.'

B′: **IRUNE** da etorri.
Irune has arrived
'(Actually,) Irune **HAS** arrived.'

- Laka describes an analysis in which *ba* is the realization of an affirmative Pol^0, and it hosts P-Focus in the context of (10B)
- She goes on to describe an allomorph of this Pol^0 that is silent; when it is silent, the subject hosts P-Focus in the context of (10B′)

Like Irish, **misalignment arises when there is not enough prosodic structure to support P-Focus**

- In (10B′), the Pol^0 (the domain of S-Focus) is too small for the needs of P-Focus realization

Semantic Focus	**Prosodic Focus**
Pol^0	Subject (DP or pronoun)

An unresolved question: why the subject (and not, e.g., the aux or V)?

- We do not have enough information to decide
  - Hypothesis: P-Focus is realized as a floating prosodic element, and it docks to its left during the phonological computation (cf. Sailor 2014)
    - Perhaps because of how the floating element is prosodically phrased, perhaps because it is an enclitic, ...
  - Hypothesis: An S-Focused silent head can transfer its syntactic 'FOC' marking to its specifier, during the morphophonological computation (cf. Ahn 2015)
    - Prosody sees the Spec,PolP as F-marked, and Semantics sees Pol^0 as F-marked

3.3 Italian Nominal Identity

In Standard Italian, semantics-prosody misalignments can be found within the nominal domain.

- For some, corrective S-Focus on the identity of a nominal[3] can be realized prosodically as P-Focus on the determiner (or the P+D complex):

(11) A: Questo è il cane del figlio del capo.
this is the dog of.the son of.the boss
'This is the dog of the son of the boss.'
B: No, è il cane **DEL** capo.
no is the dog of.the boss
'No, it is the dog of the boss **HIMSELF**.'

- Speakers who accept this prosody report that it is the identity of the NP (versus plausible discourse alternatives) that is under S-Focus, not the NP's denotation
- Yet, the marker of P-Focus falls on an element which is not S-Focused: *del* 'of.the'.

In Germanic languages, similar contexts have been analyzed as focused identity functions

- That is, for (12), Eckardt analyzes *selbst* as an identity function:

(12) Peter **SELBST** fährt gerne in die Berge.
Peter ID^0 drives gladly in the mountains
'Peter **HIMSELF** likes to go to the mountains' (Eckardt 2001)

  - ID(*Peter*) simply returns *Peter*
  - S-Focusing ID brings up "conceptually accessible set of functions" (e.g., MOTHER-OF, DOG-OF)

One analysis of data like (11) might be that what is under S-Focus is also ID^0, but it is silent in Italian

Semantic Focus	**Prosodic Focus**
ID^0 (?)	D^0 (or D^0+P^0)

- This analysis is much less substantiated, and requires deep investigation of (at least):
  - (i) Italian nominal structure, (ii) the focus semantics of (11), and (iii) details of Italian prosodic phonology (with special regard to focus)
- But! **Taking into consideration our other misalignment examples, we're able to construct a simple hypothesis of how to approach the data:**
  - Look for semantic functions that lack the prosodic structure necessary to support any P-Focus

[3] See Siemund (2000) on *centrality effects*.

3.4 Afrikaans Exclamatives

Additional examples of semantics-prosody misalignments can be found in Afrikaans, with some exclamatives (see Biberauer 2010)

- The P-Focus may be realized in one of (at least) three positions in these examples, crucially with no difference in S-Focus among them (T. Biberauer, p.c.):

(13) a. **HET** jy (nou) 'n uitstekende opstel geskryf!
b. Het **JY** (nou) 'n uitstekende opstel geskryf!
c. Het jy (nou) 'n **UITSTEKENDE** opstel geskryf!
have you now an excellent essay written
'What an amazing essay you've written!'

Let's consider the meaning of these exclamatives

- Each sentence in (13) expresses surprise at the extent of some degree: 'V-fronting degree exclamatives'
- Rett (2008) argues that this involves a degree operator, which is null in non-WH exclamatives such as (13)
  - It originates clause-internally (local to e.g. a gradable adjective)
  - It syntactically moves to the left periphery (e.g., Spec,CP)
- Given the semantics of these exclamatives, which all remark on the degree of excellence, it is plausible that this null operator is under S-Focus
  - In this way, there is a constant LF representation (focus on the degree operator)
  - So at least two of these PF forms should constitute misalignments

The possible surface forms in this type of exclamative depend on the syntax of the clause, so **these misalignments should not be thought of as 'idiomatic' stress patterns**

- Rather, they appear to be **actively formed in the derivation**

Semantic Focus	**Prosodic Focus**
OP_{DEG}	{ Auxiliary (V1) / Subject / Adjective (gradable) }

We have some tentative suggestions for how to arrive at multiple surface forms

- Perhaps prosodic phonology produces multiple optimal candidates
  - Although this seems less likely, as it is not clear how (prosodic) phonology would isolate the attested forms apart from the unattested ones
  - (It isn't clear which phonological primitives could be used to yield the pattern above)
- Perhaps this has to do with structural positions of the OP_{DEG}
  - Perhaps this is like quantification at a distance
  - Perhaps the copy reduction process can Spell Out OP_{DEG} in multiple positions

3.5 English Exclamatives

Similar to Afrikaans exclamatives, English V-fronting degree exclamatives allow multiple P-Focus hosts

(14) [*I know John regularly looks nice, but I just saw him, and...*]
  a. **BÓY** did he look nice today!
  b. Boy did **HÉ** look nice today!
  c. Boy did he look **NÍCE** today!
  "He looked especially nice today"

- Like Afrikaans exclamatives (§3.4), (14) remarks at the extent to which some degree (e.g., nice-lookingness) holds
- The P-Focus marker can occur on the interjection, the subject, or the adjective: none of which is under S-Focus[4]
- We again assume such sentences involve a null degree operator (Rett 2008) which is under S-Focus
  - Null/silent material is an unsuitable host for a prosodic focus marking (the minimal-size constraint)
  - This yields a misalignment: the host will have to be something that is outside the semantically focused constituent[5]

Semantic Focus	**Prosodic Focus**
OP_{DEG}	{ "Boy" / Subject / Adjective (gradable) }

The similarities between Afrikaans and English exclamatives reinforce our suggestion that the **semantics-prosody misalignments come about through syntactic derivations**

- Afrikaans and English are remarkably similar in the syntax of their inversion exclamatives
- The languages do differ here, of course, both syntactically and prosodically:
  - English degree exclamatives disallow a (non-negative) verb to be in the sentence-initial position, and the verb cannot bear P-Focus: (14d)

(14) d. #Boy **DÍD** he look nice today!

  - Afrikaans degree exclamatives do allow a verb to be in the sentence-initial position, and the verb can bear P-Focus: (13a)

[4]Such examples would not constitute semantics-prosody misalignments if the subject were in fact the semantic focus, i.e. if (14b) were expressing surprise at the fact that it's John of all people who look nice. Aside from the fact that context rules this out in (14b), this reading isn't actually provided by the semantics of exclamatives, which are built on gradable properties, not individuals (again, see Rett 2008). If we try to construct an unambiguous exclamative about individuals rather than degrees, the result is ill-formed:

(i) You of all people should know the answer to this.
(ii) #Boy should **YOU** of all people know the answer to this!

[5]It's clear that this can't simply be a surface phonological phenomenon, as the nature of the subject (e.g. its semantic content / syntactic status) is relevant. For example, expletive subjects cannot bear the prosodic focus marking (thanks to Bjørn Lundquist for pointing this out):

(i) ??Boy is IT a nice day!
(ii) ??Boy are THERE a lot of people here!

Superficially, this looks like evidence against a semantics-prosody misalignment: if the prosodic focus marking is interpreted in-situ, and the subject has no semantic content, then it would yield the above unacceptability. Despite this, though, we can rule out the possibility that the subject is the semantic focus: see fn. 4.

3.6 Hungarian Missing Copulas

In Hungarian clauses with non-verbal predicates, the copula appears in a post-predicate position

- With predicate PPs, the copula is always overt
- But with predicate nominals, the PRES.3SG copula is obligatorily null

(15) a. Az öccse egy katoná-val van.
the younger.brother.3SG.POSS a soldier-INSTR be.PRES.3SG
'His younger brother is (living) with a soldier.'
b. Az öccse katona (*van).
the younger.brother.3SG.POSS soldier (*be.PRES.3SG)
'His younger brother is a soldier.'

Now consider corrective focus contexts, when the S-Focus falls on the tense specification (T^0)

- With predicate PPs, the P-Focus marking shows up where we'd expect, i.e. on the copula expressing T:

(16) A: Az öccse egy katoná-val volt?
the younger.brother.3SG.POSS a soldier-INSTR be.PAST.3SG
'His younger brother was (living) with a soldier?'
B: Nem, egy katoná-val **VAN**.
no a soldier-INSTR be.PRES.3SG
'No, he **IS** (living) with a soldier.'

(17) A: Az lányod Leiden-ben volt?
the daughter.3SG.POSS Leiden.in be.PAST.3SG
'Your daughter was in Leiden?'
B: Nem, Leiden-ben **VAN**.
no Leiden-INESS be.PRES.3SG
'No, she **IS** in Leiden.'

But with predicate nominals, we see a semantics-prosody misalignment arise.[6]

- This arises in exactly the circumstance we've now come to expect:
  - S-Focus on T cannot be expressed by P-Focus on the PRES.3SG copula, because it is null with predicate nominals

(18) A: Az öccse katona volt?
the younger.brother.3SG.POSS soldier be.PAST.3SG
'His younger brother was a soldier?'
B: Nem, kato**NA** Ø.
no soldier be.PRES.3SG
'No, he **IS** a soldier.'
B′: *Nem, katona **VAN**.
No soldier be.PRES.3SG

In these cases, P-Focus is realized as stress on the final syllable of the predicate (Kenesei et al. 1998:430)

Semantic Focus	**Prosodic Focus**
T^0	Final syllable of the predicate nominal

[6]Thanks to Anikó Lipták for bringing this phenomenon to our attention and for providing data, and to András Bárány for additional discussion.

This is especially notable, as Hungarian is famously rigidly stress initial, word-internally (Kenesei et al. 1998:453)

- Up to this point, all the data we have seen has involved P-Focus marking that is a misalignment, with regard to S-Focus
  - i.e., We have see that P-Focus/S-Focus alignment constraints can be violated – this Hungarian data does indeed exhibit this sort of violation
- In addition, though, this data shows that **general rules of prosodic phonology can also be violated in semantics-prosody misalignments**
  - We will call cases like these "**double misalignments**": not only is the P-Focus outside the domain of S-Focus, but it's on an unstressed vowel
  - Such a double misalignment is incredibly informative:
    - Even though Hungarian is rigidly stress initial, this can be overridden in particular derivational contexts
    - The fact that this otherwise robust fact about the language can be overridden in this way is especially surprising, because the language could just as easily requires a speaker to talk around this, use affix support, etc.

Notably, the exceptionally stressed syllable is at the right edge of the word

- The same side of the word where an overt T^0 / copula is found
- This may suggest that Hungarian is employing a strategy that we hypothesized about earlier, in the discussion of Basque[7]
  - Hypothesis: P-Focus is a floating prosodic marker, and it docks to its left during the phonological computation (cf. Sailor 2014)

3.7 Some English Propositional Modifiers and Subordinators (apparentLY!)

Unlike the Hungarian double mismatch we just saw, all the English data up to this point has misalignments that otherwise obeyed language-internal prosodic phonology

- One possibility: English and Hungarian are fundamentally different
- However, **English also produces double misalignments**

This is demonstrated in the data below[8]

(19) Context: *Lynda and Janelle are on the train, and stopped on the tracks*
J: I think we will be late
L: pròbab**LÝ**/próbably

(20) Context: *No one knows for sure whether Jill's grant will be funded, but everyone thinks it should be.*
A: I think Jill's grant will be funded
S: hòpeful**LÝ**/hópefully

(21) Context: *Kris and Shane look out the window and see lots of puddles and a wet sidewalk.*
K: it must have rained
S: appàrent**LÝ**/appárently

(22) Context: *Hank and Elena's grandfather usually brings his special Christmas cookies when he visits during the holidays.*
H: I bet grandpa will bring his cookies tomorrow
E: mày**BÉ**/máybe

[7] To be clear, we do not take this to mean all languages employ the same strategy. In fact, as we will see in §3.7, it must be that individual languages don't always employ the same strategy.
[8] See Armstrong and Schwenter (2016) for some similar data and for other comments.

- The bearer of P-Focus need not be an adverb, nor be the word that encodes any scalar epistemic meaning:

(23) Context: *Kris and Shane look out the window and see lots of puddles and a wet sidewalk.*
K: it must have rained
S: (it) mùst **HÁVE**/(it) múst have

(24) Context: *Molly and Rita are deciding between taking the train and taking the bus from the airport. When they get to the transportation center, a sign says "Trains out of service".*
M: we'll have to take the bus
R: (I) guèss **SÓ**/(I) guéss so

We observe that this final-syllable stress pattern is only available when the prejacent proposition for the verb/adverb is reduced (proform) or is unpronounced

(25) Context: *Kris and Shane look out the window and see lots of puddles and a wet sidewalk.*
K: it must have rained
a. S: appàrent**LÝ**
b. S: appàrently **SÓ**
c. *S: appàrent**LÝ** it rained
d. #S: appàrently it **RÁINED**

(26) Context: *Lynda and Janelle are on the train, and stopped on the tracks*
J: I think we will be late
a. L: pròbab**LÝ**
b. L: pròbably **SÓ**
c. *L: we pròbab**LÝ** will be late
d. #L: we pròbably will be **LÁTE**

- Note the appropriate position of P-Focus in the same context, when there is no elided/pro-form clause:

(25) e. S: appàrently it **DÍD** (rain)

(26) e. L: we pròbably **WÍLL** be (late)

  - What bears P-Focus in these contexts (when the clause is more fully pronounced) is the same element that would support verum/polarity S-Focus for English.
    - (cf. Irish polarity S-Focus §3.1, Basque polarity S-Focus §3.2, and their English equivalents)
  - No double mismatch is possible when more of the proposition's "middlefield" is pronounced
    - Compare (25c–d) with (25e)
    - Suggesting that what licenses this is an unpronounced element in the middlefield of the clause
- These syntactic facts strongly suggest the following two conclusions:
  - **Syntax plays a key role in yielding focus misalignments** of this type (ellipsis/proforms), and
  - This phenomenon might have derivational similarities to polarity/verum focus misalignments

What is missing is a complete understanding of what is under S-Focus

- The semantic/pragmatic contribution of this final-syllable focus remains to be properly characterized
  - Armstrong and Schwenter (2016) gathered experimental data on this phenomenon and found that this misalignment is only possible with certain propositional modifiers/subordinators[9] epistemic meaning

[9] In particular, they found this final-stress to be incompatible with some adverbials that indicate an end-point on an epistemic scale:
(i) A: Those people are for sure from Texas.
a. B: appàrent**LÝ**/appárently
b. B: ??dèfinite**LÝ**/définitely
However, ongoing work (Ahn and Jeong, in prep) finds that there are contexts that permit *obvious**LÝ***, which (at least at first analysis) is an adverbial expressing an end-point of the epistemic scale. Deeper investigations on which expressions can participate in this

- ▸ Part of the meaning appears to be regarding certainty for the prejacent[10]

(27) Q: Is it raining?
a. A: It **SEEMS** so. But it isn't.
b. #A: It seems **SO**. But it isn't.

- ▪ Because of this meaning, (27b) is weird as an answer, because: P-Focus on "*so*" should mean the speaker cannot commit to the truth of the prejacent (*it is raining*), while the follow up "*but it isn't*" suggests the speaker can commit with certainty to the prejacent
- ▪ What this means for what is F-marked in the syntax is as yet unclear

For now we can conclude:

Semantic Focus	**Prosodic Focus**
A middlefield epistemic operator (?)	Phrase-final syllable (?)

This phenomenon involves P-Focus marking within a word that doesn't directly encode the meaning that is under S-Focus

- ◆ This is like what we saw earlier in English exclamatives
- ◆ However, this phenomenon is different, in that it is a double misalignment: P-Focus marking can surface on lexically/phrasally unstressed syllables
- ◆ This means that **a single language may have more than one strategy for managing misalignments**
  - ▸ (cf. Appendix D)
  - ▸ Which of course means that we should expect (some) cross-linguistic variation in this domain as well

4 Conclusions

Basic question: How do these different senses of focus relate to one another in the grammar?

- ◆ Basic answer: **P-FOCUS** typically aligns to a position that may signal the domain of $[\![\text{S-Focus}]\!]_{\text{FOC}}$
  - ▸ This alignment is mediated by syntactic $[\text{F-marking}]_{\text{F}}$
- ◆ Major roles also played by prosodic phonology and syntactic derivations
- ◆ But **P-FOCUS** can surface in a position that does not transparently signal the domain of $[\![\text{S-Focus}]\!]_{\text{FOC}}$
  - ▸ This is also mediated by the same factors: ($[\text{F-Marking}]_{\text{F}}$, prosodic phonology, syntactic derivations)

type of misalignment will be important for complete understanding of the phenomenon.

[10] This meaning is being developed with Sunwoo Jeong, and will be explored experimentally in Ahn and Jeong (*in prep*).

4.1 Semantics-Prosody Misalignments as Counterexamples

Any theory that requires GAPS to not be violated is inadequate

(6) **Generalization on Aligning P-Focus and S-Focus (GAPS)**
For a given F-marked XP in the syntax D_Σ, there is a S-Focus domain in the semantics D_λ and P-Focus domain in the prosody D_ϕ. These align in that $\mathbf{D}_\phi$ **occurs within** $\mathbf{D}_\lambda$ (more precisely: within the phonological structure that corresponds to D_λ).

- There are productive and wide-spread counterexamples to GAPS

What are the appropriate analytical moves?

i. GAPS is a part of Grammar, and must be violable

ii. GAPS is not part of Grammar, but can help a theoretician understand the Grammar's true nature
   - We aim for the latter:
   - In this way, finding where GAPS is violated and how it is resolved uncovers the mechanisms at play in all cases of (mis)alignment between P-Focus and S-Focus

Similarly, there are productive counterexamples to generalizations about focus stress aligning to lexically stressed syllables

- These are the double misalignments we saw in Hungarian and in English
- This is also revelatory about the nature of not only how P-Focus and S-Focus align, but also about how P-Focus aligns with other aspects of prosodic structure
   - (These grammatically derived placements of P-Focus suggest that other manifestations of P-Focus on an unstressed syllable [e.g., "metalinguistic focus"] should be returned to as possibly grammatically derived as well; cf. Artstein 2004)

Uncovering the systems involved should be on the research agenda for anyone concerned with focus

- Big picture goal: We need an articulated set of operations/constraints for P-Focus placement
   - *Dealing with, e.g.: (i) transmuting syntactic F-marking into an abstract feature F_ϕ in prosodic structure, (ii) determining the exponence of F_ϕ, (iii) aligning the domain of P-focus realization with the F_ϕ-marked structure, and (iv) minimum/maximum size for the domain of P-Focus realization*
   - Lots of work to be done!

4.2 The Role of Syntax

In a Y-model, LF and PF interfaces each act upon a common syntactic source, to produce S-Focus and P-Focus

- P-Focus and S-Focus can end up on different parts of the structure because of the nature of the respective modules
   - In some senses, it is necessary that P-Focus will land on a different sort of constituent than S-Focus, because prosodic constituents and syntactic/interpretive constituents are defined in different terms

GAPS states that we should find total/partial alignment

- New prediction: Misalignment (and double misalignments) will systematically arise when **a syntactically F-marked constituent is too phonologically small** (e.g., because it is segmentless)
   - It also arises when syntactic content does have segments, in case the segments don't constitute enough structure to support prosodic focus marking

Thus, misalignments can actually be taken as evidence **in favor of** F-marking in the syntax and a grammatical architecture where LF and PF do not interface directly (strict modularity)

- Big message: "Don't give up on a theory because of counterexamples – in fact, they can end up bolstering your theory's basic idea"

Misalignments are common crosslinguistically because they are one possible output of these structures that are regularly produced by Grammar

- i.e., Structures where S-Focus does not correspond to sufficient prosodic structure
- F-marking / S-Focus are determined with no mind paid towards prosodic structure

4.3 A Broader View of the Derivation

It is up to the prosody (on the basis of the syntax) to find an appropriate location for P-Focus

- There need to be appropriate resolutions to the conflicting demands of focus-alignment constraints and minimal-size constraints
- And stress displacement is evidently one such strategy

The data suggest that there are at least two different sorts of solutions

① Ones that lead to violations of GAPS

② Ones that additionally lead to violations of more general constraints of prosodic phonology

- Which of these two is employed is (possibly) determined derivationally
  - English has both types, and each type is consistently used within each construction
- There are other types of resolutions as well (see Appendix D) – again determined derivationally, it seems
  - Open Question: What is it in the derivation that triggers each solution?
  - Does it correlate with any other grammatical conditions (e.g. blocking: cf. tense-lowering vs. *do*-support in English)?

(*See Appendix F for additional evidence of the role of syntax in P-Focus placement*)

4.4 Some Generalizations / Outlook

Some generalizations we uncovered (all review)

- Prosodic phonology (operating on morphosyntactic output) can yield a semantics-prosody misalignment
- Misalignments arise when there is not enough prosodic structure to support prosodic focus marking
- Misalignments hinge on syntactic structures
- We can investigate new phenomena with now work on them
- Misalignments should not be thought of as 'idiomatic' stress patterns
- General rules of prosodic phonology can also be violated in semantics-prosody misalignments
- A single language may have more than one strategy for managing misalignments

We should like to know what is compatible with existing research on semantics/syntax/prosody in these languages

- And also what new conclusions these sorts of phenomena might lead us to

If you're wondering where the heady analysis is, the answer is "give us a grant and we'll let you know in a year or two"

- The scale of this project is big
- To make progress, there is a lot to document and analyze (cf. Appendix A)

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APPENDIX

A Requirements for Full Analysis of 'Misalignments'

An (incomplete) list of what is required to fully analyze these "semantics-prosody misalignments"

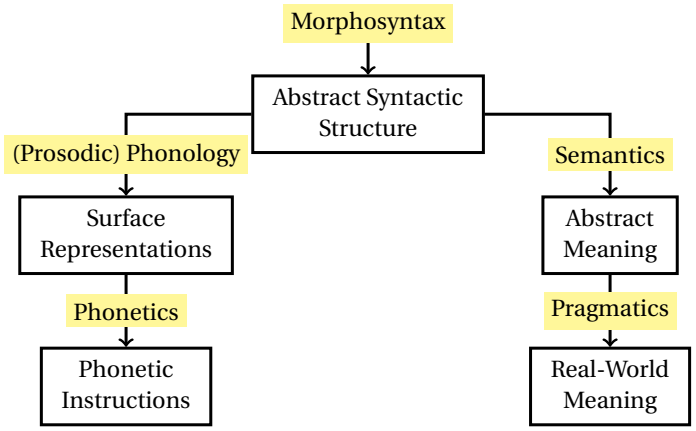
- Lots of language-internal investigation
  - Robust descriptions of the data patterns and their internal properties
- Clear understanding of the language's prosodic characteristics
  - what prosodic structures are used
  - how prosodic structures are built
  - which prosodic devices are used to mark focus (if any)
- Clear understanding of what precisely is under semantic focus
  - how do those semantic pieces manifest in the syntax
  - how do those syntactic pieces manifest as prosodic structure
- Models of...
  - the syntax
  - prosodic phonology
  - language acquisition
  - Grammatical architecture and interfaces

B The Model We Assume

As this paper concerns the relationship between semantics and prosody, we need to lay out our commitments about the interface architecture

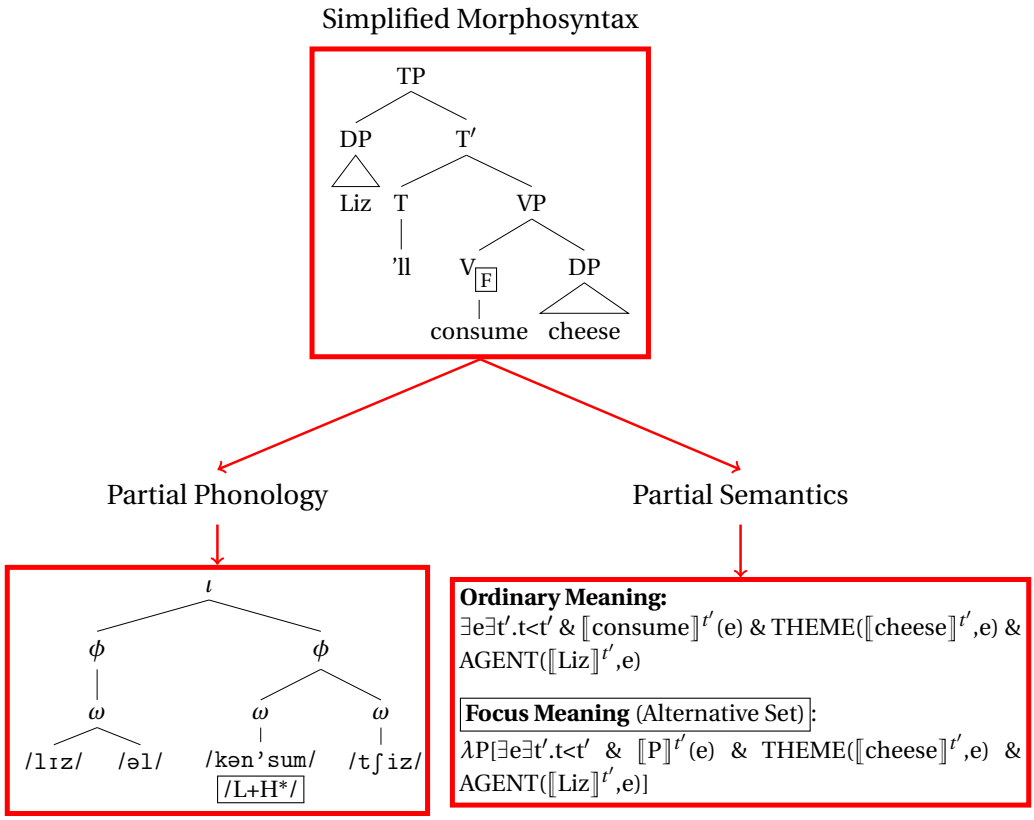
- We adhere to a (Minimalist) model in which syntax mediates the prosody-semantics connection (cf. Chomsky 1995)

(28) Y-Model of Grammar



  - In this model, there is no direct semantics-prosody interface, *per se*
  - Instead, it's that morphosyntactic information underwrites both prosody and semantics

- More concretely, this means, for prosody to expone a semantic notion like focus, **it must be that syntax mediates the semantics-prosody connection**, and focus is marked in the syntax (cf. Jackendoff 1972, Selkirk 1984)

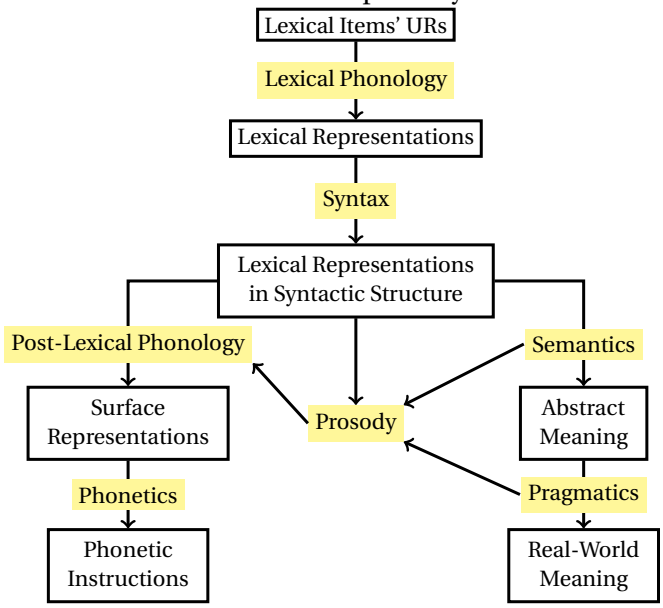


  - This highlights that semantics and prosody essentially operate over the same domain, **because that domain is marked as focused in the syntax**
  - In fact, this figure oversimplifies matters in many ways
    - First, there are lexical items in the (simplified) syntactic structure (whereas any model with vocabulary insertion after the fact would not; syntax would only contain abstract features)
    - Second, this assumes P-Focus is abstractly indicated in the phonology by a (particular) pitch accent, in a rather simplified prosodic representation
    - Third, the semantic representation is simplified

This model constrains the types of hypotheses one can entertain, providing more testable predictions

C Alternative Grammatical Model

(29) Model of Grammar in which prosody has direct access to more grammatical information



This sort of model is (implicitly) invoked by many working on prosodic interfaces, from the perspective of prosodic phonology

- This can be seen in certain works on how to model prosody on the basis of discourse structure, speaker beliefs, focus/topic, etc.
- A model like (29) can certainly be used to derive all these effects, since semantics, pragmatics, and syntax all feed into the prosodic computation

With this sort of model, semantics-prosody misalignments may be seen as **true misalignments**, given that the two components can directly interface with one another

- i.e., This model allows prosody to create a misalignment from semantic structures, on the basis of some certain (non-)linguistic features
- In this way, this model makes **many fewer predictions on where to find misalignments** (or how to derive them), as compared to the Y-model adopted in this work

D English Violations of GAPS

When GAPS cannot be respected, the grammar has more than one way to resolve the violation of GAPS

- English demonstrates (at least) **four means** by which the grammar may deal with a situation in which what is S-Focused corresponds to phonological structure that is too small

① **Crash**.

- The derivation does not converge.[11] To yield a convergent derivation, use different vocabulary items such that the domain of S-Focus will correspond to at least one syllable.[12]

[11] This is derive-and-crash description; however, it is different for the sorts of derive-and-crash models that Preminger argues against in his thesis. The crash is not a result of an uninterpretable syntactic feature that is unchecked. At the same time, this must be derive-and-crash, because there's nothing independently wrong with F-marking a syntactic chunk that doesn't correspond to one or more syllables.

[12] This is common for focus on silent pronouns in pro-drop languages.

(30) [*B disagrees, regarding who the subject of eating should be.*]
A: Ø eat this!
B: #No, Ø eat this!
B′: No, **YÓU** go to the store!

② **Affix Support**.

- The "affix support" mechanism (used to support, e.g., negation) inserts a morpheme, which serves to host the P-Focus.)

(31) [*B is emphatically agreeing with A.*]
A: Hal talks a lot.
B: Yeah, he **DÓES** talk a lot.

③ **Misalignment**.

- The P-Focus gets realized on the stressed syllable of a word that is outside the domain of S-Focus.

(32) [*B is commenting on the degree of tallness.*]
A: You saw RuPaul today?
B: Yeah. **BOY** is she tall!

④ **Double Misalignment**.

- The P-Focus gets realized on a word that is outside the domain of S-Focus, and on an unstressed syllable

(33) [*A and B have share a (weak) belief, and B agrees that they can't be certain of that belief.*]
A: I think we will be late.
B: Probab**LÝ**

It is worth noting that English employs all four of these 'strategies'

- This entails that it is not a language-specific decision of which resolution to GAPS violations is employed

And these different strategies cannot all be used for the same context

- The resolution to the GAPS violation is derivation-specific
- Suggesting that which one gets used is a *result* of the derivation itself
  - The impact of the derivation can be supported by the similarities/differences across Germanic, regarding what happens in V-fronting degree-exclamatives
  - Similarities: landing sites of movement of the silent S-Focused Deg^0 provide potential hosts for P-Focus
    - English, Afrikaans, and German all involve this movement, likely to similar positions
  - Differences: positions of the verb are different in English and Afrikaans V-fronting degree-exclamatives, such that the verb is higher in Afrikaans
    - And Afrikaans allows P-Focus on the fronted (aux) verb, but English doesn't

E Aspects of the Grammar of P-Focus Placement

The mechanisms by which P-Focus 'tries' to align with S-Focus have an articulated structure

- (It is not just that there is a simple condition of 'P-Focus and S-Focus map onto the same domain')

- We explode GAPS into multiple types of operations:
  - Transmuting syntactic F-marking into an abstract feature F_ϕ in prosodic structure
    - 'When generating prosodic structure, turn the syntactic F-marking into a prosodic structure with a F_ϕ feature'
  - Determining the exponence of F_ϕ
    - 'Use the right kind of phonological categories / acoustic cues for P-Focus realization'
    - 'Don't have too many/few realizations of P-Focus, given the F_ϕ marking'
  - Aligning the domain of P-Focus realization with the F_ϕ-marked structure
    - 'Make P-Focus realizations be as close to F_ϕ-marked structure as possible'
  - Minimum/maximum size for the domain of P-Focus realization
    - 'P-Focus must realize in a syllable (English), in a binary foot (Irish), ...'

These mechanisms are implemented in a larger grammatical model

- And each mechanisms is not on equal footing (with regard to timing / constraint-ranking / ...)

This model is sensitive to syntactic relationships between focus-sensitive operators and the focus associates

- See Appendix F.3

F More Evidence of the Role of Syntax in P-Focus Placement

F.1 English Reflexive Objects

Manifestations of P-Focus are well explored in English

- Some generalizations about English (see Büring 2016 for substantial discussion):
  - GAPS is well respected, very broadly
  - The S-Focus can be identified through the Question Under Discussion (QUD)
  - Together these mean that the constituent in an answer that corresponds to the WH-phrase in a QUD will contain a P-Focus

Focused reflexive objects appear to violate these generalization, however (Ahn 2015)

- When a reflexive anaphor is P-Focused, it yields an interpretation of focused reflexivity
  - i.e., focus is on the fact that there is co-identity of the predicate's two arguments
- In the following example, the boxed WH in the question corresponds to the boxed constituent in the answer

(34) A: $\boxed{\text{Who}}$ assigned Liam_1 to Kim?
B: $\boxed{\text{He}_1}$ assigned **HIMSÉLF** to Kim.

In (34), the focused reflexive yields an interpretation of "*when someone assigned Liam to Kim, it was a reflexive 'assigning' event*".

- Syntax constrains where this type of reflexive-focus interpretation is available
- For example, such clauses cannot be passive:

(35) A: Who was assigned to Liam_1?

B: #[He$_1$] was assigned to **HIMSÉLF**.
B′: [**HÉ**$_1$] was assigned to **HIMSÉLF**.

The S-Focus in (34) can't be the content of the reflexive anaphor itself, otherwise we would expect (35B) to be good

- Ahn posits a focused silent reflexivizing Voice^0
- Reflexive Voice^0 is unavailable in (35), because it is in complementary distribution with a passive Voice^0

Semantic Focus	**Prosodic Focus**
Voice^0	Object (reflexive)

These effects are modulated by manipulating syntactic variables

- The semantics-prosody misalignment cannot occur in Passive Voice^0
  - (*See Ahn (2015) for manipulation of other syntactic variables, and worked-out derivations*)
- **It is a strong case for analyses in which misalignments hinge on syntactic structures**
- In particular: when such structures contain a constituent that (i) is under S-Focus and (ii) is prosodically insufficient to host P-Focus (because, e.g., it is silent)

F.2 Exclamatives in German

Like English and Afrikaans, German degree exclamatives also allow P-Focus on the subject (cf. Truckenbrodt 2013b)

- This certainly constitutes a misalignment, since the S-Focus will be on a (silent) degree operator

(36) a. Der **PÉTER** kann schön singnen!
b. **DÉR** kann schön singnen!
c. S expresses the amazement about how beautiful he (Peter) can sing. ('degree reading')

- Truckenbrodt: degree reading requires special syntax; a degree reading is not possible with a complementizer-initial exclamative:

(37) a. Dass der Peter schön singnen kann!
b. Dass der schön singnen kann!
c. S expresses surprise that he (Peter) can sing beautifully. ('non-degree reading')

Thus German focus misalignments rely on (i) an interpretation where the degree is under S-Focus, and (ii) there is a particular syntactic derivation

- This further supports the general view that misalignments are syntax dependent
- More research is needed to compare degree exclamatives in German and in other Germanic languages (English, Afrikaans)

F.3 Focus Sensitive Operators in English

F-marked constituents that occur outside the semantic domain of focus, as defined by focus sensitive operators (e.g., ∼, *also*, Q; Truckenbrodt 2013a) do not always bear P-Focus marking

- Staying within the domain of the operator (Q in (38), Truckenbrodt 2013a; *also* in (39), Erlewine 2014) leads to obligatory P-Focus marking on the S-Focused constituent

(38) ⟦who⟧$_{FOC}$ Q [married ⟦**WHÓ**⟧$_{FOC}$]?

(39) Every student will go, and also [apparently ⟦a pro**FÉSS**or⟧$_{FOC}$ will go]

- Moving outside of the domain of the operator can lead S-Focused constituents without P-Focus

(40) ⟦who⟧$_{FOC}$ Q [did your sister marry]?

(41) Every student will go, and apparently ⟦a professor⟧$_{FOC}$ will **ÁLSO** [go]

Movement/scope thus directly affects the location of P-Focus

- Lending further evidence that P-Focus realizations depend on syntactic representations