

Anti-pied-piping

Kenyon Branan and Michael Yoshitaka Erlewine

Leibniz Centre for General Linguistics, National University of Singapore

branan@leibniz-zas.de, mitcho@nus.edu.sg

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Anti-pied-piping is a widespread but understudied phenomenon where a language targets a proper subpart of the logical focus for focus morphosyntax, e.g. focus particle placement or focus movement. We show that anti-pied-piping is attested in over 60 languages from 40 distinct language groups. We present a theory of focus particle syntax/semantics that involves severing the pronounced position of a focus particle and the logical position of its corresponding semantic contribution, which successfully accounts for both anti-pied-piping and pied-piping behavior. Constraints on attested anti-pied-piping behavior and its interaction with movement show that particle placement takes place at particular, punctuated points in the derivation, in a cyclic model of syntactic structure-building. We also discuss the relation of particle placement to other processes such as stress assignment.

Keywords: focus particles, focus movement, focus association, anti-pied-piping, pied-piping, particle placement, cyclic Spell-Out, stress assignment

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Contents

1	Introduction	3
2	Focus as the locus of alternatives	6
3	Properties of anti-pied-piping	9
3.1	Yaeyaman	9
3.2	Anti-pied-piping in particle placement	11
3.3	Anti-pied-piping in phrasal movement	18
3.4	Position	21
3.5	Summary	24
4	Proposal	25
4.1	Severing the particle from its semantics	26
4.2	Particle syntax in the operator–particle theory	32
4.3	Support from idiom chunks	36
4.4	The timing of particle placement	38
4.5	Argument/adjunct asymmetries	42
5	Alternative analyses	43
5.1	Nesting	44
5.2	Movement out of the focus	46
6	Particle placement and left-alignment	48
6.1	Exceptions to leftmost requirements	48
6.2	Two stress-based hypotheses	50
6.3	Proposal: • assignment and left-alignment	53
6.4	Pied-piping and anti-pied-piping	55
7	Discussion and conclusion	58
	Languages with anti-pied-piping by genus	74

1 Introduction

In many languages, the presence of focus in a sentence triggers a characteristic morphosyntactic response, such as a marked word order via movement or the appearance of a focus particle. For example, in Hungarian (canonically SVO), exhaustive focus triggers movement to a dedicated, immediately preverbal position, as in (1):¹

(1) **Focus-triggered movement in Hungarian:** (Horvath, 1981: 117)

A házigazda [Katinak]_F mutatta be Jánost ____.
the host Cathy.DAT show VM John.ACC
'The host introduced John [to Cathy]_F.'

A language may likewise indicate the presence of focus and an associated semantics using a dedicated particle. For example, additive focus is indicated in Japanese with the particle *mo*, as in (2). Languages may also use particle placement and movement simultaneously, or use altogether different strategies, as we will discuss.

(2) **Focus-triggered particle placement in Japanese:**

Hanako-wa [hon]_F-**mo** kat-ta.
Hanako-TOP book-also buy-PST
'Hanako also bought [a book]_F.'

We will refer to such morphosyntactic responses to focus as “MSF” throughout. In both (1) and (2), the constituent targeted for MSF — movement in Hungarian and particle placement in Japanese — is the logically focused constituent, which we annotate with the subscript “F.” But in some cases, there is a mismatch between the logical focus and the target of MSF, in which case we annotate both with separate subscripts.

Ross 1967 describes a famous type of mismatch termed *pied-piping*, where MSF targets a constituent properly containing the logical focus. Examples of pied-piping, again from Hungarian and

¹ The preverbal focus position is associated with exhaustive, identificational focus (Szabolcsi, 1981; É Kiss, 1998) and is often translated with English *it*-clefts. The so-called “verb modifier” (VM, *be* in (1)) prefixes to the verb when the preverbal focus position is unoccupied, e.g. resulting in *be-mutatta* for the verb in (1); see É Kiss 2002. The postverbal position of *be* in (1) therefore indicates that the immediately preverbal Cathy occupies this focus position. Similarly, the position of the verb modifier in example (7) below indicates that a constituent has moved to the focus position there as well.

Japanese, are given below. In (3), additional, non-focused material is moved together with the focused constituent. In (4), the focus particle attaches to a constituent that includes the logical focus, as well as additional, non-focused material.²

(3) **Pied-piping in Hungarian focus movement:** (Kenesei, 1998b: ex. 13b)

Anna [a [használt]_F autót]_{MSF} adta el ____.

Anna the used car.ACC sold VM

‘It’s the [used]_F car that Anna sold (not the new one).’

(4) **Pied-piping in Japanese focus particle placement:**³ (based on Kuroda, 1965: 78)

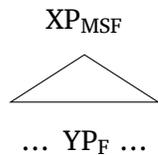
Hanako-wa [[hon]_{F-o} kai]_{MSF-mo} si, [[zassi]_{F-o} kai]_{MSF-mo} si-ta.

Hanako-TOP book-ACC buy -also do magazine-ACC buy -also do-PST

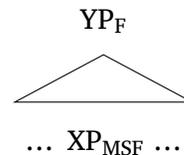
‘Hanako bought [books]_F and also bought [magazines]_F.’

We schematize the syntactic configuration referred to as pied-piping in (5) below. In this paper, we document and investigate the phenomenon of *anti-pied-piping*, schematized in (6), where a constituent *properly contained within* the logical focus is marked with a focus particle or targeted for focus movement. Anti-pied-piping can thus be thought of as the inverse of the very well-studied pied-piping pattern.

(5) **Pied-piping**



(6) **Anti-pied-piping**



Anti-pied-piping is attested in both Hungarian and Japanese. In the Hungarian example (7), predicate focus results in movement of the object out of the focused verb phrase to the preverbal

² Ross (1967: sec. 4.3) introduced the term “pied-piping” (attributed to Robin Lakoff; see his p. 263 note 23) to specifically describe instances of movement that appear to displace more than their logical target. In contrast, the ability of focus particles to be sensitive to the position of focus within their sister is more often discussed under the banner of “association with focus” since Jackendoff 1972: sec. 6.5 and Rooth 1985. Here we use the term pied-piping for this pattern of particle placement as well.

³ In example (4) and also (8) below, the additive particle *mo* naturally appears in each conjunct, in contrast to the English additives *also* and *too* which we give only once in translations. See e.g. Kobuchi-Phillips 2009 and Brasoveanu & Szabolcsi 2013 for discussion of this property of *mo*.

focus position (see footnote 1 above). Similarly, in the Japanese example (8), two whole propositions contrast and license the additive focus particle *mo*, but the particle appears on the subject within each focus. In both cases, MSF targets a proper subconstituent of the logically focused constituent. It is this type of mismatch that we concern ourselves with in this paper.

(7) **Anti-pied-piping in Hungarian focus movement:** (Kenesei, 1998a: 77)

Péter [a Hamletet]_{MSF} [olvasta fel ____ a kertben]_F, nem pedig [úszott]_F.
 Peter the Hamlet.ACC read VM the garden.INE not rather swim
 ‘Peter [read out Hamlet in the garden]_F, rather than [swim]_F.’

(8) **Anti-pied-piping in Japanese focus particle placement:** (Nagano, 1951: 210)

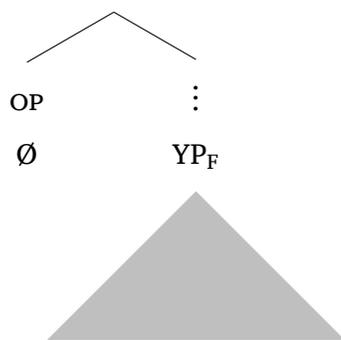
[[Ame]_{MSF}-**mo** furu]_F-si, [[kaze]_{MSF}-**mo** fuku]_F.
 rain -also falls -CONJ wind -also blows
 ‘[It’s raining]_F and [the wind is blowing]_F, too.’

We begin in section 2 with a brief introduction to focus semantics which will establish a methodology for identifying the logically focused constituent and, therefore, mismatches between the target of MSF and the logical focus. Section 3 presents our cross-linguistic survey of anti-pied-piping. We show that anti-pied-piping mismatches of the form in (7) and (8) are attested in over 60 different languages from 40 distinct language groups, as classified by major subfamily or genus (Dryer, 1989); a list of all languages discussed here as exhibiting anti-pied-piping is given at the end of the paper. In addition, we show that the process of anti-pied-piping in many languages must make reference to the linear order of constituents.

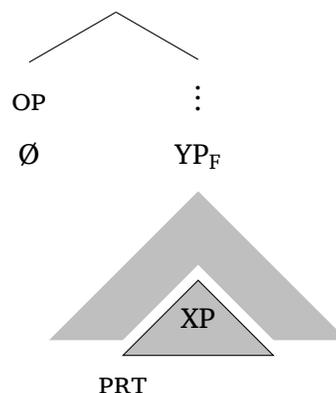
In section 4, we introduce a new theory for the syntax/semantics of focus particles which allows for anti-pied-piping mismatches. In brief, we propose that many focus particles do not introduce their associated semantics directly, but instead serve as morphosyntactic flags that signal the presence of corresponding abstract operators. In (9a) below, the entire focus (YP, in gray) is within the sister of the unpronounced operator (OP) which associates with focus in a compositional manner. We propose that the particle (PRT) may be adjoined to a proper subpart of the focus (XP), as schematized in (9b).⁴

⁴ We use the term “particle” as a descriptive cover term for the small closed class of lexical items whose apparent contribution to the meaning of the sentence involves the consideration of logical alternatives; i.e. “focus particles,” and similar expressions encoding other information-structural features. There are, however, other items that have been

(9) a.



b.



If the particle (PRT) is pronounced, we derive particle anti-pied-piping as in (8). Alternatively, once the particle has been inserted in an anti-pied-piping configuration as in (9b), the resulting particle phrase (the particle, possibly unpronounced, and its sister) can be targeted for movement, resulting in movement anti-pied-piping as in (7). We will show that this theory also naturally extends to cases of pied-piping, and captures a number of parallels between the two.

We propose that this particle placement takes place at certain designated, punctuated points during the derivation, in a *cyclic Spell-Out* model of grammar (Uriagereka, 1999; Chomsky, 2000, 2001, a.o.). This allows particle placement to make reference to some phonological information such as linear order and prosodic information, and to then feed further syntactic operations. Although we concentrate on focus here, our proposal is intended to also extend to the morphosyntactic reflexes of other information-structural notions as well.

After we have presented our core proposal, we discuss some potential alternative analyses in section 5. Finally, we discuss the question of which constituent is targeted in anti-pied-piping in further detail, and relate this behavior to processes of stress assignment as well as pied-piping, in section 6. We conclude in section 7 with implications of the analysis and a further outlook.

2 Focus as the locus of alternatives

Before diving into the empirical landscape of anti-pied-piping, we first briefly discuss the function of focus in grammar. This section serves an important methodological purpose: anti-pied-piping represents a mismatch between the logical focus and the constituent treated as focused by the morphosyntax. An understanding of the semantics of focus is crucial for identifying the position

called “particles” in prior literature, e.g. in verb–particle constructions, which our discussion does not bear on.

of logical focus in any particular utterance. Here in particular we'll concentrate on the role of focus in the interpretation of focus particles and question-answer congruence.

The core function of focus is to highlight a portion of the sentence as standing in contrast to other values in a set of contextually salient *alternatives* (see e.g. Rooth, 1992; Krifka, 2008).⁵ Focus-sensitive expressions such as focus particles then quantify over these alternatives. For example, consider the contrast between (10a) and (10b). These examples differ only in the placement of focus — realized in English with a pitch accent — but make very different claims about the world.⁶ In example (10a), the theme *sandwiches* is focused; this claim entails that Alex did not make anything else for Cara. In example (10b), *Brie* is focused instead, contrasting against other potential beneficiaries; this claim entails that Alex didn't make sandwiches for anyone else. This difference in meaning is reflected in the different felicity patterns of the continuations (i) and (ii) which elaborate on the claim made with *only* in (10a,b).

- (10) a. Alex **only** made [sandwiches]_F for Brie.
i. ✓ She didn't make [soup]_F for her. ii. #She didn't make sandwiches for [Cara]_F.
b. Alex **only** made sandwiches for [Brie]_F.
i. #She didn't make [soup]_F for her. ii. ✓ She didn't make sandwiches for [Cara]_F.

In common parlance, focus-sensitive expressions *associate* with the focused phrase. For example, we may say that the focus particle *only* associates with *sandwiches* in (10a) and with *Brie* in (10b).

We indicate the position of logical focus in example sentences with the subscript F, commonly referred to as *F-marking*. However, the position of logical focus is not unambiguously and directly reflected in the linguistic signal. In particular, for example, the phonetic realization of example (10a) is the same as the first sentence of (11), in that both of these choices of focus result in the most prominent accent on the object *sandwiches*. But in example (11), the entire VP *made sandwiches* is focused. The first sentence with *only* therefore claims that Alex didn't do anything for Brie except make sandwiches. The second sentence elaborates on this claim, mentioning washing the car as a particular alternative activity that Alex didn't do for Brie.

⁵ This notion of focus differs from the notion of focus as new information. On the relationship between these two notions of “focus,” see e.g. Rochemont 2013.

⁶ English *only* can also be adjoined closer to the focused constituent — for example, appearing as *only sandwiches* in (10a) or *only for Brie* in (10b). Our analysis in section 4 develops an account of the relationship between such *constituent particles* that adjoin to a sub-sentential phrase and *sentential particles* that adjoin to the clausal spine such as the *only* in (10a,b).

(11) Alex **only** [made sandwiches]_F for Brie. She didn't (also) [wash the car]_F for her.

The surface equivalence of sentences with different positions of focus — including some equivalences even when considering prosodic cues, as in the case of (10a) and (11) above — makes it challenging to confidently identify the position of focus in a sentence in isolation. As we see from the examples above, however, the position of focus can be elucidated by explicit continuations that make the extent of contrast between alternatives clear. Explicit continuations are useful for identifying the position of focus for utterances with additive particles such as *also* as well:

- (12) a. Alex made soup for Brie. She **also** made [sandwiches]_F for her.
b. Alex washed the car for Brie. She **also** [made sandwiches]_F for her.

Again, focus marks the position over which salient alternatives differ: the contrasting propositions differ only in their objects in (12a), but over their VPs in (12b). The semantics introduced by *also* then presupposes that another alternative is true, in contrast to *only* which claims that the other alternatives are false.

Constituent questions and their congruent answers are also useful for identifying the position of focus. Consider the object *wh*-question in (13) and the predicate *wh*-question in (14), each presented with two possible answers. The position of contrast amongst each set of answers bears focus, roughly corresponding to the argument that has been replaced with a *wh*-word in the question.

- | | |
|--|--|
| (13) What did Alex make for Brie? | (14) What did Alex do for Brie? |
| a. She made [sandwiches] _F for her. | a. She [made sandwiches] _F for her. |
| b. She made [soup] _F for her. | b. She [washed the car] _F for her. |

Again, the utterances in (13a) and (14a) both result in a pitch accent on *sandwiches* and therefore cannot be distinguished in isolation, but we can identify their foci by considering the questions that they address ((13) vs (14)) and the shape of other felicitous answers to those questions.

In the following sections, we will continue to indicate the position(s) of logical focus compatible with a particular surface form using F-marking notation (subscript F). In the interest of space, in most cases we will not include the supporting contexts or continuations that are necessary to verify the choice of F-marking. Most of the data we present comes from work by other scholars; in all such cases, the original, cited sources include such supporting materials or otherwise have suf-

ficiently detailed descriptions that allow us to confidently conclude that the reproduced example indeed has the focusing possibility that we report.⁷

Finally, we note that other information-structural notions beyond focus, such as topic or contrast, may also exhibit mismatches between their logical semantic/pragmatic locus and their corresponding morphosyntactic target. We believe that the notions of pied-piping and anti-pied-piping as well as the theoretical proposal we put forward below also extend to other such information-structural categories and their corresponding morphosyntactic reflexes. However, we concentrate on focus here, due to the existence of well-established diagnostics for the logical position of focus, reviewed above, and the fact that focus phenomena is comparatively well described in a wide range of languages.

3 Properties of anti-pied-piping

We now explore the empirical landscape of anti-pied-piping and highlight some of its important properties and points of cross-linguistic variation. We show that anti-pied-piping is widely attested in a range of genetically unrelated and typologically varied languages, with both particle placement (§3.2) as well as phrasal movement (§3.3). We then discuss the choice of constituent that is targeted for MSF and variation in the obligatoriness of anti-pied-piping (§3.4).

3.1 Yaeyaman

We begin by presenting a detailed and instructive case of anti-pied-piping in Yaeyaman, a Southern Ryukyuan (Japonic) language, from Christopher Davis’s work on the Miyara variety. We consider the focus particle *du*, which in the basic case appears as an enclitic on *wh*-phrases and the focused constituent in corresponding answers. This is illustrated by the question-answer pairs in (15–16).⁸ Note that the answers in (15b) and (16b) convey the same proposition, that Chris ate soba. In (15b), as an answer to a subject *wh*-question, *du* appears on the subject. In (16b), as an answer to an object *wh*-question, *du* appears on the object.

⁷ Some of the examples we reproduce are violent or are problematic from the perspective of gender representation and the perpetuation of gendered stereotypes. This is an area of ongoing concern for linguistic example sentences (Kotek, Dockum, Babinski & Geissler, 2021), but unfortunately difficult to address in research such as ours that heavily relies on existing descriptions by other scholars.

- (15) **Subject focus:** (Davis, 2014: 124) (16) **Object focus:** (*ibid.*)
- a. *Taa-du* suba-ba fai? a. Kurisu-ja *noo-ba-du* fai?
 who-PRT soba-BA ate Chris-TOP what-BA-PRT ate
 ‘Who ate soba?’ ‘What did Chris eat?’
- b. [Kurusu-n]_F-*du* suba-ba fai. b. Kurisu-ja [suba-ba]_F-*du* fai.
 Chris-NOM-PRT soba-BA ate Chris-TOP soba-BA-PRT ate
 ‘[Chris]_F ate soba.’ ‘Chris ate [soba]_F.’

What is of particular interest is the behavior of *du* in utterances with *sentence focus* and *predicate focus* (Lambrecht 1994; see also discussion in Vydrina 2020 sec. 2.4), such as in the answer to the question ‘What happened?’ in (17) and to the question ‘What did that woman do?’ in (18). In (17b), where the entire sentence constitutes the focus in the answer to the question, the particle *du* appears on the subject. In (18b), where the predicate ‘eat fish’ is focused, *du* appears on the object. The placement of *du* in (17–18) constitutes cases of anti-pied-piping.⁹

- (17) **Sentence focus:** (Davis, 2013: 33) (18) **Predicate focus:** (*ibid.*)
- a. *Noo-n-du* ari? a. Unu midunpito-o *noo-ba-du* hii?
 what-NOM-PRT existed that woman-TOP what-BA-PRT did
 ‘What happened?’ ‘What did that woman do?’
- b. [Hajasi-san]_{MSF}-*du* ziroo-ba bari. b. Kunu midunpito-o [izi-ba]_{MSF}-*du* fai.
 Hayashi-san-PRT Jiro-BA hit this woman-TOP fish-BA-PRT ate
 ‘[Hayashi-san hit Jiro]_F.’ ‘This woman [ate fish]_F.’

Davis (2013) notes that this anti-pied-piping in (17–18) is obligatory — that is, *du* cannot instead appear inside or following the verbal complex — despite the fact that *du* can encliticize to the verb in cases of narrow focus on the verb. Instead, “*du* seems only to be able to occur attached

⁸ We have made glosses more uniform following the Leipzig conventions, where possible, and simplified the glossing of word-internal morphology where orthogonal to the phenomena at hand. We refer readers to the original sources for further details on the morphology of these languages and on glosses reproduced here. We use the gloss PRT for focus particles that do not have immediate parallels in English.

⁹ The placement of *du* on the *wh*-phrases in (17–18) may also constitute cases of anti-pied-piping. The theory we develop here also extends to particle placement and movement in *wh*-constructions as well, but we concentrate on focus constructions.

to the leftmost element within its associated focus” (p. 36). Shimoji (2018: 96) furthermore reports that this description also holds of all of fifteen other Ryukyuan language varieties that he has surveyed. We return to this leftmost effect and the general question of which subpart of the focus is targeted for MSF in anti-pied-piping in section 3.4.

3.2 Anti-pied-piping in particle placement

Anti-pied-piping in focus particle placement is readily attested in many other languages. Examples (19–28) all illustrate anti-pied-piping in predicate focus in ten other verb-final languages from distinct language subfamilies or genera. In each of these transitive clauses, a focus particle targets the direct object for attachment (MSF) while semantically associating with the entire predicate VP.¹⁰

- (19) **Burmese**¹¹ (Okell, 2002: 87) b. ‘Salima also [bakes kulcha]_F.’
 [Caùn]_{MSF}-**hmá** mǎ-teq-k’éh-da.
 school -PRT NEG-attend-PST-DA
 ‘(I) didn’t even [attend school]_F.’
- (20) **Imbabura Quechua** (Kwon, 2013: 76) (22) **Kakabe**¹³ (Vydrina, 2020: 518)
 [Pirkuti-ta]_{MSF}-**mi** wanyuchirka Pepe.
 rat-ACC -PRT killed Pepe
 a. ‘Pepe killed [the rat]_F.’
 b. ‘Pepe [killed the rat]_F.’
 Mùsèè kà [sòbéé]_{MSF} ‘lé tàbì.
 woman PFV meat PRT prepare
 a. ‘The woman prepared [the meat]_F.’
 b. ‘The woman [prepared the meat]_F.’
- (21) **Ishkashimi**¹² (Karvovskaya, 2013: 81) (23) **Korean** (Choe, 1996: 677)
 Salima [kulča]_{MSF}-**məs** pacu.
 Salima kulcha -also bake
 a. ‘Salima also bakes [kulcha]_F.’
 [Sakwa]_{MSF}-**man** mekesseyo.
 apple -only ate
 a. ‘(I) only ate [the/an apple]_F.’
 b. ‘(I) only [ate the/an apple]_F.’

¹⁰ For further discussions related to the data here, we thank Dorothy Ahn (Korean) and Rahul Balusu and Sreekar Raghotham (Telugu).

¹¹ The preceding context in the source shows that this is a predicate focus use, but based on the description there, we expect this structure to also allow for a narrow object focus use. The same applies to (28) below. See Erlewine & New 2021 for further discussion of the Burmese particle *hmá*.

¹² Balogh & Kazemian (2021: ex. 16) documents the same pattern in Persian, which is also Iranian.

¹³ Kakabe clauses follow a general “S (AUX) O V X” word order and so the language is not verb-final per se.

- (24) **Masalit** (Leffel, 2011: 30–32)
 Hawa [mada]_{MSF} **de** tange.
 Hawa mada only drink
 a. ‘Hawa only drinks [mada]_F.’
 b. ‘Hawa only [drinks mada]_F.’
- (25) **Telugu** (based on Kotani, 2008: 191)
 Suma [Jaya-ni]_{MSF} **kuuḍa** meččukunindi.
 Suma Jaya-ACC even praised
 a. ‘Suma even praised [Jaya]_F.’
 b. ‘Suma even [praised Jaya]_F.’
- (26) **Tibetan** (Erlewine field notes¹⁴)
 Tshe.ring [deb]_{MSF}-**yang** ’bri-’dug.
 Tsering book -also write-AUX
- a. ‘Tsering also wrote [a book]_F.’
 b. ‘Tsering also [wrote a book]_F.’
- (27) **Turkish** (Kamali, 2011: 182)
 Biz [iskambil]_{MSF} **de/bile** oynadık.
 we cards also/even played
 a. ‘We also/even played [cards]_F.’
 b. ‘We also/even [played cards]_F.’
- (28) **Qunqi Dargwa** (Dmitry Ganenkov,
 p.c. to Forker & Belyaev 2016: 249)
 ... [it:i]_{MSF}-**ra** durt’ibce cadi.
 them -also give COP
 ‘(they) also [gave them away]_F.’

As noted above, we do not reproduce supporting contexts or continuations that motivate each attested choice of F-marking, but such information is available in the original sources that we cite.

The focus particles associating with the VP in (19–28) appear between their MSF object and the inflected verb. We might wonder whether anti-pied-piping in such examples is a response to the fact that particle placement directly on the logically focused VP may disrupt the morphology of the verbal complex. The Japanese examples in (29) show that this cannot be the motivation for anti-pied-piping in the general case. When associating with a transitive VP, a focus particle such as additive *mo* may adjoin to the VP itself as in (29a) or to the object as in (29b), the latter being a case of anti-pied-piping parallel to those above. In the former case (29a), the verbal morphology is indeed disrupted, triggering a process akin to *do*-support.

- (29) **Japanese**¹⁵ (Ohno, 2003: 323–324)
- a. Taro-ga [tako-o tabe]_{MSF}-**mo** si-ta.
 Taro-NOM oct.-ACC eat -also do-PST
 ‘Taro also [ate octopus]_F.’
- b. Taro-ga [tako]_{MSF}-**mo** tabe-ta.
 Taro-NOM octopus -also eat-PST
 ‘Taro also [ate octopus]_F.’

¹⁴ The Tibetan judgments here and in (64) reflect the judgments of three native speakers in Dharamsala, India, consulted in 2018–2019.

This optionality of anti-pied-piping in Japanese — despite its obligatoriness in the related and morphosyntactically similar Yaeyaman language in the preceding section — shows that anti-pied-piping cannot be generally described as a kind of repair to satisfy morphological processes, and also that its application is subject to cross-linguistic variation that must be learned.

Focus may also trigger other morphosyntactic reflexes in a clause. In Tundra Yukaghir, when an object is focused with a particle such as *leŋ*, as in example (30a), the subject agreement affix on the verb changes to a dedicated object focus (OF) form. In cases of predicate focus, a particle similarly appears on the object, again triggering the object focus agreement form, as in (30b). See also Nagasaki 2018 for equivalent patterns in Kolyma Yukaghir.

- (30) **Tundra Yukaghir** (Matić & Odé, 2015: 630)
- | | |
|---|---|
| <p>a. <u>Object focus:</u>
 Q: What do you fear?
 [Labunme]_F-leŋ iŋe:-meŋ.
 ptarmigan -PRT fear-OF.1/2SG
 ‘I fear [ptarmigans]_F.’</p> | <p>b. <u>Predicate focus:</u>
 Q: What do you do for a living?
 Met [qajser]_{MSF}-leŋ wie-nun-meŋ.
 1sg ski -PRT make-HAB-OF.1/2SG
 ‘I [make skis]_F.’</p> |
|---|---|

Anti-pied-piping in particle placement is not limited to verb-final languages. As seen in examples (31–33) below, anti-pied-piping in predicate focus is also attested in verb-medial languages.

- (31) **Awing** (Fominyam & Šimík, 2017: 1039)
- | | |
|---|--|
| <p>a. A-pe'-náŋnə tsó'ə [ŋgəsáŋə]_{MSF}.
 AGR-PST-cook only maize
 ‘(He) only cooked [maize]_F.’</p> <p>b. A-tə-ndzí'ə tsó'ə [alí'ə]_{MSF}.
 AGR-PROG-till only farm
 ‘(She) is only [tilling the farm]_F.’</p> | <p>(32) Dagbani¹⁶ (Fiedler & Schwarz, 2005: 9)</p> <p>ɔ̀ bɔ̀l lá [George]_{MSF}.
 3sg call PRT George
 a. ‘She called [George]_F.’
 b. ‘She [called George]_F.’</p> <p>(33) Tangale¹⁷ (Hartmann & Zimmermann, 2007a: 119)</p> <p>N fad-go núm [littáfi-i]_{MSF}.
 1sg buy-PRF only book-the
 a. ‘I only bought [the book]_F.’
 b. ‘I only [bought the book]_F.’
 c. ‘I only [bought]_F the book.’</p> |
|---|--|

¹⁵ In addition to the intended predicate focus reading, example (29a) may associate narrowly with the object or the verb and example (29b) also allows for narrow focus with the object.

Anti-pied-piping in focus particle placement is also attested in verb-initial languages, which we exemplify with Tagalog later in this section.

Readers may note that the anti-pied-piping data just presented fall largely into two categories: OV (head-final) languages with postfocal particles (19–30) and VO (head-initial) languages with prefocal particles (31–33). Readers may rightly wonder whether other combinations are possible, i.e. anti-pied-piping in head-final languages with prefocal particles or in head-initial languages with postfocal particles. We imagine that such languages may exist, but have not identified any here, due to a systematic methodological challenge, which we elaborate on here.

To illustrate the issue, consider example (34) below from Konkomba, another Oti–Volta Gur language related to Dagbani. Like the Dagbani example (32) above, (34) is reported as able to express object focus or predicate focus.

(34) **Konkomba**

(Schwarz, 2007a: 123, 126)

Ù ηmán !ηítùùn lá.

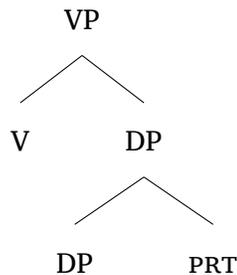
CL chew beans PRT

a. ‘She ate [beans]_F.’

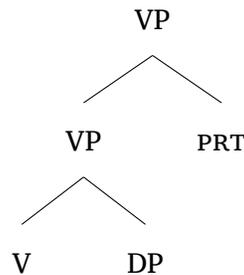
b. ‘She [ate beans]_F.’

Before we can determine whether there is a mismatch between the logical focus and focus particle placement, we must identify the syntactic position of the particle. Unlike in the Dagbani (32), the focus particle *lá* in the Konkomba (34) follows the entire head-initial verb phrase. Therefore, the surface structure in (34) is amenable to either of the parses in (35):¹⁸

(35) a.



b.



¹⁶ Schwarz (2009, 2010) shows that the behavior in (32) also obtains in the related Oti–Volta Gur languages Buli, Gurene, and Kɔnni.

¹⁷ Example (33) is also compatible with a narrow verb focus reading (33c), which we address in footnote 69 below.

¹⁸ We adopt the label DP (for Determiner Phrase) for noun phrase projections (Szabolcsi, 1983; Abney, 1987).

If object focus in (34a) and predicate focus in (34b) correspond respectively to the structures in (35a) and (35b), then there is no mismatch of anti-pied-piping nor pied-piping. However, if the particle is adjoined to the object as in (35a) for both readings in (34), we would describe (34b) as a case of anti-pied-piping. Without further work to establish the exact position of the particle, such examples are not sufficiently informative as to whether or not the particle exhibits anti-pied-piping.¹⁹ In contrast, with postfocal particles in head-final structures and prefocal particles in head-initial structures, anti-pied-piping is more immediately identifiable.

Another common pattern of anti-pied-piping involves the subject being marked by a focus particle, with the sentence as a whole being interpreted as the logical focus, as seen in (36–41) below. We also saw this pattern with Yaeyaman *du* in (17).

(36) **Even** (Matić & Wedgwood, 2013: 153)

[Ama]_{MSF}-**dm̩ar** ɔmɔlgɔ-j negirin.
 father -PRT son-REFL.POSS scolded
 ‘[A father was scolding his son]_F.’

(37) **Ishkashimi** (Karvovskaya, 2013: 82)

[Wai mol]_{MSF}-**m̩əs** xi dusto-i zənayʉ isu.
 DEM husband-also REFL hands-ACC wash come
 a. ‘[Her husband]_F goes to wash his hands, too.’
 b. ‘[Her husband goes to wash his hands]_F, too.’

(38) **Kakabe** (Vydrina, 2020: 502)

[Túlân]_{MSF} **d̩è** ká jààréènú súbé tólópè là.
 mice PRT PFV cats choose game OBL
 ‘[The mice chose the cats to have a party]_F.’

¹⁹ Similar challenges hold for prefocal particles in head-final languages. To wit, there has been an active debate concerning the proper analysis of prefocal particles in Germanic as either consistently adjoined to the head-final clausal spine (see especially Jacobs 1986; Büring & Hartmann 2001) or indeed potentially adjoined to sub-clausal constituents (see e.g. Smeets & Wagner 2018).

(39) **Korean** (Choe, 1996: 680)

[[Moduni]_{MSF}-**man** tonguiha-myen], na-to ttaru-kess-so.
everybody -only agree-COND I-also follow-TAM
'Only if [everybody agrees]_F, I too would follow.'

(40) **Lak** (Victor Friedman p.c. to Forker & Belyaev 2016: 251)

K'ič:a [ca č'iwis:a q:urši]_{MSF}-**gu** bahnu bur.
up.there one small box -also fall COP
'[from up there a small box fell]_F, too.'

(41) **Navajo** (Perkins, 1978: 25)

[[Jáan]_{MSF} **hanii** chidí yiyííłchọ'-go] t'áani' naashá.
John NEG.PRT car wreck-COMP afoot 1.walk
a. 'It's not because [John]_F wrecked the car that I'm on foot.'
b. 'It's not [because John wrecked the car]_F that I'm on foot.'

The Yukaghir languages also exhibit this same form of sentence-focus anti-pied-piping. Recall that verbal subject agreement morphology is affected by the presence of focus particles, as we saw in (30) above. Similarly, when an intransitive subject is focused with a particle as in (42a), the agreement morphology on the verb is replaced with an invariant subject focus (SF) suffix. When an entire intransitive clause is focused, as in (42b), its subject bears a focus particle, with the verb again appearing in the subject focus form.

(42) **Tundra Yukaghir** (Matić & Odé, 2015: 630)

a. <u>Subject focus:</u>	b. <u>Sentence focus:</u>
They say that [you] _F are strong.	Q: What is going on?
Ele:ń, [kõde] _F - leŋ werwe-l.	[Iije]- leŋ werwe-mu-l!
no man-PRT be.strong-SF	wind-PRT be.strong-INCH-SF
'No, [the man] _F is strong.'	'[The wind has gotten strong] _F !'

Anti-pied-piping in sentence focus is also attested in verb-medial languages, as we see in (43) and (44).

- (43) **Ewe**²⁰ (Ameka, 2010: 151) (44) **Konkomba**²¹ (Schwarz, 2007a: 23, 24)
- [dɛvíáwó]_{MSF}-é gba zea. [Àjúá]_{MSF} lé !ɲmán ɲítùùn.
 the.children -PRT break the.pot Ajuá FM chew beans
 a. '[Ajuá]_F ate beans.'
 b. '[Ajuá ate beans]_F.'

Finally, we discuss anti-pied-piping in Tagalog and Latin, which will foreshadow our own proposal for the nature of anti-pied-piping. The Tagalog 'only' particle *lang* also exhibits anti-pied-piping, but this anti-pied-piping behavior can be directly attributed to a more general mechanism in the language. In example (45a), the 'only' particle *lang* immediately follows the focus, which is an adjunct fronted to initial position. This gives the appearance of *lang* being an enclitic focus particle. In contrast, *lang* in (45b) associates with the verb phrase 'give money' in (45b), with *lang* appearing properly within the predicate, between 'give' and 'money.'

- (45) **Tagalog** (Kaufman, 2005: 181)
- a. [Sa simbahan]_F lang ako nag-bi-bigay ng pera.
 OBL church only 1sg AV-ASP-give GEN money
 'I only give money [in church]_F.'
- b. Sa simbahan ay nag-bi-bigay lang ako ng pera.
 OBL church TOP AV-ASP-give only 1sg GEN money
 'In church, I only [give money]_F.'

The behavior of *lang* in (45) is explained in part by recognizing its more general status as a second-position clitic. Second-position clitics in Tagalog follow one phrase or head within the clause, not counting topic phrases (Kroeger, 1998; Kaufman, 2010). Note that the pronoun *ako* here is also such a second-position clitic and thus exhibits this same pattern of placement in (45a) vs (45b). Thus we can conclude that the anti-pied-piping manifested by *lang* in examples

²⁰ Collins (1994) shows that sentence focus anti-pied-piping can target the subject as in (43) (see his p. 57 ex. 101) but may also involve object fronting (p. 53 ex. 86). Anti-pied-piping in sentence focus is also attested in other Kwa languages such as Akan (see discussion in Bearth, 1999: 255–257), Fongbe (Collins, 1994: 53–54 exx. 89, 91), Gungbe (Aboh, 2006: 31 ex. 20b), Tuwuli (Harley, 2005: 222 ex. 145), and Yoruba (Manfredi, 2004: ex. 39a).

²¹ Schwarz (2007a) argues against analyzing *lé* as an enclitic that forms a constituent with the subject. The pattern in (44) also holds of four other Oti–Volta Gur languages, Buli, Dagbani, Gurene, and Kɔnni (Schwarz, 2009, 2010).

such as (45b) is due to a more general property of second-position clitic placement in Tagalog.²² Focus particles in Thompson River Salish, which like Tagalog is a predicate-initial language, are also second-position clitics, resulting in expressions parallel to (45); see Koch & Zimmermann 2010: pp. 242–243 exx. 14a,b, 17a,b.

Latin too exhibits anti-pied-piping behavior involving the well-known second-position clitic *que* (see e.g. Zwicky 1977). Here we follow Mitrović & Sauerland (2014) and Szabolcsi (2015) in describing *que* as an additive focus particle rather than a conjunction. The placement of *que* in second-position within its logical focus leads to examples such as (46):²³

- (46) **Latin** (Julius Caesar, glossed in Carlson, 1983: 80)
- A cultū prōvinciae longissime absunt, [minime]_{MSF}-**que** ad eōs mercatores
 from culture province furthest be.absent least -also to them merchants
 saepe comitant, [proximi]_{MSF}-**que** sunt Germānis.
 often visit near -also are Germany
 ‘[They] are furthest from the civilization of Roman Italy, are [rarely visited by merchants]_F,
 and are also [closest to Germany]_F.’

We consider these final cases from Tagalog and Latin to be instructive, as anti-pied-piping in these cases can be described rather clearly as due to a process of second-position clitic placement that leads to a mismatch between the position of the particle and the position of its logical interpretation. In particular, of the mismatch exhibited by Latin *que*, Carlson (1983) writes, “A much simpler interpretation of *-que* could be given, though, if we were to somehow ‘postpone’ its semantic effect until a larger unit is encountered in the tree” (p. 73). The analysis that we develop in section 4 builds on this intuition and generalizes it to other cases of anti-pied-piping.

3.3 Anti-pied-piping in phrasal movement

Many languages conventionally target focused constituents for movement. Such movement may also exhibit anti-pied-piping, targeting a constituent that is a proper subpart of the logical focus. Although some previous works have described such examples as involving a movement that is

²² Tagalog additionally allows for focused VPs to be discontinuous via postverbal scrambling. See Richards 2019.

²³ The Turkish additive particle *da* from (27) similarly encliticizes to the first constituent within clausal conjuncts. See Kornfilt 1997: 109 ex. 430. This also parallels the placement of Japanese additive *mo* in example (8) above.

independent of the focal structure of the sentence (as we review in section 5), we instead argue that these patterns are most fruitfully described by paying close attention to the mismatch between the target of movement and the logical focus and then analyzed as related to the phenomenon of anti-pied-piping in focus particle placement.

The examples in (47–52) all illustrate predicate focus with transitive VPs where only the object is moved to a focus position, just as we saw attested in Hungarian in the introduction (7).

- (47) **Bura** (Hartmann, Jacob & Zimmermann, 2008: 72) (50) **Russian**²⁵ (Fanselow & Lenertová, 2011: 203)
 [Yími ní]_{MSF} án tí da sá _____. [Cvety]_{MSF} oni sobrali _____.
 water DEF COP REL 3pl drink flowers.ACC 3pl plucked
 ‘They [drank the water]_F.’ ‘They [plucked flowers]_F.’
- (48) **Garrwa**²⁴ (Mushin, 2006: 311) (51) **Somali**²⁶ (Lecarme, 1999: 284)
 [Nganbi-nyi]_{MSF} ngayu yadajba _____. [Búug]_{MSF} buu ____ akhriyay.
 lilyseed-DAT 1sg.NOM wait book FM + 3SGM read.TAM
 ‘I’m [waiting for lilyseed]_F.’ ‘He [read a book]_F.’
- (49) **Haitian Creole** (Franz Cozier ms. in Fanselow & Lenertová 2011: 194) (52) **Yoruba** (Manfredi, 2004: ex 39a)
 Se [poul]_{MSF} m ap kuit _____. [Èmọ]_{MSF} ni Àràbá rà _____.
 FM chicken 1sg TAM cook palmwine FM Araba buy
 a. ‘Araba bought [palmwine]_F.’
 b. ‘Araba [bought palmwine]_F.’
 ‘I am [cooking chicken]_F.’

The fronted constituent may also host an overt focus particle, as in (53–55). In the German (53), the stranded verb has independently fronted to verb-second position.

²⁴ The pronoun *ngayu* is a second-position clitic, which follows the verb in verb-initial clauses (Mushin, 2006).

²⁵ Fanselow (2004: 17–18) notes that similar patterns are attested in Czech, Croatian, and Polish as well. We will discuss some Czech examples in section 6.

²⁶ The focus marker *baa* here has fused with the subject pronoun to become *buu*. See also Svolacchia, Mereu & Puglielli, 1995: 73–74 for additional data of this form.

(53) **German** (Fanselow, 2004: 17)

On his wedding anniversary...

nur [einen Blumenstrauß]_{MSF} überreicht jeder dritte Ehemann ____.

only a bunch.of.flowers hands.over every third husband

‘every third husband only [hands over a bunch of flowers]_F.’

(54) **Kĩtharaka** (Abels & Muriungi, 2006: 9) (55) **Mandarin** (Constant & Gu, 2010)

I-[nyomba]_{MSF} Maria araakire __.

PRT-house Maria built

a. ‘Maria built [the house]_F.’

b. ‘Maria [built the house]_F.’

Tā **lián** [tóufa]_{MSF} dōu bù shū ____.

3sg even hair DOU NEG comb

a. ‘He doesn’t even comb [his hair]_F.’

b. ‘He doesn’t even [comb his hair]_F.’

Focus movement with anti-pied-piping is also attested in cases of sentence focus. Examples (56–60) below are all reported as answers to questions such as ‘What happened?’ or ‘What’s the matter?’, but where only the subject moves to a dedicated focus position. The relevant position is a cleft pivot position in (56), (58), and (59), V2 prefield position in (57), and a left-peripheral position marked by a focus marker in (60).

(56) **French** (Sasse, 1987: 538)

C’ est [maman]_{MSF} qui ____ me bat.

this is mother who 1sg hit

‘[Mum’s hitting me]_F.’

(57) **German** (Fanselow & Lenertová, 2011: 181)

[Eine Krankenschwester]_{MSF} hat ____ einen Patienten getötet.

a nurse has a patient killed

‘[A nurse killed a patient]_F.’

(58) **Tilapa Otomi** (Palancar, 2018: 261)

ñü [a rú ngopho]_{MSF} kəha ____ bi... bi-kokhi-’a.

PRT DEF. POSS.3SG brain COP TAM TAM-bleed-3SG

‘[Her brains bled]_F.’

(59) **Welsh** (Mac Cana 1973: 93, as glossed in Sasse 1987: 539)

[Y ffermwrt]_{MSF} (a) adawodd y glwyd ar agor.

DEF farmer REL let DEF gate open

a. 'It was [the farmer]_F that left the gate open.'

b. '[The farmer left the gate open]_F.'

(60) **Wolof** (Robert, 1991: 125)

[Patron bi]_{MSF} moo ____ ma taamu.

boss DEF FM.3SG 1sg choose

'[The boss chose me]_F.'

While such patterns are common, there are also cases of anti-pied-piping with sentence focus leading to focus movement of the object rather than the subject. This is the case in (61) and (62), where there is no independent subject that can be fronted.

(61) **Breton** (Jouitteau, 2007: 178) (62) **Sicilian**²⁷ (Cruschina, 2012: 71)

[Va lein]_{MSF} e tebrin ____.

my breakfast E eat.FUT.1SG

'[I will eat my breakfast]_F.'

[A machina]_{MSF} m' arrubbaru ____!

the car to.me stole.3PL

'[They stole the car from me]_F!'

We will discuss the general question of which subconstituent of the logical focus is targeted for MSF in the following subsection and again in section 6.

3.4 Position

The data presented in the preceding sections establish that anti-pied-piping is well attested cross-linguistically, as observed in both the position of focus particle placement and in the choice of constituent targeted for focus movement, which are two dominant MSF strategies. Given the existence of anti-pied-piping, a natural question is which sub-constituent of the logical focus is targeted for MSF. We will see that, in many languages, the element targeted for MSF is at or near the left edge of the logical focus, but there is also substantial cross-linguistic variation in the presence or strength of this effect.

First, recall that in Yaeyaman and Ishkashimi, sentence focus is marked by particle placement on the subject and transitive predicate focus is marked by particle placement on the object. For

²⁷ Bianchi, Bocci & Cruschina (2016: 36 ex. 43) report a parallel example in standard Italian.

these two languages, Davis (2013) and Karvovskaya (2013) also show that other possibilities are ungrammatical. These options are schematized below.

(63) **Miyara Yaeyaman *du* (Davis, 2013, 2014) and Ishkashimi *məs* (Karvovskaya, 2013):**

- | | | | | |
|----------------------------|----------------------|---|-------------|-------------|
| a. <u>Sentence focus:</u> | [S O V] _F | ⇒ | √ S-PRT O V | *S O-PRT V |
| b. <u>Predicate focus:</u> | S [O V] _F | ⇒ | *S-PRT O V | √ S O-PRT V |

Similar leftmost effects are observed in other languages as well, although with the status of a preference rather than a hard constraint. Example (64) is a case of predicate focus with a ditransitive predicate in Tibetan. For the intended reading, consulted speakers prefer to place the particle *yang* after the leftmost (goal) argument within the predicate:

(64) **Tibetan** (Erlewine field notes)

Kunga's a very good person. She prays at the temple every day.

Kun.dga' khyi-la-{'yang} kha.lag-{'yang} sprad-gi-'dug.

Kunga dog-DAT -also food -also give-IPFV-AUX

'Kunga also [gives food to dogs]_F.'

In Japanese, the leftmost requirement is subject to some speaker variation. Ohno (2003: 324) reports that for the sentence focus reading in a SOV sentence, all speakers allow the additive particle *mo* on the subject as in (65a) but only some also allow the particle on the object as in (65b).²⁸

(65) **Japanese** (based on Aoyagi 1998: 151, 2006: 123)

At yesterday's party, not only did Hanako dance a dance, but...

- | | |
|--|--|
| a. √ [Taro] _{MSF} - mo piano-o hii-ta. | b. %Taro-ga [piano] _{MSF} - mo hii-ta. |
| Taro-alsopiano -ACC play-PST | Taro-NOM piano -also play-PST |
| '[Taro played piano] _F , too.' | '[Taro played piano] _F , too.' |

²⁸ This variation is also reflected in the literature: Aoyagi (1998: 151, 2006: 123) reports optionality of placement in examples parallel to that in (65), whereas Numata (2009: 70) claims that focus particles in Japanese anti-pied-piping always target the leftmost constituent within the focus. Given this speaker variation, explicitly noted by Ohno (2003: 324), we reproduce Aoyagi's example but with judgment marks that reflect the full range of attested judgments in (65a,b). We thank Heidi Harley (p.c.) for bringing Ohno's work to our attention.

Dash & Datta 2020 reports optionality in anti-pied-piping particle placement in Hindi-Urdu and Bangla. For instance, both variants of the ditransitive example (66) below are described as grammatical for predicate focus, but with a “weak leftmost preference.”

(66) **Hindi-Urdu** (Dash & Datta, 2020: exx. 5, 17)

During Diwali, Pulkit plans to feed the poor and also distribute gifts to children. However, due to some emergency, he fails to be able to feed the poor.

(Vo) (sirf) bachcho-ko {[✓]hii} tohfe {[✓]hii} de payaa hai.
 3sg only children-DAT PRT gifts PRT give able.PRF.3PL AUX
 ‘He could only [give gifts to children]_F.’

Next we turn to anti-pied-piping involving phrasal movement. Here too, leftmost effects have been described in some languages. In the German (67), fronting of the ditransitive’s theme allows for the predicate focus reading in (67a_{ii}), but fronting of the goal in (67b_{ii}) does not. The theme is naturally leftmost in the VP’s base order.

(67) **German** (Fanselow, 2004: 11)

- a. [Die Bücher]_{MSF} hab ich ____ ins Regal gestellt.
 the books have 1sg into.the shelf placed
 i. ‘I put [the books]_F on the shelves.’
 ii. ‘I [put the books on the shelves]_F.’
- b. [Ins Regal]_{MSF} hab ich die Bücher ____ gestellt.
 into.the shelf have 1sg the books placed
 i. ‘I put the books [on the shelves]_F.’
 ii. *‘I [put the books on the shelves]_F.’

A weaker leftmost preference is reported in Kikuyu. Schwarz (2003: 95) notes that for predicate focus with a ditransitive VP with goal–theme base order, goal fronting (68a) “seems to be slightly preferred” over theme fronting (68b), “although both seem to be acceptable.”

(68) **Kikuyu**

(Schwarz, 2003: 95)

Q: What does Abdul do?

- a. Ne- [mwana] Abdul ađomayera ____ iβuku.
PRT 1.child Abdul read book
- b. ?Ne- [iβuku] Abdul ađomayera mwana ____.
PRT book Abdul read child
'Abdul [read the child a book]_F.'

In contrast, in San Martín Peras Mixtec (base order: VSO), sentence focus may involve fronting of either the subject or object with apparent optionality:

(69) **San Martín Peras Mixtec**

(Hedding, 2019: exx. 43a,b)

- a. [Tsinà]_{MSF} shàshi ____ koñu.
dog ate meat
'[The dog ate the meat]_F.'
- b. [Koñu]_{MSF} shàshi tsinà ____.
meat ate dog
'[The dog ate the meat]_F.'

We conclude that anti-pied-piping in many languages observes a leftmost requirement, whereby MSF must or prefers to target the leftmost sub-phrase of the logical focus, although there is considerable cross-linguistic variation in the presence or absence and strength of such effects.²⁹ We discuss further details of this process and its relation to stress placement and the theory of focus projection in section 6, after we present our core proposal in section 4. For now, it suffices to note that the process of MSF target selection that results in anti-pied-piping must be able to make reference to linearized structures, and ultimately to phrasal stress or its determinants as well. We also note that anti-pied-piping behavior in particle placement and phrasal movement parallel each other, and these parallels will be strengthened in section 6.2. Both of these properties of anti-pied-piping will be important features of the proposal we develop here.

3.5 Summary

We have now established a number of facts about anti-pied-piping. Anti-pied-piping is attested in a wide range of languages: in total, we have identified anti-pied-piping in over 60 languages from

²⁹ We give a definition for “leftmost” in section 6 below that is not simply determined by linear extent. In particular, as motivated by the data in this section, the object in a VO verb phrase must count as “leftmost” within the verb phrase for purposes of particle placement and movement.

40 different subfamilies or genera, which we list in an index at the end. Both particle placement as well as focus fronting allow for anti-pied-piping, with the choice of constituent targeted often subject to a leftmost requirement.

Although the availability of anti-pied-piping is wide-spread, we do not believe it to be universal. There are, for example, languages where scholars have specifically investigated broad focus constructions and have shown that possible patterns of anti-pied-piping are not attested. This is the case in two Zapotec languages, which are both verb-initial and express narrow argument focus by fronting to a preverbal position but where broad focus must be expressed using a verb-initial clause without fronting (Lee, 1997: 237–238; Bueno Holle, 2016: ch. 5). Just as there is variation amongst the behavior of languages with anti-pied-piping, its availability too is a point of potential variation that must be learned.

The existence of anti-pied-piping complicates the syntax/semantics of focus particle placement. It forces us to divorce the pronounced position of particles and their position of interpretation, just as Carlson (1983) suggests in his discussion of Latin *que* as noted above.³⁰ The analysis that we develop is also inspired by contemporary theories of pied-piping, allowing us to unify anti-pied-piping in particle placement and in movement and explain their similarities, as well as to account for parallels between anti-pied-piping and pied-piping, which we present in section 6.

4 Proposal

We now present our analysis for the anti-pied-piping patterns presented in the previous sections. Anti-pied-piping constitutes a serious challenge for the compositional semantics of focus particles, as a central expectation of focus semantics since Jackendoff 1972 and Rooth 1985 is that the focus be within the focus particle's sister. We therefore begin by putting forward a new and general theory for the compositional semantics and syntactic derivation of focus particle constructions, which will allow for anti-pied-piping in focus particle placement. We then address cases of anti-pied-piping in focus movement, building on the influential proposal for pied-piping as the result of movement targeting a particle-adjoined phrase (see e.g. Tanaka, 1999; Horvath, 2000, 2007;

³⁰ The existence of anti-pied-piping in focus movement also challenges the idea that syntactic operations make direct reference to information-structural annotations such as F-marking, as also noted by Fanselow (2006) and Hartmann & Zimmermann (2007b: 388), in much the same way that pied-piping does. See also Branan & Erlewine 2021 for further discussion.

Watanabe, 2006; Cable, 2007, 2010a,b). We address the question of how the position of particles is determined in greater detail in section 6 below.

4.1 Severing the particle from its semantics

There are broadly two analytic approaches to the semantics of focus particles that adjoin to a sub-clausal phrase such as the *only* in example (70) below.

(70) Alex made **only** [sandwiches]_F for Brie.

The first approach, which we call the QUANTIFICATIONAL PARTICLE theory, takes the pronounced *only* to be a semantically contentful, two-place operator with denotation as in (71) below. Under this view, *only* composes with its sister (the α argument, of type σ) to form a quantificational meaning that then composes with its scope (β).³¹ The resulting expression presupposes $\beta(\alpha)$ and will be true if and only if all other, alternative meanings to α in the alternative set C , when composed with β , are false.³²

(71) **Two-place *only* meaning for the quantificational particle PRT_{only}:**

$$\llbracket \text{only}_{\text{two-place}} \rrbracket = \lambda\alpha_{\sigma} \cdot \lambda\beta_{\langle\sigma,t\rangle} : \underbrace{\beta(\alpha)}_{\text{presupposition}} \cdot \underbrace{\forall\gamma \in C [(\gamma \neq \alpha) \rightarrow \neg\beta(\gamma)]}_{\text{truth condition}}$$

Under the second approach, which we call the OPERATOR–PARTICLE theory, the pronounced *only* in (70) is not itself semantically contentful but is instead simply a morphological flag that signals the presence of a corresponding, unpronounced ONLY operator in the clause (Lee 2004, 2005; Hirsch 2017; Hole 2017; Quek & Hirsch 2017; Sun 2021; a.o.).³³ The covert ONLY is a one-place operator that takes a sister of propositional type with denotation φ , presupposes φ , and is true if and only if all other alternatives in a set of propositional alternatives C are false; see (72).

³¹ In examples such as (70), [*only* α] forms a quantificational noun phrase meaning that must undergo a scope-taking operation in order to compose with its second argument, β . We illustrate this in (80) below.

³² The denotations that we sketch for *only* in (71) and (72) are presented using an extensional semantics and are somewhat simplified. Most notably, they require the negation of all non-prejacent alternative propositions, whereas technically all and only alternative propositions that are not entailed by the prejacent proposition should be negated. See e.g. von Stechow 1997.

³³ The idea that focus particle constructions reflect structures with both a sentential operator and a sub-sentential particle, only one of which is pronounced, has also been motivated on primarily syntactic grounds in Horvath 2000, 2007, 2013, Barbiers 2010, 2014, Bayer & Obenauer 2011, and Bayer 2020. However, these works are less clear regarding the

(72) **One-place *only* meaning for the operator OP_{only} :**

$$\llbracket \text{only}_{\text{one-place}} \rrbracket = \lambda \varphi_t : \underbrace{\varphi}_{\text{presupposition}} . \underbrace{\forall \psi \in C [(\psi \neq \varphi) \rightarrow \neg \psi]}_{\text{truth condition}}$$

In either case, the alternative set C is a contextually determined variable that contains alternatives that are congruent in focus structure to the meaning of the interpreted *only*'s sister. We can ensure the congruence of alternatives by making reference to logical F-marking as in the Alternative Semantics of Rooth 1992, 2016, or without reference to F-marking as in Büring 2015. We will continue to discuss examples with *only* in this section, but these two approaches to the syntax/semantics of *only* also extend to other types of focus particles.

Under the operator–particle approach, example (70) above reflects the syntactic structure in (73) below: an operator OP with the semantics of one-place *only* (72) is adjoined to the clausal spine, here taking νP as its sister,³⁴ and a corresponding particle PRT is adjoined to the focused phrase *sandwiches*. In English, either the operator or particle can be pronounced as *only*, but not simultaneously (Hirsch, 2017; Quek & Hirsch, 2017).³⁵ If the particle is pronounced, we yield (70) above. If the operator is pronounced instead, we yield the form in (74) with sentential *only*, which has the equivalent interpretation. See also Quek & Hirsch 2017, Hirsch 2017 chapter 7,

semantic division of labor between the operator and particle.

There is also earlier work that takes constituent focus particles to be interpreted at a higher, clause-adjoined position at Logical Form (LF) (see e.g. Lahiri 1998 on *even* and Herburger 2000 on *only*, as well as Aoyagi 1998, 1999, 2006 on focus particles in Japanese), perhaps following a type of covert movement operation. (To our knowledge, this intuition was first articulated in the generative tradition in Kuroda 1965's discussion of "attachment transformations.") In addition, work such as Chierchia 2006, 2013 propose that certain other expressions such as polarity-sensitive items lexically require the presence of covert operators akin to *even* or *only*. Such proposals can be recast as other instances of operator–particle pairs in our theory.

³⁴ We adopt the *predicate-internal subject hypothesis* (see e.g. Kitagawa, 1986; Kuroda, 1988; McCloskey, 1997) and refer to the agent-introducing head as ν . Operators must take a constituent of propositional type as their sister. νP is proposition-denoting, with extensional type t .

³⁵ Similarly, see Horvath 2013: 112 for evidence that the Hungarian 'only' operator or its corresponding particle can be pronounced overtly as *csak*. Some languages allow both the particle and corresponding operator to be pronounced simultaneously, descriptively in a concord-like relationship; this is attested in Dutch (Barbiers, 2010, 2014), German Sign Language (Deutsche Gebärdensprache) (Herrmann, 2013: 299–300), Vietnamese (Hole, 2013, 2017; Erlewine, 2017; Sun, 2020: 331–332), and Lavukaleve (see (86) below). See also Bayer 2020: 64–66 for discussion of naturally occurring examples in English and German that may be best analyzed as rare cases of double pronunciation of the operator and particle.

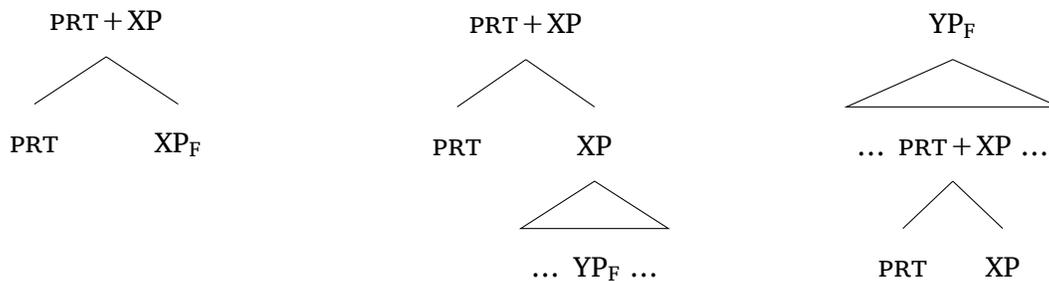
and Bassi, Hirsch & Trinh 2022 for extensive motivation for the operator–particle theory from the scope-taking behavior of English *only*.

(73) Alex OP_{only} [_{VP} *t* made [PRT_{only} [sandwiches]_F] for Brie]

(74) Alex **only** made [sandwiches]_F for Brie. = (10a)

In (73), the particle has adjoined directly to the logical focus. This possibility is schematized in (75). But faithful adjunction to the focused constituent is not the only possibility. The particle could be adjoined to a constituent that properly contains the logical focus, as schematized in (76); this is pied-piping. The particle could also be adjoined to a constituent properly contained within the focus, as in (77), which is the configuration we recognize as anti-pied-piping.

(75) **No mismatch (MSF = F)** (76) **Pied-piping (MSF > F)** (77) **Anti-pied-piping (MSF < F)**



We argue that the semantic interpretation of anti-pied-piping requires the operator–particle theory with one-place operator semantics. To see why this is the case, we discuss the interpretation of a predicate focus structure where PRT has adjoined to the object, a proper subpart of the logical focus. For presentational purposes, we discuss a pseudo-English example pronounced as (78a) but interpreted as (78b), modeled after the Hungarian example (7), although this pattern of anti-pied-piping is not attested in English. This example can however be taken to stand in for one of the many examples of predicate focus with particle placement on the object discussed above.

- (78) a. “Peter read only [Hamlet]_{MSF}.”
 b. ‘Peter only [read Hamlet]_F.’ (He didn’t do anything else.)

Under the operator–particle theory, we could posit (79) as the underlying structure for (78). The higher, unpronounced operator OP is interpreted with the one-place denotation for *only* in (72) above.

(79) **Structure for (78) under the operator–particle theory:**

Peter OP_{only} $[_{\text{VP}} t [_{\text{VP}} \text{read} [\text{PRT}_{\text{only}} [\text{Hamlet}]_{\text{MSF}}]]_F]$

Notice that the entire focus (VP) is within the sister of the interpreted operator OP. This allows OP to consider alternatives that vary in their choice of VP denotation, contrasting ‘read Hamlet’ with other contextually relevant VP meanings; these might include other activities we had thought Peter might do today, like the transitive ‘read Macbeth’ and ‘clean the car,’ as well as the intransitive ‘swim.’ The presence of PRT serves only to morphologically indicate the presence of a corresponding operator OP that is interpreted, but is itself semantically inert.

In contrast, let’s consider how we might attempt to interpret (78) using the quantificational particle theory. Interpreting the pronounced particle in (78a) with the two-place semantics for *only* in (71) above, the constituent [only Hamlet] will yield a quantificational noun phrase meaning. Following *Quantifier Raising* (QR; May 1977; see also Heim & Kratzer 1998: ch. 7), this results in a *Logical Form* (LF) representation as in (80), where the trace position is interpreted as a variable (x) and a corresponding λ -binder is adjoined above. For ease of presentation, we illustrate (80) with the agent *Peter* reconstructed into its base position.

(80) **LF structure for (78) under the quantificational particle theory:**

LF: [only Hamlet] [λx $[_{\text{VP}} \text{Peter} [_{\text{VP}} \text{read } x]]]$

Recall that the two-place denotation for *only* as in (71) considers alternatives to its sister, *Hamlet*, in the contextually specified variable C and requires that all of those alternatives that are not *Hamlet*, when composed with its second argument ($\lambda x . \text{Peter read } x$), will be false. For instance, if C includes *Macbeth*, (80) would require that Peter did not read Macbeth. However, because only alternatives to the object are considered, (80) cannot be used to derive the intended predicate focus meaning which contrasts ‘read Hamlet’ with alternative VP meanings involving other verbs. In other words, if the pronounced particle itself introduces the semantics of *only* with denotation as in (71), the logical focus must be the particle’s sister or a subpart thereof (pied-piping); anti-pied-piping focus association cannot be modeled in this way.³⁶

³⁶ The outlook for the quantificational particle theory can be improved slightly by modifying the two-place denotation for *only* as in (i) below, so that it considers alternatives for the particle’s sister α , in set C , as well as alternatives for the particle’s second argument β , in set D .

Such patterns can be modeled straightforwardly under the operator–particle theory. These languages simply allow for multiple particles to be adjoined within a single focused constituent. A single logical operator then takes the entire focus in its scope. Under the operator–particle theory, particles and operators need not be one-to-one, although that is often the case. See also Krifka 1991: 144 and Lee 2004: 47 for discussion of similar structures with multiple focus particles in English and Korean, respectively.

A practical issue that arises in the analysis of focus particle constructions in the operator–particle theory is determining whether a particular overt expression is the realization of an operator or a particle, in our technical sense. Three diagnostics are useful here. First is syntactic position and constituency: Operators adjoin to the clausal spine — to a node of propositional type (i.e. type *t*, at *vP* or higher; see footnote 34) — whereas particles may adjoin to sub-sentential phrases of arbitrary syntactic category and semantic type, e.g. to noun phrases or prepositional phrases. Second is semantic scope: Operators make a semantic contribution, so if they are pronounced, their overt position indicates their scope, whereas particles do not directly indicate the scope of their associated semantics and therefore may lead to scope ambiguities.³⁸ Consider the observation from Taglicht 1984 that English *only* adjoined to a sub-sentential constituent may take variable scope as in (82), but *only* in a preverbal, sentential adverb position takes fixed scope as in (83).

- (82) **Constituent *only* has flexible scope:** (based on Taglicht, 1984: 150)
 I knew (that) he had learned **only** [Spanish]_F. (✓ *only* > know, ✓ know > *only*)
- (83) **Sentential *only* has fixed scope:** (*ibid.*)
 a. I **only** knew (that) he had learned [Spanish]_F. (✓ *only* > know, *know > *only*)
 b. I knew (that) he had **only** learned [Spanish]_F. (**only* > know, ✓ know > *only*)

Such facts receive an immediate explanation under the operator–particle theory. We propose that the two interpretations of (82) reflect two different syntactic structures, in (84) below, with varying operator positions. Example (82) reflects a realization of (84a) or (84b) where the particle

³⁸ Relatedly, since operators must be one-to-one with their semantics, multiple exponence with a single corresponding semantic contribution must necessarily involve the realization of multiple particles, as in (81), or the simultaneous realization of an operator and a particle, as discussed in footnote 35.

is pronounced *only* and its corresponding operator is unpronounced.³⁹ In contrast, examples (83a) and (83b) reflect the possibility of pronouncing the operator in (84a,b) as *only*, explaining the fact that the position of *only* in these examples directly reflects its interpreted scope.

(84) **Two structures underlying (82) and (83):**

- a. I **OP**_{only} knew [that he had learned [**PRT**_{only} [Spanish]_F]]. only > know
- b. I knew [that he had **OP**_{only} learned [**PRT**_{only} [Spanish]_F]]. know > only

The third and final diagnostic is the availability of anti-pied-piping: Semantic interpretation in the operator–particle theory requires that the logical focus be within the operator’s sister modulo reconstruction of material that has moved out, but not necessarily within a particle’s sister. Particles therefore may exhibit anti-pied-piping patterns of focus association, but operators do not.⁴⁰

4.2 Particle syntax in the operator–particle theory

We have argued that considerations of compositional semantics necessitate the adoption of the operator–particle theory for focus particles that allow for anti-pied-piping mismatches. Under this theory, a semantically inert particle is adjoined within the scope of the operator. In this section, we discuss syntactic consequences of particle insertion, accounting for patterns of focus-targeting agreement and movement, before discussing the derivational timing of particle adjunction in section 4.4.

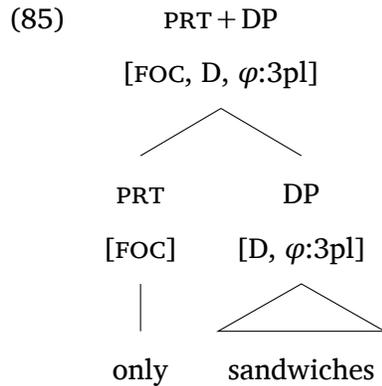
We propose that particles are adjoined clitics, as explicitly claimed by Aoyagi (1998), targeting maximal projections. Although particles are semantically inert, they may introduce formal features. Formal features of both the particle (PRT) and its sister XP will project to their mother, which we refer to as a *particle phrase* and label PRT + XP in the general case.⁴¹ Suppose a particle

³⁹ Scope ambiguities as in (82) can potentially also be explained using the quantificational particle theory by taking [only Spanish] to QR to positions above or below *know*, as in the common analysis of scope ambiguities introduced by quantificational noun phrases (see e.g. May, 1977 and also Heim & Kratzer, 1998: 194–198). However, a challenge for this approach is the fact that, for many English speakers, quantificational noun phrases cannot scope out of embedded finite clauses (Wurmbrand, 2018). This suggests that the availability of the wide-scope *only* interpretation in (82) should not be attributed to QR, and thus supports the analysis based on the operator–particle theory presented here.

⁴⁰ Except where attributable to independent movements, as we discuss in section 5.2.

⁴¹ See Bayer 1996: 15, Bayer & Obenauer 2011: 476, Bayer 2018 for precursors to this proposal.

optionally pronounced as *only* and bearing the feature [FOC] adjoins to a DP *sandwiches*, as in our English example structure in (73) above. The resulting phrase *only sandwiches* will project the [FOC] feature as well as features projected from *sandwiches* such as the category [D] and its φ -features:⁴²



The particle and its corresponding operator are then linked by the derivational operation Agree that allows them to exchange additional formal feature values (see e.g. Chomsky, 2000), as proposed in Lee 2004, 2005, Quek & Hirsch 2017, and Hirsch 2017.⁴³ Focus constructions in Lavukaleve offer explicit evidence for this operation.⁴⁴ In Lavukaleve, particles encliticize to focused arguments: the subject in (86a) and object in (86b). Notice that the form of the particle inflects to reflect the φ -features of the constituent it has adjoined to. In addition, in such cases, Lavukaleve allows for the pronunciation of another marker in a fixed, postverbal position, which we analyze as the corresponding operator. (See footnote 35 for other languages that allow for the simultaneous realization of particles and their operators.) The operator also inflects to reflect the φ -features of the focused constituent.

⁴² This joint projection of features from both sisters also allows for the construction of targets for probes that seek a goal that will simultaneously satisfy both an A-feature and an \bar{A} -feature. The existence of such *composite probes* has been extensively motivated in recent work such as Van Urk 2015, Van Urk & Richards 2015, Erlewine 2018, Bossi & Diercks 2019, Colley & Privoznov 2020, Branen & Erlewine to appear, and Scott 2021.

⁴³ In addition, the particle phrase may be thought to covertly move to the corresponding operator at LF, as proposed for English in Wagner 2006 and Erlewine & Kotek 2018 a.o. Such covert movement would also account for the behavior of particles that are not allowed to be separated from their corresponding operator position by syntactic islands, as in Premodern Japanese, Okinawan, and Sinhala (see e.g. Hagstrom, 1998), Imbabura Quechua (Hermon, 1984), Tlingit (Cable, 2007, 2010b), and Tundra Yukaghir (Matić, 2014).

⁴⁴ We thank Isaac Gould (p.c.) for drawing our attention to the patterns of focus markers in Lavukaleve.

- a. [Aira la]_F **feo** fo'sal na aua **heo**.
 woman(f) ART.SGF PRT.3SGF fish(m) ART.SGM ate.AGR OP.3SGF
 ‘[The woman]_F ate a fish.’
- b. Aira la [fo'sal na]_F **fin** oum **hin**.
 woman(f) ART.SGF fish(m) ART.SGM PRT.3SGM ate.AGR OP.3SGM
 ‘The woman ate [a fish]_F.’

The possibility of this inflection on both the particle and operator directly supports our analysis for the syntax of particle phrases and their relationship to operators. As illustrated in (85) above, the particle phrase will bear both the formal features of the particle (e.g. [FOC]) and of its host, such as its φ -features. Agree between the particle phrase and its corresponding operator, based on their shared feature ([FOC]), then allows for the particle phrase’s φ -features to be copied onto the operator.

This approach to particle syntax may also serve to explain interactions between focus and case-marking as in Kakataibo (Valle, 2014) and Beria (Wolfe & Abdalla Adam, 2018). Transitive subjects in each of these languages can be unmarked, but appear with an optional ergative case marker especially when they are narrowly focused, as well as in cases of sentence focus, constituting anti-pied-piping.⁴⁵ (We do not reproduce this data here, in the interest of space.) In these languages, targeting a subject for MSF — analyzed as adjoining an unpronounced particle — has the result of affecting the realization of case-marking on the subject.

The adjunction of a focus particle may have other consequences for its host, by affecting the structural relationship between the host and its surrounding structure. The syntactic presence of adjoined particles may serve to explain the inability of focused phrases to undergo incorporation or to be visible for external morphological operations (Haiman, 1988), or for focus particles to shield nominals from what would otherwise be binding-theoretic violations (Heim, 1998: 242).

The syntactic visibility of features such as [FOC] on the particle phrase is also key to our account for anti-pied-piping in phrasal movement. For concreteness, let us return to our basic English example with the particle phrase *only sandwiches*. Suppose we introduce a higher head that probes for the [FOC] feature and moves a matching goal. This probe will skip the subject

⁴⁵ In addition, in Kakataibo, focused arguments occupy a dedicated sentence-initial position, which the ergative-marked subject occupies under these conditions.

Alex and the verb *made* and Agree with the particle phrase PRT + DP and move it. Movement of PRT + DP could, for example, result in a cleft:⁴⁶

(87) It's [_{PRT+DP} PRT_{only} [sandwiches]_F] that Alex made ____ for Brie.

⇒ It's only SANDWICHES that Alex made for Brie.

Suppose furthermore that there is also a PRT that introduces the [FOC] formal feature but is unpronounced. Adjunction of this particle to *sandwiches* will lead to the appearance of *sandwiches* moving alone to become the cleft pivot, without an overt particle:

(88) It's [_{PRT+DP} PRT_∅ [sandwiches]_F] that Alex made ____ for Brie.

⇒ It's SANDWICHES that Alex made for Brie.

As we have discussed above in the case of overt focus particles, suppose a particle PRT adjoins instead to a proper subpart of the logical focus (89a). Probing for a formal feature such as [FOC] introduced by the particle and projected by the particle phrase (e.g. PRT + DP) will result in movement of a proper subpart of the logical focus (89b). With non-pronunciation of both the operator and particle and together with independent subject raising, this derives the anti-pied-piping focus movement in the Hungarian example repeated here as (90). Recall that the entire VP with the object *Hamlet* reconstructed is within the scope of the interpreted operator OP and thereby can contrast with other contextually relevant VP meanings such as 'swim.'

(89) a. OP [_{VP} Peter [_{VP} read [_{PRT+DP} PRT [Hamlet]_{MSF}] in the garden]_F]

b. [_{PRT+DP} PRT [Hamlet]_{MSF}] OP [_{VP} Peter [_{VP} read ____ in the garden]_F]

(90) **Anti-pied-piping in Hungarian focus movement:** = (7) (Kenesei, 1998a: 77)

Péter [a Hamletet]_{MSF} [olvasta fel ____ a kertben]_F, nem pedig [úszott]_F.

Peter the Hamlet read VM the garden.INE not rather swim

'Peter [read out Hamlet in the garden]_F, rather than [swim]_F.'

Following a suggestion by Cable (2007, 2010b: ch. 6), we propose that all \bar{A} -movement is, by definition, movement of particle phrases.⁴⁷ Under this proposal, the parallels observed between anti-pied-piping in particle placement and in phrasal movement — for example, in both being subject to leftmost requirements in many languages (discussed in further detail in section 6) —

⁴⁶ The corresponding operator in this case must be higher than where it is represented in (73), in the cleft's higher clause.

fall out immediately: \bar{A} -movement such as focus movement is always movement of a particle phrase, although in many cases the relevant particle is unpronounced.

This view of \bar{A} -movement grows out of an influential analysis of pied-piping as particle phrase movement, developed by Tanaka (1999), Horvath (2000, 2007), Watanabe (2006), and Cable (2007, 2010a,b). Not accidentally, then, our proposal for particle syntax also allows for pied-piping mismatches. Particle placement may target a focus-*containing* phrase, as in (91a). \bar{A} -movement targeting the particle phrase then results in focus movement with pied-piping, as in (91b). This derivation followed by independent subject raising yields the Hungarian pied-piping example repeated in (92).

- (91) a. OP [_{VP} Anna sold [_{PRT+DP} PRT [the [_{used}]_F car]_{MSF}]]
 b. [_{PRT+DP} PRT [the [_{used}]_F car]_{MSF}] OP [_{VP} Anna sold ____]

(92) **Pied-piping in Hungarian focus movement:** = (3) (Kenesei, 1998b: ex. 13b)

Anna [a [_{használt}]_F autót]_{MSF} adta el ____.

Anna the used car.ACC sold VM

‘It’s the [_{used}]_F car that Anna sold (not the new one).’

In section 6.4 below, we will present parallels in the fine-grained behavior of pied-piping and anti-pied-piping that further motivate their unification.

4.3 Support from idiom chunks

Additional support for our proposal for anti-pied-piping involving a one-place covert operator comes from the fact that focus particles can appear on a proper subpart of an idiom chunk while taking the entire idiom as its logical focus, in an anti-pied-piping pattern. This is observed in (93), where the additive particle *mo* encliticizes to the object but associates with the predicate, which is literally ‘eat weeds’ but idiomatically means to loiter or waste time along a path.

⁴⁷ This accords with Van Urk 2015’s featural criterion for the A/ \bar{A} -distinction: A-movement targets obligatory features of lexical items, such as category features, whereas \bar{A} -movement targets optional features. These optional features are introduced by particle adjunction. In contrast, A-movement does not pied-pipe, nor anti-pied-pipe, because A-movement does not target a feature introduced by a particle, and thus there is no apparent optionality or mismatch in the size of the moved constituent. We briefly discuss further consequences of our theory for the A/ \bar{A} -distinction in the conclusion.

(93) **Japanese *mo* within an idiom chunk:**

(Ohno, 2003: 248)

(Taroo-wa) [michi-kusa]_{MSF}-**mo** kutta.

Taro-TOP road-grass -ALSO ate

‘Taro also [loitered on the way]_F.’

Under the proposal here, the pronounced particle itself has no semantic contribution and therefore the VP ‘eat weeds’ can be interpreted as a single constituent with its non-compositional interpretation, all within the scope of a covert additive operator and contrasted against other relevant VP meanings. In contrast, under the quantificational particle theory, the particle’s surface sister (here: ‘weeds’) and its second argument (including ‘eat’) would be interpreted separately and then composed via the semantics of the particle, which only considers focus alternatives for its sister.⁴⁸

Anti-pied-piping focus movement may also target a subpart of an idiom chunk while retaining idiomatic interpretation. This is observed in the Hungarian (94), where the VP ‘scrape horsehide’ retains its idiomatic meaning of sleeping. Similar examples are attested in Dutch (Van Riemsdijk & Zwarts, 1974/1997: 18–19), German (Büring, 1997: 72 ex. 58), Czech (Lenertová & Junghanns, 2007: 355 ex. 21), and Hausa (Newman, 2000: 261), as also discussed by Fanselow & Lenertová (2011).

(94) **Hungarian focus fronting of part of an idiom chunk:**

(Kenesei, 1998a: 85)

Nem [a ló**b**ört]_{MSF} húzza ____, hanem keményen dolgozik.

not the horsehide.ACC scrapes but hard works

‘He’s not [sleeping]_F, but is working hard.’

Under the operator–particle theory, there is no particular semantics that applies specifically to the fronted phrase, but there is instead a corresponding sentential operator that takes the entire focus in its scope. By reconstructing the fronted phrase to its base position, the entire VP ‘scrape horsehide’ can be interpreted as a unit and thereby idiomatically, within the scope of the covert operator involved in contrastive focus, and contrast as a whole with other VP meanings.

⁴⁸ If the suggestion in footnote 36 is adopted, alternatives to the second argument’s denotation are also considered, but again the entire VP will not be interpreted together as a unit.

4.4 The timing of particle placement

We now turn to the question of when and how particles are introduced into the derivation. Recall that anti-pied-piping behavior makes reference to the linear order of constituents (§3.4) and furthermore also correlates with stress assignment in some languages, as we elaborate in section 6 below. It follows that particle placement must make reference to structures that are linearized and possibly prosodified. But at the same time, particle placement cannot be entirely post-syntactic. As we just proposed, particle placement also feeds further syntactic processes, by forming targets for movement and agreement.

Our solution will be to adopt a theory of cyclic structure-building where structures are built and undergo *Spell-Out* at certain punctuated points in the derivation (Uriagereka 1999; Chomsky 2000, 2001, a.o.). Whereas the syntax proper operates on hierarchical structures without reference to phonology, when a structure undergoes *Spell-Out*, the pronunciation of its terminal nodes, their word order, and prosodic representation are calculated (see e.g. Dobashi 2003, 2010; Ishihara 2004, 2007; Fox & Pesetsky 2005; Kratzer & Selkirk 2007; Kahnemuyipour 2009; Sato 2012a). Further derivational steps may build on the output of *Spell-Out*. Following this body of work, especially Fox & Pesetsky 2005, we take *Spell-Out* to target complete *phases*. In particular, we concentrate here on the effects of particle placement during *Spell-Out* of the *vP* phase, which allows us to account for the patterns of anti-pied-piping in sentence focus and predicate focus documented above.⁴⁹

We propose that particles are adjoined during cyclic *Spell-Out*, just as López (2009) has claimed for abstract information-structural features.⁵⁰ When a phase undergoes *Spell-Out*, first its linear

⁴⁹ See footnote 34 on the notion of *vP*. Other common candidates for phasehood include full clauses (CP) and noun phrases (DP; see footnote 18). If we assume that particles and their corresponding operators must be quite local, examples of anti-pied-piping where the corresponding operator scopes outside of the complementizer, rather than simply over the event description — as in the Korean (39) and Navajo (41) above — may require analyses involving particle placement during CP *Spell-Out*. Anti-pied-piping is also attested within the noun phrase: focus on the entire noun phrase may lead to particle placement on its proper subpart in Tundra Nenets (Nikolaeva, 2019: 383 ex. 24) and movement of its proper subpart in Hinuq (Forker & Belyaev, 2016: 245 ex. 11b). These effects may be described in terms of particle placement during DP *Spell-Out*.

⁵⁰ López's discussion is centered around cases where such features are added to elements that occupy particular, privileged positions within a phase at the point of *Spell-Out*, which can then be targeted for later agreement or movement. He does not discuss overt particle placement or use this to explain mismatches of the (anti-)pied-piping type. We believe that our overall proposal can also be extended to López's facts, with López's features recast as unpronounced particles

and prosodic representation is calculated. Particle adjunction then takes place via *Late Adjunction* (Lebeaux, 1988, 1991) into this structure.⁵¹ As noted above, particles may adjoin directly to a focused phrase, or to a containing phrase (pied-piping) or to a contained phrase (anti-pied-piping). The determination of particle position can then make reference to the phase’s linear and prosodic representation at this stage, resulting in the leftmost effects above.

Concretely, we summarize our proposal for particle placement in (95) below. We discuss and formalize the relevant notion of “left-alignment” in section 6 below.⁵²

(95) **Particle placement:** (preliminary; to be revised in section 6)

During phasal Spell-Out, Late Adjoin the particle to a phrase that {is left-aligned / is preferably left-aligned / overlaps} with the logical focus.

As a final step during Spell-Out, we propose that the newly derived particle phrase may optionally move to the edge of the phase. This is necessary for allowing the particle phrase to be moved out of the current phase, if we assume the Phase Impenetrability Condition of Chomsky 2000, 2001 or similar.

One advantage of this Late Adjunction approach to particle placement is that it allows us to account for the fact that particles do not disrupt selection between their host and its selector, despite the fact that particle phrases themselves are later syntactically visible for syntactic operations. See Aoyagi 1998 ch. 2 for discussion of this tension. This can be seen as a case of derivational opacity: the strictly local structural relationship necessary for selection between, for instance, a transitive

in our terms, but we leave the full exploration of this extension (especially regarding the position of particle placement, related to section 6 below) for future work. We thank an anonymous reviewer for highlighting the relevance of López’s claim to us.

⁵¹ The appeal to Late Adjunction here can be thought of as similar to theories of second-position clitic placement that involve counter-cyclic placement or displacement in the post-syntax (see e.g. Halpern, 1995; Embick & Noyer, 2001; Legate, 2008), but not applying entirely post-syntactically, which will be important below.

Our proposal echoes the conjecture in Zyman 2021 that all adjunction involves Late Adjunction “immediately before” the point of phasal Spell-Out. Together with Stepanov 2001 and López 2009, these discussions form a growing body of converging evidence that ties the timing of adjunction to phasal Spell-Out. One important difference, however, is that for the cases of adjunction that Zyman investigates, the result of adjunction cannot be a later target of movement, unlike with particle insertion.

⁵² As noted in footnote 29 above, our final proposal will allow for objects in VO verb phrases to count as “left-aligned” with the entire verb phrase, in the relevant sense. It will also address various systematic exceptions to leftmost effects, which we present in section 6.

verb and its object is satisfied during the construction of the phase, prior to the introduction of particles during phasal Spell-Out.⁵³

After one phase undergoes Spell-Out, the syntactic derivation can continue, building on the result of the lower phase. Therefore a particle phrase built during a lower phase’s Spell-Out will be visible for syntactic operations from above, including for movement and agreement, as we have seen. Ultimately, for the derivation to converge, the corresponding operator must be present and Agree with its particle(s), as discussed above, and the logical focus must be in the scope of the operator.

Further motivation for the timing of particle placement comes from opaque interactions between particle placement and subsequent, independent movement operations. For example, consider the Ishkashimi example in (96), where the object has scrambled over the subject and the subject bears the focus particle *məs*. Karvovskaya (2013) reports this sentence as “marked but somewhat acceptable” with sentence-focus interpretation, which we indicate with ?. The (relative) acceptability of (96) is puzzling given the strict leftmost requirement of anti-pied-piping particle placement in Ishkashimi (see (63)): the particle targets the subject in (96), which is not leftmost within the material that makes up the logical focus.

(96) **Ishkashimi** (cf 37) (Karvovskaya, 2013: 88)

?Xi dusto-i [wai mol]_{MSF} -**məs** ____ zənyu isu.
 REFL hands-ACC DEM husband-also wash come
 ‘[Her husband goes to wash his hands]_F, too.’

The possibility of (96) with its sentence-focus interpretation supports our proposal for the timing of particle placement (95). We take the sentence-focus construal to involve focus on the *vP* event description, which includes the base position of the subject as well as the object, which in turn contains a reflexive that must be bound by the subject. When the *vP* phase undergoes Spell-Out in (97a), the phase is first linearized in its basic SOV order, and then particle placement applies, targeting the leftmost constituent within the focus: the subject. Scrambling of the object then applies for independent reasons, in (97b), fronting the object across the subject to the phase edge, and potentially later to a higher position.

⁵³ We could imagine pursuing this line of argumentation further: Particles (and perhaps other elements), *must* adjoin late if introducing them early would lead to a problem for selection. See also footnote 51.

(97) a. At phasal Spell-Out, Late Adjoin particle to the leftmost sub-phrase in the focused ν P:
 $[_{\nu P} \text{ S-PRT } O \text{ V }]_F$

b. Independently scramble object across subject:

$O \text{ S-PRT } \text{ ____ } V$


A similar interaction is also reported for Japanese. Consider example (98), where the object is marked with the focus particle *dake*, and has been fronted across the subject. Kotani (2009) shows that examples of this form allow for a predicate-focus interpretation, as given in (98).

(98) **Japanese**

(based on Kotani, 2009: 30)

[Huro]_{MSF}-**dake** Takuya-wa ____ wakasi-ta.

bath -only Takuya-TOP heat-PST

‘Takuya only [heated up a bath]_F.’

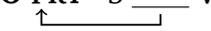
Recall that Japanese allows optional anti-pied-piping in predicate focus (see (29)), with particle placement targeting a proper subpart of the VP. On the surface, however, the constituent targeted by particle adjunction in (98) is not a subpart of the logical focus, i.e. the VP.⁵⁴

Such examples are also accounted for straightforwardly under our proposal. We begin by linearizing the ν P phase, including the base position of the subject, when it undergoes Spell-Out in (99a). Particle adjunction here optionally targets a subpart of the focus, resulting in anti-pied-piping particle placement on the object. Subsequent movement operations, as in (99b), may target the resulting particle phrase.

(99) a. At phasal Spell-Out, Late Adjoin particle within the focused VP:

$[_{\nu P} \text{ S } [_{VP} \text{ O-PRT } V]_F]$

b. Scramble object particle phrase across subject:

$O-PRT \text{ S } \text{ ____ } V$


Notice that we cannot explain such examples by appeal to post-syntactic lowering (see e.g. Embick & Noyer, 2001). Such an approach may posit that particles are first adjoined directly to their logical focus but then lower after the end of the syntactic derivation onto its surface host. Contrary to fact, we would then expect movement of an object to a position higher in the clause to bleed particle placement in cases such as (98), or to feed particle placement on the object

⁵⁴ Dash & Datta (2022) show this same interaction to hold in Hindi-Urdu and Bangla as well.

that becomes the leftmost constituent within the focus as in the Ishkashimi (96). In contrast, the theory developed here, which interleaves particle placement and movement operations, derives the attested counterbleeding and counterfeeding patterns above.

4.5 Argument/adjunct asymmetries

The empirical landscape laid out in section 3 was restricted, in that the patterns of anti-pied-piping consistently involved core arguments, without adjuncts. While this is in part a function of the sources from which our survey was built, there is evidence from some languages that suggests that there is a systematic asymmetry between arguments and adjuncts in anti-pied-piping.

Consider the Japanese examples in (100) below. Aoyagi (1998) and Ohno (2003: 317–318) independently observe that when the focus particle appears on an object, as in (100a), both narrow focus and anti-pied-piping predicate focus readings are available, while in (100b), when the focus particle appears on an adverbial, only a narrow focus reading is available.

(100) **Japanese** (Aoyagi, 1998: 175)

- a. Iti-niti san-kai [kusuri]_{MSF}-**mo** non-da.
 one-day three-times medicine -also drink-PST
 i. ‘(He) also took [medicine]_F three times a day.’
 ii. ‘(He) also [took medicine three times a day]_F.’
- b. [Iti-niti san-kai]_{MSF}-**mo** kusuri-o non-da.
 one-day three-times-also medicine-ACC drink-PST
 i. ‘(He) even took medicine [three times a day]_F’.
 ii. *‘(He) also [took medicine three times a day]_F.’

Kenesei (1998a) observes a similar asymmetry between arguments and adjuncts in Hungarian focus movement. Although the object can be fronted to the preverbal focus position to express predicate focus — as in example (7), repeated here as (101a) — an adverb such as *hangosan* ‘aloud’ in the focus position as in (101b) is only compatible with narrow focus on the adjunct.

(101) **Hungarian** (Kenesei, 1998a: 77)

- a. Péter [a Hamletet]_{MSF} olvasta fel a kertben.
 Peter the Hamlet.ACC read VM the garden.INE
 ‘Peter [read out Hamlet in the garden]_F.’ =(7)

- b. Péter [hangosan]_{MSF} olvasta fel a Hamletet.
 Peter aloud read VM the Hamlet.ACC
- i. ‘Peter read out Hamlet [aloud]_F.’
- ii. *‘Peter [read out Hamlet aloud]_F.’

Hyman & Polinsky (2010) discuss a similar argument/adjunct asymmetry in the interpretation of the Immediately After the Verb (IAV) focus position in Aghem. With the object in IAV position, narrow object focus and predicate focus interpretations are both possible. However, if an adjunct occupies the IAV position, only a narrow adjunct focus reading is available. If we analyze the IAV position in Aghem as involving movement to a dedicated position, these facts clearly parallel that in Hungarian, with the predicate focus examples being another instance of anti-pied-piping.

The theory developed here — in which particle placement takes place at punctuated points in the derivation — allows us to account for this asymmetry, based on an approach to the argument/adjunct asymmetry proposed by Lebeaux (1988, 1991) and in much subsequent work. On this approach, adjuncts but not arguments can be introduced into the clause via Late Adjunction, perhaps later during cyclic Spell-Out (see footnote 51). This may offer a way of understanding the impossibility of adjunct anti-pied-piping: the adjunct is not present in the structure at the point of *vP* Spell-Out, when particles for predicate focus are adjoined. Since these elements are not present, they cannot be targeted for particle adjunction. We leave a fuller investigation of such argument/adjunct contrasts and their consequences for derivational timing for future work.

5 Alternative analyses

We briefly discuss alternative analyses for anti-pied-piping patterns in both particle placement and phrasal movement. The first treats a subpart of the logical focus as carrying a separate, marked information-structural status. The second treats apparent anti-pied-piping as the result of independent movements out of the logical focus. We will see that these explanations may account for a limited set of anti-pied-piping examples, but they fail to explain the wide-spread possibility of anti-pied-piping and its cross-linguistic tendencies, which our proposal explains.

5.1 Nesting

We first discuss the possibility that anti-pied-piping may involve structures where a subpart of the logical focus independently bears a marked information-structural status. We first observe that it is possible to nest a narrow focus within a larger focus, as discussed in work such as Krifka 1991 and Neeleman & Szendrői 2004 and illustrated in (102). For expository purposes, we annotate the two foci F1 and F2.

(102) **Nested foci:** (based on Krifka, 1991: 131)

Ted was behaving strangely at last night’s party. At one point, he went back to his room to take a nap. He **also** [drank **only** [water]_{F1} (all night)]_{F2}. I wonder if he’s feeling ok.

In (102), we can detect the semantic contribution of two overt focus particles, each with their expected semantics: *only* associates with *water* (F1), contrasting with other beverages available at the party, while *also* associates with the entire VP (F2), contrasting with going to take a nap.

Now suppose we have a structure with nested foci akin to (102) but where overt focus morphology applies only to the embedded focus F1 and a focus-sensitive semantics is clearly detectable only in relation to F2. This would lead to the appearance of anti-pied-piping. However, under this approach we expect the syntax/semantics associated with the embedded focus F1 to be independent of the syntax/semantics associated with the larger focus F2, just as we observe in (102) above. Instead, in focus particle anti-pied-piping, we observe that the choice of overt focus particle (by hypothesis, adjoined to and narrowly associating with F1) correlates with the semantics that associates with the higher focus (F2). The Japanese examples in (103) with predicate focus interpretation illustrate this correlation between particle form and interpreted semantics.⁵⁵

(103) **Semantics associated with wide focus correlates with embedded particle choice:**

- | | |
|---|---|
| a. Taro-ga [tako] _{MSF} - mo tabe-ta.
Taro-NOM octopus -also eat-PST
‘Taro also [ate octopus] _F .’ = (29b) | b. Taro-ga [tako] _{MSF} - dake tabe-ta.
Taro-NOM octopus -only eat-PST
‘Taro only [ate octopus] _F .’ |
|---|---|

⁵⁵ A further complication for analyzing examples such as (103a,b) as involving nested foci is the fact that the particle’s semantics is not interpreted as associating with its sister at all. That is, additive ‘also’ semantics applies to the predicate *instead of* — rather than *in addition to* — the object in (103a), and *mutatis mutandis* with exclusive ‘only’ semantics in (103b). The sentences in (103) also allow for narrow object focus interpretations.

Such correspondences are unexpected if apparent anti-pied-piping is generally attributed to the availability of nested foci, and instead motivate our own operator–particle proposal, where a syntactic dependency (Agree) ensures a correlation between the choice of overt particle and the choice of semantically contentful but unpronounced operator above.

Next we turn to cases of anti-pied-piping in phrasal movement without overt particle placement. Such examples appear to be more amenable to a nesting analysis: as long as a subpart of the focus has some marked information-structural status (as a “focus” or otherwise) and the language has a process that fronts such material, it may be moved out of the larger interpreted focus. This may be a loose pragmatic notion such as “emphasis,” which has been associated with fronting in many languages (see e.g. Frey, 2010).⁵⁶ It is difficult to rule out the possibility, suggested by a reviewer, that some such pragmatically-motivated movement may underly some of our examples of movement anti-pied-piping in section 3.3, especially as the descriptions of the relevant pragmatic notions (see footnote 56) are in many cases not precise enough to confidently determine whether they apply narrowly to the fronted constituent or to the larger focus as a whole.

There are, however, at least two considerations that cast doubt on the idea that movement anti-pied-piping is generally due to the fronting of an embedded, independently pragmatically marked constituent. First, under this type of nesting account, the requirement in many languages for anti-pied-piping to target a leftmost subpart of the logical focus (discussed in further detail in section 6) goes unexplained; in principle, any subpart of the logical focus may be subject to “emphasis,” depending on the speaker’s communicative goals. Second, anti-pied-piping in both particle placement and phrasal movement is generally not described as semantically or pragmatically marked as compared to non-anti-pied-piping constructions,⁵⁷ and in particular is to our knowledge never described as licensed only in a particular, more complex discourse structure.

⁵⁶ The relevant notion has also been described, for different languages, as “newsworthiness” (Mithun, 1992), “emphasis for intensity” (Beltrama & Trotzke, 2019), “unexpectedness” or “mirativity” (Cruschina, 2012; Bianchi et al., 2016), or being “surprising” (Hartmann & Zimmermann, 2007b). Comparing such pragmatically-motivated fronting across different languages, Cruschina 2021 describes subtle differences in their felicitous contexts of use. Thus, these various labels given by different scholars in relation to fronting in different languages may (at least in part) reflect true differences in the pragmatics of these constructions.

⁵⁷ One exception is Fanselow & Lenertová (2011), who describe the invocation of anti-pied-piping as “more ‘emphatic’” but then note that “this emphasis affects the predicate as a whole and never the fronted part of the predicate alone” (p. 179), undermining a potential nesting account.

Furthermore, in cases where the semantics associated with fronting is clearer and more precisely described, we are able to construct forceful arguments against this type of nesting account for anti-pied-piping. This is the case for movement to the preverbal focus position in Hungarian (see footnote 1). As Surányi (2018: 248–249) discusses, the exhaustive identificational semantics associated with focus movement in Hungarian applies to the entire logical focus in anti-pied-piping examples, and not narrowly to the constituent that is moved to the preverbal focus position. This is unexpected under a nesting analysis, where the observed focus fronting should constitute an independent focus movement of the embedded focus, with its associated conventional semantics, and would not lead to that same semantics instead applying to the larger focus.

We conclude that the availability of information-structural nesting — with a subpart of the larger focus being an independent narrow focus or having some other marked pragmatic status — fails to provide a general explanation for patterns of anti-pied-piping in both particle placement and phrasal movement.

5.2 Movement out of the focus

Next we discuss the possibility that anti-pied-piping mismatches are only apparent, due to independent movements out of the focused constituent that make focus morphosyntax appear to target only a subpart thereof.

This hypothesis is articulated most clearly for focus particle anti-pied-piping in Japanese by Kotani (2008, 2009). Consider the case of anti-pied-piping in predicate focus in (104). Kotani proposes that the particle adjoins directly to its logical focus (VP), but the verb then optionally moves out of the VP to T in order to form the verbal complex. This results in the appearance of object attachment, as schematized in (105) below. If this movement does not take place, the focus particle stays transparently adjacent to its focus, with a process akin to *do*-support taking place to host the tense affix, as attested in (29a) above.

(104) **Anti-pied-piping in Japanese predicate focus:** = (29b/103a) (Ohno, 2003: 324)

Taro-ga [tako]_{MSF}-**mo** tabe-ta.
 Taro-NOM octopus -also eat-PST
 ‘Taro also [ate octopus]_F.’

(105) S [_{VP} O t_V]_{F-PRT} V-T
 ↑

Movement out of the pronounced particle's sister could also explain the anti-pied-piping pattern in the English example (106), where preverbal *only* — which must associate with its sister or a subpart thereof (Jackendoff, 1972; Erlewine, 2014) and which we analyze as the realization of the operator (see (73)) — associates with the entire proposition.

(106) The judge **only** sent you to prison; your wife didn't leave you too.

(McCawley, 1970: 296)

Assuming that the subject *the judge* originated within *vP* and moved out (see footnote 34), we may straightforwardly think of this as a case of *only* associating with the content of its sister *vP* with the subject reconstructed (Kayne, 1998: 159 fn. 75; Erlewine, 2014: 82). Krifka (1991: 142–143) offers a similar analysis for cases of German predicate focus, where a portion of the VP has moved out of the surface sister of a focus particle.⁵⁸

However, such cases where anti-pied-piping patterns can be fully attributed to the effects of independently motivated movements are few and far between. For example, returning to Japanese, the approach in (105) above fails to naturally extend to other examples such as cases of anti-pied-piping in sentence focus, which Kotani does not discuss. To explain the word order in examples such as (107), not only the verb but also the object would have to move descriptively to the right, which has no independent motivation in the language.⁵⁹

(107) **Anti-pied-piping in Japanese sentence focus:** = (65a)

[Taro]_{MSF}-**mo** piano-o hii-ta.

Taro -also piano-ACC

‘[Taro played piano]_F, too.’

(based on Aoyagi 1998: 151, 2006: 123)

Fanselow (2004: 29–35) similarly discusses anti-pied-piping in phrasal movement as involving remnant movement, i.e. with some material independently moving out of the logical focus before it undergoes movement, but concludes that such an approach is not feasible as the necessary

⁵⁸In addition, as a reviewer notes, anti-pied-piping in the Grassfields language Awing includes cases involving a particle ('only' *tsʒ'ə* as in example (31)) for which our core proposal may apply, but also cases involving a structurally rigid operator *lɔ* with verb movement out of a focused VP, akin to what we schematize in (105). See discussion in Fominyam & Šimík 2017: 1064–1065.

⁵⁹But see also Kayne 1998 for extensive discussion of deriving subsentential focus particle positions in English via a series of otherwise unmotivated movements, although he does not discuss anti-pied-piping.

movements are otherwise unattested. In contrast, our operator–particle theory does not require an overt particle to take the logical focus as its sister at any point in the derivation, avoiding the need to hypothesize such otherwise unmotivated movements.

This alternative approach to anti-pied-piping mismatches also faces difficulty with focus particle constructions involving multiple exponence. Recall that focus particles can appear multiply in anti-pied-piping, as in (81) above, and that subsentential particles and their corresponding operators can be pronounced simultaneously in some languages, as in (86) and discussed further in footnote 35. Such examples are also modeled straightforwardly in the operator–particle theory.

6 Particle placement and left-alignment

We now return to the question of how languages determine which sub-constituent of the focus to target for focus particle placement and/or movement in anti-pied-piping. We saw in section 3.4 that anti-pied-piping in many languages exhibits a leftmost effect: MSF often targets the leftmost sub-phrase of the logical focus, with some variation in the strength of this requirement. In this section, we discuss this aspect of anti-pied-piping in further detail. We motivate a general description for such leftmost requirements which will relate particle position to phrasal stress assignment in stress languages, but which also extends to languages without phrasal stress. We then show how this description naturally explains certain parallels between pied-piping and anti-pied-piping behavior.

6.1 Exceptions to leftmost requirements

Our starting point is the observation that there appears to be a common class of exceptions to the leftmost requirements described above: Certain nominals — roughly corresponding to those that are indefinite, given, or less informative — are skipped for the evaluation of “leftmost.” We illustrate this first with Czech focus fronting: for sentence focus, object fronting is blocked across the subject *Linda* in (108a), but is allowed across an indefinite subject in (108b). Example (108a) can only be interpreted with narrow focus on the object instead.

(108) **Czech** (Radek Šimík, p.c., based on Lenertová & Junghanns, 2007: 356)

Q: What's new?

a. # [Janu]_{MSF} **Linda** hledala ____.

Jana.ACC Linda.NOM looked.for.SGF

Intended: '[Linda was looking for Jana]_F.'

b. [Janu]_{MSF} **někdo** hledal ____.

Jana.ACC somebody.NOM looked.for.SGM

'[Somebody was looking for Jana]_F.'

Similar facts are reported for German, where the effect has been studied experimentally by Féry & Drenhaus (2008) and Wierzba & Fanselow (2020). Here we present the results of an acceptability rating study in Féry & Drenhaus 2008. In this experiment, participants were asked to rate audio recordings of question-answer pairs on a 1–6 scale, where 6 is most natural. Example (109) is one representative set of stimuli to test the acceptability of object fronting in a sentence-focus context, with accented words in smallcaps. Notice that the subject is a pronoun in (109a), an unaccented DP in (109b), and an accented DP in (109c). In all cases, the fronted object was accented. The numbers on the right correspond to average ratings for each condition exemplified by the item at left.

(109) **German** (Féry & Drenhaus, 2008: 24–25)

Q: Why are your neighbors complaining?

a. [Die MIETE]_{MSF} haben **sie** wieder mal ____ erhöht. 5.5/6

the rent have they again once raised

b. [Die MIETE]_{MSF} hat **der Hauswirt** wieder mal ____ erhöht. 4.8/6

the rent has the landlord again once raised

c. [Die MIETE]_{MSF} hat **der HAUSWIRT** wieder mal ____ erhöht. 2.2/6

the rent has the landlord again once raised

'[They/the landlord raised the rent once again]_F.'

The results reflect a clear and statistically significant difference between these conditions (see Féry & Drenhaus, 2008: 25–26 fn. 10): object fronting is highly degraded across an accented subject (109c) but acceptable across a pronominal subject (109a) or otherwise deaccented subject (109b), which may be interpreted as being given under accommodation.

We observe a similar effect in Japanese, where overt particle placement manifests anti-pied-piping. Recall that for sentence focus in Japanese, the particle *mo* could be placed on the subject or object, as we saw in (65) above. In (110), we have modified example (65) so that the subject is indefinite. Speakers then disprefer the placement of the particle on the indefinite subject.⁶⁰

(110) **Japanese** (based on (65) above from Aoyagi 1998, 2006)

At yesterday’s party, not only did Hanako dance a dance, but...

- | | |
|---|--|
| a. # [dareka] _{MSF} - mo piano-o hii-ta.
someone-also piano-ACC play-PST
‘[someone played piano] _F , too.’ | b. dareka-ga [piano] _{MSF} - mo hii-ta.
someone-NOM piano-also play-PST
‘[someone played piano] _F , too.’ |
|---|--|

These contrasts show that a certain class of elements are skipped for the evaluation of leftmost requirements. Furthermore, these elements — which are indefinite, given, or less informative — form a natural class in that they avoid phrasal stress in stress languages. This suggests a connection between the process of particle placement and phrasal stress assignment.

6.2 Two stress-based hypotheses

In this section, we consider proposals for particle placement that explicitly make reference to stress information, motivated by the data above.⁶¹ We will however conclude that such approaches are inadequate in the general case, especially considering the possibility of anti-pied-piping in languages without phrasal stress. This sets the stage for our own proposal, in section 6.3, which maintains the connection to stress assignment discussed here, but also extends to languages without phrasal stress.

Recall that we have already proposed that particle placement takes place during cyclic Spell-Out (§4.4), and therefore can make reference to information associated with *Phonological Form* (PF) including linear order and prosodic structure. This architecture allows for Hypothesis 1 in (111).

⁶⁰ We report the contrast in (110) based on the judgments of eight native speakers of Japanese. Hoshi (2008: 26) similarly observes that anti-pied-piping particle placement in Japanese cannot target a leftmost but given and non-contrastive pronoun. Vydrina (2020: 520–521) describes similar interactions in anti-pied-piping particle placement in Kakabe.

⁶¹ In his discussion of focus particle syntax, Bayer (1996: 14) interestingly claims, “the only requirement seems to be that [focus particles] attach to a [+max] category which is able to bear stress,” foreshadowing the connection to stress which we discuss here.

(111) **Hypothesis 1 for particle placement given stress information:**

Particle placement in anti-pied-piping targets the phrase that bears main stress within the focus.⁶²

This description is conceptually attractive as it relates anti-pied-piping to the phenomenon of *focus projection*, which relates the positions of main prosodic prominence and logical focus. (See Arregi 2016 for an overview.) Indeed, a number of previous authors have suggested an explicit comparison or explanatory link between the process of focus projection and anti-pied-piping; we are aware of such discussions in Zsámboki 1995, Choe 2002, Szendrői 2003, Fanselow 2004, Yoshimura 2007, Schwarz 2007b: 147–149, Kotani 2009, and Karvovskaya 2013.

However, one immediate challenge for Hypothesis 1 comes from cases where the target of MSF is clearly not the most prominent. Consider the case of predicate focus in German ditransitive clauses, as in (67) above. As noted in Fanselow 2004: 23 and Fanselow & Lenertová 2011, both objects in such cases receive pitch accents, but it is the second object (the goal) that bears a more prominent pitch accent. Nonetheless, it is the first (leftmost) object that is targeted for anti-pied-piping as in (67). Another concrete challenge comes from patterns of anti-pied-piping in Japanese transitive clauses with sentence focus. As discussed in Ishihara 2000, 2001 and Sato 2012b, nuclear stress in Japanese generally targets the immediately preverbal phrase. Nonetheless, as shown in (65) above, MSF may target either the subject or the object, with some speakers in fact preferring subject placement (see footnote 28). See also Kahnemuyipour & Megerdooian 2017 for explicit arguments against tying focus particle position to main stress in Eastern Armenian, although without discussion of anti-pied-piping.

Given these issues, we turn to Hypothesis 2 (112), which does not target the main stress and also allows for the observed cross-linguistic variation in the strength of leftmost effects.⁶³

(112) **Hypothesis 2 for particle placement given stress information:**

Particle placement in anti-pied-piping targets {the leftmost / preferably the leftmost / any} accented sub-phrase of the focus.

⁶² For this hypothesis, cases of apparent optionality would have to be described as fed by independent manipulations in the choice of main stress placement.

⁶³ Fanselow & Lenertová (2011) propose what may be thought of as a particular version of Hypothesis 2 (112). Specifically, to capture patterns of anti-pied-piping in focus movement of the form in Czech and German above, they propose a ban on the movement of an accent-bearing phrase across another accent-bearing phrase. The leftmost condition and its

An immediate challenge that affects Hypothesis 2 (as well as Hypothesis 1) comes from the possibility of anti-pied-piping in languages that do not utilize accents or stress, unlike many of the languages discussed thus far. One such example is Hausa, a tone language that lacks accents of the relevant sort, and where focus is not generally prosodically marked.⁶⁴ Nevertheless, Hausa demonstrates anti-pied-piping behavior similar to that in other languages with stress and/or accent. Sentence focus may be expressed by fronting the subject before the focus marker *nèe*, as in (113a). However, in certain circumstances, as in (113b), the object is fronted instead; it is further noted that fronting the subject in (113b) is not an available option.

(113) **Hausa** (Hartmann & Zimmermann, 2007b: 385)

- a. [B'àràayii]_{MSF} **nèe** ____ su-kà yi mîn saatàa!
 robbers FM 3PL-REL.PRF do to.me theft
 '[Robbers have stolen from me]_F!'
- b. [Dabboobi-n jeejii]_{MSF} **nee** mutàanee su-kà kaamàa ____.
 animals-of wild FM men 3PL-REL.PRF catch
 '[The men caught wild animals]_F!'

The argument skipped for the evaluation of leftmost in (113b) again seems to be of the sort that is skipped in Czech, German, and Japanese above: one which is indefinite, given, or less informative.⁶⁵

exceptions as in Czech (108) and German (109) arise naturally from this constraint: in most cases, the leftmost subpart of the focus is accented, thereby blocking movement of another subpart across it, but when the leftmost subpart is deaccented (either because it is pronominal or because it is given or uninformative), movement across that element is allowed. This description however does not explain leftmost restrictions on the placement of particles with anti-pied-piping as in Yaeyaman and Ishkashimi (see §3.4), and in particular cannot explain the parallels between restrictions on particle placement as in the Japanese in (110) and focus movement in Czech and German here above.

⁶⁴ Leben, Inkelas & Cobler (1989) note a tonal phenomenon involving raising of H tones involving preverbal constituents, which naturally include focus-fronted objects. While Hartmann & Zimmermann (2007b) suggest that this tonal phenomenon is a reflex of focus marking, it is equally conceivable that this is a result of the phonological phrasing generally enforced on preverbal arguments in the language, independent of considerations of focus. Postverbally, focused and non-focused constituents are not prosodically distinguished.

⁶⁵ Hartmann & Zimmermann (2007b: 385) suggest that the choice of movement target reflects what is most “interesting or surprising,” but it is not clear for example why ‘robbers’ would be particularly surprising in a context where stealing is reported. See section 5.1 for a more general critique of such explanations for anti-pied-piping behavior.

Among other languages that demonstrate anti-pied-piping discussed here, Schwarz (2009) shows that, in the Oti-Volta Gur languages described above (see (32) and (44)), there are no prosodic effects of focusing. Focus is also not reflected prosodically in Wolof (see (60)) (Rialland & Robert, 2001).

We see that anti-pied-piping behavior with leftmost effects — including its familiar exceptions — may be observed in languages such as Hausa that lack phrasal accents and do not prosodically realize focus. This suggests that the cross-linguistically common leftmost effect in anti-pied-piping should not be described as parasitic on surface phonological information such as accent or stress, but should instead rely on a more abstract representation that might feed subsequent phonological processes.

6.3 Proposal: • assignment and left-alignment

We put forward a theory that takes Hypothesis 2 above to be on the right track — that in languages with phrasal stress, anti-pied-piping particle placement appears to target the leftmost accented subphrase of the focus — but without making reference to stress or accents in the general case. We suggest that particle placement is sensitive to the same information that languages with phrasal stress use to determine which elements receive stress and which do not. For expository purposes, we refer to this information as •-marking (read: *bullet*), a rule for which is given below in (114).

(114) • assignment:

At phasal Spell-Out, assign a • to each phrase that is not a part of the extended projection that contains the phase head.

Our rule for •-marking in (114) draws on a long line of work arguing that information relevant for nuclear stress determination is assigned cyclically throughout the derivation (see e.g. Bresnan, 1971, 1972; Legate, 2003; Adger, 2007; Kahnemuyipour, 2009; Sato, 2012b; Richards, 2018). Although these prior works differ in the details of this process, •-marking and the rule in (114) are meant to be theory-neutral abstractions standing in for what its proper characterization turns out to be.⁶⁶

⁶⁶ For the discussion that follows we take these rules to be language-invariant. However, we could imagine that variation in the prosodic systems of different languages might be reflected in differences in their rules for •-marking, leading to differences in particle placement patterns, as suggested by a reviewer. We think that an investigation along these lines is in order, and hope to pursue it in future work, but set this question aside for now.

Importantly for our current purpose, ●-marking is abstract in a way that phrasal stress in and of itself is not. ● assignment may subsequently feed the application of a realization rule like that in (115) — giving rise to what we would call a language with phrasal stress — but, crucially, ● assignment takes place independent of the existence of such a rule in a language. In languages like Hausa, for instance, ● assignment takes place, but there is no rule like that in (115).⁶⁷

(115) ● **realization:**

Each element marked with ● is realized with phonological prominence.

We can now put forward our general statement for particle placement, in (116), which makes reference to a ●-relativized notion of left-alignment, defined in (117).⁶⁸

(116) **Particle placement:** (revised; subsumes (95))

During phasal Spell-Out, Late Adjoin the particle to a phrase that {is ●-left-aligned / is preferably ●-left-aligned / overlaps} with the logical focus.

(117) ●-**relativized left-alignment:**

X and Y are ●-*left-aligned* if the leftmost ●-marked phrase in X and the leftmost ●-marked phrase in Y are left-aligned.

We will leave as an open question whether or not a language's choice between the strong, weak, or free variant of (116) can be predicted by independent properties of the language.

As we have seen earlier in this section, certain types of phrases are cross-linguistically commonly skipped for the determination of particle placement.⁶⁹ We propose that these elements resist ●-marking:

(118) ● **avoidance:**

Indefinite, given, or less informative elements are not assigned a ●.

⁶⁷ A reviewer suggests that ●-marking may be relevant for prosodic phrasing in Hausa, following Féry 2013, although the language does not employ stress.

⁶⁸ As we also emphasize elsewhere, our proposal for particle placement may also fruitfully explain the distribution and syntax of other items beyond conventional focus particles. For example, Wu (to appear) shows that in English disjunction, *either* may adjoin to the leftmost contrasting phrase within a left disjunct, which may be explained by (116).

This rule explains why these exceptional elements are commonly destressed or deaccented: (118) bleeds (115). However, the calculation of • assignment is independent of the presence of a realization rule such as (115), explaining the availability of similar leftmost effects in languages without phrasal stress such as Hausa.

6.4 Pied-piping and anti-pied-piping

Recall that the operator–particle theory that we propose allows for the derivation of pied-piping patterns as well as anti-pied-piping. In this section, we show that our proposal for particle placement above — motivated by the leftmost effects observed in anti-pied-piping — can also account for observed restrictions on pied-piping. This further supports our account, which views pied-piping and anti-pied-piping as a unified phenomenon.

Pied-piping in many languages also exhibits a form of leftmost requirement. For instance, as shown in (119), pied-piping in English interrogative *wh*-movement requires the logical focus — the locus of variation across semantic alternatives, i.e. the *wh*-word — to be at the left edge of its pied-piped constituent. The pair in (120) furthermore shows that the restriction is sensitive to linear position, rather than depth of embedding.

(119) **Leftmost requirement in English pied-piping:**

- a. [*Whose* picture] did you frame ____?
- b. * [A picture of *whom*] did you frame ____?

(120) a. [[[*Whose* brother]’s friend]’s father] did you see ____?

- b. * [The father of [[*whose* brother]’s friend]] did you see ____?

(Kotek & Erlewine 2016: 687 based on Cable 2012: 823)

⁶⁹ We may wonder what happens if there is not a valid host for particle placement (cliticization) that aligns with the logical focus. Such a situation appears to come about in many languages in cases of narrow focus on the lexical verb, leading to a range of different responses. In Tangale, narrow focus on the verb is expressed with particle placement on an object, if present (see (33c) above); otherwise, the language employs an altogether different strategy for marking narrow focus on intransitive verbs (Hartmann & Zimmermann, 2007a: 106–107). In cases of narrow focus on intransitive verbs, particle placement is simply disallowed in Ishkashimi (Karvovskaya, 2013: 89 fn. 8), but in the related language of Turkish, the verb itself may host the focus particle (Kamali & Karvovskaya, 2013: 182 exx. 2d–e). In Yaeyaman, an objectless verb may host a focus particle itself, but speakers seem to prefer to insert a vacuous manner adjunct to serve as the host (Davis, 2013: 38 exx. 19–20). We leave a full survey of such responses as a topic for future research.

We propose that this behavior can also be explained by our proposal for particle placement in (116) above. In the case of pied-piping, a particle adjoins to a constituent that *contains* the logical focus (here, the *wh*-word) and that is •-left-aligned with the *wh*-word. Consider (121a,b) below, which represent the base structures for (119) prior to particle adjunction at vP Spell-Out.

- (121) a. you frame [_{DP} *whose* picture]
 b. you frame [_{DP} a picture of *whom*]

In (121a), the constituent marked DP is •-left-aligned with the *wh*-word, so an unpronounced particle PRT can adjoin to it. Probing for the resulting particle phrase PRT + DP leads to what we describe as *wh*-movement with pied-piping, following the intuition for pied-piping developed in works such as Tanaka 1999, Horvath 2000, 2007, Watanabe 2006, and Cable 2007, 2010a,b. In contrast, in (121b), DP is not •-left-aligned with the *wh*-word and therefore cannot host a particle according to the strict formulation of (116).

Our rule for particle placement based on •-relativized left-alignment, developed above, also predicts that this leftmost requirement on pied-piping will tolerate certain exceptions, in allowing us to skip material that does not bear stress. This prediction is borne out. For example, in English, a light preposition like *to* may intervene between the left edge of the pied-piped constituent and the *wh*-phrase as in (122), but anything heavier such as a lexical noun as in (119b) and (120b) may not.

(122) **Not quite leftmost in English *wh* pied-piping:**

[To [*which*]_F student's friend]_{MSF} did you speak ____?

Exceptions of precisely this form are also tolerated in anti-pied-piping with Latin *que*, discussed in section 3.2 above. *Que* generally follows one word at the left edge of its logical focus, but similarly skips monosyllabic prepositions:

(123) **Not quite leftmost in Latin *que* anti-pied-piping:**

(Carlson, 1983: 73)

... [ob [eās]_{MSF}-**que** rēs]_F

because these-also things

‘... and [because of these things]_F, too’

The fact that these phonologically light elements are ignored for the evaluation of leftmost effects in both pied-piping and anti-pied-piping is a welcome consequence of our proposal for

particle placement (116) and its application to both pied-piping and anti-pied-piping mismatches. Recall from our discussion before that certain elements are consistently skipped for •-marking and thereby resist being stressed (118); we propose that these phrases headed by phonologically light prepositions similarly avoid •-marking. Their presence at the left edge will thus be ignored for the evaluation of •-left-alignment, allowing for the “not quite leftmost” pattern of pied-piping in (122) and anti-pied-piping in (123).

Not all instances of pied-piping are subject to this leftmost requirement. For example, Russian does not require interrogative *wh*-words to be left-aligned within their pied-piped constituents (124). Similarly, relative pronouns in English need not be left-aligned (125), unlike interrogative *wh*-words.

(124) **No leftmost requirement in Russian pied-piping:** (Heck, 2008: 79)
 Interesno [_{CP} [na sestře druga č’ej materi] on ženilsja ____].
 interesting on sister friend whose mother he married
 ‘I wonder whose mother’s friend’s sister he married.’

(125) **No leftmost requirement in English relative pronoun pied-piping:** (Ross, 1967: 198)
 Reports [_{RC} [the height of the lettering on the covers of *which*] the government prescribes ____] should be abolished.

Recall that our rule for particle placement allows for parametric variation. English *wh*-interrogatives require •-left-alignment between the *wh*-word and the target for particle placement (and hence, the target for movement), but Russian *wh*-interrogatives and (certain types of) English relative clauses do not. This distinction parallels the variation observed in anti-pied-piping particle placement, as discussed in section 3.4. In many languages such as Yaeyaman and Ishkashimi, particle placement must target the leftmost argument in cases of sentence focus (i.e. the subject), whereas in some languages such as San Martín Peras Mixtec, particle placement may target either the subject or the object. See Heck 2008 for further discussion of variation in pied-piping behavior.

In sum, we have shown that pied-piping also makes reference to the linear alignment of the logical locus of alternatives (*wh* or focus) and the target of MSF (here, movement), subject to significant cross-linguistic and cross-constructural variation. This aspect of pied-piping clearly echoes the observed variation in the leftmost requirements on anti-pied-piping. We showed that our proposal for particle placement in (116) successfully derives these left-alignment effects in

both pied-piping and anti-pied-piping, as well as their exceptions. The success of this extension further strengthens our view that pied-piping and anti-pied-piping mismatches should be thought of together as a unified phenomenon, reflecting different options for particle placement.

We leave open for future work the further investigation of constraints on the shape of pied-piping, and cross-linguistic and cross-constructural variation therein, from the perspective of our theory of particle placement.

7 Discussion and conclusion

The study of focus has featured prominently in linguistic theory, in part because choices of focus placement have consequences for interpretation, morphosyntax, and prosody, naturally leading to questions of grammatical architecture and modularity. In this paper, we have described cases of *anti-pied-piping*, a form of mismatch between the morphosyntax and semantics of focus where focus morphosyntax targets a proper subpart of the interpreted position of focus. Anti-pied-piping is quite widely attested cross-linguistically — with examples identified here in over 60 languages from 40 distinct subfamilies or genera — with some notable parallels to well-studied pied-piping behavior. In particular, both mismatches require alignment at the left edge between the logical focus and correspondingly morphosyntactically marked element in many languages.

We have argued that the details of anti-pied-piping behavior motivate a theory of particle placement in which particles are introduced into the syntactic structure independent of their corresponding semantic operator (the operator–particle theory), at certain punctuated points in the derivation (Spell-Out) where PF-branch information such as statements of linear order are accessible to the syntax. The cyclic Spell-Out model of grammar (Uriagereka, 1999; Chomsky, 2000, 2001, a.o.) adopted here allows us to account for certain opaque interactions between particle placement and scrambling, as well as to unify the anti-pied-piping behavior of overt focus particle placement with anti-pied-piping in focus movement, following previous work on the syntax of pied-piping.

These facts and the resulting theory developed here have important further consequences for the theory of grammar, especially regarding the nature and behavior of \bar{A} -movement. Following Tanaka 1999; Horvath 2000, 2007; Watanabe 2006; Cable 2007, 2010a,b, we take \bar{A} -movement to be movement of particle phrases built from a process of particle placement. The theory thus explains aspects of the classic A/ \bar{A} -distinction in terms of the timing of particle placement (see also

Safir, 2019): for instance, as particle placement takes place at phasal Spell-Out, we predict that a constituent cannot undergo \bar{A} -movement until a containing phase is complete and undergoes Spell-Out. Furthermore, if movement operations take place as soon as possible, all things being equal, we predict A-movement (movement not contingent on particle placement) to precede \bar{A} -movement.

In addition, in the final section we discussed parallels between particle placement position and positions of prosodic prominence, and sketched an approach to both sets of facts that indirectly derives their parallels. Again, as \bar{A} -movement is always movement of a particle phrase, we predict that \bar{A} -movement can only target phrases that can bear pitch accents in languages with phrasal accents, as has been independently motivated in work such as Cheung 2009 and Branan 2018. We explore these and other consequences of the proposal here in future work.

References

- Abels, Klaus & Peter Muriungi. 2006. The focus particle in Kĩĩtharaka. In *Papers on information structure in African languages* (ZAS Papers in Linguistics 46), 1–20.
- Abney, Steven. 1987. *The English noun phrase in its sentential aspect*: Massachusetts Institute of Technology dissertation.
- Aboh, Enoch O. 2006. When verbal predicates go fronting. In *ZAS papers in linguistics* 46, 21–48.
- Adger, David. 2007. Stress and phasal syntax. *Linguistic Analysis* 33(3-4). 238–266.
- Ameka, Felix K. 2010. Information packaging constructions in Kwa: Micro-variation and typology. In Enoch O. Aboh & James Essegbey (eds.), *Topics in Kwa syntax*, 141–176. Springer.
- Aoyagi, Hiroshi. 1998. *On the nature of particles in Japanese and its theoretical implications*: University of Southern California dissertation.
- Aoyagi, Hiroshi. 1999. On association of quantifier-like particles with focus in Japanese. In Masatake Muraki & Enoch Iwamoto (eds.), *Linguistics: In search of the human mind—a festschrift for Kazuko Inoue*, 24–56. Tokyo: Kaitakusha.
- Aoyagi, Hiroshi. 2006. *Nihongo no joshi to kinōhanchū [Particles and functional categories in Japanese]*. Hitsuji Syobo.
- Arregi, Karlos. 2016. Focus projection theories. In Féry & Ishihara 2016 185–202.
- Balogh, Kata & Reza Kazemian. 2021. The additive particle *ham* in Modern Persian. Presented at the 16th International Conference on Role and Reference Grammar.
- Barbiers, Sjef. 2010. Focus particle doubling. In Jan-Wouter Zwart & Mark de Vries (eds.), *Structure preserved: Studies in syntax for Jan Koster*, 21–30. John Benjamins.
- Barbiers, Sjef. 2014. Syntactic doubling and deletion as a source of variation. In M. Carme Picallo (ed.), *Linguistic variation in the minimalist framework*, 197–223. Oxford University Press.
- Bassi, Itai, Aron Hirsch & Tue Trinh. 2022. Pre-DP *only* is a propositional operator at LF: A new argument from ellipsis. Manuscript.
- Bayer, Josef. 1996. *Directionality and logical form: on the scope of focusing particles and wh-in-situ*. Kluwer Academic Publishers.
- Bayer, Josef. 2018. From the adjunction theory to the head theory of particles. Manuscript, Konstanz.
- Bayer, Josef. 2020. Why doubling discourse particles? In Ludovico Franco & Paolo Lorusso (eds.), *Linguistic variation: Structure and interpretation*, 47–72. de Gruyter.

- Bayer, Josef & Hans-Georg Obenauer. 2011. Discourse particles, clause structure, and question types. *The Linguistic Review* 28. 449–491.
- Bearth, Thomas. 1999. The inferential gap condition. *Pragmatics* 9(2). 249–280.
- Beltrama, Andrea & Andreas Trotzke. 2019. Conveying emphasis for intensity: Lexical and syntactic strategies. *Language and Linguistics Compass* 13(7).
- Bianchi, Valentina, Giuliano Bocci & Silvio Cruschina. 2016. Focus fronting, unexpectedness, and evaluative implicatures. *Semantics & Pragmatics* 9(3). 1–54.
- Bossi, Madeline & Michael Diercks. 2019. V1 in Kipsigis: Head movement and discourse-based scrambling. *Glossa* 4(65). 1–43.
- Branan, Kenyon. 2018. *Relationship preservation*: Massachusetts Institute of Technology dissertation.
- Branan, Kenyon. 2019. Nominals Agree with each other in Coahuilteco. Manuscript, National University of Singapore. <https://ling.auf.net/lingbuzz/004579>.
- Branan, Kenyon & Michael Yoshitaka Erlewine. 2021. Is there focus-marking in the syntax? Presented at GLOW 44. <https://mitcho.com/research/talk-focus-debate.html>.
- Branan, Kenyon & Michael Yoshitaka Erlewine. to appear. \bar{A} -probing for the closest DP. *Linguistic Inquiry* .
- Brasoveanu, Adridan & Anna Szabolcsi. 2013. Presuppositional *too*, postsuppositional *too*. In Maria Aloni, Michael Franke & Floris Roelofsen (eds.), *The dynamic, inquisitive, and visionary life of φ , $?\varphi$, and $\diamond\varphi$: A festschrift for Jeroen Groenendijk, Martin Stokhof, and Frank Veltman*, 55–64.
- Bresnan, Joan W. 1971. Sentence stress and syntactic transformations. *Language* 47(2). 257–281.
- Bresnan, Joan W. 1972. Stress and syntax: A reply. *Language* 48(2). 326–342.
- Bueno Holle, Juan José. 2016. *Information structure in Isthmus Zapotec*: University of Chicago dissertation.
- Büring, Daniel. 1997. *The meaning of topic and focus: The 59th street bridge accent*. Taylor & Francis Routledge.
- Büring, Daniel. 2015. Unalternative semantics. In *Proceedings of SALT 25*, 550–575.
- Büring, Daniel & Katharina Hartmann. 2001. The syntax and semantics of focus-sensitive particles in German. *Natural Language & Linguistic Theory* 19. 229–281.
- Cable, Seth. 2007. *The grammar of Q*: Massachusetts Institute of Technology dissertation.
- Cable, Seth. 2010a. Against the existence of pied-piping: Evidence from Tlingit. *Linguistic Inquiry* 41(4). 563–594.

- Cable, Seth. 2010b. *The grammar of Q: Q-particles, wh-movement, and pied-piping*. Oxford University Press.
- Cable, Seth. 2012. Pied-piping: Introducing two recent approaches. *Language and Linguistics Compass* 6(12). 816–832.
- Carlson, Greg N. 1983. Marking constituents. In Catherine Rudin, Frank Henry & Barry Richards (eds.), *Linguistic categories: Auxiliaries and related puzzles*, vol. 1, 69–98. Springer.
- Cheung, Lawrence Yam-Leung. 2009. Dislocation focus construction in Chinese. *Journal of East Asian Linguistics* 18. 197–232.
- Chierchia, Gennaro. 2006. Broaden your views: Implicatures of domain widening and the “logicality” of language. *Linguistic Inquiry* 37(4). 535–590.
- Chierchia, Gennaro. 2013. *Logic in grammar: Polarity, free choice, and intervention*. Oxford University Press.
- Choe, Jae-Woong. 1996. “-Man”-eu jakyongyeok jungeuseong [Scopal ambiguity of Korean particle *-man*]. *Korean Journal of Linguistics* 21(1–2). 673–692.
- Choe, Jae-Woong. 2002. Extended focus: Korean delimiter *man*. *Language Research* 38(4). 1131–1149.
- Chomsky, Noam. 2000. Minimalist inquiries: the framework. In Roger Martin, David Michaels & Juan Uriagereka (eds.), *Step by step: Essays on minimalist syntax in honor of Howard Lasnik*, 89–156. MIT Press.
- Chomsky, Noam. 2001. Derivation by phase. In Michael Kenstowicz (ed.), *Ken Hale: A life in language*, 1–52. MIT Press.
- Colley, Justin & Dmitry Privoznov. 2020. On the topic of subjects: Composite probes in Khanty. In Mariam Asatryan, Yixiao Song & Ayana Whitmal (eds.), *Proceedings of NELS 50*, 111–124.
- Collins, Chris. 1994. The factive construction in Kwa. In Claire Lefebvre (ed.), *Travaux de recherche sur le creole haitien*, 31–65. Université du Québec à Montréal.
- Constant, Noah & Chloe Chenjie Gu. 2010. Mandarin ‘even,’ ‘all’ and the trigger of focus movement. In Jon Scott Stevens (ed.), *Proceedings of PLC 33*, .
- Cruschina, Silvio. 2012. *Discourse-related features and functional projections*. Oxford.
- Cruschina, Silvio. 2021. The greater the contrast, the greater the potential: On the effects of focus in syntax. *Glossa: a journal of general linguistics* 6(3). 1–30.
- Dash, Bhamati & Madhumanti Datta. 2020. Focus anti-pied-piping in Bangla and Hindi-Urdu. Presented at FASAL 10.

- Dash, Bhamati & Madhumanti Datta. 2022. Focus anti-pied-piping in Bangla and Hindi-Urdu. In Ishani Guha, Sana Kidwai & Martha Schwarz (eds.), *Proceedings of FASAL 10*, .
- Davis, Christopher. 2013. Surface position and focus domain of the Ryukyuan focus particle *du*: Evidence from Miyara Yaeyaman. *International Journal of Okinawan Studies* 4(1). 29–49.
- Davis, Christopher. 2014. The role of focus particles in wh-interrogatives: Evidence from a Southern Ryukyuan language. *Proceedings of WCCFL 31* 124–133.
- Dobashi, Yoshihito. 2003. *Phonological phrasing and syntactic derivation*: Cornell University dissertation.
- Dobashi, Yoshihito. 2010. Computational efficiency in the syntax–phonology interface. *The Linguistic Review* 27(3). 241–260.
- Dryer, Matthew S. 1989. Large linguistic areas and language sampling. *Studies in Language* 13(2). 257–292.
- Dryer, Matthew S. 2013. Genealogical language list. In Matthew S. Dryer & Martin Haspelmath (eds.), *The world atlas of linguistic structures online*, Leipzig: Max Planck Institute for Evolutionary Anthropology. <https://wals.info/languoid/genealogy>.
- Eaton, Helen. 2002. *The grammar of focus in Sandawe*: University of Reading dissertation.
- Eaton, Helen. 2010a. Information structure marking in Sandawe texts. In Fiedler & Schwarz 2010 1–34.
- Eaton, Helen. 2010b. *A Sandawe grammar*. SIL International.
- Embick, David & Rolf Noyer. 2001. Movement operations after syntax. *Linguistic Inquiry* 32(4). 555–595.
- Erlewine, Michael Yoshitaka. 2014. *Movement out of focus*: Massachusetts Institute of Technology dissertation.
- Erlewine, Michael Yoshitaka. 2017. Vietnamese focus particles and derivation by phase. *Journal of East Asian Linguistics* 26(4). 325–349.
- Erlewine, Michael Yoshitaka. 2018. Extraction and licensing in Toba Batak. *Language* 94(3). 662–697.
- Erlewine, Michael Yoshitaka & Hadas Kotek. 2018. Focus association by movement: Evidence from Tanglewood. *Linguistic Inquiry* 49(3). 441–463.
- Erlewine, Michael Yoshitaka & Keely New. 2021. A variably exhaustive and scalar focus particle and pragmatic focus concord in Burmese. *Semantics & Pragmatics* 14(7).
- Fanselow, Gisbert. 2004. Cyclic phonology–syntax interaction: Movement to first position in

- German. In Shinichiro Ishihara, Michaela Schmitz & Anne Schwarz (eds.), *Interdisciplinary studies on information structure 1*, 1–42. University of Potsdam.
- Fanselow, Gisbert. 2006. The restricted access of information structure to syntax: A minority report. In Caroline Féry, Gisbert Fanselow & Manfred Krifka (eds.), *Interdisciplinary studies on information structure 6*, 205–220.
- Fanselow, Gisbert & Denisa Lenertová. 2011. Left peripheral focus: Mismatches between syntax and information structure. *Natural Language & Linguistic Theory* 29(1). 169–209.
- Fiedler, Ines & Anne Schwarz. 2005. Out-of-focus encoding in Gur and Kwa. In *Interdisciplinary studies on information structure 3*, 111–142.
- Fiedler, Ines & Anne Schwarz (eds.). 2010. *The expression of information structure: A documentation of its diversity across Africa*. John Benjamins.
- von Fintel, Kai. 1997. Bare plurals, bare conditionals, and *only*. *Journal of Semantics* 14. 1–56.
- Fominyam, Henry & Radek Šimík. 2017. The morphosyntax of exhaustive focus: A view from Awing (Grassfields Bantu). *Natural Language & Linguistic Theory* 35(4). 1027–1077.
- Forker, Diana. 2016. Floating agreement and information structure: The case of Sanzhi Dargwa. *Studies in Language* 40(1). 1–25.
- Forker, Diana & Oleg Belyaev. 2016. Word order and focus particles in Nakh-Daghestanian languages. In Jocelyne Fernandez-Vest & Robert D. Van Valin (eds.), *Information structuring of spoken language from a cross-linguistic perspective*, 239–261. De Gruyter Mouton.
- Fox, Danny & David Pesetsky. 2005. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31. 1–45.
- Frey, Werner. 2010. \bar{A} -movement and conventional implicatures: About the grammatical encoding of emphasis in German. *Lingua* 120(6). 1416–1435.
- Féry, Caroline. 2013. Focus as prosodic alignment. *Natural Language & Linguistic Theory* 31(3). 683–734.
- Féry, Caroline & Heiner Drenhaus. 2008. Single prosodic phrase sentences. In *Interdisciplinary studies on information structure 10*, 1–44.
- Féry, Caroline & Shinichiro Ishihara (eds.). 2016. *The Oxford handbook of information structure*. Oxford University Press.
- Hagstrom, Paul. 1998. *Decomposing questions*: Massachusetts Institute of Technology dissertation.
- Haiman, John. 1988. Incorporation, parallelism, and focus. In Michael Hammond, Edith A. Moravcsik & Jessica Wirth (eds.), *Studies in syntactic typology*, 303–320. John Benjamins.

- Halpern, Aaron L. 1995. *On the placement and morphology of clitics*. CSLI Publications.
- Harley, Matthew W. 2005. *A descriptive grammar of Tuwuli, a Kwa language of Ghana*: SOAS University of London dissertation.
- Hartmann, Katharina, Peggy Jacob & Malte Zimmermann. 2008. Focus asymmetries in Bura. In Shinichiro Ishihara, Michaela Schmitz & Anne Schwarz (eds.), *Interdisciplinary studies on information structure 8*, 45–92.
- Hartmann, Katharina & Malte Zimmermann. 2007a. Focus strategies in Chadic: The case of Tangale revisited. *Studia Linguistica* 61(2). 95–129.
- Hartmann, Katharina & Malte Zimmermann. 2007b. In place – out of place? Focus in Hausa. In Schwabe & Winkler 2007 365–405.
- Heck, Fabian. 2008. *On pied-piping: wh-movement and beyond*. Berlin: Mouton de Gruyter.
- Hedding, Andrew. 2019. New information and the grammar of focus: Evidence from San Martín Peras Mixtec. Manuscript, UC Santa Cruz.
- Heim, Irene. 1998. Anaphora and semantic interpretation: A reinterpretation of Reinhart’s approach. In Uli Sauerland & Orin Percus (eds.), *The interpretive tract*, 205–246. MIT Working Papers in Linguistics.
- Heim, Irene & Angelika Kratzer. 1998. *Semantics in generative grammar*. Malden, Massachusetts: Blackwell.
- Herburger, Elena. 2000. *What counts: focus and quantification*. MIT Press.
- Hermon, Gabriella. 1984. *Syntactic modularity*. Foris.
- Herrmann, Annika. 2013. *Modal and focus particles in sign languages: A cross-linguistic study*. Walter de Gruyter.
- Hirsch, Aron. 2017. *An inflexible semantics for cross-categorical operators*: Massachusetts Institute of Technology dissertation.
- Hole, Daniel. 2013. Focus particles and related entities in Vietnamese. In Daniel Hole & Elisabeth Löbel (eds.), *Linguistics of Vietnamese: an international survey*, 265–303. de Gruyter.
- Hole, Daniel. 2017. A crosslinguistic syntax of scalar and non-scalar focus particle sentences: the view from Vietnamese and Chinese. *Journal of East Asian Linguistics* 26. 389–409.
- Horvath, Julia. 1981. *Aspects of Hungarian syntax and the theory of grammar*: University of California at Los Angeles dissertation.
- Horvath, Julia. 2000. Interfaces vs. the computational system in the syntax of focus. In H. Bennis, Martin Everaert & Eric Reuland (eds.), *Interface strategies*, 183–206.

- Horvath, Julia. 2007. Separating “focus movement” from focus. In Simin Karimi, Vida Samiian & Wendy K. Wilkins (eds.), *Clausal and phrasal architecture: Syntactic derivation and interpretation*, 108–145. John Benjamins.
- Horvath, Julia. 2013. Focus, exhaustivity and the syntax of *wh*-interrogatives: The case of Hungarian. In Johan Brandtler, Valéria Molnár & Christer Platzack (eds.), *Approaches to Hungarian*, vol. 13, 97–132. John Benjamins.
- Hoshi, Koji. 2008. Remarks on focus feature organization in narrow syntax with special reference to the additive *mo* ‘also’. *Journal of Japanese Linguistics* 24(1). 1–44.
- Hyman, Larry M. & Maria Polinsky. 2010. Focus in Aghem. In Malte Zimmermann & Caroline Féry (eds.), *Information structure: Theoretical, typological, and experimental perspectives*, 206–233. Oxford University Press.
- Ishihara, Shinichiro. 2000. Scrambling and its interaction with stress and focus. *MIT Working Papers in Linguistics* 38. 95–110.
- Ishihara, Shinichiro. 2001. Stress, focus, and scrambling in Japanese. *MIT Working Papers in Linguistics* 39. 142–175.
- Ishihara, Shinichiro. 2004. Prosody by phase: Evidence from focus intonation–*wh*-scope correspondance in Japanese. In Shinichiro Ishihara, Michaela Schmitz & Anne Schwarz (eds.), *Interdisciplinary studies on information structure 1*, 77–119.
- Ishihara, Shinichiro. 2007. Major phrase, focus intonation, Multiple Spell-Out. *The Linguistic Review* 24(2–3). 137–167.
- Jackendoff, Ray. 1972. *Semantic interpretation in generative grammar*. MIT Press.
- Jacobs, Joachim. 1986. The syntax of focus and adverbials in German. In Werner Abraham & Sjaak de Meij (eds.), *Topic, focus, and configurationality*, 103–128. John Benjamins.
- Jouitteau, Mélanie. 2007. The Brythonic reconciliation. *Linguistic Variation Yearbook* 7. 163–200.
- Kahnemuyipour, Arsalan. 2009. *The syntax of sentential stress*. Oxford University Press.
- Kahnemuyipour, Arsalan & Karine Megerdooian. 2017. On the positional distribution of an Armenian auxiliary: Second-position clisis, focus, and phases. *Syntax* 20(1). 77–97.
- Kamali, Beste. 2011. *Topics at the PF interface of Turkish*: Harvard dissertation.
- Kamali, Beste & Lena Karvovskaya. 2013. ‘Also’ in Turkish and Ishkashimi. In Umut Özge (ed.), *Proceedings of WCCFL 8*, 181–186.
- Karvovskaya, Lena. 2013. ‘Also’ in Ishkashimi: additive particle and sentence connector. In Felix Bildhauer & Mira Grubic (eds.), *Interdisciplinary studies on information structure 17*, 75–97.

- Kaufman, Daniel. 2005. Aspects of pragmatic focus in Tagalog. In I Wayan Arka & Malcolm Ross (eds.), *The many faces of Austronesian voice systems: some new empirical studies*, 175–196. Pacific Linguistics.
- Kaufman, Daniel. 2010. *The morphosyntax of Tagalog clitics: A typologically driven approach*: Cornell University dissertation.
- Kayne, Richard. 1998. Overt vs. covert movement. *Syntax* 1(2). 128–191.
- Kenesei, István. 1998a. Adjuncts and arguments in VP-focus in Hungarian. *Acta Linguistica Hungarica* 45(1–2). 61–88.
- Kenesei, István. 1998b. On the syntactic options of focus. Manuscript, University of Szeged.
- Kitagawa, Yoshihisa. 1986. *Subjects in Japanese and English*: University of Massachusetts Amherst dissertation.
- Kobuchi-Phillips, Mana. 2009. Japanese *mo*: Universal, additive, and NPI. *Journal of Cognitive Science* 10. 173–194.
- Koch, Karsten & Malte Zimmermann. 2010. Focus-sensitive operators in Nl̥əʔkepmxcin (Thompson River Salish). In *Proceedings of Sinn und Bedeutung 14*, 237–255.
- Koopman, Hilda & Anna Szabolcsi. 2000. *Verbal complexes*. MIT Press.
- Kornfilt, Jaklin. 1997. *Turkish*. Routledge.
- Kotani, Sachie. 2008. A mismatch between position and interpretation: Focus association with *even* in Japanese. *Toronto Working Papers in Linguistics* 28. 175–194.
- Kotani, Sachie. 2009. *Focus particles and their effects in the Japanese language*: University of Delaware dissertation.
- Kotek, Hadas, Rikker Dockum, Sarah Babinski & Christopher Geissler. 2021. Gender bias and stereotypes in linguistic example sentences. *Language* 97(4). 653–677.
- Kotek, Hadas & Michael Yoshitaka Erlewine. 2016. Covert pied-piping in English multiple *wh*-questions. *Linguistic Inquiry* 47(4). 669–693.
- Kratzer, Angelika & Elisabeth Selkirk. 2007. Phase theory and prosodic spellout: The case of verbs. *The Linguistic Review* 24(2-3). 93–135.
- Krifka, Manfred. 1991. A compositional semantics for multiple focus constructions. In *Proceedings of SALT 1*, 127–158.
- Krifka, Manfred. 2008. Basic notions of information structure. *Acta Linguistica Hungarica* 55(3-4). 243–276.
- Kroeger, Paul R. 1998. Tagalog clitics and clause structure. In Maria Lourdes S. Bautista &

- Teodoro A. Llamzo (eds.), *Pagtanaw: Essays on language in honor of Teodoro A. Llamzon*, 53–72. Linguistic Society of the Philippines.
- Kuroda, Sige-Yuki. 1965. *Generative grammatical studies in the Japanese language*: Massachusetts Institute of Technology dissertation.
- Kuroda, Sige-Yuki. 1988. Whether we agree or not: a comparative syntax of English and Japanese. *Linguisticæ Investigations* 12(1). 1–47.
- Kwon, Iksoo. 2013. One *-mi*: An evidential, epistemic modal, and focus marker in Imbabura Quechua. In John Sylak-Glassman & Justin Spence (eds.), *Structure and contact in languages of the Americas*, 69–86. Survey of California and Other Indian Languages.
- Lahiri, Utpal. 1998. Focus and negative polarity in Hindi. *Natural Language Semantics* 6. 57–123.
- Lambrecht, Knud. 1994. *Information structure and sentence form: Topic, focus, and the mental representations of discourse referents*. Cambridge University Press.
- Lebeaux, David. 1988. *Language acquisition and the form of the grammar*: University of Massachusetts Amherst dissertation.
- Lebeaux, David. 1991. Relative clauses, licensing, and the nature of the derivation. In Susan D. Rothstein (ed.), *Perspectives on phrase structure: Heads and licensing*, 175–194. Academic Press.
- Leben, William R, Sharon Inkelas & Mark Cobler. 1989. Phrases and phrase tones in Hausa. In *Current approaches to African linguistics*, 45–61. Foris.
- Lecarme, Jacqueline. 1999. Focus in Somali. In Georges Rebuschi & Laurice Tuller (eds.), *The grammar of focus*, 275–310. John Benjamins.
- Lee, Felicia. 1997. Focus and judgment type in San Lucas Quiavini Zapotec. In Matthew L. Juge & Jeri L. Moxley (eds.), *Proceedings of BLS 23*, 234–244.
- Lee, Youngjoo. 2004. *The syntax and semantics of focus particles*: Massachusetts Institute of Technology dissertation.
- Lee, Youngjoo. 2005. Exhaustivity as agreement: the case of Korean *man* ‘only’. *Natural Language Semantics* 13. 169–200.
- Leffel, Timothy. 2011. Focus constructions in Masalit. Manuscript, New York University.
- Legate, Julie Anne. 2003. Some interface properties of the phase. *Linguistic Inquiry* 34(3). 506–515.
- Legate, Julie Anne. 2008. Warlpiri and the theory of second position clitics. *Natural Language & Linguistic Theory* 26(1). 3–60.
- Lenertová, Denisa & Uwe Junghanns. 2007. Wide focus interpretation with fronted focus exponents in Czech. In Schwabe & Winkler 2007 347–363.

- López, Luis. 2009. *A derivational syntax for information structure*. Oxford University Press.
- Mac Cana, Proinsias. 1973. On Celtic word and the Welsh ‘abnormal’ sentence. *Ériu* 24. 90–120.
- Manfredi, Victor. 2004. The prosodic infrastructure of focus in Benue-Kwa. Handout.
- Matić, Dejan. 2014. Questions and syntactic islands in Tundra Yukaghir. In Rik van Gijn, Jeremy Hammond, Dejan Matić, Saskia van Putten & Ana Vilacy Galucio (eds.), *Information structure and reference tracking in complex sentences*, 127–162. John Benjamins.
- Matić, Dejan & Cecilia Odé. 2015. On prosodic signalling of focus in Tundra Yukaghir. *Acta Linguistica Petropolitana* 11(2). 627–644.
- Matić, Dejan & Daniel Wedgwood. 2013. The meanings of focus: The significance of an interpretation-based category in cross-linguistic analysis. *Journal of Linguistics* 49. 127–163.
- May, Robert Carlen. 1977. *The grammar of quantification*: Massachusetts Institute of Technology dissertation.
- McCawley, James D. 1970. English as a VSO language. *Language* 46(2). 286–299.
- McCloskey, James. 1997. Subjecthood and subject positions. In Liliane Haegeman (ed.), *Elements of grammar*, 197–235. Kluwer Academic Publishers.
- Mithun, Marianne. 1992. Is basic word order universal? In Doris L. Payne (ed.), *Pragmatics and word order flexibility*, 15–61. John Benjamins.
- Mitrović, Moreno & Uli Sauerland. 2014. Decomposing coordination. In Jyoti Iyer & Leland Kusmer (eds.), *Proceedings of NELS 44*, vol. 2, 39–52.
- Mushin, Ilana. 2006. Motivations for second position: Evidence from North-Central Australia. *Linguistic Typology* 10(3). 287–326.
- Nagano, Masaru. 1951. Gendaigo no joshi, jodoushi: youhou to jitsurei [*Particles and auxiliary verbs in Modern Japanese: Uses and examples*]. National Language Research Institute.
- Nagasaki, Iku. 2018. The focus construction in Early Modern Kolyma Yukaghir. *Gengo Kenkyu* 154. 123–152.
- Neeleman, Ad & Kriszta Szendrői. 2004. Superman sentences. *Linguistic Inquiry* 35(1). 149–159.
- Newman, Paul. 2000. *The Hausa language: An encyclopedic reference grammar*. Yale University Press.
- Nikolaeva, Irina. 2019. Focus as a morphosyntactic and morphosemantic feature. In *Morphological perspectives papers in honour of Greville G. Corbett*, 370–389. Edinburgh University Press.
- Numata, Yoshiko. 2009. *Gendai Nihongo toritateshi no kenkyū [A study of focus particles in Modern Japanese]*. Hitsuji Syobo.

- Ohno, Kazutoshi. 2003. *The interpretation of focalizers in Japanese and English*: University of Arizona dissertation.
- Okell, John. 2002. *Burmese by ear*. Audio-Forum and the School of Oriental and African Studies.
- Palancar, Enrique L. 2018. Subject and focus in clefts: The case of Tilapa Otomi. In Evangelia Adamou, Katharina Haude & Martine Vanhove (eds.), *Information structure in lesser-described languages*, 245–264. John Benjamins.
- Perkins, Ellavina. 1978. *Topics in Navajo Grammar*: University of Arizona dissertation.
- Quek, Yihui & Aron Hirsch. 2017. Severing focus form and meaning in Standard and Colloquial Singapore English. In Andrew Lamont & Katerina Tetzloff (eds.), *Proceedings of NELS 47*, vol. 3, 15–25.
- Rialland, Annie & Stéphanie Robert. 2001. The intonational system of Wolof. *Linguistics* 39(5). 893–939.
- Richards, Norvin. 2018. Nuclear stress and the life cycle of operators. In Laura R. Bailey & Michelle Sheehan (eds.), *Order and structure in syntax: Word order and syntactic structure*, 217–240. Language Science Press.
- Richards, Norvin. 2019. Association with *lang* ‘only’ in Tagalog. Presented at AFLA 26.
- Robert, Stéphane. 1991. *Approche énonciative du système verbal: Le cas du Wolof*. Centre National de la Recherche Scientifique.
- Rochemont, Michael. 2013. Discourse new, F-marking, and normal stress. *Lingua* 136. 38–62.
- Rooth, Mats. 1985. *Association with focus*: University of Massachusetts, Amherst dissertation.
- Rooth, Mats. 1992. A theory of focus interpretation. *Natural Language Semantics* 1. 75–116.
- Rooth, Mats. 2016. Alternative semantics. In Féry & Ishihara 2016 19–40.
- Ross, John Robert. 1967. *Constraints on variables in syntax*: Massachusetts Institute of Technology dissertation.
- Safir, Ken. 2019. The A-/Ā-distinction as an epiphenomenon. *Linguistic Inquiry* 50(2). 285–336.
- Sasse, Hans-Jürgen. 1987. Thethetic/categorical distinction revisited. *Linguistics* 25. 511–580.
- Sato, Yosuke. 2012a. Multiple Spell-Out and contraction at the syntax-phonology interface. *Syntax* 15(3). 287–314.
- Sato, Yosuke. 2012b. Phonological interpretation by phase: Sentential stress, domain encapsulation, and edge sensitivity. In Ángel Gallego (ed.), *Phases: Developing the framework*, 283–307. De Gruyter Mouton.
- Schwabe, Kerstin & Susanne Winkler (eds.). 2007. *On information structure, meaning, and form*:

- Generalizations across languages*. John Benjamins.
- Schwarz, Anne. 2007a. The particles *lé* and *lá* in the grammar of Konkomba. *Interdisciplinary studies on information structure* 8. 115–139.
- Schwarz, Anne. 2009. Tonal focus reflections in Buli and some Gur relatives. *Lingua* 119(6). 950–972.
- Schwarz, Anne. 2010. Verb-and-predication focus markers in Gur. In Fiedler & Schwarz 2010 287—314.
- Schwarz, Florian. 2003. Focus marking in Kikuyu. In *ZAS papers in linguistics* 30, 41–118.
- Schwarz, Florian. 2007b. Ex-situ focus in Kikuyu. In Enoch Oladé Aboh, Katharina Hartmann & Malte Zimmermann (eds.), *Focus strategies in African languages: The interaction of focus and grammar in Niger-Congo and Afro-Asiatic*, 139–159. Mouton de Gruyter.
- Scott, Tessa. 2021. Formalizing two types of mixed A/ \bar{A} movement. Manuscript, University of California at Berkeley.
- Shimoji, Michinori. 2018. Information structure, focus, and focus-marking hierarchies in Ryukyuan languages. *Gengo Kenkyu* 154. 85–121.
- Smeets, Liz & Michael Wagner. 2018. Reconstructing the syntax of focus operators. *Semantics & Pragmatics* 11(6). 1–27.
- Stepanov, Arthur Vladimirovich. 2001. *Cyclic domains in syntactic theory*: University of Connecticut dissertation.
- Sun, Yen-an. 2020. Only-concord in Vietnamese: Support for a bipartite analysis and Undermerge. In Mariam Asatryan, Yixiao Song & Ayana Whitmal (eds.), *Proceedings of NELS 50*, vol. 3, 183–192.
- Sun, Yen-an. 2021. A bipartite analysis of *zhiyou* ‘only’ in Mandarin Chinese. *Journal of East Asian Linguistics* 30. 319–355.
- Surányi, Balázs. 2018. Focus in focus. In Huba Bartos, Marcel Den Dikken, Zoltán Bánrési & Tamás Váradí (eds.), *Boundaries crossed, at the interfaces of morphosyntax, phonology, pragmatics and semantics*, 243–262. Springer.
- Svolacchia, Marco, Lunella Mereu & Annarita Puglielli. 1995. Aspects of discourse configurationality in Somali. In Katalin É Kiss (ed.), *Discourse configurational languages*, 65–98. Oxford University Press.
- Szabolcsi, Anna. 1981. The semantics of topic-focus articulation. In Jeroen A. G. Groenendijk, Theo M. V. Janssen & Martin B. J. Stokhof (eds.), *Formal methods in the study of language, part 2*,

- 513–540. Mathematisch Centrum, Amsterdam.
- Szabolcsi, Anna. 1983. The possessor that ran away from home. *The Linguistic Review* 3. 89–102.
- Szabolcsi, Anna. 2015. What do quantifier particles do? *Linguistics and Philosophy* 38(2). 159–204.
- Szendrői, Kriszta. 2003. A stress-based approach to the syntax of Hungarian focus. *The Linguistic Review* 20. 37–78.
- Taglicht, Josef. 1984. *Message and emphasis: on focus and scope in English*. Longman.
- Tanaka, Hidekazu. 1999. LF *wh*-islands and the minimal scope principle. *Natural Language & Linguistic Theory* 17. 371–402.
- Terrill, Angela. 2003. *A grammar of Lavukaleve*. Mouton de Gruyter.
- Uriagereka, Juan. 1999. Multiple spell-out. In Samuel David Epstein & Norbert Hornstein (eds.), *Working minimalism*, 251–282. MIT Press.
- Valle, Daniel. 2014. Focus marking in Kakataibo (Panoan). *Oklahoma Working Papers in Indigenous Languages* 1. 55–78.
- Vallejos Yopán, Rosa. 2009. The focus function(s) of =*pura* in Kokama-Kokamilla discourse. *International Journal of American Linguistics* 75(3). 399–432.
- van Riemsdijk, Henk & Frans Zwarts. 1974/1997. Left dislocation in Dutch and status of copying rules. In Elena Anagnostopoulou, Henk van Riemsdijk & Frans Zwarts (eds.), *Materials on left dislocation* (1997), 13–30. John Benjamins.
- van Urk, Coppe. 2015. *A uniform syntax for phrasal movement: A Dinka Bor case study*: Massachusetts Institute of Technology dissertation.
- van Urk, Coppe & Norvin Richards. 2015. Two components of long-distance extraction: Successive cyclicity in Dinka. *Linguistic Inquiry* 46(1). 113–155.
- Vydrina, Alexandra. 2020. Topicality in sentence focus utterances. *Studies in Language* 44(3). 501–547.
- Wagner, Michael. 2006. Association by movement: evidence from NPI-licensing. *Natural Language Semantics* 14(4). 297–324.
- Watanabe, Akira. 2006. The pied-piper feature. In Lisa Lai-Shen Cheng & Norbert Corver (eds.), *Wh-movement: Moving on*, 47–70. MIT Press.
- Wierzba, Marta & Gisbert Fanselow. 2020. Factors influencing the acceptability of object fronting in German. *Journal of Comparative Germanic Linguistics* 23. 77–124.
- Wolfe, Andrew & Tajeldin Abdalla Adam. 2018. Optional ergativity and information structure in Beria. In Jason Kandybowicz, Travis Major, Harold Torrence & Philip T. Duncan (eds.), *African*

- linguistics on the prairie: Selected papers from the 45th Annual Conference on African Linguistics*, Language Science Press.
- Wu, Danfeng. to appear. Syntax of “either” in “either...or...” sentences. *Natural Language & Linguistic Theory* .
- Wurmbrand, Susi. 2018. The cost of raising quantifiers. *Glossa* 3(19). 1–39.
- Yoshimura, Keiko. 2007. *Focus and polarity: even and only in Japanese*: University of Chicago dissertation.
- Zsámboki, András. 1995. Contrastive co-ordinations with focussed clauses. In *Working papers in the theory of grammar*, vol. 2 5, Research Institute for Linguistics, Hungarian Academy of Sciences.
- Zwicky, Arnold M. 1977. On clitics. Reproduced by the Indiana University Linguistics Club.
- Zyman, Erik. 2021. Phase-constrained obligatory late adjunction. *Syntax* 25. 84–121.
- É Kiss, Katalin. 1998. Identificational focus versus information focus. *Language* 74(2). 245–273.
- É Kiss, Katalin. 2002. *The syntax of Hungarian*. Cambridge University Press.

Languages with anti-pied-piping by genus

We follow the major subfamily and genus (see Dryer, 1989) classifications of the WALS Genealogical Language List (Dryer, 2013) but with some simplifications to genus names and by separating Bantu and Grassfields languages. Languages that we discuss in the paper as exhibiting anti-pied-piping behavior, but for which we do not reproduce examples here in the interest of space, are listed in parentheses.

Athapaskan	Yoruba, 52
Navajo, 41	Dravidian
Bantu	Telugu, 25
Kîtharaka, 54	Garrwa, 48
Kikuyu, 68	Germanic
Bodic	(Dutch),
Tibetan, 26, 64	English, 106
Celtic	German, 53, 57, 67, 109
Breton, 61	Grassfields
Welsh, 59	(Aghem),
Chadic	Awing, 31
Bura, 47	Gur
Hausa, 113	(Buli, Gurene, Kɔnni),
Tangale, 33	Dagbani, 32
Chinese	Konkomba, 34, 44
Mandarin, 55	Haitian Creole, 49
Cushitic	Indic
Somali, 51	(Bangla),
Daghestanian	Hindi-Urdu, 66
(Hinuq),	Iranian
Lak, 40	(Persian),
Qunqi Dargwa, 28	Ishkashimi, 21, 37, 96
Defoid	Japonic

Japanese, 2, 4, 8, 29, 98, 100
 Yaeyaman, 15–18

Khoe-Kwadi
 Sandawe, 81

Korean, 23, 39

Kwa
 (Akan, Fongbe, Gungbe, Tuwuli),
 Ewe, 43

Lolo-Burmese
 Burmese, 19

Maban
 Maslit, 24

Mande
 Kakabe, 22, 38

Mixtec
 San Martín Peras Mixtec, 69

Otomian
 Tilapa Otomi, 58

Panoan
 (Kakataibo),

Philippine
 Tagalog, 45

Quechua
 Imbabura, 20

Romance

French, 56
 (Italian),
 Latin, 46, 123
 Sicilian, 62

Saharan
 (Beria),

Salishan
 (Thompson River Salish),

Samoyedic
 (Tundra Nenets),

Slavic
 (Croatian, Polish),
 Czech, 108
 Russian, 50

Tungusic
 Even, 36

Tupian
 (Kokama-Kokamilla),

Turkic
 Turkish, 27

Ugric
 Hungarian, 1, 3, 7, 101

Wolof, 60

Yukaghir
 (Kolyma Yukaghir),
 Tundra Yukaghir, 30, 42