

Discontinuous Noun Phrases in Iquito

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Abstract

In this paper, we provide an account of the syntactic restrictions on noun phrase discontinuity in Iquito. In Iquito, noun phrases containing determiners that have undergone movement must have a discontinuous realization where the determiner strands the noun phrase. With moved possessive noun phrases, we find apparent pied-piping of the possessum in addition to the determiner only in case the determiner is semantically associated with the possessor. We argue that this ‘possessum pied-piping’ is determined by the syntactic attachment height of the determiner within the noun phrase. In doing so, we provide a novel way of restricting the mechanism of distributed deletion based on configurational properties of the noun phrase, rather than some information structural or phonological property. Furthermore, we show how extending this analysis to phrase-internal syntax also allows us to derive the apparently idiosyncratic word orders we find inside NPs and PPs, thereby providing a unified account of both phrase-level and the clause-level word order in Iquito.

1 Introduction

Many languages have so-called ‘split NP’ constructions in which some sub-constituent of the noun phrase appears discontinuously from the rest of the NP, e.g. Left-Branch Extraction in Slavic (Siewierska 1984; Borsley & Jaworska 1988; Corver 1992; Bošković 2005), Hungarian (Szabolcsi 1983) and Ch’ol (Little 2020), *combien*-splits in French (Starke 2001; Kayne 2002), split NPs in Greek (Androutsopoulou 1998; Ntelitheos 2004) and Chichewa (Mchombo 2004), *was für*-splits in German (Abels 2003; Leu 2008), *wat voor*-splits in Dutch (den Besten 1985; Corver 2017), and discontinuous NPs in Mohawk (Baker 1996) and Kiowa (Adger et al. 2009) as well as in Meskwaki (Dahlstrom 1987) and other Algonquian languages (Johnson & Rosen 2015). Below are illustrative examples of split NP constructions from Serbo-Croatian (1a) and Meskwaki (1b) in which a demonstrative determiner is split from its associated noun. Throughout the paper, we underline both the determiner and the associated noun (phrase) of a discontinuously realized noun phrase both in the glosses and the free translation.

- (1) a. Ta je *pro* vidio kola
that is.3SG seen car
‘That car, he saw.’ (Bošković 2005: 2)
- b. ma·haki kenohtamwihene wi·teko·waki
these cause-to-understand.1/2.IND owl-PL
‘I made you understand these owls.’ (Dahlstrom 1987: 57)

Languages are known to vary with regard to the kind of NP-internal material that can participate in a split construction. For example, adjectives and numerals can be readily extracted in Slavic, in addition to demonstratives (Bošković 2005). Furthermore, split constructions are typically optional in a given language, albeit with associated effects on prosody and/or information structure (Fanselow & Féry 2006; Schultze-Berndt & Simard 2012).

In this paper, we focus on split NP constructions in the SVO language Iquito (Zaparoan; Northern Peru).¹ Unlike the languages mentioned above, split NP constructions in Iquito are only possible with demonstrative determiners. Furthermore, Iquito differs from other split NP languages in that, in the syntactic contexts where we find discontinuous noun phrases, the observed split is obligatory, not optional. Consider the examples in (2). Example (2a) provides a baseline SVO sentence without movement. In the example in (2b), there is obligatory displacement to a position between the subject and the verb (this displacement is linked to a semantic change in reality status/mood).² We observe that only the determiner is realized in the derived position and the associated NP is left behind. In this construction, discontinuous realization of the noun phrase is obligatory, as the ungrammatical parallel example in (2c) shows.

- (2) a. Nu= simiita-ki-Ø [NP iina simiimi]
 3SG= read-PFV-NPST DET book
 ‘She/he read this book (earlier today).’
- b. Nu= iina simiita-ki-Ø [NP ____ simiimi]
 3SG= DET read-PFV-NPST book
 ‘She/he will read this book.’
- c. *Nu= [NP iina paápaaja] asa-rii-Ø ____
 3SG= DET fish eat-MMTPFV-NPST
 Intended: ‘She/he will eat this fish.’ (Beier et al. 2011: 85, (42, 43))

In the theoretical literature on split NP constructions, three main types of analysis have been pursued. These are illustrated below in (3) for the example in (2b). The traditional sub-extraction

¹Iquito is a highly endangered language of the Zaparoan family that is spoken in the Peruvian Amazon. The data in this paper was collected by the linguists of the Iquito Language Documentation Project (ILDP), led by Chris Beier and Lev Michael since 2002. We draw on both published work (e.g. Beier et al. 2011; Hansen 2011) and unpublished field notes from Lev Michael, in particular Michael (2003, 2004b). We wish to express our thanks to the four Iquito speakers Hermenegildo Díaz Cuyasa, Ligia Inuma Inuma, Jaime Pacaya Inuma and Ema Llona Yareja for their collaboration with the ILDP.

We use the standard abbreviations from the Leipzig Glossing Rules, with the following additions and modifications: AN=animate, DEIPFV = deictic perfective, DIM = diminutive, DPAST = distant past, MMTPFV=momentary perfective, NPST = non-past tense, PFV = general perfective, REL = relative pronoun, REMPFV = remote perfective, REP = reportative, RPST = recent past tense. Throughout the paper, we use the updated Iquito orthography system, which was an outcome of the *Congreso de normalización del alfabeto de la lengua IKITU* (“IKITU Language Alphabet Standardization Congress”) and made official in 2014 by the Peruvian government.

²While the English glosses suggest that the semantic distinction between (2a) and (2b) is one of tense, Iquito does not have a future tense marker. Iquito has three morphological tenses: the distant past, recent past, and non-past. The non-past is a non-pre-hodiernal tense that is used for any event from the dawn of the current day into the indefinite future. Thus, to express future temporal reference, Iquito uses the non-past tense combined with irrealis mood. Irrealis mood, to be discussed in section 3, is expressed via displacement of a postverbal element to a pre-verbal position.

analysis assumes that splits involve direct movement of the left-branch out of the NP (3a) (Ross 1967; Corver 1992; Bošković 2005, 2016). The remnant movement approach, on the other hand, asserts that what undergoes displacement is actually a larger constituent containing a trace of the head noun that was moved out in an earlier step (3b) (Franks & Progovac 1994; Abels 2003, 2012; Bašić 2004, 2009). Finally, distributed deletion analyses assume that NP splits are the effect of scattered deletion applying to different sub-parts of the NP in its higher and lower occurrences (3c) (Wilder 1995; Fanselow & Ćavar 2002; Pereltsvaig 2008; Fanselow & Féry 2013; Davis 2020a; Bondarenko & Davis 2023).

- (3) a. *Extraction*
 Nu= iina₁ simiitaki [_{NP} t₁ simiimĩ]
 3SG= this reads book
- b. *Remnant movement*
 Nu= [_{NP} iina t₁]₂ simiitaki simiimĩ₁ t₂
 3SG= this reads book
- c. *Distributed deletion*
 Nu= [_{NP} iina simiimĩ] simiitaki [_{NP} iina simiimĩ]
 3SG= this reads book

In this paper, we will argue in favor of the distributed deletion approach in (3c) for discontinuous constituents in Iquito. The evidence for this comes from the varying patterns of split behavior that we find with complex possession structures both within NPs and PPs, as well as at the clause-level. Here, we find cases of apparent non-constituent movement that we argue are best understood on a distributed deletion approach. Nevertheless, one of the major challenges facing this line of analysis is how to provide a restrictive theory that sufficiently constrains the application of scattered deletion in movement chains (see e.g. van Urk to appear). We will propose such a structural restriction for distributed deletion in Iquito and argue that discontinuity is determined solely by the c-command relations within the base configuration, thereby providing a principled explanation of how distributed deletion can apply in a constrained manner.

To see this, we will preview our discussion of the displacement of possessive noun phrases containing determiners. In (4), we have a possessive NP ‘these children of the woman’ where the possessum ‘children’ is associated with the determiner and the possessor is bare. Putting NP-internal word order aside for now (see section 4.1), we observe that only the determiner moves to pre-verbal position in (4), just as in (2b).

- (4)
- | | | | | | | |
|--------------|------|-----------|-------------------|----------------------|------------------------|------------------------|
| Aámiikáaka | kí= | iipĩ | siwĩira-kwa-Ø | [_{NP} ____ | mĩsaji _{PSSR} | mĩra _{PSSM}] |
| one.day.away | 1SG= | DET.PL.AN | visit-DEIPFV-NPST | | woman | children |
- ‘Tomorrow, I will go there to visit these children of the woman.’
- (Hansen 2011: 155, (3.89))

When the determiner is instead associated with the possessor, as in ‘the clothes of those children’, a different pattern emerges. In (5), both the determiner associated with the possessor ‘children’ (indicated by underlining) and the bare possessum are displaced.³

³In general, we will represent both displaced determiners and multiple displaced elements with a single gap at the left edge of the NP, which is where they would surface in a non-movement configuration. This is only intended to

- (5)
- | | | | |
|--------------|------|-----------------------------------|------------------------------------------------------|
| | ↓ | | ↑ |
| Aámiikáaka | kí= | iipi sináaki _{PSSM} | [_{NP} <u>mírajaárika</u> _{PSSR}] |
| one.day.away | 1SG= | DET.PL.AN clothes | children.DIM |
| | | sikita-rii-ø | wash-MMTPFV-NPST |
- ‘Tomorrow, I will wash the clothes of those children.’
- (Hansen 2011: 161, (3.102))

It is important to note that the moved elements in (5) do not plausibly form a constituent. Furthermore, the appearance of a non-constituent in the moved position is correlated with an apparently independent property, namely the particular noun that the determiner involved in the split is associated with. We therefore arrive at the following descriptive generalization about split constructions in Iquito (Beier et al. 2011: 87; Hansen 2011: 137–138):

(6) *Possessum pied-piping generalization (PPG)*

When a determiner is realized discontinuously from a possessive NP, the possessum appears together with the determiner in its derived position if the determiner modifies the possessor.

One of the contributions of the paper will be to show how we can make sense of the PPG in a distributed deletion approach. The PPG follows, we argue, from the internal structural properties of the noun phrase, i.e. the c-command domain of the determiner. Given the syntax of the Iquito NP that we adopt, any element c-commanded by the base-position of the determiner will be protected from deletion in the lower copy of a movement chain by virtue of a feature/diacritic, which we refer to as a ‘P-mark’ that is assigned to all terminals in the c-command domain of a determiner. This is what gives the effect of ‘pied-piping’ when an NP containing the determiner undergoes phrasal movement.

We argue that alternative approaches to split noun phrases either struggle to capture the non-constituent displacement (sub-extraction) or fail to provide a sufficiently constrained way of deriving it (remnant movement). Our analysis therefore builds on recent attempts to constrain the mechanism of distributed deletion that has been used to derive apparent non-constituent movement. Moreover, we will illustrate how the PPG can provide insights into the somewhat puzzling word order restrictions found at the phrase-level, namely with recursive possession in noun phrases and also inside adpositional phrases. The internal syntax of such phrases has not been analyzed in previous work and the word order variation that we find here may seem, at first glance, to be rather idiosyncratic. We will show, however, that the patterns we find have some striking parallels to the patterns of those shown above for clause-level movement. We argue that this parallel falls out naturally once we assume that the PPG is also active in these domains and that word order within both NPs and PPs is derived by phrasal movement. This serves to further add to the body of cross-linguistic evidence for structural parallels between syntax of the DP and the clause (see e.g. Bernstein 2001; Giusti 2006; Alexiadou et al. 2007). Furthermore, it provides additional support for the claim that some NP-internal word orders are derived by phrasal movement (e.g. Cinque 2005).

The paper is structured as follows. We first establish the basic structure of possessive noun phrases in section 2, arguing that there is a ‘noun second’ requirement inside NPs that can result in split constructions. We also present our assumptions about how to derive split constructions by means of distributed deletion, as constrained by the structurally-determined assignment of a

indicate their origin within the NP and not their precise base position within the NP.

diacritic we call a ‘P-mark’. We then move on to discuss clause-level movement to the so-called ‘irrealis position’ in section 3. After clarifying our background assumptions about this movement, we illustrate how our theory of P-mark assignment can account for the PPG. In section 4, we then go on to show how the PPG is also active within recursive possession structures inside NPs and how our proposal extends to these cases, too. We also discuss the adpositional domain in section 5, whose internal word order is also subject to the PPG. In section 6, we briefly discuss split NP constructions under movement to subject position that provide a counterexample to the general observation of the obligatoriness of NP splits in Iquito. We propose that the requirement for NP splits governed by P-marking appears to be overridden by an independent constraint that we argue falls under the well-known *Subject In-Situ Generalization*. Two further issues are addressed in section 7. First, we consider alternative approaches involving Left-Branch Extraction and remnant movement, which we argue cannot adequately derive the PPG. Second, the cross-linguistic implications of the analysis we developed for Iquito will be presented and discussed. Finally, section 8 concludes.

2 The structure of possessive noun phrases

In this section, we will present our assumptions about the structure of simple possessive noun phrases in Iquito. As we have already seen, while Iquito lacks a definite article, it has several demonstrative determiners whose forms are listed in (7) Hansen (taken from 2011: 105).

(7)

Orientation	sg/general	PL (inanimate)	PL (animate)
Speaker Proximal/Distal	<i>iina</i>	<i>iimi</i>	<i>iip̃i</i>
Addressee Proximal	<i>kiina</i>	<i>kiimi</i>	<i>kiip̃i</i>
Speaker/Addr. Distal	<i>iina tíira</i>	<i>iimi tíira</i>	<i>iip̃i tíira</i>

As is clear from the forms in this table, the respective determiners contain the suffixes *-na*, *-mi* and *-p̃i*, marking number and animacy distinctions. These suffixes are also found on adjectives, however for simplicity’s sake, we do not segment these morphemes in our glosses. The determiners that are relevant for our purposes are the plural animate demonstrative *iip̃i* and the general determiner *iina*, both of which can have either a proximal or distal meaning, depending on context. Bare nouns lacking a determiner can receive both definite and indefinite interpretations.

Relatedly, we will assume that Iquito noun phrases are NPs rather than DPs. This follows the typological generalization put forward by Bošković (2008, 2009) that languages that lack articles also lack a DP. Iquito also allows for extraction of demonstratives from noun phrases, as expected of an ‘NP language’ given Bošković’s NP/DP-Parameter. Both Beier et al. (2011) and Hansen (2011) argue that determiners in Iquito are undergoing a grammaticalization process from demonstratives to definite articles, but have not reached that stage yet. This further supports the synchronic status of Iquito as an NP language.

2.1 The structure of possession

Now, let us consider the structure of noun phrases containing a possessor. If the possessor is a bare noun, then it proceeds the possessum. This can be seen in (8a) where the possessor ‘woman’

precedes the possessum ‘animal’. When the possessor is modified by a determiner, however, only the determiner associated with the possessor ‘woman’ precedes the possessum, while the possessor itself appears postnominally (8b). We treat this a split determiner construction inside the NP.

- (8) a. [NP m̄isaji kajinani]
 woman animal
 ‘the animal of the woman’
 b. [NP iina kajinani m̄isaji]
 DET animal woman
 ‘the animal of this woman’
- (Michael 2004*b*: 6, (15a,b))

We argue that, descriptively speaking, Iquito has a ‘second position’ requirement for noun phrases, what we might call an ‘N2-requirement’ in reference to the well-known V2-requirement in several Germanic languages (den Besten 1983). We propose to analyze the second position requirement in NPs as the result of the head of the noun phrase bearing an [EPP] feature which requires a phrase to be merged as its specifier.⁴ Furthermore, we assume that possessors are always base-generated as the complement of the possessum noun, as shown in the trees in (9). In order to check the [EPP] feature, the possessor moves to the specifier of N.⁵ With bare possessors, this leads to the observed word order in (9a), whereas a phrase containing a determiner (9b) will necessarily result in a split construction due to the obligatory discontinuous realization of a moved NP containing a

⁴Without an overt determiner, adjectives may adjoin to the left or the right of the noun, where a left-adjoining adjective is the default and a right-adjoining adjective indicates contrastive focus (Beier et al. 2011: 79). In light of the N2-requirement, one might ask whether, in the presence of a determiner, the adjective may precede the noun, i.e. DET ADJ NOUN, or whether the adjective must follow the noun. Unfortunately, in the Iquito literature, most examples of unsplit NPs with a noun modified by an adjective do not also contain determiners, so this is difficult to ascertain. There are numerous such examples with splits however, such as (i), in which we find the the adjective preceding the noun in the stranded portion of the NP. We have not encountered data involving this kind of NP without a split, however.

(i) Iina maaya nu= iina irikatájuu-rii-Ø [NP — umaana iimina]
 DET child 3SG= DET repair-MMTPFV-NPST big canoe
 ‘This child, it will fix this big canoe.’

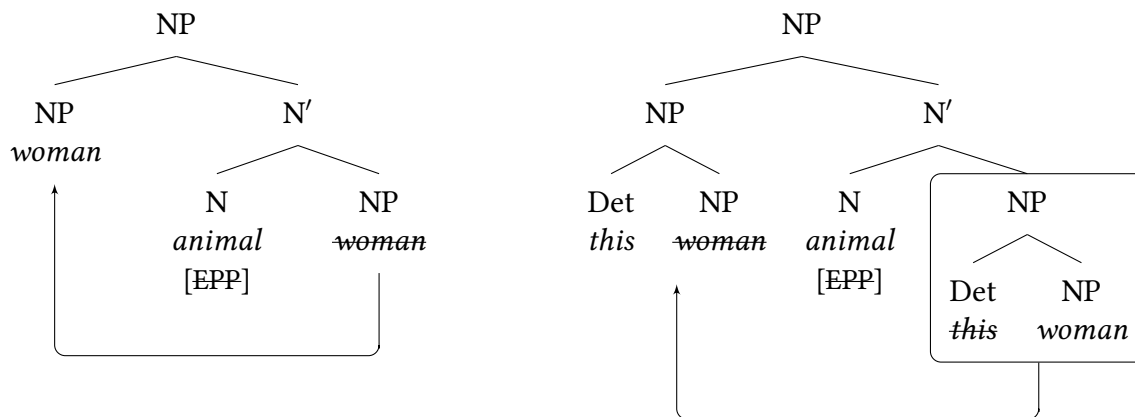
(Hansen 2011: 140, (3.55))

⁵ Throughout the paper, we will make only very basic assumptions about the internal structure of the noun phrase. We treat determiners as being of category Det and adjoined to the noun phrase that they modify, in line with our proposal that Iquito is an NP language. Another reason for this is a practical one: Since some of the structures we discuss will get rather complex, these minimal representations are intended to increase readability. As far as we can tell, nothing substantial in our analysis changes under a more articulated theory of the noun phrase, e.g. including *nP* and other functional projections, or even if determiners were assumed to head a DP projection after all. Given the minimal structures we adopt here, movement to Spec-NP violates Comp-to-Spec Anti-Locality (see e.g. Abels 2003). This would not be the case, however, if the NP has a more richly-articulated structure involving a *nP* projection, for example. We omit any such details here.

A related point pertains to the phasal status of the noun phrase. As a reviewer points out, we require that deletion apply to an embedded NP in (8). In the course of our discussion, we will encounter more complex examples in which deletion applies within several levels of embedding. The reviewer mentions that this could be seen as incompatible with the view that the NP constitutes a phasal domain, in line with conclusions reached in Davis (2020*b*) and Sabbagh (2007), but contra Bošković (2005). Aside from this consideration, nothing major in our analysis hinges on this assumption, however.

determiner (something we return to in section 2.2).⁶

- (9) a. *m̄isaji kajinani*
 woman animal
 ‘the woman’s animal’
- b. *iina kajinani m̄isaji*
 DET animal woman
 ‘this woman’s animal’



It is worth mentioning that the alternative assumption that possessors are arguments of some higher functional head (e.g. PossP) cannot straightforwardly capture the relatedness of these constructions. Consider (10) as potential alternative base structures for the examples in (9). While the base-generated order in (10a) gives us the correct surface structure without further ado, (10b) would have to involve multiple movements both of the possessor and the possessum to derive the order corresponding to *this animal woman*.

- (10) a. [_{PossP} [_{NP} woman] [_{Poss'} Poss [_{NP} animal]]]
 b. [_{PossP} [_{NP} this woman] [_{Poss'} Poss [_{NP} animal]]]

As such, the two surface word orders for (10) would have to be derived by radically different means. In contrast, under the analysis we propose, they involve the same kind of movement to prenominal position, coupled with the independently-motivated observation that movement of an NP containing a determiner necessarily leads to a split construction in the language.

⁶Further evidence for this comes from nominalizations. Non-finite subordinate clauses in Iquito are expressed via event nominalization of the verb (Christine Beier, p.c.). The verbal suffix *-ni* is sometimes glossed as an infinitive marker, but more recent work treats it as a nominalizer (Michael et al. 2019). In such clauses, we find exceptional OV order with a bare NP object (ia) and a split construction when the object has a determiner (ib).

- (i) a. *Aámiikáaka ku=atitii-yaa-kura [nasi kamaraa-ni]*
 one.day.away 1SG=begin-IPFV-RPST field clear-NMLZ
 ‘Yesterday I started to clear the field.’
- b. *Aámiikáaka ku=atitii-yaa-kura [iina kamaraa-ni nasi]*
 one.day.away 1SG=begin-IPFV-RPST DET clear-NMLZ field
 ‘Yesterday I started to clear this field.’
- (Michael 2004b: 8-9, (23a-b))

The analysis presented above can be straightforwardly extended to such cases, as illustrated for (ib) below:

- (ii) [_{NP} [_{NP} *iina nasi*] [_{N'} [_N [_V kamaraa] -ni_[EPP]] [_{NP} *iina nasi*]]]
 DET clear -NMLZ field

Finally, we will discuss cases in which the determiner modifies the possessum rather than the possessor, as in ‘this animal of the woman’. The structure we would expect would be one in which the determiner merges directly with the possessum NP in which there has been movement of the possessor.

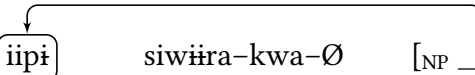
(11) [NP this [NP woman [N' [N animal] ~~woman~~]]

Somewhat surprisingly, Hansen (2011: 127–128) notes that the Iquito consultants only interpret noun phrases of the form ‘DET NP NP’ as having the determiner modify the possessor rather than the possessum as in (11). Consequently, the string in (12) could only be interpreted with the woman as the possessum and animal as the possessor which is also modified by the determiner (12a). It cannot be interpreted with the underlying structure in (11) where woman is the possessor and animal is the possessum and the determiner modifies the possessum (12b).

(12) [NP *this woman animal*]
 a. ‘the woman of this animal’
 b. *‘this animal of the woman’

We assume that structures in which the possessum is modified by a determiner are syntactically well-formed, but there is some, at present poorly-understood, speaker preference to assign the NP-internal string in (12) the interpretation in (12a) over (12b).⁷

Importantly, this does not appear to be a deep grammatical restriction, however. The structure in (11) must still be licensed by the grammar, because the interpretation in (12b) becomes available when the NP in question has undergone a split. We have already seen this in (4), repeated below.

(13) 
 Aámiikáaka kí= iipi siwira-kwa-Ø [NP ___ mĩsaji mira]
 one.day.away 1SG= DET.PL.AN visit-DEIPFV-NPST woman children
 ‘Tomorrow, I will go there to visit these children of the woman.’
 (Hansen 2011: 155, (3.89))

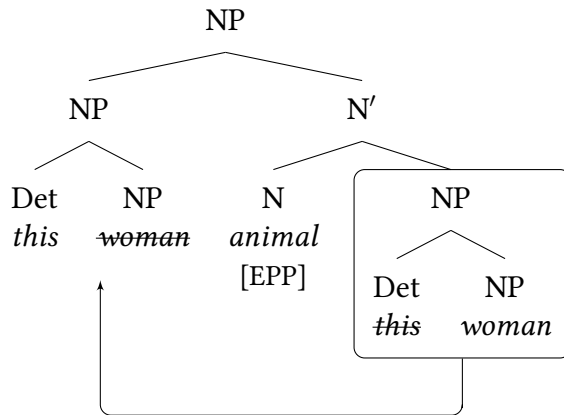
Here, it is the possessum ‘children’ that is modified by a determiner. The underlying structure for such an example must therefore involve the structure in (11). We will therefore for assume that both of the following structures are licensed in the grammar in principle:

⁷One might wonder whether this restriction still holds if the features of the determiner do not match the possessor. Hansen (2011) provides the example in (i) which is argued to show that determiner *iipi* may not agree with the possessum, even when there would be a number mismatch with the possessor.

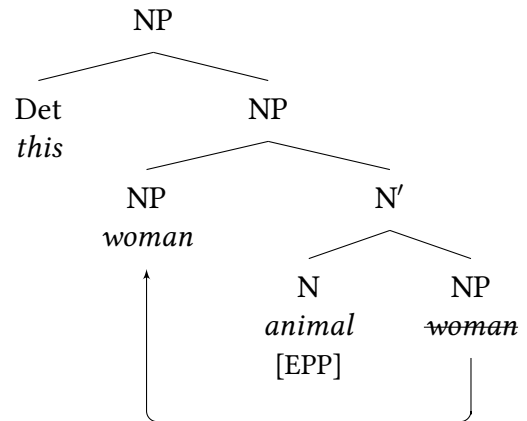
(i) Kí=kariínii-yaa-Ø [NP iina/*iipi mira mĩsaji]
 1SG=watch-IPFV-NPST DET/*DET.PL.AN child.PL woman
 ‘I am watching the woman’s children’
 (Hansen 2011: 128, (3.33), (3.34))

However, demonstrating this is actually not straightforward. It is important to note that the word order in (i) is not compatible with treating ‘child’ as the possessum. Since a bare possessum always moves in front of the possessor (8), ‘child’ would have to occur after ‘woman’, as in (13), in order to be construed as the modifying the possessum in (i). In this case, this DET NP NP string would then be subject to the aforementioned preference to interpret the second NP as the modified possessor rather than the possessum.

(14) *Determiner modifying possessor*



Determiner modifying possessum



As we have seen, the NP-internal word of possessive phrases can be accounted for by assuming that the possessor moves. When the possessor contains a determiner, as in (13), the moved NP must be realized discontinuously. This is a general property of noun phrases containing determiners in Iquito, however we have not yet specified what exactly leads to obligatory split constructions in the language. This will be addressed in the following section.

2.2 Deriving splits with distributed deletion

Now, let us turn to how splits in noun phrases are derived. As mentioned in the introduction, we will argue for a distributed deletion approach to split constructions. We defer a comparison of alternative accounts to section 7.1. Distributed deletion approaches assume that split constructions involve movement of an entire phrasal constituent with deletion applying in a scattered fashion to certain sub-constituents in both the higher and lower occurrences (see e.g. Wilder 1995; Fanselow & Ćavar 2002; Pereltsvaig 2008; Fanselow & Féry 2013; Davis 2020a; Bondarenko & Davis 2023). On this analysis and in light of the assumptions in the preceding section, an example such as (9b) would be analyzed as in (15) where deletion has applied only partially in the upper and lower copies of the moved phrase.

(15) [NP [NP iina miisaji] [N' [N kajinani] [NP ~~iina~~ miisaji]]]
 DET animal woman

'the animal of this woman'

(Michael 2004b: 6, (15b))

Of course, any reasonable theory of distributed deletion must be supplemented with explicit assumptions about what exactly can be deleted and under which conditions. While an analysis such as (15) is clearly powerful enough to derive the desired surface strings, it lacks explanatory insight if the formalism remains entirely unconstrained (Bošković 2005: 32).

One possible way of constraining the theory of distributed deletion is with reference to PF factors. Adopting the Copy Theory of Movement (Chomsky 1995) where full deletion of lower copies is the default case, one can then try to identify the particular morpho-phonological conditions under which lower copies may be pronounced (see e.g. Bobaljik 2002; Nunes 2004; Bošković & Nunes 2007). For example, Bošković (2002: 364–365) argues that exceptional lower copy pronunciation in Romanian multiple wh-questions is triggered by a PF constraint against

sequences of homophonous *wh*-words, for example. Furthermore, Franks & Bošković (2001) argue that there is a non-initiality constraint on clitic clusters in Bulgarian that triggers scattered deletion. While it is clear that PF factors can license lower copy Spell-Out or distributed deletion, it is not always possible to identify a clear PF constraint for all cases of split constituents. In Iquito, the trigger for discontinuity is a moved phrase containing a determiner, irrespective of any other obvious morpho-phonological condition. Here, it seems more plausible that the conditioning factor for split constructions in Iquito is morpho-syntactic in nature.

In other work on discontinuous constructions, when the mechanism governing deletion has been made explicit, it has been assumed that it is the featural content of the moved phrase that licenses the application of distributed deletion. For example, Fanselow & Ćavar (2002) argue that split NP constructions are due to the presence of distinct information structure-related features (e.g. topic, focus) inside the moved phrase (also see Bošković 2015). If an XP contains two such features and they are successfully checked in different positions (e.g. Spec-Top, Spec-FocP), as in (16), then the material bearing the checked feature must be spelled-out within the corresponding projection (Fanselow & Ćavar 2002: 86; also see Landau 2007).

(16) $[_{\text{FocP}} [_{\text{XP}} \text{X}_{[\text{Foc}]} \text{NP}_{[\text{Top}]}] \text{Foc}_{[u\text{Foc}]} \dots [_{\text{TopP}} [_{\text{XP}} \text{X}_{[\text{Foc}]} \text{NP}_{[\text{Top}]}] \text{Top}_{[u\text{Top}]} \dots [_{\text{XP}} \text{X}_{[\text{Foc}]} \text{NP}_{[\text{Top}]}]]]$

That said, not all instances of split constructions appear to be associated with information structural properties. As we have already seen for Iquito, split NP constructions are conditioned by the presence of a demonstrative determiner within the noun phrase. Furthermore, recall that the amount of material stranded in the split is dependent on the semantic association of the determiner (the PPG). As such, we do not see how one can successfully apply Fanselow & Ćavar’s (2002) analysis to the Iquito data, since, aside from the question of explaining the PPG, it is hard to identify what distinct formal features could be at play here.

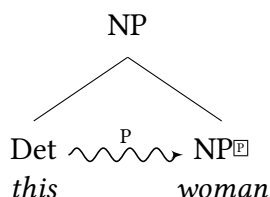
Alternative proposals have suggested that a different featural distinction is responsible for triggering a split construction. Hinterhölzl (2000, 2002) argues that only pied-piped material may be deleted in a higher copy, while the locus of the movement-triggering feature may not. Van Urk (to appear) makes a similar proposal for Imere and other predicate fronting languages, arguing that a constraint *REALIZEGOAL* mandates deletion of all material in the higher copy that does not bear the feature responsible for movement of the verb phrase (for van Urk, this is a verbal category feature [*iV*]). It is not easy to see how this approach could be extended to Iquito, however. We could assume that the determiner fulfils a similar function in hosting the feature driving movement of the noun phrase (e.g. [*iN/D*]), however it remains unclear how we could account for the PPG on this kind of analysis. It would seem to require that the possessum also bear the relevant movement triggering feature only when the determiner originates with the possessor. The motivation for such a stipulation, which would be central to deriving the PPG, remains far from obvious.

Instead, we propose an alternative syntactically-determined approach to restricting distributed deletion in Iquito that does not rely on the featural content of the moved phrase. Recall that the conditioning factor for obligatory split NP constructions in Iquito is the presence of a determiner. In other words, whenever a moved NP contains a determiner, a discontinuous realization of that NP is mandatory. We model this by assuming that determiners in Iquito have the inherent lexical property of assigning a special diacritic to all terminals in their c-command domain. We refer

to this diacritic as $\overline{\text{P}}$ (or as a ‘P-mark’) and represent P-mark assignment visually as in (17).⁸ It is important to mention that splits are only triggered by determiners in Iquito. NPs containing adjectives, numerals and other modifiers do not show splits in the absence of a determiner. In languages where this is the case, P-mark assignment would be available optionally and for a wider range of lexical items (see section 7.2 for further discussion).

(17) *P-marking in Iquito*

A determiner assigns a P-mark to all terminal nodes that it c-commands.



The language-specific property of P-marking by determiners will derive both the obligatoriness of NP splits in Iquito and also the structure-sensitive nature of the PPG. A language-specific stipulation of this kind is unavoidable in any account of why NP splits are mandatory with determiners in Iquito, unlike in the majority of other split NP languages. The diacritic $\overline{\text{P}}$ can be thought of as an instruction to PF with regard to how deletion applies within a given movement chain. P-mark assignment could easily be implemented as valuation under Agree of some pronunciation-related feature [PRON: ___] on all terminal nodes in the c-command domain of the determiner. In what follows, we adopt the view of the ‘P-mark’ as a diacritic, while acknowledging that there are other ways of implementing this.

In line with previous work, we assume distributed deletion to be a special instance of the more general Copy Deletion operation involved in generating displacement (Chomsky 1995; Nunes 2004). Within the Copy Theory of Movement, an explicit PF algorithm is required in order to determine which elements in a movement chain are pronounced (see e.g. Nunes 2004; Landau 2006; Hein 2018). We propose the formulation of Copy Deletion in (18).

(18) *Copy Deletion*

In a movement chain $\langle \alpha, \beta \rangle$ where α is the higher copy and β is the lower copy,

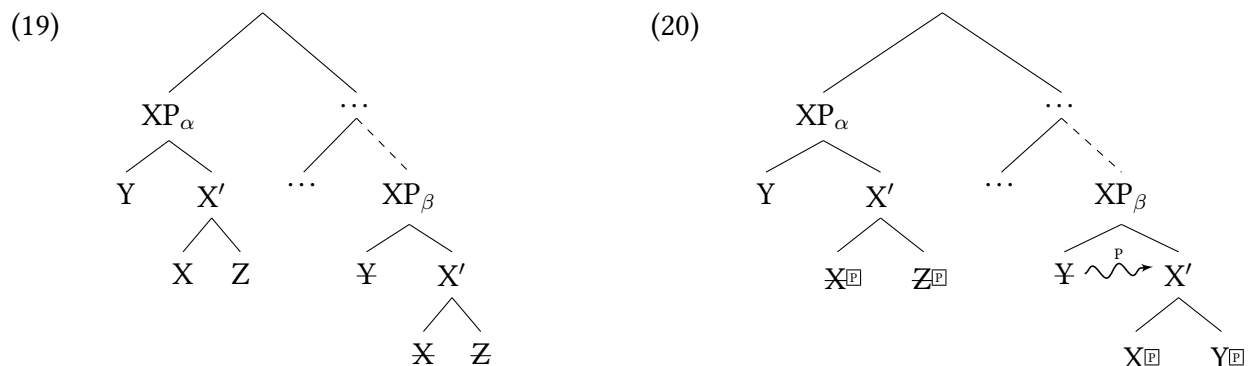
- a. delete all P-marked terminals in α ,
- b. delete all terminals in β which are not P-marked.

An important assumption, which we return to in the following section, is that the algorithm in (18) applies cyclically in the derivation, i.e. after each movement step. This is why Copy Deletion is formulated over exactly two copies created by a single application of Internal Merge. The result of the deletion specification assigned by Copy Deletion is preserved at later stages of the derivation. This formulation of Copy Deletion allows us to derive both regular instances of full deletion of a

⁸Since we assume that determiners are adjuncts to NP, this analysis raises questions about how P-marking is to be understood in relation to adjunction structures. On many interpretations of adjunction, we would expect the P-mark to also be present on the higher segment of the adjunction structure. What we say here is compatible with this view, since the definition of Copy Deletion deletion in (18) only makes reference to deletion of terminal nodes. Any non-terminals bearing a P-mark would therefore be ignored. For this reason, we will not any P-marks on the higher segment(s) of adjunction structures.

lower copy, as well as distributed deletion determined by P-mark assignment.

To see how (18) works, consider the abstract derivations in (19) and (20) in which an XP has undergone movement. In (19), the moved phrase does not contain any occurrences of the P-mark (\overline{P}). Consequently, no deletion occurs in the higher copy, as per (18a). In the lower copy, all terminals are deleted due to the absence of any P-marked nodes that would protect them from deletion. This derives displacement as the general case: When a phrase moves, the lower copy is deleted. The situation is different if one of the heads has a P-marking property. In (20), the Y head assigns a P-mark to all of the terminals in its c-command domain, namely X and Y. These P-marks are also present on the higher copy of XP. When this phrase undergoes displacement, all P-marked terminals in the higher copy (XP_α) will be deleted, as per (18a). In the lower copy (XP_β), those same terminals are protected from deletion by (18b), with only Y being deleted. This yields a split construction: ‘Y ... X Z’.



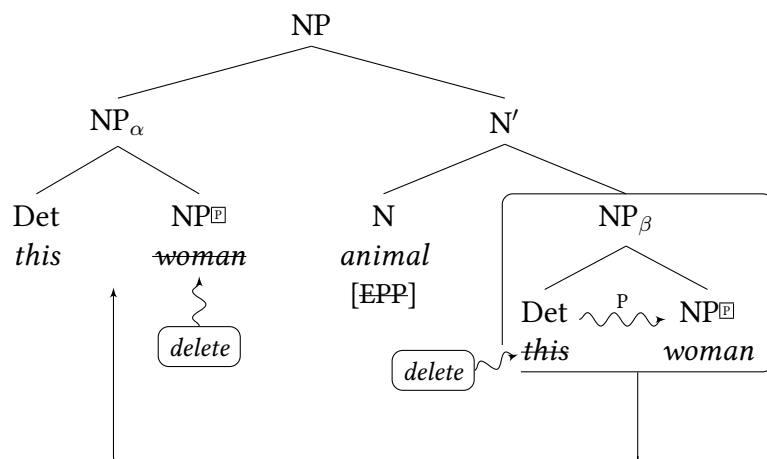
This assumption that P-marks are maintained under movement automatically derives the complementarity of deletion that is assumed by most approaches to distributed deletion, i.e. deleting an instance of an element in the higher copy of a movement dependency necessarily implies pronouncing it in the lower one, and vice versa (see e.g. Wilder 1995: 292).

Now, let us see how these assumptions derive a simple NP-internal split with a determiner modifying a possessor. Recall example (8b) repeated below as (21).

- (21) [_{NP} iina kajinani miisaji]
 DET animal woman
 ‘the animal of this woman’ (Michael 2004b: 6, (15b))

As (22) shows, the possessor ‘this woman’ moves to the specifier of the possessum ‘animal’ to check its [EPP]-feature. Since the determiner assigns a P-mark to its sister NP, the P-marked NP ‘woman’ is marked for deletion in the higher copy and protected from deletion in the lower copy, given the Copy Deletion algorithm we have proposed. This correctly derives the NP-internal split.

(22)



Thus, whenever a determiner is contained in an NP, it will assign a P-mark to some subpart of that NP, which therefore leads to a split construction if the NP undergoes movement. This derives the basic generalization about Iquito that split constructions are obligatory whenever the moved NP contains a determiner (see section 7.2 for discussion of the cross-linguistic implications of this analysis). With these assumptions in place, we will now show how this particular approach to split constructions derives the *Possessum Pied-Piping Generalization*.

3 Split NPs with irrealis movement

Having clarified the internal structure of possessive noun phrases and how split NP constructions are derived in our approach, we now turn to the movement at the clause level. In order to show how our analysis accounts for the PPG, we must first clarify what exactly the relevant movement process is that leads to discontinuity, namely ‘irrealis movement’.

3.1 The irrealis position

One important driver of clause-level movement in Iquito is the marking of reality status. In Iquito, finite clauses are obligatorily marked for reality status, which is an inflectional category that distinguishes realized events from unrealized events (Mithun 1995; Elliott 2000). Most importantly for our purposes, irrealis mood is marked by a change in word order, which appears to involve clause-level movement of a postverbal constituent to a position between the subject and verb. Given this typologically unusual strategy of marking mood as well as its pervasiveness in the Iquito language, reality status marking has been extremely well-documented in Iquito and the topic of much of the previous Iquito literature. While the foundational work (e.g. Lai 2009; Hansen 2011; Beier et al. 2011) focused on the word order changes that appear in irrealis mood and argued that word order was the sole exponent of reality status marking, more recent discoveries have brought to light that, in addition to the obligatory word order distinction between realis and irrealis, there is also (i) a tonal melody that accompanies irrealis mood, and (ii) a vowel length difference in subject pronouns (Beier & Michael 2022). In the present paper, we focus on the word order distinction between realis and irrealis, which we argue to involve clause-level movement

and, subsequently, examine how this movement leads to another environment for NP and PP splits.

First, we will briefly illustrate the word order distinction between realis and irrealis clauses. Irrealis clauses are marked by the intervention of a single constituent between the subject and verb, while realis clauses require adjacency of subject and verb. For example, the contrast in (23) is between the canonical SVO order in (23a) (realis mood) and the alternative SOV order in (23b), where the placement of the object between the subject and verb marks irrealis mood.

(23) *Direct object in the irrealis position*

- a. Iima kapi-ki-Ø [NP asúraaja] (realis)
 Ema cook-PFV-NPST manioc
 ‘Ema cooked manioc.’
- b. Iima [NP asúraaja] kapi-ki-Ø (irrealis)
 Ema manioc cook-PFV-NPST
 ‘Ema will cook manioc.’ (Beier et al. 2011: 66, (1a, b))

As we saw previously in (2), another option is for part of a split noun phrase to appear in the irrealis position (24b).

(24) *Determiner in the irrealis position*

- a. Nu= simiita-ki-Ø [NP iina simiimi] (realis)
 3SG= read-PFV-NPST DET book
 ‘She/he read this book (earlier today).’
- b. Nu= [NP iina simiimi] simiita-ki-Ø [NP iina simiimi] (irrealis)
 3SG= DET read-PFV-NPST book
 ‘She/he will read this book.’ (Beier et al. 2011: 85, (42))

Furthermore, it is important to mention that it is not possible to split an adjective from its modified noun, for example. As (25) shows, the adjective and noun appear together in the irrealis position.

- (25) Aamikáaka Iima [NP paápaaja umáana] asa-rii-Ø (irrealis)
 one.day.away Ema fish big eat-MMTPFV-NPST
 ‘Tomorrow Ema will eat a big fish.’ (Beier et al. 2011: 79, (24b))

In addition to nominals, we see that a constituent of any category may occupy the position between the subject and the verb in an irrealis clause. For example, an intervening adverb between the subject and the verb also leads to an obligatory irrealis interpretation (26b).

(26) *Adverb in the irrealis position*

- a. Kí= maki-ki-Ø [AdvP suwaáta] (realis)
 1SG= sleep-PFV-NPST well
 ‘I slept well.’
- b. Kí= [AdvP suwaáta] maki-ki-Ø (irrealis)
 1SG= well sleep-PFV-NPST
 ‘I will sleep well.’ (Beier et al. 2011: 82, (33a, b))

It is therefore not just SOV order that marks irrealis, but rather SXV where X stands for any

moveable constituent in the clause. The position occupied by X is referred to as the ‘irrealis position’ by Beier et al. (2011: 73). We see further evidence for the category-neutrality of this position in (27), where an adpositional phrase occupies it.

- (27) *Directional PP in the irrealis position*
 Kí-níyaaka [PP Iquito=jina] iiku-maa-Ø (irrealis)
 1SG-husband Iquitos=LOC go-REMPFV-NPST
 ‘My husband will go to Iquitos (in the distant future).’ (Beier et al. 2011: 81, (31a))

It is also possible to have a negative particle in the irrealis position between the subject and the verb. In certain clause types, negation is marked with a postverbal particle *kaa* and a verbal suffix *-ji*, as shown in (28a). The negative particle *kaa* can surface between the subject and the verb, leading to an irrealis interpretation (28b).

- (28) *Negative particle in the irrealis position*
 a. Saakaa iina kasíra-**ji**-ki-Ø [XP **kaa**] ikwani? (realis)
 what DET catch-NEG-PFV-NPST NEG man
 ‘What didn’t this man catch?’
 b. Jáana simiimi kí= [XP **kaa**] paa**ji**-**ji**-rii-Ø? (irrealis)
 which book 1SG= NEG study-NEG-MMPFV-NPST
 ‘Which book won’t I read?’
 (Hansen 2018: 146, (52), 149, (59))

We assume that this bipartite negation is akin to similar constructions in other languages such as French *ne...pas* or Middle Dutch *en...niet*, where it has been argued that the affix is the head of a NegP projection and the negative particle occupies Spec-NegP (see e.g. Pollock 1989; Haegeman 1995; Zeijlstra 2004). We therefore adopt the structure in (29) where *kaa* is a phrasal projection in Spec-NegP and *-ji* is the head of Neg.

- (29) ... [NegP [XP *kaa*] [Neg' [Neg *-ji*] [_{vP} ...]]]

Given the examples introduced thus far, we can state the following descriptive generalization about the word order component of irrealis marking (note that we address splits with subjects in section 6):⁹

⁹A relevant question one might ask is what happens when there is no moveable constituent other than the subject in the clause. For example, what happens in the case of an intransitive clause that does not contain any adverbs? Beier et al. (2011: 91) present a revealing example of this kind, which we have revised to accommodate an updated analysis where the subject pronoun has an underlying long vowel [p̄i] (doubled vowels represent a long vowel). With an intransitive verb such as *iikwa* (‘go’), there is typically hiatus resolution when the proclitic subject ends in a vowel, as is the case in example (i). The sequence /īii/ (that would occur at the end of the subject and the start of the verb) is resolved by deleting the second vowel (while preserving its length) to derive [īi] (see Casali 1997 on deletion as a hiatus repair). Evidence that its length is preserved comes from the fact that while the long vowel of *p̄i* is optionally shortened in some environments, in this instance, the vowel is obligatorily long. Turning to the corresponding irrealis example in (ii), we see that it has the same underlying representation as (i), but there is no hiatus resolution. The lack of hiatus resolution in (ii) is indicative of some intervening null material in the irrealis position in line with the generalization in (30).

(30) *Irrealis generalization*

Irrealis clauses must have an intervening constituent between the subject and verb.

At this point, it is also important to emphasize that Beier & Michael (2022) have recently shown that, in addition to the word order requirement in (30), there is also a tonal change involved in the marking of irrealis mood in Iquito. In the realis clause in (31a), there are no elements with lexical tone and no irrealis tonal melody, so the only tone expressed is the right-edge boundary tone (H%), which is realized on the verbal argument. In the corresponding irrealis clause in (31b), there is an additional HLL tonal melody. The H docks to the final mora of the subject, and the LL is linked to the first two moras of the XP in the irrealis position.

- (31) a. [naaʃikitaki núú]
Naa= ʃikita-Ø-ki [NP nuu] H%
3PL= wash-PFV-NPST 3SG
'They washed it (today).' (*realis*)
- b. [náá nùùʃikitakí]
Naa^{HLL} [NP nu=] ʃikita-Ø-ki H%
3PL IRR 3SG wash-PFV-NPST
'They will wash it (today).' (*irrealis*) (Beier & Michael 2022: 7, (10), (11))

With the empirical generalizations about irrealis marking now in place, we move on to our analysis of the irrealis position.

3.2 Analysis of irrealis movement

In order to capture the generalization in (30), we propose a movement-based account of the irrealis position. Specifically, we argue the irrealis position is an inner specifier of T. In realis clauses (which show SVO order), we assume that the subject is in Spec-TP while the verb moves to T (32a). Movement of the subject is triggered by an [EPP] feature on T that triggers movement of the closest NP to its specifier. In irrealis clauses, the T head bears an additional [EPP] feature, which triggers movement of a second phrasal constituent to an inner specifier of T (32b).¹⁰ We take this to be part of the lexical specification of irrealis T. Importantly, this additional [EPP] feature

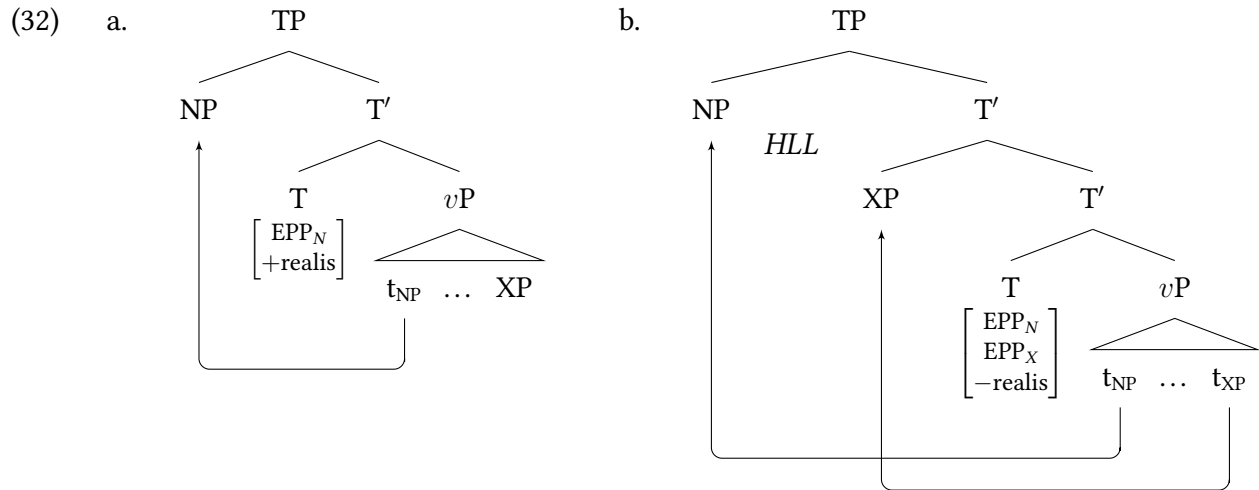
-
- (i) [pí.kwa.ki]
Pí=iikwa-ki-Ø
1PL.INCL=go-PFV-NPST
'We went.' (*realis*)
- (ii) [pí.í.kwa.ki]
Pí=iikwa-ki-Ø
1PL.INCL=go-PFV-NPST
'We will go.' (*irrealis*)
(Beier et al. 2011: 91, (56, 57))

¹⁰Multiple specifiers of T have been proposed for languages with so-called 'broad subjects' (Doron & Heycock 1999, 2010), e.g. for multiple nominative constructions in Japanese (i) (also see Davis 2021: 320–322 for an argument for multiple specifiers of T in English).

- (i) [TP yoi otya-ga [T' nihonzin-ga [T' kononde nomu]]] (koto)
good green.tea-NOM Japanese-NOM enjoying drink (fact)
'Good green tea, Japanese people drink [it] with pleasure.'
(Doron & Heycock 1999: 70, (1b))

A reviewer also points out that the assumption of an additional [EPP] brings up a question of restrictiveness: Could there be a language with three or more [EPP] features on a given head? In principle, this might be the case. The way

is category-neutral, meaning that it can attract a phrase of any category to an inner specifier of T. In (32), we emphasize this difference in the category-sensitivity of the features by using a subscript $[EPP_X]$ for the category-neutral variant in (32). A category-neutral $[EPP]$ feature on T has been proposed for other languages, e.g. for stylistic fronting in Icelandic (Holmberg 2000, 2006; Ott 2018), and similar inversion constructions in Finnish (Holmberg 2005), Russian (Bailyn 2004), Czech (Kučerova 2012) and English (Collins 1997).



These movements to Spec-TP must be order-preserving. This can be achieved by Richards’s (2001) notion of ‘tucking-in’, assuming that the $[EPP_N]$ feature can be extrinsically ordered prior to the category-neutral $[EPP_X]$. Alternatively, one could adopt the ‘buffer’ approach to order-preserving movement in Heck & Himmelreich (2017) where movement to multiple specifiers proceeds via a pushdown stack in a separate workspace.

In addition, we indicate that the floating HLL tonal melody that is responsible for the tonal changes observed in the irrealis must somehow also be incorporated into the structure in (32b). One possibility, raised by a reviewer, would be to say that the tonal melody occupies an additional syntactic position between the subject and the irrealis XP, i.e. yet another inner specifier of T (this could potentially be an explanation for the effect noted in footnote 9). Alternatively, one could view the floating tonal melody as a concatenative exponent of T whose association is regulated by constraints in the phonology (Trommer to appear). What is clear is that its effects are best captured by assuming that it occupies the position in (32b). Since this tonal change is not crucial for our analysis, we do not commit to any of these particular implementations.

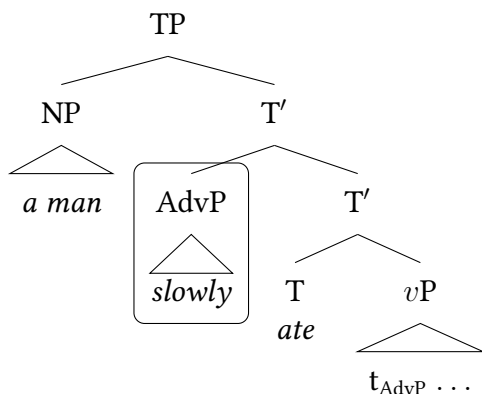
One might wonder why we analyze the irrealis position as an inner specifier of T rather than the specifier of a dedicated functional projection such as Irr(ealis)P (33). On this view, we would have to say that the verb moves to T only in realis clauses. There could be no movement of the head of Irr(ealis)P to T (otherwise the verb would intervene between NP and XP).

that we think about the additional $[EPP]$ on T in Iquito is as part of the realization of irrealis mood in the language (in conjunction with the tonal changes mentioned above). In some sense, this additional $[EPP]$ is then linked to the feature $[-realis]$, i.e. as a kind of ‘configurational exponence’. Although not fully worked out, the intuition we are pursuing here is that an additional $[EPP]$ feature on a head such as T would only be posited if it serves to mark some grammatical distinction (e.g. realis vs. irrealis). This may ultimately be one way to constrain the postulation of such additional features cross-linguistically.

(33) [TP NP [T' T [IrrP XP [Irr' [Irr V+v] [vP t_{NP} ... t_{V+v} ... t_{XP}]]]]]

While this might offer a natural solution for the location of HLL (in T), a potential argument in favour of the subject and the irrealis XP being part of the same specifier domain comes from adjacency restrictions found in both realis and irrealis clauses. It is ungrammatical for an adverb (or any other phrase) to intervene between the subject and the verb in a realis clause (34).

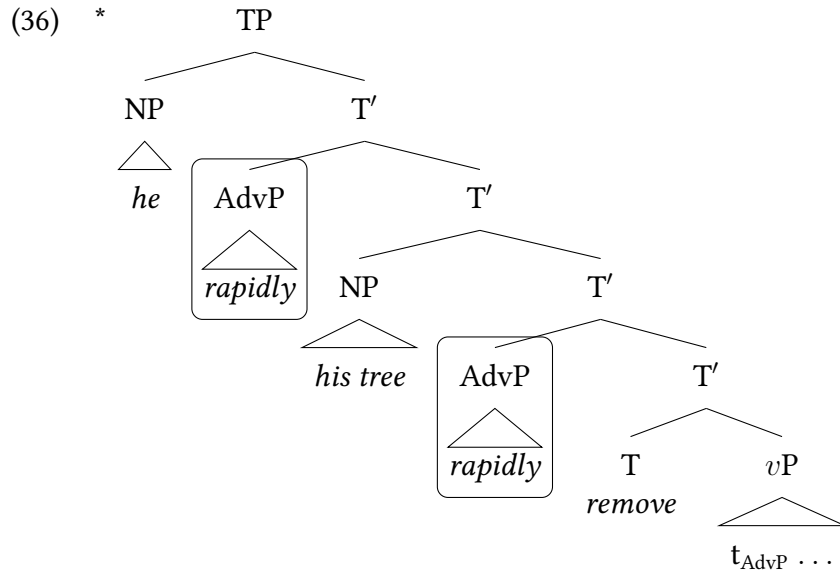
(34) *Ikwani maakwáarika asa-ki-Ø iina pápaaja (realis)
 man slowly eat-PFV-NPST DET fish
 Intended: 'A man ate the fish slowly.' (Beier et al. 2011: 82, (36))



As shown in (34), we can view this as the impossibility of scrambling the AdvP to T' via clause-internal scrambling (however, this would still be possible via EPP-driven movement). Importantly, we find the same restriction in irrealis clauses. While irrealis clauses are characterized by the obligatory presence of a constituent between the subject and the verb, Beier et al. (2011) show that no other constituent may occur between the phrase in the irrealis position and either the finite verb (35a) or the subject (35b).

(35) a. *Íina ikwani nu= nu-náana **iyarákata** jimata-rii-Ø (irrealis)
 DET man 3SG= 3SG-tree rapidly remove-MMTPFV-NPST
 Intended: 'That man, he will remove his timber rapidly.'
 b. *Íina ikwani nu= **iyarákata** nu-náana jimata-rii-Ø (irrealis)
 DET man 3SG= rapidly 3SG-tree remove-MMTPFV-NPST
 Intended: 'That man, he will remove his timber rapidly.'
 (Beier et al. 2011: 90, (55))

On our analysis of the irrealis position is an inner specifier of T, the same ban on scrambling AdvPs to T' also extends to the irrealis examples in (35), as shown in (36).



Our theory can therefore capture the observation that, similar to the subject and the verb, the irrealis XP forms an impenetrable domain with the subject and the verb. On the alternative analysis involving a dedicated irrealis projection (33), one would also have to stipulate that scrambled adverbs may not adjoin to IrrP, which does not offer a clear way of unifying the adjacency restrictions in realis and irrealis clauses.

Another alternative view of the irrealis position that has been proposed treats the distinction between realis and irrealis word orders as derived by head movement rather than phrasal movement (see Brown 2004b, Hansen 2006 and Berger 2017). On this view, the verb raises to T in realis clauses (37a), while this movement is absent in irrealis clauses (37b).

(37) *Alternative verb movement analysis of irrealis word order*

- a. $[_{TP} \text{ Iima } [_{T'} \text{ [}_T \text{ [}_V \text{ kapiki }]]] [_{VP} \text{ [}_{NP} \text{ asúraaja }] \text{ t}_V \text{ }]]]$ (realis)
 Ema cook manioc
 ‘Ema cooked manioc.’
- b. $[_{TP} \text{ Iima } [_{T'} \text{ [}_T \text{ } \emptyset \text{] } [_{VP} \text{ [}_{NP} \text{ asúraaja }] \text{ [}_V \text{ kapiki }] \text{ }]]]$ (irrealis)
 Ema manioc cook
 ‘Ema will cook manioc.’

Here, one could assume that $[-\text{realis}]$ T lacks the feature relevant for head movement of the verb to T (in contrast to having an [EPP] feature as in our analysis). This approach faces some problems though. First, in order to derive (37b), one would have to assume that Iquito is underlying OV, a fact that is broadly inconsistent with the head-initial profile of the language, or alternatively stipulate that there is obligatory object shift only in irrealis clauses. Furthermore, it is unclear how this analysis can capture the (im)possibility of intervening constituents between the subject and the verb, including the phenomenon of ‘possessum pied-piping’. If the verb remains low in irrealis clauses (37b), then it is unclear why there should be a ban on adjunction to the verb phrase leading to the adjacency restrictions discussed above. Finally, split NPs in the irrealis clauses are entirely unexpected given the structure in (37b) where the verb does not move. On this analysis,

the irrealis position is the base position, a fact that makes examples with a stranded postverbal NP difficult to analyze.

3.3 Split NPs in the irrealis position

With these assumptions about irrealis movement in place, let us now return to how we derive split NPs at the clause level. Recall that there are two patterns we find with irrealis clauses where the object is a possessive NP containing a determiner (see Brown 2004*a*; Hansen 2011 for further examples). In (38a), the determiner is associated with the possessum and appears alone in the irrealis position. In (38b), the determiner modifies the possessor and both the possessum and the determiner occupy the irrealis position, a case of what we have termed ‘possessum pied-piping’.

- (38) a. Aámiikáaka kí= iipi siwĩra-kwa-Ø [NP ____ miisaji mira]
 one.day.away 1SG= DET.PL.AN visit-DEIPFV-NPST woman children
 ‘Tomorrow, I will go there to visit these children of the woman.’
 (Hansen 2011: 155, (3.89))
- b. Aámiikáaka kí= iipi sinaaki sikita-rii-Ø [NP ____ mira-jaarika]
 one.day.away 1SG= DET.PL.AN clothes wash-MMTPFV-NPST children-DIM
 ‘Tomorrow, I will wash the clothes of these children.’
 (Hansen 2011: 161, (3.102))

To capture this observation descriptively, recall the formulation of the PPG in (39).

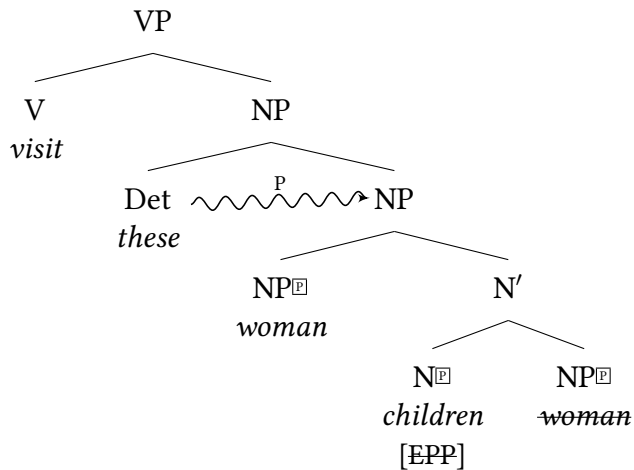
- (39) *Possessum pied-piping generalization (PPG)*
 When a determiner is realized discontinuously from a possessive NP, the possessum appears together with the determiner in its derived position if the determiner modifies the possessor.

We are now in a position to see how our assumptions about the internal structure of the NP and the P-marking approach to NP splits can derive this generalization straightforwardly.

First, let us consider what happens when the determiner modifies the possessum. The pre-movement structure for (38a), repeated below as (40), is given in (41). The entire NP is merged as the direct object of the verb. Within the NP, the bare possessor ‘woman’ has undergone movement to the edge of the noun phrase headed by the possessum ‘children’ with its lower copy being marked for deletion. The entire possessum NP is modified by the determiner ‘these’, which assigns a P-mark to all the terminals it c-commands. This includes both the possessum and the possessor.

- (40) Aámiikáaka kí= iipi siwĩra-kwa-Ø [NP ____ miisaji mira]
 one.day.away 1SG= DET.PL.AN visit-DEIPFV-NPST woman children
 ‘Tomorrow, I will go there to visit these children of the woman.’

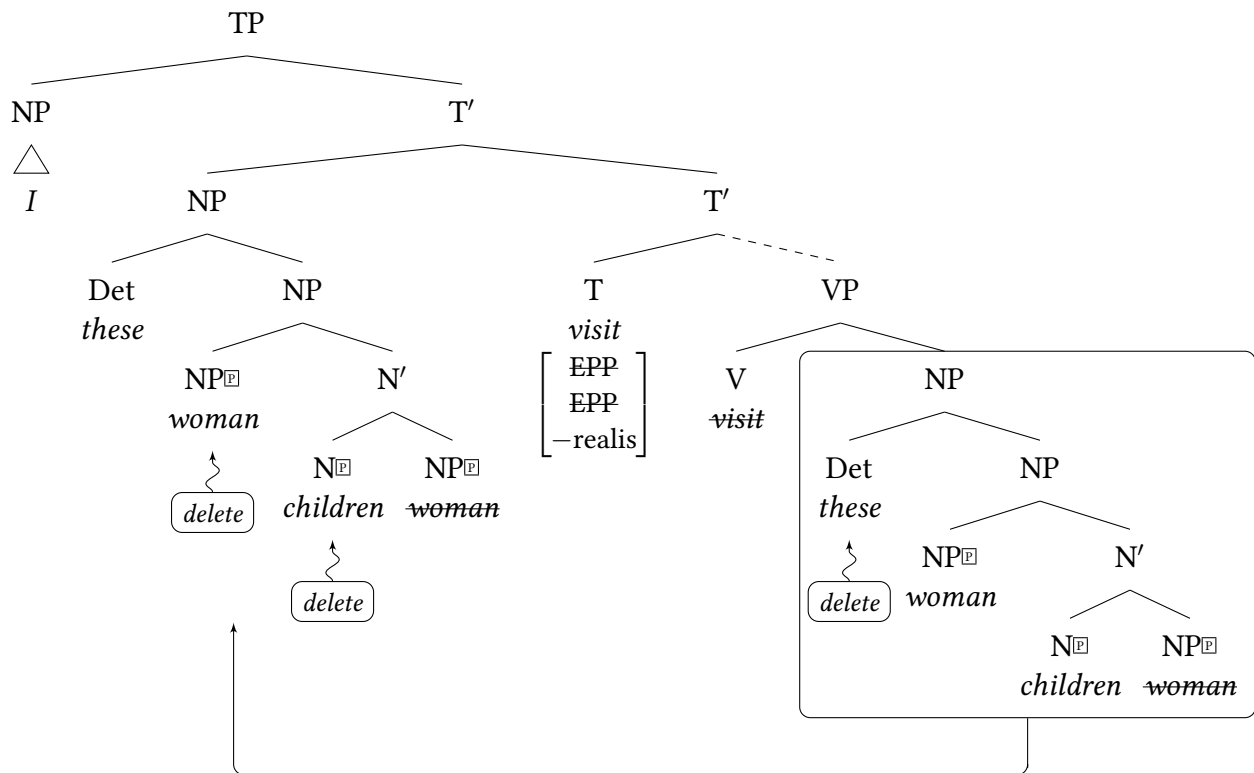
(41)



Although the lower copy of ‘woman’ has already been marked for deletion at this point, we will still add a P-mark here for the sake of consistency. Since the deletion specification is not reversible, the assignment of this P-mark will not have any effect on the outcome.

Subsequently, this NP (together with all P-mark and deletion specifications) is moved to the irrealis position (42).

(42)



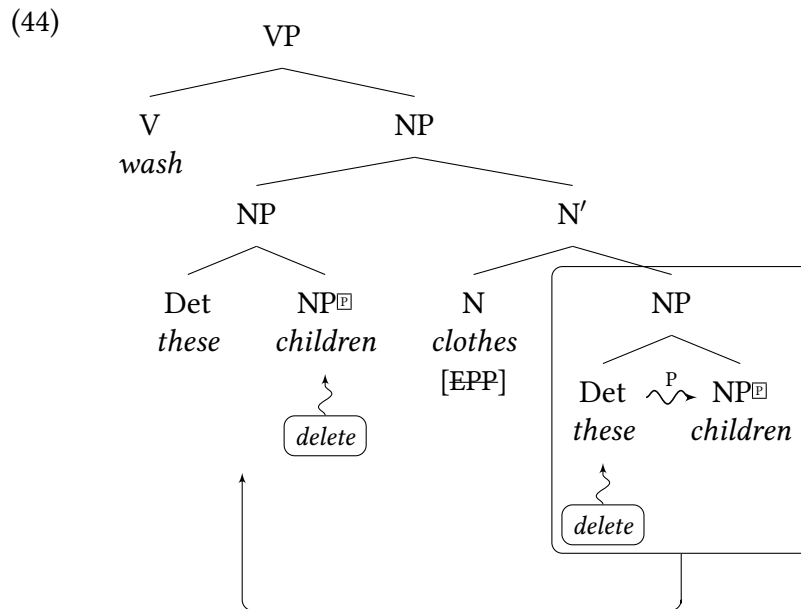
After this movement, the copy deletion algorithm applies again. Recall that the Copy Deletion algorithm states that all non-P-marked terminals in the lower copy will be deleted. In (42), it is just ‘these’ in the lower copy that does not bear a P-mark. In the higher copy, only terminal nodes

that bear a P-mark will be deleted. This leads to deletion of everything but the determiner ‘these’ in the higher copy. In this way, the word order we derive in (42) corresponds to displacement of the determiner but no possessum pied-piping.

Now let us see why the situation is different if the determiner modifies the possessor. In an example such as (38b), repeated below as (43), the determiner is associated with the possessor ‘children’. Under movement to this irrealis position, the possessum is pied-piped along with the determiner.

- (43)
- | | | | | | | |
|--|--------------|------|-----------|---------|------------------|-------------------------|
| | Aámiikáaka | kí= | iipi | sinaaki | sikita-rii-Ø | [_{NP} _____] |
| | one.day.away | 1SG= | DET.PL.AN | clothes | wash-MMTPFV-NPST | mira-jaarika] |
| | | | | | | children.-DIM |
- ‘Tomorrow, I will wash the clothes of these children.’

In the pre-movement structure of the NP in (43), the determiner merges with the possessor ‘children’, assigning it a P-mark. When the possessor moves to the edge of the possessum NP, this triggers a split in the familiar fashion, with ‘children’ pronounced in the lower copy and deleted in the higher one (44).



Subsequently, this NP moves to the irrealis position, with any deletion marks from previous cycles inherited (45). Here, the Copy Deletion algorithm will delete any terminals in the lower copy do not bear a P-mark. In this case, the lower instance the possessor ‘children’ is the only P-marked terminal and all other previously undeleted terminal nodes in the lower copy are marked for deletion, namely the determiner and the possessum ‘clothes’. In the higher copy, we find the opposite scenario: only P-marked nodes are deleted. Since the lower instance of ‘children’ is the only undeleted P-marked node in the higher copy, it is marked for deletion while everything else in the higher copy is pronounced, including the possessum. This is what gives rise to possessum pied-piping.

A determiner modifying the possessum implies a relatively high attachment position whose c-command domain contains the possessum. This will cause the possessum to be P-marked and, as a result, protected from deletion in the lower copy.

Furthermore, the representations in (47) also highlight an important point, namely that Copy Deletion, or at least the determination of what elements undergo deletion, must apply cyclically, i.e. in the derivation. The reason for this can be seen in the structure for the determiner modifying the possessum. The determiner merges within an NP that contains a step of movement, as such it will assign P-marks to all the terminals it c-commands. This includes both the lower and higher copies of the moved possessor. It must therefore be the case that the deletion specification of the lower copy of the possessor is already present before P-mark assignment takes place. If it were not, then we would expect both instances of the possessor to be pronounced (since P-marked elements are not deleted in the lower copy of a movement chain). It must therefore not count as P-marked at the point at which deletion is determined, which must be prior to the determiner entering the structure. For this reason, the determination of which copies are to be deleted must take place derivationally in the syntax. This need not necessarily imply that deletion itself is a syntactic process, however.

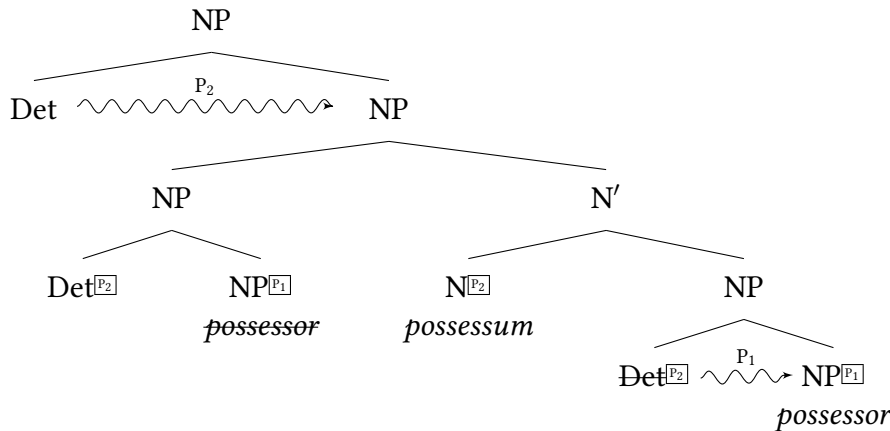
As we can see, this successfully derives the phenomenon of ‘possessum pied-piping’. However, ‘pied-piping’ is somewhat of a misnomer from the point of view of this analysis, as what is really at stake is whether the possessum falls inside the domain of immunity from deletion in the lower copies that corresponds to the c-command domain of the determiner. Consequently, we could equally understand the phenomenon of possessum pied-piping in terms of the conditions on ‘protection from deletion’ in the lower copy. This is the core insight of analysis, as we have presented it. If a given terminal node is not in the c-command domain of a determiner, then it will remain unprotected from deletion in the lower copy and, by virtue of the complementarity of distributed deletion, be pronounced in the higher copy.

3.4 Multiple determiners

We have not yet discussed whether it is possible for the both the possessor and the possessum to be modified by a determiner. Given our assumptions so far, it is clear what the prediction would be. Given the PPG, we expect to find possessum pied-piping whenever the possessor is modified by a determiner. As we have seen, this is due to the lack of P-marking of the possessum on our analysis. If the possessum is also associated with a distinct determiner, however, the possibility of possessum pied-piping should disappear due to the fact the possessum will now also be P-marked.

This is shown abstractly in (48). We have numbered the P-marks so it is easier to keep track. The determiner modifying the possessor assigns \overline{P}_1 to its sister NP, leading to a split when it moves within the possessum NP. If we then modify the entire possessum NP with a determiner, then a second P-mark \overline{P}_2 will be assigned to all terminals inside the possessum NP. For the sake of simplicity, we assume that a second P-mark cannot be assigned to the possessor (though nothing crucial hinges on this assumption).

(48) Determiner associated w/ both possessor and possessum:



The prediction here is clear, the NP in (48) moves, then only the higher determiner should be pronounced in the higher copy. Everything is P-marked and therefore protected by deletion.

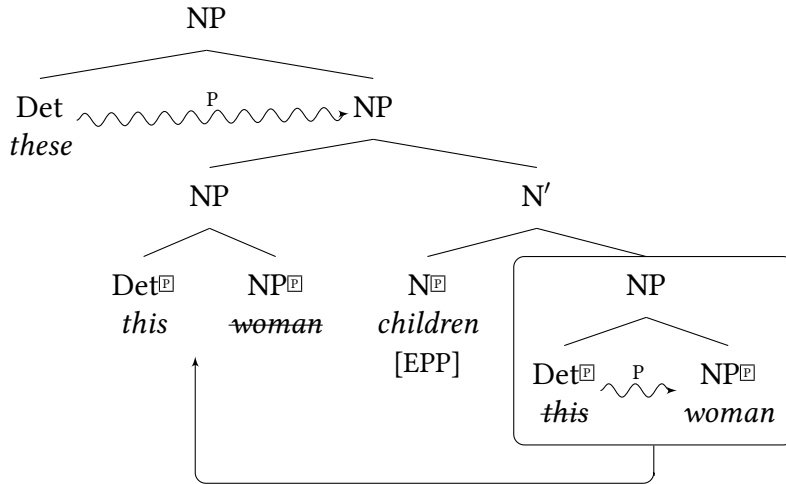
Multiple determiner constructions of this kind are attested in Iquito. The examples in (49) are taken from Hansen (2011), which show a single determiner in the derived position. In (49a), we cannot easily tell which noun the displaced determiner modifies due to the lack of agreement with either noun, though (49b) clearly shows that the displaced determiner is associated with the possessum due to plural/animacy agreement.¹¹

- (49) a. Iina máaya_i, nu_i=iina irikatájuu-rii-Ø [NP ____ iina íimina ikwaáni]
 DET child 3SG= DET repair-PFV-NPST DET canoe man
 ‘This child, it will repair this canoe of this man.’
- b. Aámiikáaka kí=iipi kariinii-rii-Ø [NP ____ iina mira mĩsáji]
 one.day.away 1SG DET.PL.AN care.for-PFV-NPST DET children woman
 ‘Tomorrow, I will care for these children of this woman.’
 (Hansen 2011: 163, (3.104); 164, (3.109))

Below, we provide the analysis for (49b). First, we have to build the object NP ‘these children of this woman’. The possessor ‘woman’ is assigned a P-mark by the determiner ‘this’. The determiner ‘these’ merges with the entire possessum NP constituent, assigning a P-mark to all other previously non-P-marked terminals. We do not distinguish with indices here, as this structure closely corresponds to (48). The possessor moves across the possessum, stranding the NP ‘woman’ in the familiar way.

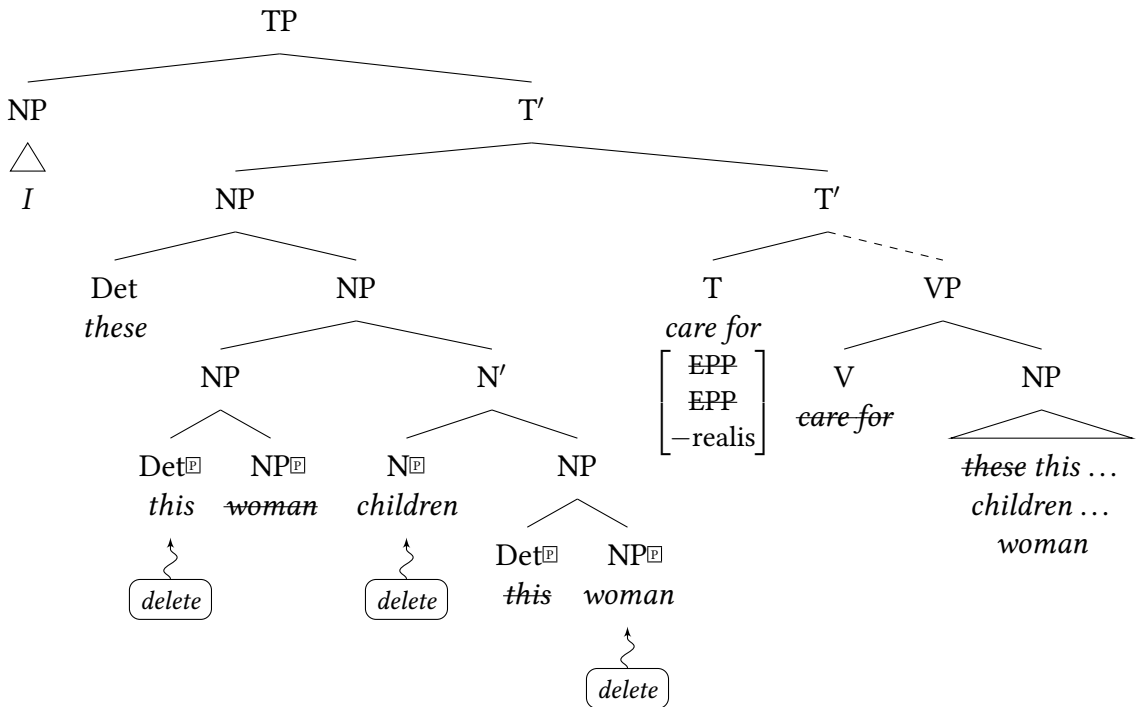
¹¹Hansen (2011: 163) initially refers to constructions such as (49a) as ‘determiner doubling’, however the translation given for (49a) makes it clear that actually both the possessor and possessum are each associated with a separate determiner. Hansen (2011: 167) subsequently states that ‘when the determiner occurs in both the irrealis position and after the verb, then both the possessor and the possessum are interpreted as definite’, which we interpret to mean they are each syntactically modified by a determiner, as the distinct forms in (49b) make apparent. Furthermore, this putative ‘determiner doubling’ is claimed to be restricted to possessive noun phrases (Hansen 2011: 164), which makes sense if each determiner is actually modifying a separate noun in all of these cases.

(50)



This NP is merged as the object of the verb *kariinii* ('care for') and subsequently moves to the irrealis position. Here, the copy deletion algorithm says to delete any previously undeleted P-marked elements in the highest copy, which corresponds to everything except the determiner 'these' which is associated with the possessum. Given the complementarity of deletion, this determiner, by virtue of being the only non-P-marked terminal that was not previously marked for deletion, is now deleted in the lower copy with all other P-marked terminals protected.

(51)



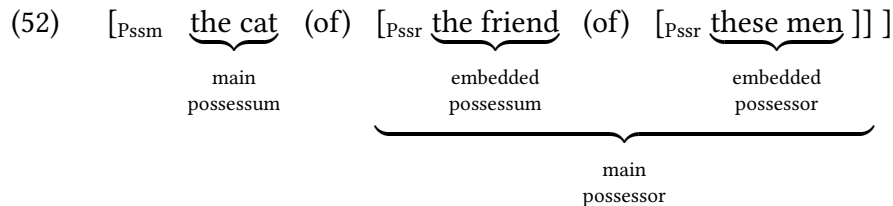
In a certain respect, the multiple determiner constructions are therefore the exception that prove the rule. The PPG states that possessum pied-piping happens whenever the possessor is modified

by a determiner. But as we have seen, this is a necessary but not a sufficient condition for possessum pied-piping. It must also be the case that the possessum is *not* modified by a determiner in order to have possessum pied-piping. This additional factor makes sense if it is the configurational properties of the noun phrase that regulate how much material is pronounced in the higher phrase, as it is only if a terminal is not c-commanded by a determiner that it will be pronounced in the higher copy. In general, discontinuities in Iquito arise whenever part of an NP is c-commanded by a determiner and therefore P-marked.

As we have shown, this approach provides what we believe to be insightful account of how the PPG applies to NP splits in the irrealis position. With that said, however, the effects of the PPG actually run much deeper in the syntax of Iquito. As we will show, this generalization is active in constraining word order in other domains, namely in NPs and PPs.

4 NP-internal word order

In this section, we discuss the word order we find inside complex possession structure in Iquito and demonstrate how these also fall under the PPG. Before presenting the data, let us first clarify some of the terminology we will use to talk about these possession structures. In (52), we show the basic semantic subordination relations that hold in recursive possession of the kind found in Iquito, e.g. ‘the cat of the friend of these men’. We call the constituent corresponding to ‘the friend of these men’ the *main possessor* and its associated possessum (‘cat’) the *main possessum*. Within the complex possessor, ‘these men’ is the *embedded possessor* to its own possessum ‘the friend’, which we in turn refer to as the *embedded possessum*.



With this terminology in mind, we now turn to the possible NP-internal word orders in Iquito.

4.1 Recursive possession in NPs

In cases with recursive possessors without any determiners such as (53), the main possessor ‘the friend of the men’ precedes the main possessum *miisi* (‘cat’), marked in boldface. Within the main possessor, the embedded possessor ‘men’ also precedes its associated possessum ‘friend’.



When we add a determiner to recursive possessor examples such as (53), the correct word order depends on which noun the determiner is associated with (Michael 2003: 9). In (54), the determiner is associated with the embedded possessum. The determiner *iipi* must appear at the left edge of

the noun phrase, where it precedes the main possessum *miisi* ('cat'). Furthermore, the embedded possessor *miisaji* ('woman') precedes the embedded possessum *mirajaarika* ('children').

- (54) [NP iipi **miisi** miisaji mira-jaarika]
 DET.PL.AN cat woman child.PL-DIM
 'the cat of these children of the woman' (Michael 2003: 9, (39))

On the other hand, if the determiner is associated with the embedded possessor, i.e. 'man-PL' in (55), both the determiner *iipi* from the embedded possessor and the embedded possessum *akuniita* ('friend') precede the main possessum *sapatu* ('shoe').

- (55) [NP iipi akuniita **sapatu** ikwani-wiya]
 DET.PL.AN friend shoe man-PL
 'the shoe of the friend of these men' (Michael 2003: 9, (40))

The possible NP-internal word orders we have seen above are summarized abstractly in (56) together with what we assume to be the underlying structures.

(56)	Underlying structure	Surface word order	
a.	[NP animal [NP woman]]	<i>woman animal</i>	(8a)
b.	[NP animal [NP this woman]]	<i>this animal woman</i>	(8b)
c.	[NP cat [NP friend [NP men]]	<i>men friend cat</i>	(53)
d.	[NP cat [NP these children [NP woman]]]	<i>these cat woman children</i>	(54)
e.	[NP shoe [NP friend [NP these men]]]	<i>these friend shoe men</i>	(55)

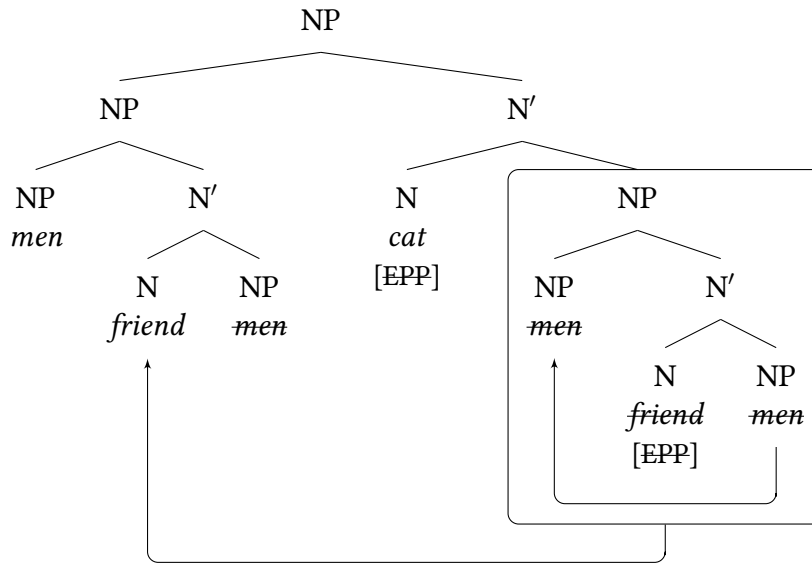
We see what looks like an effect of the PPG by comparing (56d) and (56e). The embedded possessum precedes the main possessum only if the embedded possessor is modified by a determiner, as in (56e). This is a PPG effect with respect to the main possessum if we assume that there is movement of the main possessor within NP. Here, possessum pied-piping is entirely noun phrase internal, with the main possessum now taking the role of irrealis T in the analysis presented in the preceding section. In what follows, we will demonstrate how our analysis of the PPG naturally extends to the word orders we find in recursive possession structures.

4.2 Deriving NP-internal splits

Now, let us now walk through the derivations of the various word orders presented in the preceding section. We will first take the example without any determiners in (53), repeated as (57). First, the complex possessor phrase 'friend of the men' is created, involving [EPP]-driven movement of the embedded possessor 'men' to the specifier of its possessum. When the main possessum 'cat' is merged with the complex possessor, the entire complex possessor rolls up to prenominal position as shown in the tree below.

- (57) ikwani-wiya kujimani miisi
 man-PL friend cat
 ‘the cat of the friend of the men’ (the men’s friend’s cat)

(Michael 2003: 9, (36))



Turning to the examples with determiners, let us first consider a case where the determiner modifies the embedded possessum, as in (58). As we would expect there is no pied-piping of the embedded possessum, only the determiner is realized in the derived position above the main possessum ‘cat’.

- (58) [_{NP} iipi miisi miisaji mira-jaarika]
 DET.PL.AN cat woman child-DIM
 ‘the cat of these children of the woman’

(Michael 2003: 9, (39))

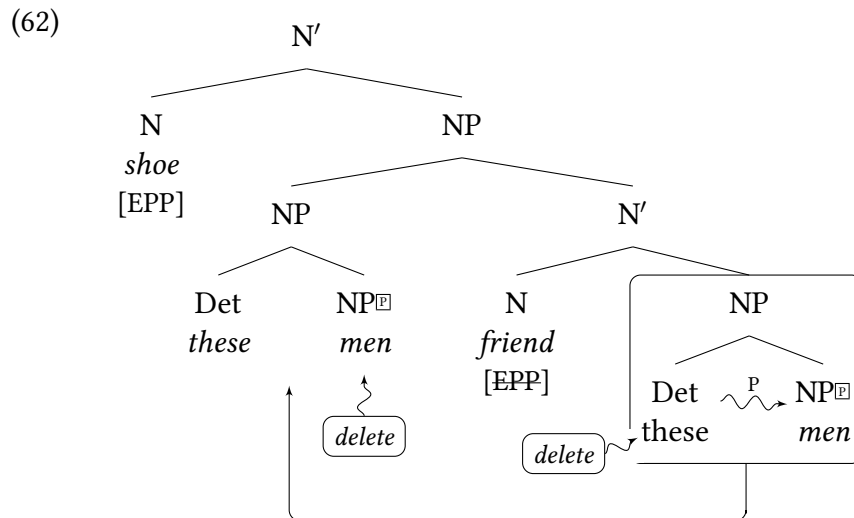
[cat [these children [woman]]] → *these cat woman children*

Going from the bottom up, we first create the main possessor ‘these children of the woman’. The embedded possessor is bare (‘woman’) and merged as the sister of the embedded possessum ‘children’. Given that every N bears an [EPP] feature, the possessor moves to the specifier of the possessum NP. Subsequently, the determiner is merged with this phrase, assigning a P-mark to all the terminals it c-commands. After the embedded possessor has been built, this NP is merged as the possessor of the main possessum ‘cat’, giving us the structure in (59).

determiner and the embedded possessum ‘friend’ precede the main possessum ‘shoe’. This is then essentially an instance of possessum pied-piping across the main possessum.

- (61) [NP iipi akuniita sapatu ikwani-wuiya]
 DET.PL.AN friend shoe man-PL
 ‘the shoe of the friend of these men’ (Michael 2003: 9, (39))
 [shoe [friend [these men]]] → *these friend shoe men*

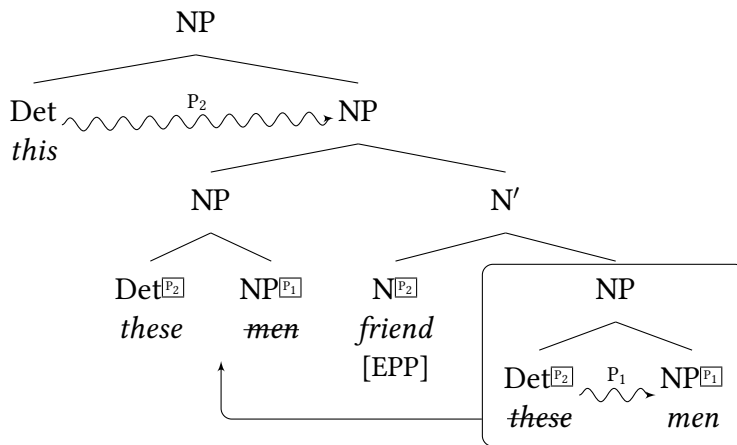
To see how this is derived, let us first consider the structure of the embedded possessor in (62). The determiner is merged with the possessor to form the embedded possessor ‘these men’. Det then assigns a P-mark to all of the terminal nodes it c-commands, which is just ‘men’. This NP is then merged as the sister of the embedded possessum ‘friend’. This NP is also a second-position domain, so the possessor moves to the specifier of the NP projected by the possessum. Following everything we have seen thus far, a split configuration is derived. This NP is then embedded as the possessor of the main possessum ‘shoe’.



Like all other NPs in Iquito, the head of this phrase bears an [EPP]-feature requiring movement to its specifier. When the complex possessor moves, we now see the effect of the PPG. The Copy Deletion algorithm tells us to delete all previously undeleted non-P-marked terminals in the lower copy. In (63), the determiner only c-commands its sister (the embedded possessor ‘men’) and therefore does not protect the embedded possessum ‘friend’ from deletion in the lower copy. Relatedly, the fact that the possessum is not P-marked means that deletion of the possessum ‘friend’ in the higher copy is not possible. Instead, only the previously undeleted P-marked instance of the possessor ‘men’ is marked for non-pronunciation in the higher copy. This yields the surface string *these friend shoe men*, and therefore a case of ‘possessum pied-piping’ in the noun phrase.

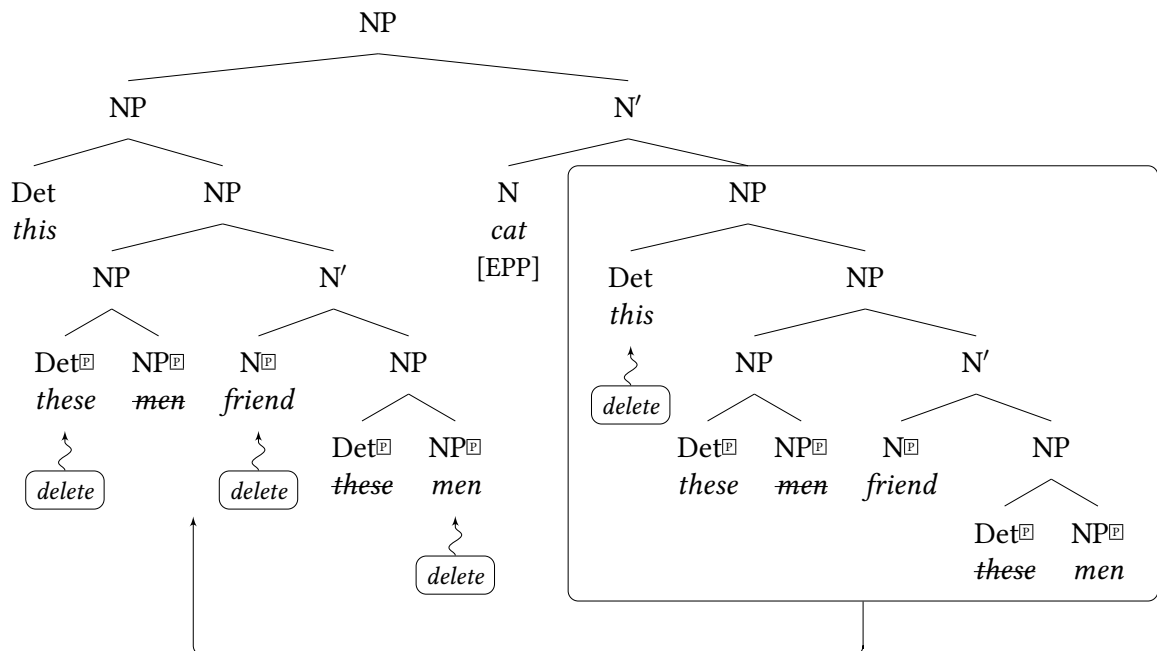
possessum NP, assigning P-marks to all other terminals inside the possessum NP. Again, we use indices to distinguish the P-marks, but there are no important implications of this for the analysis.

(65)



Importantly, by virtue of the determiner modifying the possessum, the embedded possessum 'friend' is P-marked and must therefore be deleted in the higher copy. This leads to the absence of possessum-piping in the familiar way (66).

(66)



Once again, we have an exception to the descriptive statement in the PPG. Possessum pied-piping only holds if the possessum is not also modified by a possessor. This then mirrors the pattern that

we saw for movement of NPs containing multiple determiners at the clause-level in section 3.4, notwithstanding the complications about the general acceptability of such constructions.

5 Adpositional phrases

So far, we have seen that the PPG is active both at the clause-level and the NP-level in Iquito. In this section, we will show that it also appears to be responsible for regulating word order inside PPs, too. This will serve to further illustrate the centrality of the PPG in the grammar of Iquito.

5.1 PP-internal word order

We will begin by considering simple PPs such as those in (67). As is clear from these examples, adpositions typically follow their complement NPs in Iquito.

- (67) a. [PP *iita* **jinakuma**]
house inside
‘inside the house’ (Michael 2004*b*: 5, (14a))
- b. [PP *kúsi umáana=jina*]
pot big=LOC
‘in a big pot’ (Hansen 2011: 119, (3.15))

While this may seem to suggest that Iquito is a language with postpositions, things are actually more complicated. If the complement to the adposition is modified by a determiner, then the noun phrase is split across the adposition. The determiner precedes the adposition while the associated noun phrase follows it (68). This is comparable to examples of possessive noun phrases such as (8b), where the possessum intervenes just like the adposition does here.

- (68) [PP *iina* **jinakuma** *iita*]
DET inside house
‘inside this house’ (Michael 2004*b*: 5, (14b))

As (69) shows, if the complement of the adposition is a possessive NP, then both the possessor and the possessum precede the adposition in that order. Again, this is parallel to NP-internal examples such as (53).

- (69) *Ku-asa-ki-Ø* [PP *ikwani amiiku aákuji*]
1SG-eat-PFV-NPST man friend before
‘I ate before the friend of the man’ (Michael 2003: 4, (15a))

If we have the same possession structure as in (69), but a determiner modifies the possessor ‘man’, we find that both the determiner and the possessum ‘friend’ precede the adposition (70). This is a case of possessum pied-piping in the adpositional domain.

- (70) *Ku-asa-ki-Ø* [PP *iina* *amiiku aákuji ikwani*]
1SG-eat-PFV-NPST DET friend before man
‘I ate before the friend of this man’ (Michael 2003: 5, (22a))

Unfortunately, we do not have an example parallel in which the determiner is associated with the possessum of an NP complement to an adposition (Michael 2003 does not contain any examples of this kind). Given the close parallels we otherwise observe between NPs and PPs, we would expect to find the word order in (71), analogous where only the determiner is pronounced in the higher position.

- (71) [PP before [NP this friend [P_{SSR} man]]] → *this before friend man*
 ‘before this friend of the man’

We do, however, have examples containing PPs with the hypothesized structure in (71) in which the entire PP constituent moves to a higher position in the clause. As we will discuss in section 5.3, the split configuration we observe there conforms to what we would expect if the moved PP had the structure in (71).

Although we do not have an example that instantiates (71), i.e. where the determiner modifies the main possessum of the complement of an adposition, we do have one in which the embedded possessum of a recursive possession structure is associated with a determiner. In (72), an NP whose embedded possessum (‘children’) is modified by a determiner is the complement of the adposition *jata* (‘with’). Both the determiner associated with the main possessor ‘children of the woman’ and the main possessum (in this case ‘shoes’) precede the adposition. As we will show, this particular pattern also falls under the PPG, as the determiner associated with the embedded possessum appears to pied-pipe the main possessum to a position preceding the adposition.

- (72) Ku-aamíyaaki-ɪ-Ø [PP iipi sapatu-ka **jata** miisaji mira]
 1SG-walk-IPFV-NPST DET.PL.AN shoe-PL with woman child.PL
 ‘I am walking with the shoes of these children of the woman’

(Michael 2003: 15, (53))

We summarize the PP-internal word order possibilities we have just seen in the table in (73).

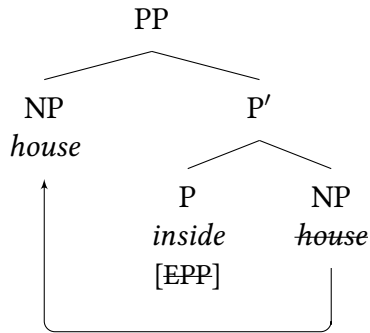
(73)	Underlying structure	Surface word order	
a.	[PP inside [NP house]]	<i>house inside</i>	(67a)
b.	[PP inside [NP this house]]	<i>this inside house</i>	(68)
c.	[PP before [NP friend [P _{SSR} man]]	<i>man friend before</i>	(69)
d.	[PP before [NP friend [P _{SSR} this man]]]	<i>this friend before man</i>	(70)
e.	[PP with [NP shoes [P _{SSR} these children [P _{SSR} woman]]]]	<i>these shoes with woman children</i>	(72)

In following section, we will show how these patterns also follow from our proposed analysis.

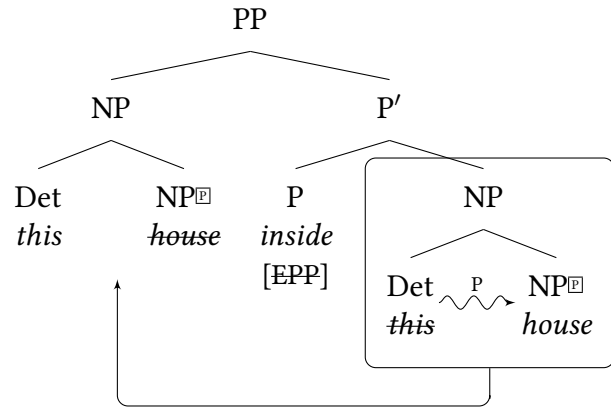
5.2 Deriving PP-internal word order

As we have seen, a bare NP complement always precedes the adposition selecting it, whereas an NP modified by a determiner always follows the adposition. This suggests a similar generalization to what we proposed for noun phrases, namely an ‘adposition second’ or ‘P2-requirement’. To capture this, we assume that PPs in Iquito are underlyingly head-initial, an assumption that is line with the general head-initial character of the language (Michael 2004b). Analogous to the NPs discussed above, every P head in Iquito bears an [EPP] feature that triggers movement of its complement to its specifier. This derives the correct word order for examples (74a) and (74b).

(74) a. *iita jinakuma*
 house inside
 'inside the house'



b. *iina jinakuma iita*
 DET inside house
 'inside this house'



Recall that the example in (75) instantiates the PPG as the determiner associated with the possessor appears to the left of the adposition together with the possessum.

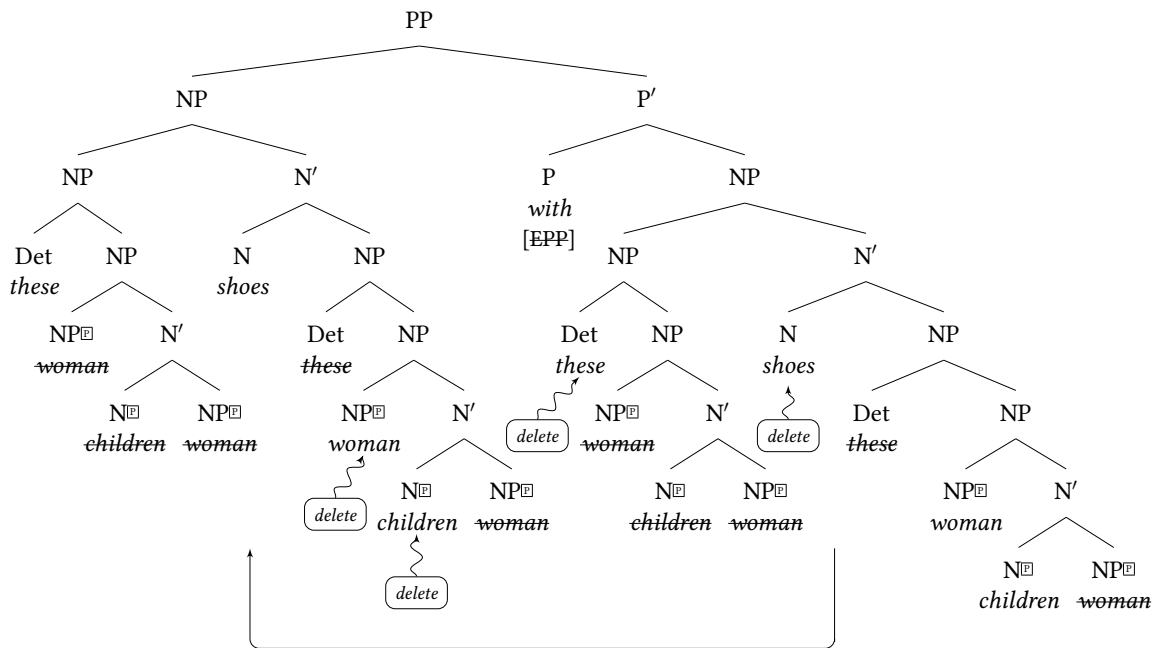
(75) *Ku-asa-ki-∅* [_{PP} *iina amiiku aákuji ikwani*]
 1SG-eat-PFV-NPST DET friend before man
 'I ate before the friend of this man'

(Michael 2003: 5, (22a))

The analysis of this example is given in (76). First, the complement of the adposition is created, deriving the NP-internal word order *this friend man*. Here, the possessum 'friend' is not P-marked due to the association of the determiner with the possessor. Within the possessive NP, the possessor moves across the possessum, generating a split. The possessive NP is then merged as the complement of the adposition and moves to the Spec-PP given the [EPP] on P. The Copy Deletion algorithm mandates deletion of all P-marked terminals in the higher copy. Due to the limited c-command domain of the determiner, the possessum is not eligible for deletion in the higher copy, giving rise to possessum pied-piping.

P-marked terminals will be marked for deletion in the higher copy. Since the main possessum within the moved NP is not P-marked, it is pronounced in the higher copy.

(78)



In general, our analysis predicts precisely the pattern we find in (78), which is another exception to the PPG as it is stated descriptively. A determiner modifying an embedded possessum can in fact pied-pipe the main possessum when the entire NP is moved to some higher position. This follows from our analysis because, in general, any material not contained in the c-command of a determiner will be ‘pied-piped’ under displacement, meaning that even when there is no possessum pied-piping within an NP, this can emerge when the entire NP is moved to some higher position (e.g. Spec-PP).

This account makes another interesting prediction. For example, if the entire PP in (78) were to undergo movement to some higher position, our analysis would predict that the higher copy of the PP would contain not only the determiner ‘these’ and the possessum ‘shoes’, but also the adposition ‘with’, as none of these elements are P-marked. In the following section, we will show that this prediction is indeed borne out.

5.3 Split PPs in the irrealis position

As shown in section 3.1, it is possible for PPs to move to the irrealis position. Since a determiner contained inside the complement of an adposition does not c-command the adposition, we predict that this adposition should never be P-marked and is therefore immune from deletion in the lower copy. This means that, in addition to the usual pied-piping of a possessum, we would also expect to find the adposition in the irrealis position with the determiner.

The following data confirm this prediction. When a PP whose complement is a possessive NP moves to the irrealis position, if the possessum is modified by a determiner, then both the determiner and the adposition are pronounced in the higher copy (79a). If the determiner modifies

the possessor, however, then we find three elements in the irrealis position: the determiner, the possessum and the adposition (79b).

- (79) a. Aámiikáaka kí= iina =jina samaraata-rii-Ø [PP ____ ikwani iita umaana]
 one.day.away 1SG= DET =LOC relax-MMTPFV-NPST man house big
 ‘Tomorrow, I will relax in this big house of the man.’
 (Hansen 2011: 170, (3.114))

- b. Aámiikáaka kana iina nasi =jina nata-rii-Ø [PP ____ miisaji]
 one.day.away 1PL.EXCL DET field =LOC plant-MMTPFV-NPST woman
 ‘Tomorrow, we will plant in the field of this woman.’
 (Hansen 2011: 172, (3.118))

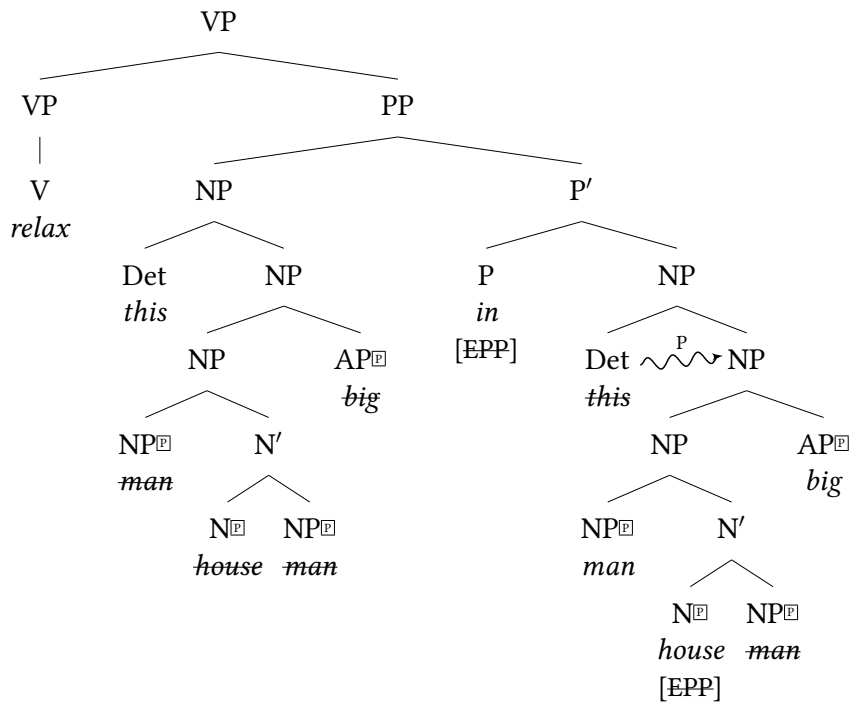
It can be shown that this pattern of more radical discontinuity is follows from our analysis of the PPG, in which all material that is not in the c-command domain of a determiner will be pied-piped under movement. In example (79a), the determiner c-commands the possessum NP headed by ‘house’ including the adjective ‘big’.¹² Recall that this is a configuration that constituted a gap in the table in (73). In this example, we have the corresponding structure in the base configuration (an adposition whose complement has a determiner modifying the possessum). Our analysis predicts that the PP has the internal structure in (80) in its base-position, where only the determiner is pronounced in the position preceding the adposition.

¹²As a reviewer mentions, our analysis correctly predicts that any adjectives in the c-command domain of a determiner are protected from deletion in the lower copy and therefore not pied-piped. This is what we see in (79a) where the determiner modifies the possessum. If the determiner modifies the possessor, then an adjectival modifier to the possessum will be expected to surface in the moved position. This can be seen in the example in (i) (note that adjectives can generally adjoin to the left or the right of the noun; Beier et al. 2011: 79).

- (i) Aámiikáaka kí= iina umaana iita =kuura iikwa-rii-Ø [PP ____ miisaji]
 one.day.away 1SG= DET big house =towards go-MMTPFV-NPST woman
 ‘Tomorrow, I will go to this woman’s big house.’
 (Hansen 2011: 173, (3.121))

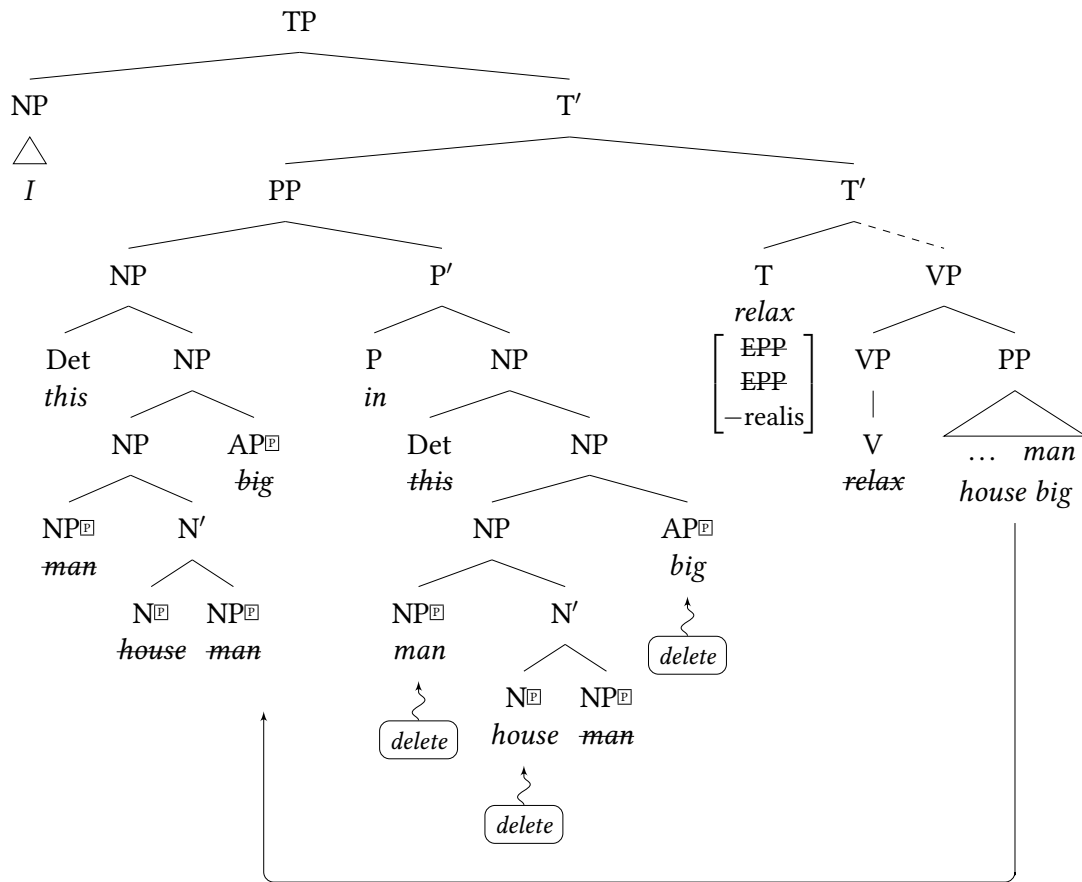
Our analysis predicts that other modifiers such as relative clauses will also be pied-piped or stranded depending on whether they are c-commanded by a determiner. At present, we do not have the relevant data to verify this prediction.

(80)



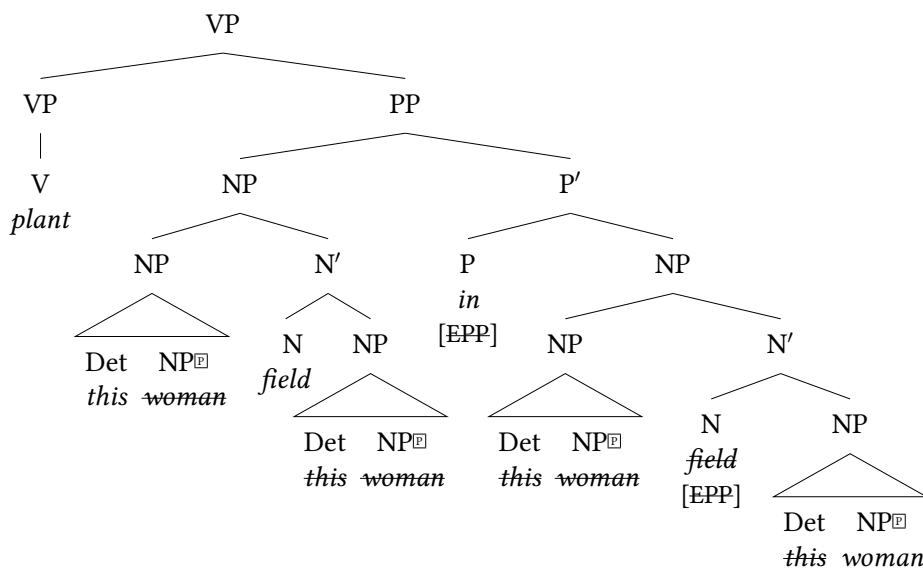
This makes the correct prediction for the surface order we find when this PP undergoes movement to the irrealis position. When the Copy Deletion algorithm applies, both the determiner and the adposition are realized in the higher copy (by virtue of not being P-marked) and all other PP-internal material is realized in the lower copy (81). There is no pied-piping of further material.

(81)



If we now consider the pre-movement structure for the PP in (79b) where the determiner is associated with the possessor, the only element that the determiner c-commands is the possessor (82). For this reason, the domain of P-marking is smaller and does not include the possessum.

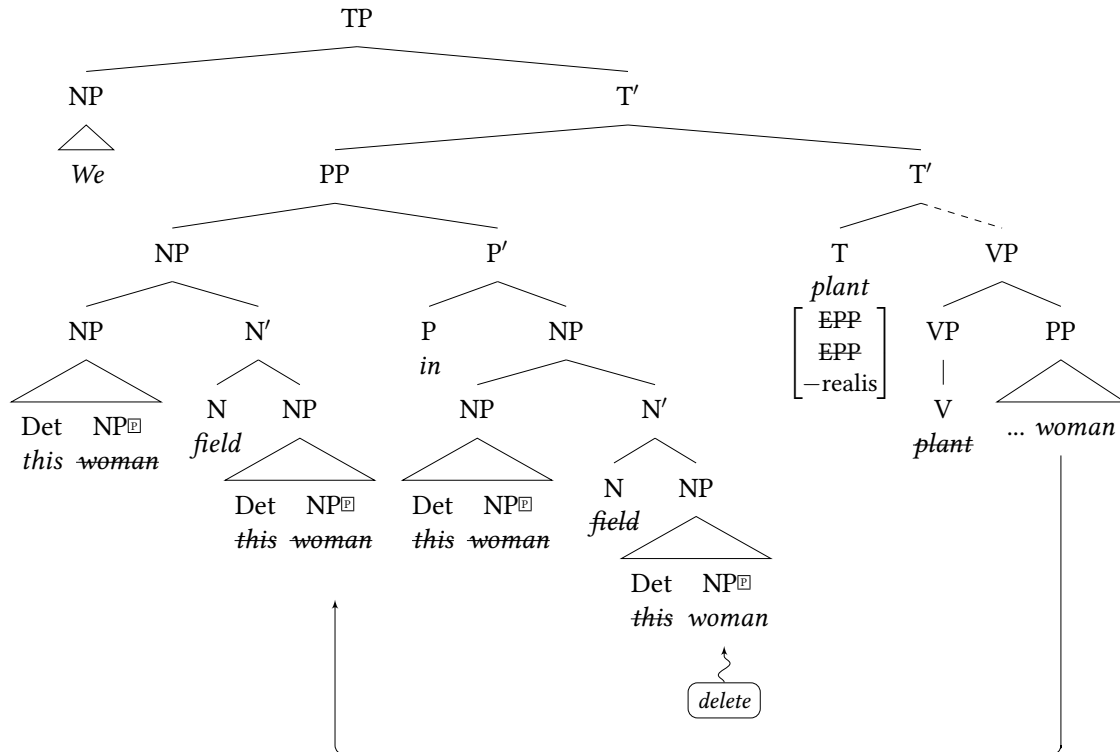
(82)



Our analysis makes a clear prediction about what happens when the PP undergoes movement.

Since only elements c-commanded by the determiner are protected from deletion in the lower copy, we expect to find pronunciation of the possessum in addition to the determiner and the adposition in the higher copy. As (83) shows, this is indeed what we find. The only P-marked item that was not previously deleted is the lowest copy of ‘woman’ that is deleted in the higher copy and pronounced in the lower one. This leads to everything else in the moved NP being pronounced, giving a more radical effect of non-constituent pied-piping that includes the adposition.

(83)



We therefore see how our analysis allows us to go beyond the PPG, in that we also predict further pied-piping effects. Even when there are further instances of movement, the determination of what is pied-piped or not will still be made on the basis of the c-command domain of the determiner. For this reason, the effects of pied-piping extend beyond possessors, as we have seen. If further material is contained in a moving phrase, e.g. an adpositional layer, the expectation is that will be pied-piped along with possessum, depending on the attachment site of the determiner.

In principle, one might expect to find parallel NP examples where a noun with a complex possessor is further embedded under another noun (e.g. ‘the shoe of the friend of the children of these men’). We do not have attested examples of this kind, presumably due to their sheer complexity. In the absence of such examples, movement of PPs to the irrealis position provide the kind of examples of more radical pied-piping that our analysis predicts to exist.

6 Split NPs in subject position

We have already discussed movement to the irrealis position in some detail, but are there other kinds of clause-level movements that could trigger discontinuities? In this section, we discuss

split NP constructions involving movement to subject position and the consequences they have for our approach.

First, let us consider clauses with intransitive verbs such as *makii* ‘sleep’ in (84). When the subject is a bare noun, it precedes the verb in what we assume to be the subject position in Spec-TP (84b). If the determiner is modified by a determiner, however, then only the determiner precedes the verb in subject position (84c).

- (84) a. Ikwani makii- \emptyset
 man sleep.IPFV-NPST
 ‘The man is sleeping.’
- b. Iina makii- \emptyset [NP ___ ikwani]
 DET sleep.IPFV-NPST man
 ‘This man is sleeping.’
- c. * [NP Iina ikwani] makii- \emptyset ___
 DET man sleep.IPFV-NPST
 ‘This man is sleeping.’
- (Michael 2004b: 3, (6))

In contrast, the subject of a transitive verb may not be split under movement to subject position, as (85) shows.

- (85) *Iina irikatájuu-yaa- \emptyset ikwani iina iimina
 DET repair-IPFV-NPST man DET canoe
 ‘This man repairs this canoe.’
- (Michael 2004b: 4, (9a))

Accordingly, when the subject of a transitive verb contains a determiner, both the determiner and the noun must appear together in the preverbal subject position (86).¹³ This is therefore an exception to the general rule that displaced NPs in Iquito which contain a determiner always result in a split construction.

- (86) a. ?Iina ikwani irikatájuu-yaa- \emptyset iina iimina.
 DET man repair-IPFV-NPST DET canoe
 This man repairs this canoe. (Michael 2004b: 4, (9b))
- b. Iina miyaara s̄inaki- \emptyset -kura iina kaaya
 DET dog bite-PFV-RPST DET person
 That dog bit that person (yesterday). (Lai 2009: 54, (18))

¹³Example (86a) is judged as marginal (?), but this is due to a discourse constraint in Iquito requiring that, when there are two third person arguments of a verb, one of them must be more ‘marked’ than the other. This generally means that one of them must be topicalized or focused, as is the case for the subject in (i).

- (i) Iina ikwani_i nu_i=irikatájuu-yaa- \emptyset iina iimina
 DET man 3SG=repair-IPFV-NPST DET canoe
 This man, he repairs this canoe. (Michael 2004b: 4, (9c))

The marginality of (86a) means that ‘this man’ and ‘this canoe’ must both be discourse neutral. However, Michael (2004a) notes that this is an entirely pragmatic constraint determined by the discourse context.

Interestingly, the impossibility of split transitive subjects is lifted when the direct object undergoes displacement to clause-initial position. Here, it is in fact obligatory that the subject be split (Michael 2004*b*). This can be seen both with *wh*-movement (87a) and focus fronting (87b).¹⁴

- (87) a. Saakaá₁ iina irikatájuu-yaa-Ø ikwani —₁ ?
 what DET repair-IPFV-NPST man
 ‘What is this man going to repair?’ (Michael 2004*b*: 4, (8b))
- b. [_{NP} Masiáana nasi]₁ iina mii-yaa-Ø miisaji —₁
 a.lot field DET have-IPFV-NPST woman
 ‘This woman has SEVERAL FIELDS.’ (Hansen 2011: 134, (3.46))

We propose that the restrictions on split subjects in Iquito are best analyzed as belonging to the class of constructions that Alexiadou & Anagnostopoulou (2001) subsume under their *Subject In-Situ Generalization* (SSG), whose descriptive formulation is given in (88).

- (88) *Subject In-Situ Generalization* (Alexiadou & Anagnostopoulou 2001: 193):
 Whenever a sentence contains a subject and a direct object, one of the arguments must vacate the *v*P.

This generalization covers a range of constructions, including expletive constructions and locative/quotative inversion in English, stylistic inversion in French, among others. These constructions all have in common a transitivity restriction that is assumed to be related to the lack of movement of the subject.

As a representative example, consider locative inversion in English (similar data can be given for quotative inversion in Collins & Branigan 1997). A relatively established view is that locative inversion involves movement of the locative phrase to the subject position, Spec-TP, and exceptional raising of the verb to T (e.g. Bresnan 1977; Collins 1997; Culicover & Levine 2001; Doggett 2004; Bailyn 2004; but cf. Postal 2004; Bruening 2010). The presence of the subject in the canonical subject position therefore forces the external argument to remain in its base position. For intransitives like (89a), this is not problematic in light of the SSG. Crucially, though, the SSG accounts for the emergence of a transitivity restriction with locative inversion due to the fact that subject stays low in (89b).

- (89) a. [_{TP} [_{PP} Into the room] [_{T'} walked [_{vP} a child —_V —_{PP}]]]

¹⁴It is important to mention that when a phrase containing a determiner undergoes focus fronting, it does not lead to a split construction. This can be seen in the example in (i) where the focal object ‘this fish’ has been fronted, but does not lead to a split (the locative PP ‘inside the canoe’ occupies the irrealis position in this example).

- (i) [_{NP} Iina paápaaja] kí= iimina=jinakuma asa-rîi-Ø —_{NP}
 DET fish 1SG= canoe=inside eat-MMTPFV-NPST
 ‘This fish, I will eat inside the canoe.’ (Hansen 2011: 184, (4.14))

This is perhaps surprising if focus fronting involves movement, as our Copy Deletion algorithm would predict that we find a split here. Generally, it seems that we only find discontinuous NPs with [EPP]-driven movement at the clause-level or NP/PP-internally. If this is the case, then this factor must be incorporated into the analysis somehow. With that said, it is not clear whether focus fronting constructions such as (i) actually involve movement. The important diagnostic tests such as those for island effects have, to the best of our knowledge, not been run. Further research on this topic is necessary before any firm conclusions can be drawn from such examples.

- b. * $[_{TP} [_{PP} \text{Into the room}] [_{T'} \text{kicked} [_{vP} \text{a child} \text{---}_V \text{a ball} \text{---}_{PP}]]]]$

Furthermore, so-called ‘stylistic inversion’ in French shows a similar restriction (Kayne & Pollock 1978; Valois & Dupuis 1992; Collins & Branigan 1997; Alexiadou & Anagnostopoulou 2001). Under certain circumstances, it is possible for the subject to appear postverbally, as in (90a). However, this is generally not possible with transitive verbs (90b).

- (90) a. Je me demande $[_{CP} \text{quand partira} [_{vP} \text{ton ami} \text{---}_V]]$
 I wonder when will.leave your friend
 ‘I wonder when your friend will leave.’
 (Kayne & Pollock 1978: 595, (2a))
- b. *Je me demande $[_{CP} \text{quand achèteront} [_{vP} \text{les consommateurs} \text{---}_V \text{les pommes}]]$
 I wonder when will.buy the consumers the apples
 Int. ‘I wonder when the the consumers will buy the apples.’
 (Alexiadou & Anagnostopoulou 2001: 195–194, (7))

On Alexiadou & Anagnostopoulou’s (2001) analysis, the subject stays low in French stylistic inversion (also see Valois & Dupuis 1992). For this reason, (90b) also falls under the SSG.

Importantly, the SSG predicts that movement of the direct object out of *vP* should void this effect. As (91) shows, this is indeed borne out, parallel to what we saw with Iquito splits in (87).

- (91) Que₁ crois-tu $[_{CP} \text{que manquet} [_{vP} \text{un grand nombre d’étudiants} \text{---}_V \text{---}_1]]$?
 what believe-you that be.absent.from a great number of.students
 ‘What do you think that a large number of students are missing?’
 (Alexiadou & Anagnostopoulou 2001: 196, (8a))

We therefore suggest that the source of the transitivity restriction on split subject constructions in Iquito is the same as in these examples: No part of the subject may be pronounced inside the *vP* if the direct object is also realized inside *vP*. Thus, a split with an intransitive verb is unproblematic (84b), as only a single NP is pronounced inside the *vP* (92a). With a transitive verb, as we saw in (85), both the head nouns associated with the subject and the object are realized within *vP* (92b), leading to a violation of the SSG. Parallel to stylistic inversion in French, moving the direct object out of the *vP* makes a split transitive subject licit (92c), as shown by (87).

- (92) a. $[_{TP} [_{NP} \text{this man}] [_{T'} \text{sleep} [_{vP} [_{NP} \text{this man}] t_V]]]]$
 b. * $[_{TP} [_{NP} \text{this man}] [_{T'} \text{repair} [_{vP} [_{NP} \text{this man}] t_V [_{NP} \text{this canoe}]]]]]$
 c. $[_{CP} [_{NP} \text{what}] [_{TP} [_{NP} \text{this man}] [_{T'} \text{repair} [_{vP} [_{NP} \text{this man}] t_V [_{NP} \text{what}]]]]]]]$

It therefore seems that the *Subject In-Situ Generalization* has the potential to explain why the subject of a transitive verb may not be split in constructions like (85), even though that is what our Copy-Deletion algorithm predicts. That is, since the determiner assigns a P-mark to its sister ‘man’, we would expect ‘man’ to be protected from deletion in the lower copy. However, this structure would violate the SSG. Thus, this observation also shows that satisfying the SSG takes precedence over the need to respect P-marking when the two are in conflict with each other. We leave the question of the resolution of this conflict, as well as the exact theoretical implementation of the SSG, to future work.

7 Further issues

7.1 Against alternative approaches


In this section, we will discuss two alternative approaches to deriving split constructions, namely the traditional Left-Branch Extraction analysis and a remnant movement analysis. We will argue that both fail to derive the PPG in a satisfactory way, compared to the distributed deletion account developed above. For this purpose, we will just focus on the basic PPG paradigm as exemplified by the recursive possession structures presented in section 4.1.

7.1.1 Left-Branch Extraction

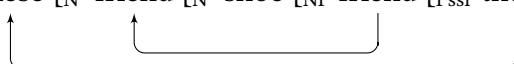
First, let us consider an alternative approach to split constructions which involves direct extraction of the displaced element(s), i.e. traditional Left-Branch Extraction (Ross 1967), and how this line of analysis could be applied to split NP constructions in Iquito. To see this, recall the basic mappings from underlying structure to surface order in (93) inside possessive NPs that instantiate the PPG. Only when the determiner modifies the possessor do we find possessum pied-piping (93b).

- (93) a. [cat [these children [woman]]] → *these cat woman children*
‘the cat of these children of the woman’
b. [shoe [friend [these men]]] → *these friend shoe men*
‘the shoe of the friend of these men’

In a direct extraction approach, we would generally assume that split NP constructions arise from movement of the determiner to Spec-NP. As (94) shows, (93a) is relatively straightforward to derive with direct extraction if the determiner simply moves to the specifier of the possessum (movement of possessor is not shown).

- (94) [NP these [N' cat [NP these children [P_{SSR} woman]]]]
- 

The apparent non-constituent movement in (93b) would require some additional assumption, for example multiple order-preserving steps of movement to Spec-NP (95) (see Bošković 2016: 21 for a similar approach to apparent multiple LBE).

- (95) [NP these [N' friend [N' shoe [NP friend [P_{SSR} these men]]]]]]
- 

Alternatively, we could adopt an analysis similar to what has been said for cases of so-called ‘extraordinary LBE’ where an adposition is extracted in addition to a left-branch constituent (see section 7.2). The general idea here is that the two displaced elements fuse to form some kind of unit that can then move as a single constituent. There have been various technical implementations of this idea in the literature (Borsley & Jaworska 1988; Corver 1990; Radkevich 2010; Martinović 2019; Talić 2019). On this approach, we could say that *these* and *friend* undergo fusion or ‘cliticization’ in (95) and move as a single constituent. The condition for pied-piping would then actually reduce to the conditions for this fusion operation to apply or not.

The main problem with both of these analyses is that they offer no real explanation for why the special case (multiple specifiers or fusion) is tied to a particular structural configuration, i.e. why it is only available when the determiner originates with the possessor. Such an account appears to struggle to provide a rationale for this, beyond pure stipulation. The problem of restricting this approach becomes more acute when we consider that even more material can be ‘pied-piped’ when a PP moves to the irrealis position (as in section 5.3).

7.1.2 Remnant movement

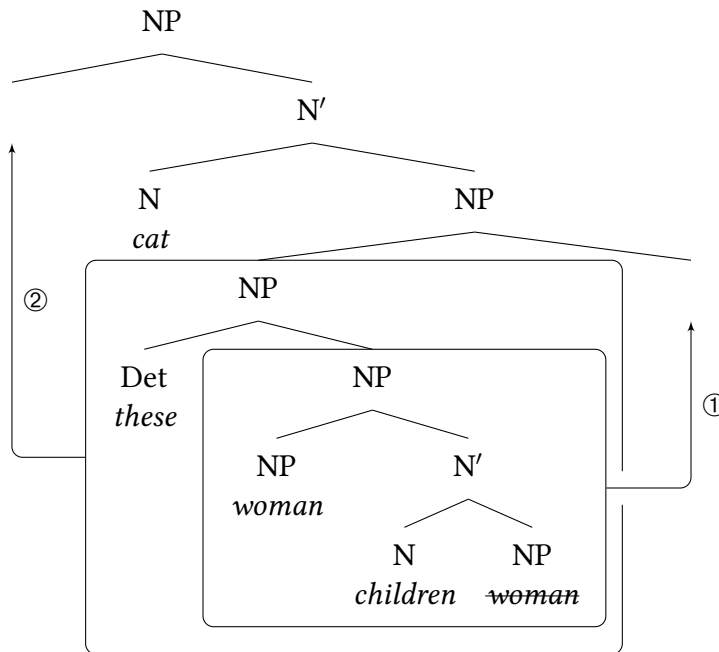
Remnant movement has a potential advantage over a direct extraction approach in that it is better equipped to handle non-constituent displacement. For this reason, it could also fare better in capturing possessum pied-piping in Iquito. That said, the well-known problem of remnant movement analyses is the lack of independent evidence for the various ‘evacuating’ movement steps required to create the remnant in the first place. This problem also carries over to any potential analysis of the PPG in Iquito.

It is possible the trigger for evacuation movement could be a similar structural configuration to what we have assumed for P-mark assignment, namely sisterhood with a determiner. A proponent of remnant movement could therefore suggest the following trigger for creating remnants:

- (96) The sister NP of the determiner must move out of the minimal NP containing the determiner and its sister.

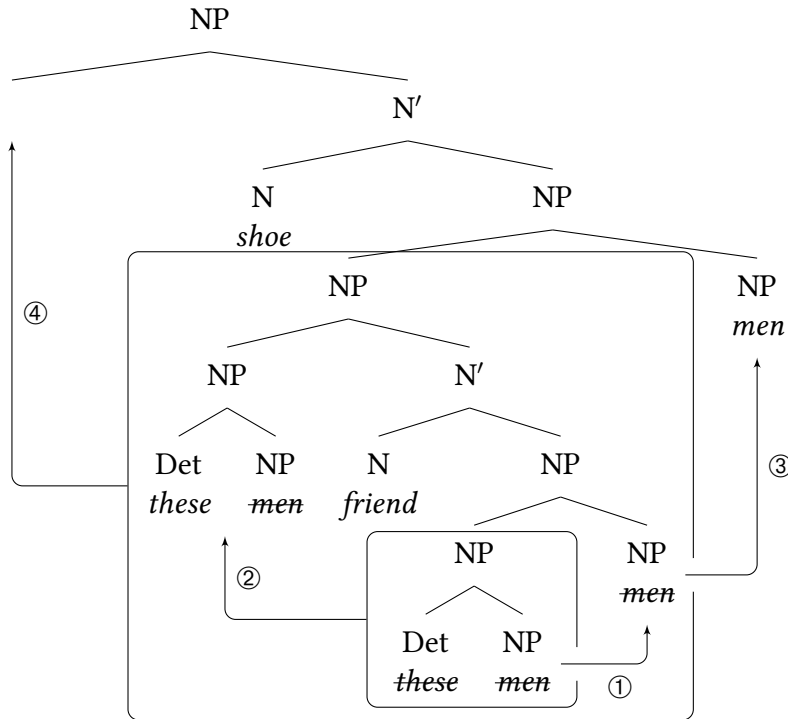
For the case in which the determiner modifies the possessum, this would derive the correct result, as shown in (97). The entire complement of the determiner will move out, with the remnant NP containing only the determiner movement to the specifier of the higher noun, as we assumed in our analysis.

- (97) [cat [these children [woman]]] → *these cat woman children*



The challenge here comes in maintaining this approach in light of possessum pied-piping derivations such as (98). When the determiner modifies the possessor, we would require an additional evacuation step of ‘men’ out of the larger NP constituent containing the determiner before it moves (step ③).

(98) [shoe [friend [these men]]] → *these friend shoe men*



It is difficult to see what the independent motivation for this step could be, beyond stating that what moves must be a remnant NP. This is clearly not a general requirement when the NP does not contain a determiner, for example. All else being equal, we might equally expect the word order **these friend men shoe* to be possible in the language, which is what we would have without the additional step in ③. While it is always possible to stipulate additional evacuation steps in a remnant movement analysis, they do not seem to correlate with any obvious independent property of the structure, e.g. the base-position of the determiner, and are therefore arguably unable to provide any insight into why the PPG exists unlike the distributed deletion analysis we have proposed.

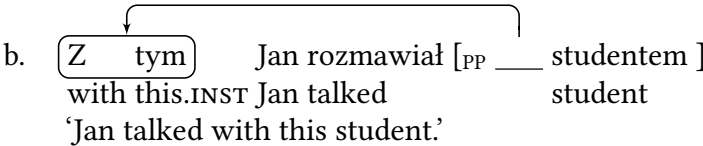
7.2 Cross-linguistic perspective

In our analysis of split NP constructions in Iquito, we have proposed that distributed deletion is constrained by the distribution of a diacritic assigned to all terminals c-commanded by a determiner that we called a ‘P-mark’. In this section, we will briefly discuss the implications this analysis could have for the analysis of other split constructions.

In general, the question of cross-linguistic variation will ultimately reduce to the lexical items that are endowed with the P-mark assigning property and the particular syntactic constructions available in a given language. For example, a much-discussed example of a split NP construction

is Left-Branch Extraction in Slavic. While determiners can trigger splits, so can other left-branch elements such as adjectives and quantifiers (see e.g. Bošković 2005). This would imply that the inventory of P-mark assigning categories in those Slavic languages with LBE would be larger than Iquito if one were to adopt our distributed deletion analysis for these languages. As it stands, however, it remains controversial what the correct analysis of Slavic LBE is. Indeed, Iquito is somewhat unusual from a cross-linguistic perspective in only having splits with determiners and also requiring them in almost all cases in which an NP containing a determiner is displaced. This is suggestive of parameterization not just in the locus of P-marking, but also in whether this property is optional for a given lexical item or category.

Recall that, as soon as part of a moved phrase is outside the domain of P-marking, discontinuities are expected to arise. Similar to the PP movement cases discussed in section 5.3, LBE-languages such as Polish have a construction known as ‘extraordinary LBE’ in which an adposition is extracted in addition to the determiner.

- (99) a. Jan rozmawiał [_{PP} Z tym studentem]
 Jan talked with this.INST student
- b. 
 with this.INST Jan talked student
 ‘Jan talked with this student.’ (Borsley & Jaworska 1988: 688)

Assuming that determiners optionally trigger splits in such languages and that the preposition is outside the domain of P-marking (as in Iquito), our analysis predicts that the preposition will not be protected from deletion in the lower copy and therefore pronounced high.

This of course raises the question of how to constrain the theory of P-marking cross-linguistically. There are several possibilities here. For example, it might be that certain kinds of lexical items, e.g. those from the closed class, are incompatible with P-marking. This would also exclude complementizers, for example, and potentially also D heads (recall Bošković’s generalization that LBE is only possible in languages without DP). As pointed out by a reviewer, if a complementizer could assign P-marks, then we might expect to find the unusual discontinuous pattern in (100b) where the TP bears a P-mark.¹⁵

- (100) a. [_{CP} that [_{TP} you would come]] I did not expect [_{CP} that [_{TP} you would come]]
 b. [_{CP} that [_{TP} you would come]^[P]] I did not expect [_{CP} that [_{TP} you would come]^[P]]

If such patterns do not exist, as seems to be the case, then a cross-linguistically applicable lexical restriction on possible P-mark assigners may be necessary.

It is worth pointing out, however, that the syntactic structure of the moving phrase also restricts the possible patterns of discontinuity that our theory of P-marking can generate. As a case in point, our theory struggles to derive what Fanselow & Ćavar (2002) call ‘inverse splits’. These are constructions in which the head noun of an NP moves, thereby stranding some sub-constituent(s) of the noun phrase such as a determiner, classifier or adjective, see e.g. Korean (Ko 2007), German (Fanselow 1988; Ott 2012), Quechua (Lefebvre & Muysken 1988; Muysken 1989), and Yucatec Maya

¹⁵However, Kenyon Branan (p.c.) points out the intriguing possibility of a silent functional head that assigns a P-mark to its sister as a way of deriving covert movement.

(Skopeteas et al. 2022). An example of so-called ‘split topicalization’ in German is given in (101).

- (101) [DP ~~keiner~~[□] [NP Generativer Linguist]] bin ich [DP ~~keiner~~[□] [NP Generativer Linguist]]
generative linguist am I none
‘I am no generative linguist.’ (Fanselow 1988: 107)

Under our P-marking analysis, c-command plays a crucial role. In general, it predicts that the stranded material must be c-commanded by the material which is displaced (assuming that reflexive P-marking is not possible). Given the commonly assumed descending structure for the NP in (101), a P-marking analysis of the inverse split in (101) would require that the determiner *keiner* is c-commanded to the exclusion of everything else in the NP. Assuming that the adjective or noun could be potential P-mark assigners, this would require a radically different, and arguably unintuitive, ascending structure for the DP in which the determiner is c-commanded by the adjective.

For this reason, it seems reasonable to assume that split NP constructions do not necessarily need to form a homogeneous class cross-linguistically. While some may be derived by distributed deletion, as we have argued for Iquito, it may be necessary to appeal to other analytical options such as direct extraction or remnant movement in cases where distributed deletion is not viable (e.g. with inverse splits). For split topicalization in German (101), for example, we could instead appeal to sub-extraction, as Ott (2012) does. Alternatively, it could well be the case that P-marking may be a specific instantiation of a more general way in which features can determine non-contiguous realization in a movement chain (see e.g. van Urk to appear).

8 Conclusion

In this paper, we have argued various domains of word order in Iquito exhibit what we call the *Possessum Pied-Piping Generalization (PPG)*. Whenever a phrase containing a determiner is moved, a possessum is pied-piped only if the determiner modifies the possessor. We have shown how one can link the PPG to asymmetries in the internal structural configuration of the NP. Any material c-commanded by a determiner is protected from the usual rule of deletion in the lower copy of a movement chain. We implemented this in terms of distributed deletion, guided by the assignment of P-mark diacritics that kind (non-)pronunciation in movement chains. This allows us to tie the determination of what is pronounced to the structural relations inside the noun phrase. Since a determiner modifying a possessor does not c-command the possessum, it cannot be protected from deletion in the lower copy and is therefore pied-piped.

As well as deriving the basic PPG effect that we find under clause-internal movement to the irrealis position, we have demonstrated that the effects of the PPG run much deeper in the entire grammar of Iquito, also determining word order inside NPs and PPs. The apparently idiosyncratic word orders we find in recursive possession structures make perfect sense in light of the PPG and the assumption that there is cyclic roll-up movement at each phrase within the NP. The same could also be shown for the internal structure of adpositional phrases, who also exhibit a PPG effect when their NP complement contains a possessor modified by a determiner. Furthermore, our account of the PPG predicts that material other than the possessum can be pied-piped as long as it is outside the domain of P-marking delineated by the determiner. As we have shown, when a PP moves to the irrealis position, the adposition is always pied-piped due to its high

structural position within the phrase. It could therefore be shown that the PPG is fundamental to understanding word order in Iquito.

The proposal in this paper has a number of broader consequences for our understanding of grammar. It lends support to distributed deletion analyses of split constructions more generally since the intricate patterns in Iquito, the PPG in particular, fall out naturally in our analysis, unlike on competing theories such as sub-extraction and remnant movement. Furthermore, we propose a novel way of restricting distributed deletion. Unlike previous accounts, our the application of deletion is determined solely by the configurational properties of the noun phrase, in particular the base-position of the determiner, rather than appealing to the distribution of features driving the movement. Finally, our analysis requires that the determination of which copies are to be deleted must be determined cyclically during the derivation, i.e. after each movement step. While there are various ways of understanding this, it could be taken to support the growing view that there is a greater degree of interleaving of PF operations in the syntax than previously assumed (Fox & Pesetsky 2005; Calabrese & Pescarini 2014; Martinović 2019).

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