

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 clause-level 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 the conditions for what we call ‘possessum pied-piping’ are 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 view to phrase-internal movement also allows us to account for 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).¹

In this paper, we focus on split NP constructions in the SVO language Iquito (Zaparoan; NW Peru).² Unlike the languages, 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 displacement to a position between the subject and the verb. We observe that just 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-ASP-NPST DET book
 ‘She/he read this book (earlier today).’
- b. Nu= iina simiita-ki-Ø [NP _____ simiimi]
 3SG= DET read-ASP-NPST book
 ‘She/he will read this book.’
- c. *Nu= [NP iina paápaaja] asa-rii-Ø _____
 3SG= DET fish eat-ASP-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

¹Another dimension of variation within split constructions is whether the head noun is the extracted phrase or (contained in) the stranded phrase. In Iquito and the examples in (1), the determiner is pronounced in the displaced position and the head noun is stranded. In other languages, however, it is the head noun that moves, 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 (Skopeteas et al. 2022). This is sometimes referred to as ‘split topicalization’ (van Hoof 2006). Since Iquito does not have this construction, we will not consider it further in the following discussion.

²Iquito 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 (ILD), led by Chris Beier and Lev Michael. 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 following abbreviations in our glosses: 1=first person, 2=second person, 3=third person, AN=animate, ASP = aspect, DET = determiner, DIM = diminutive, DPAST = distant past, EXCL = exclusive, IND = indicative, INCL=inclusive, IPFV = imperfective, LOC = locative adposition, MMTFV=momentary perfective, NEG = negation, NMLZ = nominalizer, NPST = non-past tense, PFV = general perfective, PL = plural, REL = relative pronoun, REMPFV = remote perfective, REP = reportative, RPST = recent past tense, SG = singular.

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 2020; Bondarenko & Davis to appear).

- (3) a. *Sub-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 favour of the distributed deletion approach in (3c) for discontinuous constituents in Iquito. Our main evidence comes from the varying patterns of split behaviour 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 can be straightforwardly captured by 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 (van Urk to appear). We will propose such a structural restriction for distributed deletion in Iquito and argue that the appearance of discontinuous constituents is determined solely on the basis of c-command relations in 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 movement 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 a moment (see section 2.1), we observe that only the determiner moves to pre-verbal position in (4), just as in (2b).

- (4)
- | | | | | | | | |
|--------------|------|-----------|----------------|-----------------------|---------|----------|---|
| Aámiikáaka | kí= | iipĩ | miwĩira-kwa-∅ | [_{NP} _____ | miisaji | mĩra |] |
| one.day.away | 1SG= | DET.PL.AN | visit-ASP-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.

- (5)
- | | | | | | |
|--|------|-----------|---------|---------------|--------------------------------------|
| | | | | | |
| Aámiikáaka | kí= | iipi | sináaki | sikita-rii-ø | [_{NP} <u>mirajaárika</u>] |
| one.day.away | 1SG= | DET.PL.AN | clothes | wash-ASP-NPST | children.DIM |
| ‘Tomorrow, I will wash the clothes of <u>those children</u> .’ | | | | | |
- (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 an apparent non-constituent in the moved position is correlated with an apparently independent property, namely the semantic association of the determiner involved in the split. 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 moved position if the determiner modifies the possessor.

One of the main contributions of the paper will be to show how the PPG is straightforwardly captured under 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 dependency. This is what gives the effect of ‘pied-piping’. Other 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 adds to recent attempts to provide a more restrictive way of deriving apparent non-constituent movement via scattered deletion.

Another main contribution of the present paper is to show how the PPG is also active in other domain of Iquito grammar, namely in deriving phrase-level word order in complex possessive noun phrases and 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 make sense once we assume that surface word orders within NPs and PPs are derived by phrasal movement. Furthermore, just like phrasal movement at the clause-level, XP-internal movement is also constrained by the PPG. This serves to further add to the body of cross-linguistic evidence for structural parallels between clause- and phrase-level syntax (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 should be derived by phrasal movement (e.g. Cinque 2005).

The paper is structured as follows: We begin by focusing on word order within NPs and PPs. Section 2 establishes the key empirical generalizations that our analysis will account for. Then, we proceed to present our analysis in section 3 by first laying out the theoretical assumptions central to our analysis and then illustrate how NP/PP-internal word order falls under the PPG (6). We also discuss why alternative approaches to splits, i.e. remnant movement and sub-extraction, fail to provide substantial insight into the Iquito patterns. In section 4, we turn to the PPG at the clause-level. First, we present a novel analysis of the so-called ‘irrealis position’ and analyze how split NP constructions behave with movement to this position. We show how our account of the PPG also derives the various patterns we find here, including even more radical cases of apparent

pied-piping in adpositional phrases. Then, we briefly discuss a remaining empirical domain involving NP splits with subjects that provides a counterexample to the general observation that moved NPs containing a determiner must be split. We suggest that the requirement for NP splits appears to be overridden by an independent transitivity restriction that we argue falls under the well-known *Subject In-Situ Generalization*. Finally, section 5 concludes.

2 Discontinuity in NPs and PPs

In this section, we lay out the descriptive generalizations about word order in noun phrases and adpositional phrases containing demonstrative determiners. While Iquito lacks a definite article, it has a number of demonstrative determiners, as the table from Hansen (2011: 105) in (7) shows.³

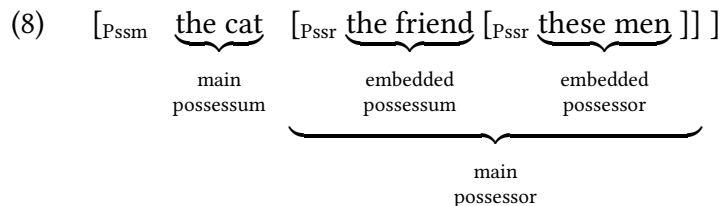
(7)

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

As is clear from the forms in this table, the respective determiners contain the suffixes *-na*, *-mi* and *-p̄i*, 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 *iip̄i* and the general determiner *iina*, both of which can have either a proximal or distal meaning, depending on context.

2.1 Discontinuous noun phrases

In this section, we discuss the different word order possibilities in complex noun phrases. Before presenting the data, we first clarify some of the terminology we will use to talk about possessive structures. In (8), we show the basic semantic subordination relations that hold in possession structures 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 refer to as the *embedded possessum*.



With this terminology in mind, we now turn to the possible NP-internal word orders in Iquito. In (9), we see an example with a possessum *kajinani* (‘animal’) and its possessor *m̄isaji* (‘woman’).

³ For this reason bare nouns can receive both definite and indefinite interpretations. Since Iquito allows for extraction of demonstratives from noun phrases, it qualifies as an ‘NP language’ in terms of Bošković (2008, 2009), lacking a DP projection. This is an assumption we adopt in our analysis (see footnote 5).

In (9a), the possessor precedes the possessum. When the possessor is modified by a determiner, as in (9b), the possessor must follow the possessum, with the associated determiner separated by the possessum. In what follows, we will mark the main possessum in boldface.

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

In cases with recursive possessors such as (10), we find that the main possessor ‘the friend of the men’ precedes the main possessum *miisi* (‘cat’). The embedded possessor ‘men’ also precedes its associated possessum ‘friend’.

- (10) [NP *ikwani-wiya kujimani miisi*]
 man-PL friend cat
 ‘the cat of the friend of the men’ (Michael 2003: 9, (36))

When we add a determiner to recursive possessor examples such as (10), we find that the correct word order depends on which noun the determiner is associated with (Michael 2003: 9). In (11), 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’). The embedded possessor *m̄saji* (‘woman’) precedes the embedded possessum *mira-jaarika* (‘children’).

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

If the determiner is associated with the embedded possessor, i.e. ‘man-PL’ in (12), both the determiner *iipi* from the embedded possessor and the embedded possessum *akuniita* (‘friend’) precede the main possessum *sapatu* (‘shoe’).

- (12) [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 (13).⁴

The bracketing here represents the basic semantic subordination relations between the NPs. A full exposition of our syntactic assumptions will be presented in section 3.

⁴The table in (13) does not contain examples where both the possessor and the possessum are modified by determiners. We defer the discussion of such examples to section 3.3.

(13)	Underlying structure	Surface word order	
a.	$[_{PSSM} \text{ animal } [_{PSSR} \text{ woman }]]$	<i>woman animal</i>	(9a)
b.	$[_{PSSM} \text{ animal } [_{PSSR} \text{ this woman }]]$	<i>this animal woman</i>	(9b)
c.	$[_{PSSM} \text{ cat } [_{PSSR} \text{ friend } [_{PSSR} \text{ men }]]$	<i>men friend cat</i>	(10)
d.	$[_{PSSM} \text{ cat } [_{PSSR} \text{ these children } [_{PSSR} \text{ woman }]]]]$	<i>these cat woman children</i>	(11)
e.	$[_{PSSM} \text{ shoe } [_{PSSR} \text{ friend } [_{PSSR} \text{ these men }]]]]$	<i>these friend shoe men</i>	(12)

From this, we can identify following descriptive generalizations about NP-internal word order in Iquito:

(14) *Descriptive generalizations for NPs*

- A bare possessor always precedes its possessum (13a, c, d).
- A possessor modified by a determiner always follows its possessum (13b, d, e).
- A determiner inside NP is always realized at the left edge of NP (13b, d, e).
- The embedded possessum and a determiner precede the main possessum only if the determiner is associated with the embedded possessor (13d) vs. (13e).

We will show that generalizations (14a–c) follow from the assumption that there is cyclic roll-up movement at each projection within the noun phrase, while the generalization in (14d) instantiates the *possessum pied-piping generalization* (6) within NP.

Before proceeding, we should point out that we have not presented any examples in which a determiner modifies the highest possessum. For example, we might expect that we could have a parallel structure to (13b) such as $[_{PSSM} \text{ this animal } [_{PSSR} \text{ woman }]]$ for ‘this animal of the woman’. Such examples are not possible, however. Hansen (2011: 127–128) notes that the Iquito consultants only interpret noun phrase strings of the form DET NP NP as the determiner modifying the possessor (15a) rather than the possessum (15b), that is, as involving the structure in (13b).

- (15) $[_{NP} \text{ this animal woman }]$
- ‘the animal of this woman’
 - *‘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 (15) the interpretation in (15a) over (15b). This does not appear to be a deep grammatical restriction, however. We believe that the underlying structure $[_{DET_1} \text{ PSSM}_1 [\text{PSSR}]]$ is indeed licit, because the interpretation in (15b) becomes available once this structure is more deeply embedded (leading to a split configuration). This is what we find in (13e) where the embedded possessum (‘children’) is modified by a determiner. This is also true for movement to clause-internal position (see section 4), as we have seen in (4) in the introduction where the highest possessum is modified by a determiner: $[_{PSSM} \text{ these children } [_{PSSR} \text{ woman }]]$. Once a split configuration is enforced, there is no problem with semantically associating a determiner with the highest possessum as in (15b).

2.2 Discontinuous constituents in adpositional phrases

In this section, we will show that there are strikingly similar word order patterns in adpositional phrases. We will see, in the relevant constructions, that the postposition fulfils a similar role to the main possessum. We will therefore mark the adposition in bold, in keeping with the conventions of the previous section. First, consider the fact that adpositions in Iquito typically follow their complement NPs, as illustrated by (16).

- (16) 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))

However, if the complement to the adposition is modified by a determiner, then the noun phrase appears discontinuously. The determiner precedes the adposition while the associated noun phrase follows it (17). This example is comparable to (9b), where the adposition the possessum has the same function as the adposition.

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

As (18) 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 (10).

- (18) *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 (18), but with a determiner associated with the possessor *ikwani* (‘man’), we find that both the determiner and the possessum *amiiku* (‘friend’) precede the adposition (19). The parallel to the example in (12) and seems to further instantiate the PPG, as we discuss further in section 2.3.

- (19) *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))

Furthermore, it is possible for an adposition to take an NP with recursive possessors as its complement. Recall (11) repeated below (20). Here, we saw that the determiner associated with the embedded possessum precedes the main possessum ‘cat’.

- (20) [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))

In (21), a noun phrase structurally similar to (20) (with a determiner modifying the embedded possessum) is the complement to the adposition *jata* ('with'). Both the determiner associated with the main possessum 'children of the woman' and the main possessum (in this case 'shoes') precede the adposition. As we will show, this also falls under the PPG.

- (21) Ku-aamiyaaki-:-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 in the table in (22).

(22)	Underlying structure	Surface word order	
a.	[_{PP} inside [_{NP} house]]	<i>house inside</i>	(16a)
b.	[_{PP} inside [_{NP} this house]]	<i>this inside house</i>	(17)
c.	[_{PP} before [_{NP} friend [_{PSSR} man]]	<i>man friend before</i>	(18)
d.	[_{PP} before [_{NP} friend [_{PSSR} this man]]]	<i>this friend before man</i>	(19)
e.	[_{PP} with [_{NP} shoes [_{PSSR} these children [_{PSSR} woman]]]]	<i>these shoes with woman children</i>	(21)

There are some interesting parallels between (22) and (13), which is repeated below as (23).

(23)	Underlying structure	Surface word order	
a.	[_{PSSM} animal [_{PSSR} woman]]	<i>woman animal</i>	(9a)
b.	[_{PSSM} animal [_{PSSR} this woman]]	<i>this animal woman</i>	(9b)
c.	[_{PSSM} cat [_{PSSR} friend [_{PSSR} men]]	<i>men friend cat</i>	(10)
d.	[_{PSSM} cat [_{PSSR} these children [_{PSSR} woman]]]]	<i>these cat woman children</i>	(11)
e.	[_{PSSM} shoe [_{PSSR} friend [_{PSSR} these men]]]]	<i>these friend shoe men</i>	(12)

Whereas (23) summarizes the word order of (possessive) NPs embedded under another noun (i.e. the main possessum), in (22) similar phrases are embedded under an adposition. Here, the descriptive generalizations are essentially the same if we exchange the term 'main possessum' for 'adposition'. Moreover, the example in (22d) are actually more revealing as they include an extra layer of embedding beyond that seen in (23). That is, the most structurally complex NP-internal examples we have seen in (23), i.e. (23e, f), are embedded as the complement of an adposition in (22e,f). This is particularly revealing in the context of the PPG, as we will discuss in the following section.

Unfortunately, we do not have an example parallel to (23e) in which the determiner is associated with the possessum of an NP complement to an adposition (Michael 2003 does not contain an example of this kind). Given the close parallels we otherwise observe between NPs and PPs, we would expect to find the word order in (24), analogous to (23e) where only the determiner is pronounced in the higher position.

- (24) [_{PP} before [_{NP} this friend [_{PSSR} man]]] → *this before friend man*
 'before this friend of the man'

Fortunately, we have examples containing PPs with the structure in (24) in which the entire PP constituent moves to a higher position in the clause, as we will show in section 4.3.2. The split configuration we observe there conforms to what we expect if we assume the structure in (24).

We take this as further support for the structure of the constructed example adopted in (24).

2.3 Interim summary

This section has introduced the various phrase-internal word orders found in NPs and PPs in Iquito. We have seen that these domains also shown that the possessum of a possessive NP appears above the structurally highest head in a given phrase if its possessor is modified by a determiner. We argue that this falls under the *Possessum pied-piping generalization* (6) that we have already seen for clause-level movement, thereby motivating the assumption that there is movement within NPs and PPs as well. The PPG is repeated below in (25).

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

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

For NPs, we see the effects of the PPG in the examples repeated below in (26). The bracketed structure indicates what we take to be the underlying constituency for each example. The full derivations will be presented in the following section. The displaced elements are marked in boldface. Assuming for now that there is some kind of movement from the main possessor to a position preceding the main possessum, we observe that the apparent non-constituent consisting of the determiner and the possessum (i.e. ‘these friend’) is displaced only when the determiner ‘these’ modifies the embedded possessor (26b), but not the embedded possessum (26a), thereby conforming to the PPG (25).

- (26) a. $[\text{NP } \boxed{\text{iipi}} \quad \text{miisi} \quad [\text{NP } \text{---} \quad \text{miisaji} \quad \text{mira-jaarika}]]]$
 DET.PL.AN cat woman children-DIM
 ‘the cat of these children of the woman’
 $[\text{NP cat } [\text{NP } \textbf{these} \text{ children } [\text{NP woman}]]]$
- b. $[\text{NP } \boxed{\text{iipi} \quad \text{akuniita}} \quad \text{sapatu} \quad [\text{NP } \text{---} \quad \text{ikwani-wiya}]]$
 DET.PL.AN friend shoe man-PL
 ‘the shoe of the friend of these men’
 $[\text{NP shoe } [\text{NP } \textbf{friend} \quad [\text{NP } \textbf{these} \text{ men}]]]$

The structural parallel becomes clear if we make similar assumptions about the internal structure of PPs, namely that there is movement to the left of the adposition within PP. So far, we have seen two relevant examples for the applicability of the PPG within PPs. In (27a), the displaced determiner modifies the possessor of the NP complement of the adposition. As the PPG predicts, it leads to pied-piping of the possessum. The example in (27b) provides a more complex example. The determiner here can be viewed as modifying the main possessor ‘children of the woman’ of main possessum to ‘shoes’, as the underlining in (27b) indicates. When it undergoes displacement to the edge of PP, it pied-pipes the main possessum, in line with the PPG.

- (27) a. Ku-asa-ki-Ø [PP iina amiiku aákuji [NP ___ ikwani]]
 1SG-eat-PFV-NPST DET friend before man
 ‘I ate before the friend of this man’
 [PP before [NP **friend** [NP **this man**]]]
- b. Ku-aamíyaaki-:-Ø [PP iipi sapatu-ka jata [NP ___ míisaji mira]]
 1SG-walk-IPFV-NPST DET.PL.AN shoe-PL with woman children
 ‘I am walking with the shoes of these children of the woman’
 [PP with [NP **shoes** [NP **these children** [NP woman]]]]

These two cases of word internal are then parallel to the clause-level movement examples with which the PPG was introduced. These are repeated from the introduction below in (28).

- (28) a. Aámiikáaka kí= iipi miwíira-kwa-Ø [NP ___ míisaji mira]
 one.day.away 1SG= DET.PL.AN visit-ASP-NPST woman children
 ‘Tomorrow, I will go there to visit these children of the woman.’
 [VP visit [NP **these children** [NP woman]]]
- b. Aámiikáaka kí= iipi sinaaki sikita-ríi-Ø [NP ___ mira-jaarika]
 one.day.away 1SG= DET.PL.AN clothes wash-ASP-NPST children-DIM
 ‘Tomorrow, I will wash the clothes of these children.’
 [VP wash [NP **clothes** [NP **these children**]]]

We can therefore unify the word orders of these three apparently unrelated syntactic domains (NP, PP, the clause) under the assumption that they all involve some kind of phrasal movement that is constrained by the PPG. The question then remains as to how the PPG should be derived under a theory of split NP constructions. There are two main challenges for a successful analysis: First, one must account for the displacement of an apparent non-constituent in cases of possessum pied-piping. Second, the PPG ties this apparent non-constituency to a particular structural configuration that correlates with the interpretation of the determiner. We are therefore seeking an explanation for why the base position of the determiner affects whether or not the possessum undergoes displacement with it. In the following section, we develop an analysis in which the various heads involved in the three constructions (nouns, adpositions, verbs) all trigger obligatory movement of noun phrase containing determiners to their specifiers, therefore leading to a split construction. Assuming distributed deletion, we will argue that all elements c-commanded by the determiner in its base-position are protected from deletion and that this is what derives the PPG.

3 Analysis

In this section, we focus on deriving the empirical generalizations about NP/PP-internal word order that were identified in the preceding section. We defer the discussion of clause-level movement to section 4. First, we present the central theoretical assumptions for our analysis in section 3.1,

in particular about phrase-internal ‘second position’ movement (3.1.1), and cyclic application of distributed deletion (3.1.2). Subsequently, we present analyses of the discontinuous patterns in noun phrases in section 3.2 and adpositional phrases in section 3.5.

3.1 Theoretical assumptions

3.1.1 The X2 requirement

First, we will lay out our assumptions about the internal syntax of NPs and PPs in Iquito. Recall the descriptive generalizations in (14a,b), repeated below.

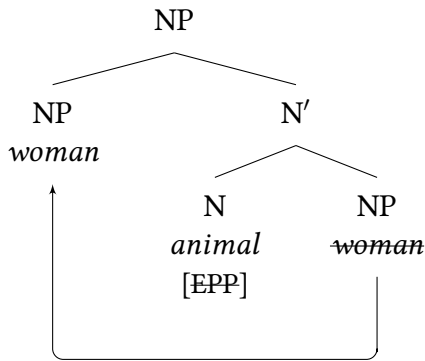
- (29) a. A bare possessor always precedes its possessum.
b. A possessor modified by a determiner always follows its possessum.

We argue that these two generalizations are related in that they both ensure that the possessum is always in ‘second position’ within the noun phrase, either preceded by a bare possessor or the determiner associated with the possessor. Descriptively, we argue that 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 analyze the second position requirement in NPs as a result of the head of a noun phrase bearing an [EPP] feature which requires a phrase to be merged as its specifier. Furthermore, we assume that possessors are always base-generated as the complement of the possessum noun, as shown in the trees in (30). 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 (30a), whereas a phrase containing a determiner (30b) will necessarily result in a split construction due to the obligatory discontinuous realization of a moved NP containing a determiner (something we return to in more detail below).

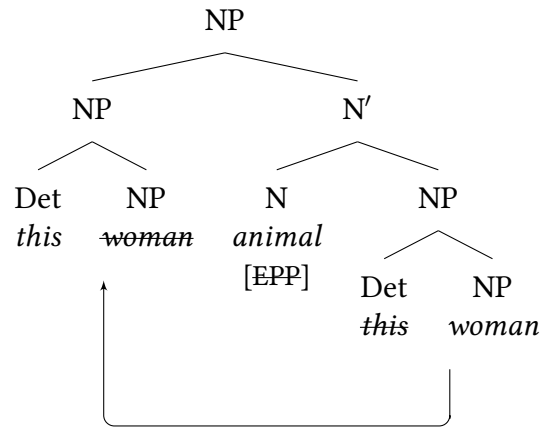
⁵ In our trees, we make only very basic assumptions about the internal structure of the noun phrase. We treat determiners as being of category Det and adjoined to the noun phrase that they modify. The main reason for this is a practical one: Since the structures we discuss will get rather complex, these 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 if determiners are assumed to head a DP projection. However, Iquito both lacks articles and allows sub-extraction from NP, as predicted by Bošković’s (2008) NP/DP-Parameter (also see footnote 3). 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 yet reached that stage yet, which supports the synchronic status of Iquito as an NP language (also see section 3.4.3).

Furthermore, given the 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 contained a more richly-articulated structure involving a *nP* projection, for example.

- (30) a. *m̩isaji kajinani*
 woman animal
 ‘the woman’s animal’

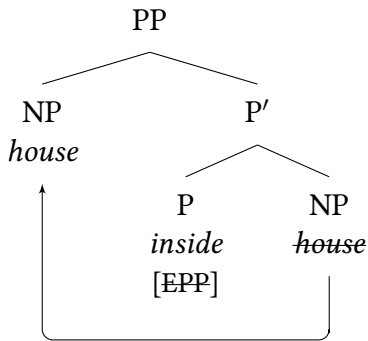


- b. *iina kajinani m̩isaji*
 DET animal woman
 ‘this woman’s animal’

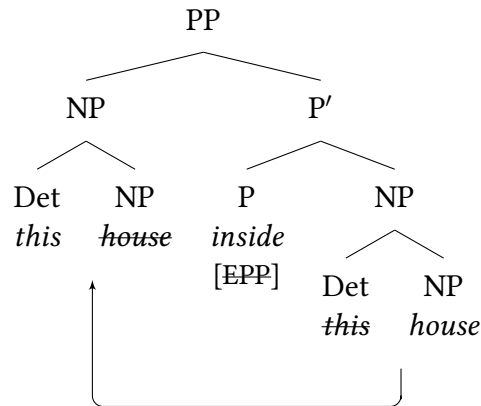


As we have seen, a similar pattern is found within PPs. A bare NP complement always precedes the adposition, whereas an NP modified by a determiner always follows the adposition. This suggests the same kind of generalization as above, namely an ‘adposition second’ or ‘P2-requirement’. We assume that PPs in Iquito are underlyingly head-initial, an assumption that is line with the general head-initial character of the language (Michael 2004*b*). 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 (31a) and (31b).

- (31) a. *iita jinakuma*
 house inside
 ‘inside the house’



- b. *iina jinakuma iita*
 DET inside house
 ‘inside this house’

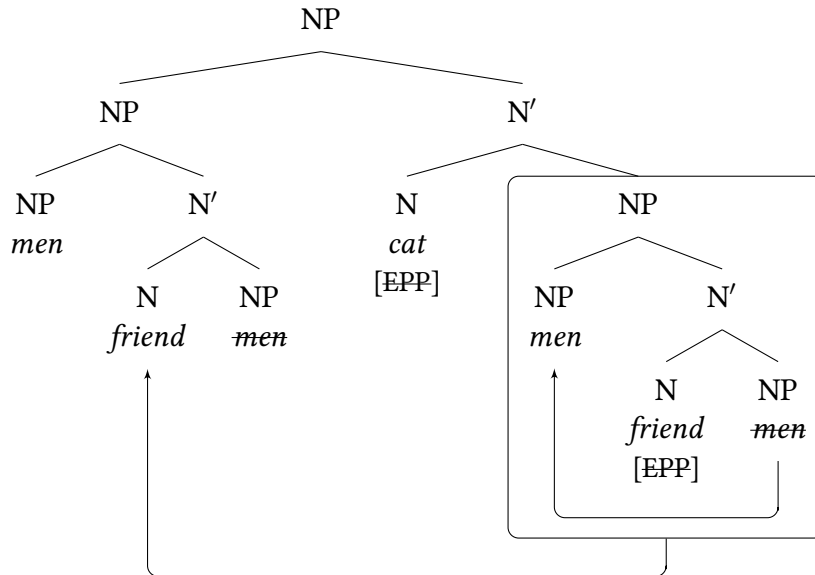


Assuming a generalized second position requirement also accounts for the word order we find with complex possessors.⁶ Taking an example such as (10), repeated as (32), the complex possessor

⁶Further evidence for a second-position requirement in noun phrases 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.

phrase ‘friend of the men’ will be built first, 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 moves to prenominal position as shown in the tree below.

- (32) 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))



The same derivation applies to parallel PP examples like (18) if we replace the highest N head with a P head that also bears an [EPP] feature.

Before moving on, 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 generalizations. Consider (33) as potential alternative base structures for the examples in (30). While the base-generated order in (33a) gives us the correct surface structure without further ado, (33b) would have to involve multiple movements both of the possessor and

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

That said, not all instances of split constructions appear to be associated with information structural constructions. 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 was 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 and what projections they move to.

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 remains far from obvious.⁷

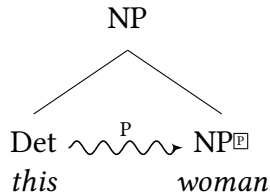
Instead, we propose an alternative syntactically-determined approach to restricting distributed deletion in Iquito that does not rely on the featural content of the moved phrase. Recall that the conditioning factor for obligatory split NP constructions in Iquito is the presence of a determiner. In other 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 their complement. We refer to this diacritic as \overline{P} (or as a ‘P-mark’) and represent P-mark visually as in (36).

⁷Another way of restricting the application of distributed deletion is based on morpho-phonological factors. Franks & Bošković (2001) provide an argument for this view based on the realization of clitic clusters in Bulgarian. Typically, object clitics in Bulgarian may not surface in initial position (ia). Assuming that the clitics and verb move as a constituent, this order must be derived by distributed deletion. The fact the verb and clitic do indeed form a constituent can be seen when the cluster is non-initial, as in (ib).

- (i) a. [mi̯ gə̯ dade] ... [mi̯ go̯ dade] Petko včera
 gave me.DAT it.ACC Petko yesterday
 ‘Pekto gave it to me yesterday’
 b. i [mi̯ go̯ dade] ... [mī̯ gə̯ dade] Petko včera
 and me.DAT it.ACC gave Petko yesterday
 ‘And Pekto gave it to me yesterday’

Franks & Bošković (2001: 180) further demonstrate the non-initiality constraint that triggers distributed deletion applies within the local phase. While this is an insightful approach, it is not clear that one can appeal to a morpho-phonological constraint in other cases of split constituents, e.g. for Iquito. A morpho-syntactic trigger for discontinuity still seems necessary in such cases.

- (36) *P-marking in Iquito*
 A determiner assigns a P-mark to its complement.



This language-specific assumption is what will derive both the obligatoriness of NP splits in Iquito and also the structural sensitivity 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 most other split NP languages. The diacritic \boxed{P} can be thought of as an instruction to PF with regard to how deletion applies within a given movement chain. As we will show, the assignment of P-marks must take place in the syntax. P-mark assignment could easily be implemented as valuation of some morphosyntactic feature [$\text{PRON}:\boxed{P}$] under Agree on all terminal nodes in the c-command domain of the determiner.⁸ In what follows, we adopt the ‘P-mark’ diacritic view in (36), 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). Assuming 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 (37).

- (37) *Copy Deletion*

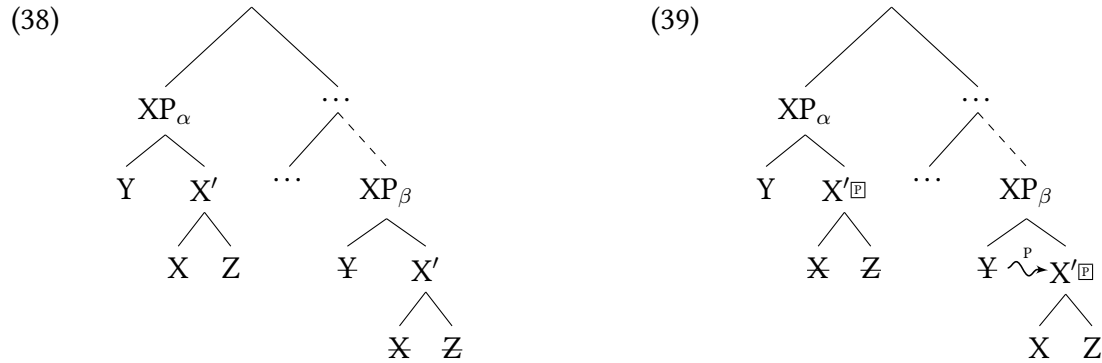
- In a movement chain $\langle \alpha, \beta \rangle$ where α is the higher copy and β is the lower copy,
- a. delete all terminals in α which are (reflexively-)dominated by a P-marked node,
 - b. delete all terminals in β which are not (reflexively-)dominated by a P-marked node.

An important assumption, which we return to in the following section, is that the algorithm in (37) 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 lower copy, as well as distributed deletion determined by P-mark assignment.

To see how (37) works, consider the abstract derivations in (38) and (39) in which an XP has undergone movement. In (38), the moved phrase does not contain any occurrences of \boxed{P} . Consequently, no deletion occurs in the higher copy, as per (37a). In the lower copy, all terminals are deleted due to the absence of any P-marked nodes. This derives the general case for overt displacement: When a phrase moves, the lower copy is deleted. The situation will be different if a

⁸This is equally compatible with our overarching analytical generalization about the PPG that any previously undeleted nodes in the c-command domain of the determiner are protected from deletion in the lower copy. On the Agree-based implementation of this idea, the definition of Copy Deletion in (37) would not be ‘delete all terminal nodes (reflexively-)dominated by a P-marked node’, but instead just all delete terminals without the feature [$\text{PRON}:+$] (i.e. all those which did not enter an Agree relation with the c-commanding determiner). For reasons of space, we do not follow this particular implementation here, but it is perfectly compatible with our overall analysis.

particular head has a P-marking property, however. In (39), the Y head assigns a P-mark to its complement X'. This P-mark is also present on the higher copy of XP. When this phrase undergoes displacement, all terminals dominated by X' in the higher copy (XP_α) will be deleted, as per (37a). In the lower copy (XP_β), those same terminals are protected from deletion by (37b), with only Y being deleted. This yields a split construction: 'Y ... X Z'.



This implementation of Copy Deletion automatically derives the complementarity of deletion that is inherently 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). Furthermore, this analysis can straightforwardly account for instances of apparent non-constituent displacement. To illustrate this, we will discuss an established case of non-constituent movement from the literature, so-called ‘Extraordinary Left-Branch Extraction’ (Bošković 2005). Consider the Polish examples in (40).⁹

- (40) a. Jan rozmawiał [_{PP} Z tym studentem]
 Jan talked with this.INST student

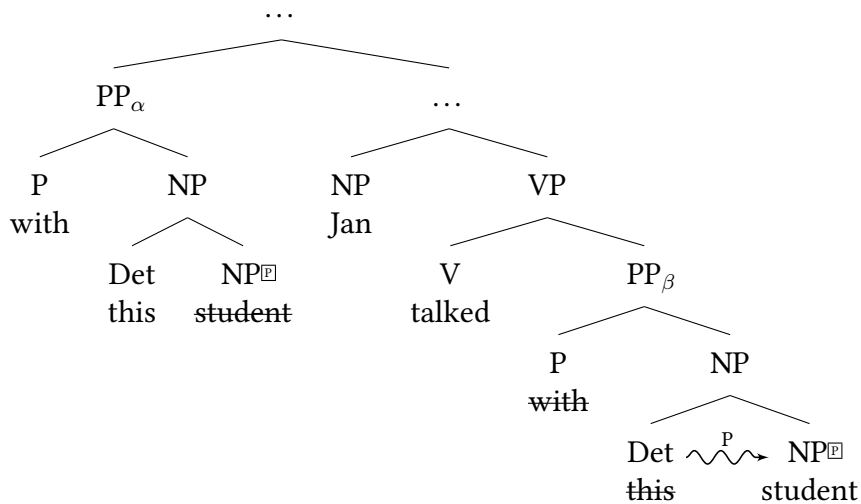
⁹We should note that we use this example purely for illustrative purposes (see e.g. Major & Torrence (2021) for other relevant examples of non-constituent movement). It is not our intention to advocate any particular analysis of Left-Branch Extraction in Slavic. There is not yet a fully-established consensus in the literature about what the correct analysis of Slavic LBE is. Proponents of distributed deletion have pointed to examples of Extraordinary LBE such as (40b) as evidence for this approach (Fanselow & Ćavar 2002; Bošković 2015), however the same data has also been argued to support an analysis in terms of remnant movement (e.g. Abels 2003; Bašić 2004). Furthermore, proponents of sub-extraction have argued that Extraordinary LBE also fits with this analysis, either as involving multiple movements (Bošković 2016) or some kind of fusion with the left-branch prior to extraction (Borsley & Jaworska 1988; Corver 1990; Radkevich 2010; Martinović 2019; Talić 2019).

Wiland (2010: 345) provides an argument against remnant movement based on stranding in intermediate positions, while Murphy (2021) argues that remnant movement incorrectly rules out inverse linking interpretations under LBE (also see Bošković 2005 on overgeneration problems with remnant movement). Meanwhile, Bondarenko & Davis (to appear) provide a compelling argument for distributed deletion based on the convergent parasitic gap licensing properties of full phrasal movement and LBE. That said, there are also fundamental differences between these two movement types that seem more in line with an extraction-based account, e.g. the ban on multiple LBE (Fernández-Salgueiro 2006; Grebenyova 2012; Murphy 2017) and differences in interpretation between multiple fronting and LBE, e.g. pair-list readings (Stjepanović 2010). In summary, there are numerous arguments for and against each kind of approach to LBE in Slavic. While our analysis can be extended naturally to nominal splits in Slavic, as in (41), more research is needed to establish whether distributed deletion is indeed the superior approach of the three for these languages.

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

Here, we see that both the preposition and the adjective have been displaced, despite not forming a constituent to the exclusion of the head noun ‘student’. In order to analyze this example with the mechanism for distributed deletion proposed in this section, we would assume that the left-branch elements like determiners may also assign a P-mark to their complement (albeit optionally). When the PP is fronted, we have the structure in (41).

(41)



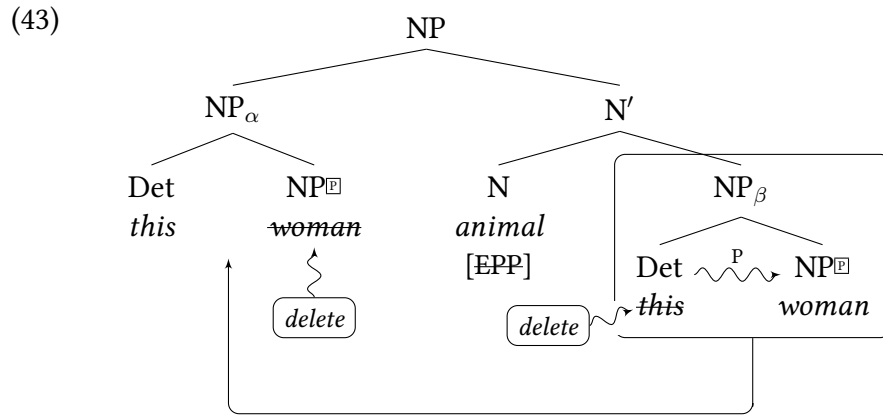
Given the algorithm in (37), all non-P-marked terminals in the lower copy are deleted. Here, this is the preposition and the determiner. Conversely, only P-marked terminals in the higher copy are deleted. This is just the head noun ‘student’ in this example. As a result, we have derived apparent movement of a non-constituent. In this example, the appearance of a surface non-constituent is the result of the structural height of the determiner responsible for P-mark assignment. Since there is an element that is not in the c-command domain of the determiner, namely the preposition, then this will not be protected from deletion in the lower copy. If determiner c-commanded all the terminals in the moved NP, i.e. in the absence of the outer PP layer, then we would have the more familiar NP split that we saw in (1a). On this analysis, the appearance of non-constituent movement is therefore a function of the position of the element with the P-assigning property. In the following section, we will show how this same basic idea can derive the PPG in Iquito.

3.2 Deriving NP-internal splits

We can now show how these assumptions work together to derive the full range of NP splits in Iquito. First, we will consider a simple NP-internal split with a determiner modifying a possessor. Recall example (9b) repeated below as (42).

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

As (43) shows, the possessor ‘this woman’ moves to the specifier to the possessum ‘animal’ to check its [EPP]-feature. Since the determiner assigns a P-mark to its complement, 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.

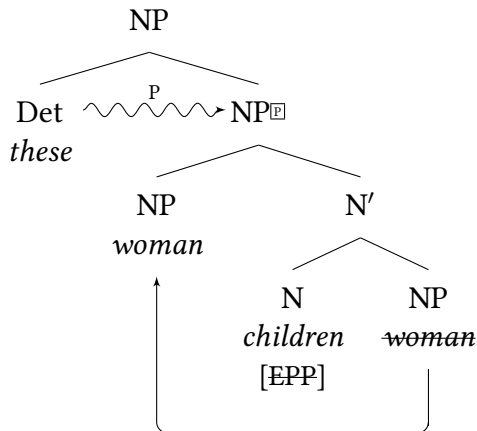


Now let us turn the examples involving the PPG. Recall that the PPG states that the possessum is ‘pied-piped’ by a determiner under movement only if the determiner modifies the possessor. Let us first consider a case where the determiner modifies the possessum of a possessive noun phrase, as in (44). Here, only the determiner is realized in the derived position above the main possessum ‘cat’.

- (44) [_{NP} iipi miisi miisaji mira-jaarika]
 DET.PL.AN cat woman child-DIM
 ‘the cat of these children of the woman’
 [cat [these children [woman]]] → *these cat woman children* (Michael 2003: 9, (39))

Going from the bottom up, we must first create the complex possessor ‘these children of the woman’ in (45). The embedded possessor is bare (‘woman’) and merged as the sister of the embedded possessum ‘children’. Given that every NP is an N2-domain, the possessor moves to the specifier of its local NP. Subsequently, the determiner is merged with this phrase, modifying the possessum. Furthermore, since determiners in Iquito have the lexical P-marking property, its complement receives the [P] diacritic.

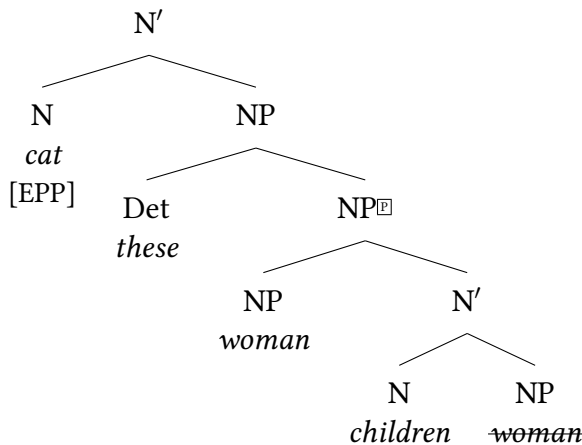
(45) Step 1: Building complex possessor



At this point, we briefly return to a point mentioned in the previous section, namely that Copy Deletion applies cyclically. The reason for this can be seen in (45). The Copy Deletion algorithm in (37) protects all terminals from deletion that are dominated by a P-marked node. The lower copy of ‘woman’ in (45) is dominated by a P-marked node. Strictly speaking, the clause in (37b) is not met. The reason why the algorithm can still mark the lower copy of this movement chain for deletion is derivation timing. The Copy Deletion algorithm applies cyclically, i.e. once the possessum NP is complete and before the determiner is merged.

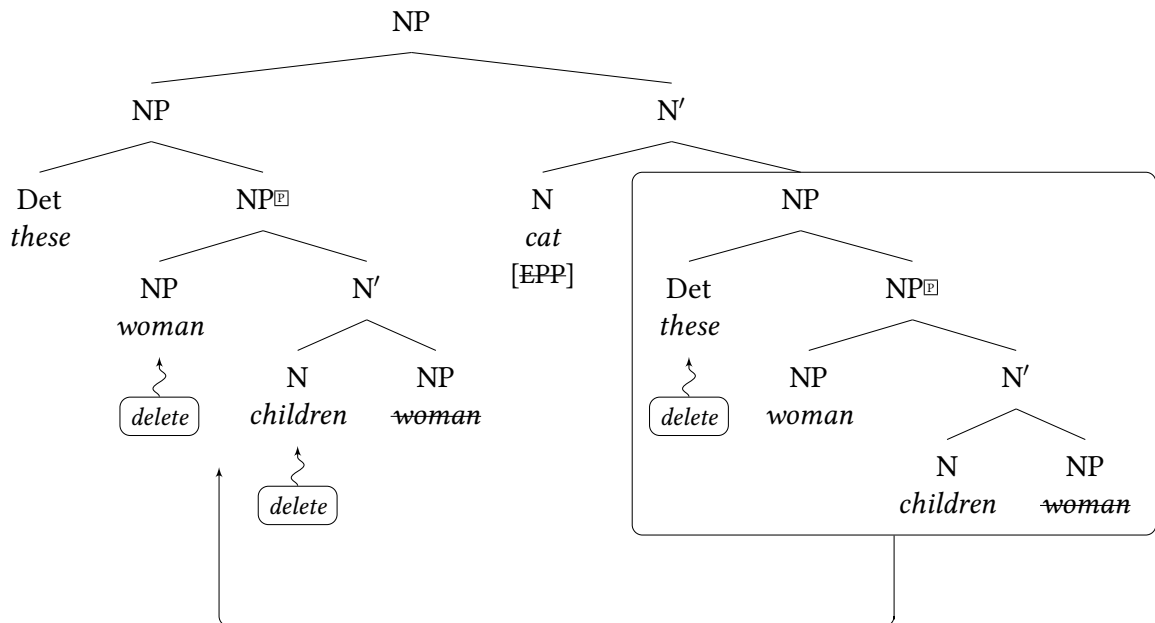
After the structure in (45) has been built, this phrase is merged as the possessor of the main possessum ‘cat’. Again, the head of this newly created NP bears an [EPP]-feature, thereby requiring movement of its complement to its specifier.

(46) Step 2: Embedding complex possessor



When the phrase moves, as in (47), the Copy Deletion algorithm in (37) requires that all terminals not dominated by a P-marked node are deleted in the lower copy (terminals that were marked for deletion at a previous derivational step retain this status). This is just the determiner, since both the embedded possessum and possessor are dominated by the P-marked sister of ‘these’. In the higher copy, only those terminals dominated by a P-marked node are marked for deletion. This is ‘woman’ and ‘children’.

(47) Step 3: Movement to Spec-NP



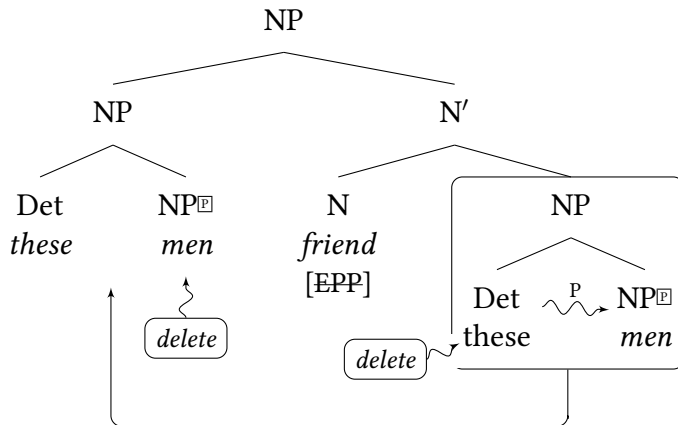
Consequently, we derive the order *these cat woman children*, which is the correct order. There is no ‘possessum pied-piping’ here because the possessum ‘children’ is in the c-command domain of the determiner and therefore protected from deletion in the lower copy.

Now let us turn to an example where the determiner modifies the possessor. In (48), the determiner is associated with the embedded possessor ‘men’ and, in the surface string, both the determiner and the embedded possessum ‘friend’ precede the main possessum ‘shoe’, an instance of possessum pied-piping.

- (48) [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*

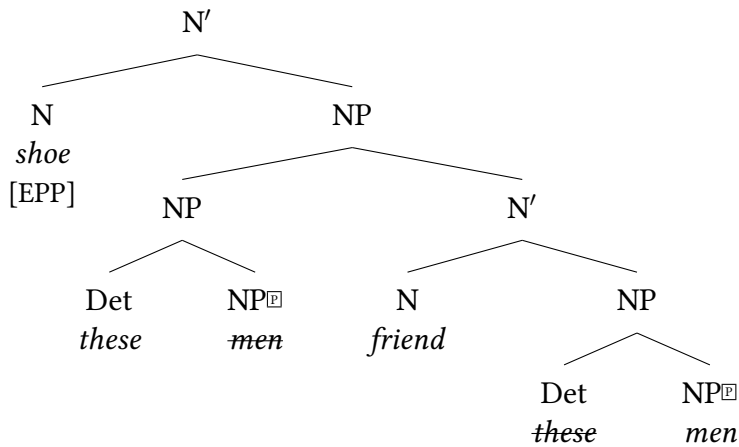
Let us first consider the structure of the embedded possessor. The determiner is merged with the possessor to form an NP. Det then assigns a P-mark to its complement. This NP is then merged as the complement to the embedded possessum ‘friend’. This NP is also a second-position domain, so the possessor moves to the specifier of the NP projected by the possessum. Given the Copy Deletion algorithm, a split configuration is derived.

(49) Step 1: Building complex possessor



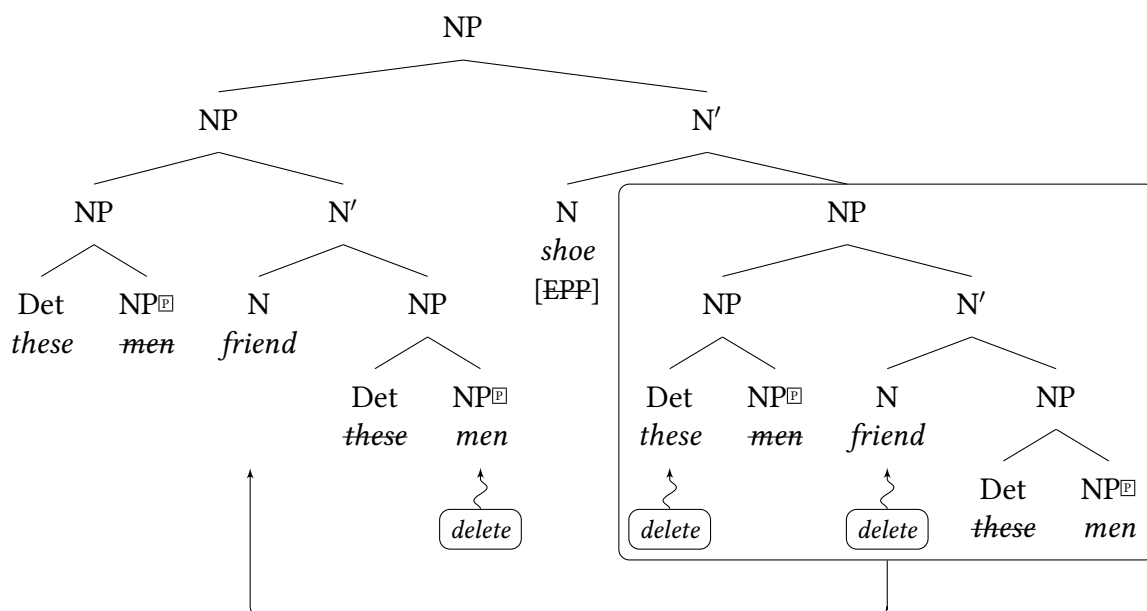
This NP is then embedded as the possessor of the main possessum ‘shoe’, with all P-marks and previously established deletion specifications inherited. Like all NPs in Iquito, the head of this phrase bears an [EPP]-feature requirement movement to its specifier.

(50) Step 2: Embedding complex possessor



When the complex possessor moves, we now see the effect of the PPG. The Copy Deletion algorithm tells us to delete all non-P-marked, previously undeleted terminals in the lower copy. In this structural configuration, the determiner only c-commands its sister (the embedded possessor ‘men’) and thus does not protect the possessum ‘friend’ from deletion in the lower copy. Relatedly, the absence of a P-marked node dominating the possessum in the higher copy means that deletion of the possessum ‘friend’ is not licensed. 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*, an instance of ‘possessum pied-piping’.

(51) Step 3: Movement to Spec-NP



We can now see how the approach to distributed deletion we have developed here straightforwardly captures the PPG. The PPG is repeated below as (52).

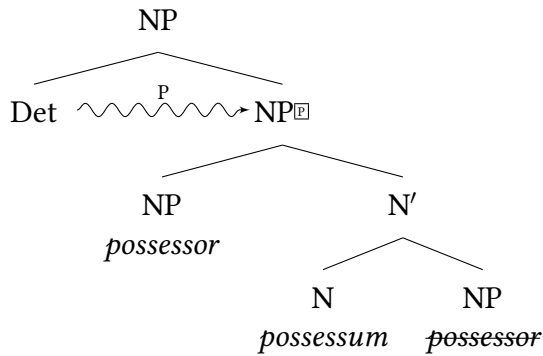
(52) *Possessum pied-piping generalization (PPG)*

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

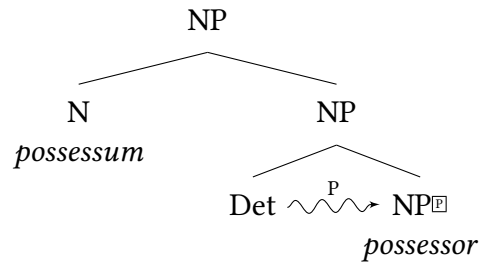
Clearly, a theoretical account of the PPG must link the appearance of a non-constituent under displacement with the semantic association of the determiner. We have argued that the semantic association of the determiner is a direct correlate of its base position in the structure. Given our assumption that Iquito determiners have the inherent property of assigning a P-mark to their complement, any elements in the c-command domain of the determiner are protected from deletion in the lower copy of a given movement step and are, by complementarity of deletion, prevented from appearing in the higher copy. Thus, ‘possessum pied-piping’ is somewhat of a misnomer on our analysis, as it is actually failure to protect the possessum from deletion in the lower copy due to lack of c-command by the determiner.

To see this more clearly, consider the following two structures for a possessive NP that will be moved to some higher position. A determiner modifying the possessum implies a relatively high attachment and the possessum is contained in its c-command domain (53). This will cause the possessum to be protected from deletion in the lower copy and therefore ‘stranded’ under movement. This is not true, however, when the determiner merges with the possessor. In (53), the c-command domain of determiner does not include the possessum. The absence of a dominating P-marked node will lead to the possessum being deleted in the lower copy and preserved in the higher one.

(53) Determiner associated w/ possessum:



(54) Determiner associated w/ possessor:



This analysis therefore successfully derives the central insight of the PPG by linking the two apparently unrelated properties of what the determiner modifies and where the possessum is pronounced as a consequence of the structural height of the determiner.

3.3 Multiple determiners

At this point, one might wonder whether it is possible for both the possessum and the possessor of an NP to be simultaneously modified by determiners. This is not straightforward to answer. Michael (2003) contains examples of this kind such as (55).

(55) [_{NP} iina miisi iipi kujimani ikwani-wiya]
 DET cat DET.PL.AN friend man-PL
 ‘the cat of this friend of these men’ (Michael 2003: 9, (37))

However, Lev Michael (p.c.) informs us that these examples were difficult to elicit and that speakers tend to find them unacceptable. One possibility is that these structures are licensed by the grammar, but have a low level of acceptability for reasons for processing (though it is not conclusive whether this is the correct interpretation of the data). For this reason, the status of such examples remains uncertain and controversial. For the purposes of evaluating the predictions of the present proposal, however, let us take (55) to be the form that the grammar of speakers will produce if they are pushed to. With these caveats in place, the mapping from underlying structure to surface word order in (55) is actually what is predicted by our analysis:

(56) [cat [this friend [these men]]] → *this cat these friend men*

To see this more clearly, let us walk through a sample derivation.

In this first step (57), the embedded possessor is modified by the determiner ‘these’ and undergoes movement to the edge of the possessum NP, deriving a split. Subsequently, the determiner modifying the possessum ‘this’ merges with the possessum NP.

notwithstanding the complications about the general acceptability of such constructions. In section 4.3.1, we discuss similar examples of this kind involving movement to the irrealis position rather than NP-internal movement.

3.4 Against alternative approaches

Before moving on, we will address the question of whether the PPG can be derived by alternative approaches. We briefly discuss each and mention why they do not capture the PPG in a satisfactory or explanatory way.

3.4.1 Sub-extraction

Let us first consider a sub-extraction approach to discontinuity. Recall the basic mappings from underlying structure to surface order for the examples that are crucial for the PPG:

- (59) a. [cat [these children [woman]]] → *these cat woman children*
 b. [shoe [friend [these men]]] → *these friend shoe men*

In a sub-extraction approach, we could assume that splits arise from movement of just the determiner to Spec-NP. As (60) shows, (59a) is relatively straightforward to derive by sub-extraction, with movement of the determiner to the specifier of the possessum (movement of possessor is not shown).

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

The apparent non-constituent movement in (59b) would require multiple order-preserving steps of movement to Spec-NP (61) (see Bošković 2016: 21 for a similar approach to apparent multiple LBE; though cf. Bošković 2015).

- (61) [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 extraordinary LBE such as (40b) where an adposition is extracted in addition to a left-branch constituent. A possible idea here is that the two apparently extracted 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 (61) and move as a single constituent. Pied-piping would then be the result of prior fusion.

The main problem with both of these analyses is that they offer no explanation for why the special case (multiple specifiers or fusion) 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 we show in section 4.3.2).

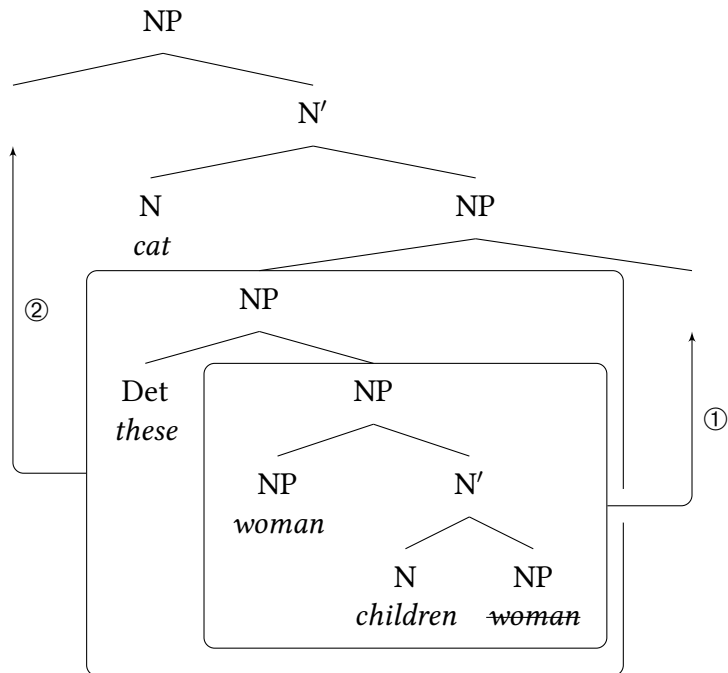
3.4.2 Remnant movement

The remnant movement approach has a potential advantage over sub-extraction in that it is better equipped to handle non-constituent displacement. For this reason, it could fare better in capturing the possessum pied-piping in Iquito. That said, the well-known problem of the remnant movement analysis is the lack of independent evidence for the various ‘evacuating’ movement steps required to create the remnant. This problem also carries over to the PPG in Iquito. To derive the general obligatoriness of splits with determiners Iquito on a remnant movement approach, we could posit a requirement such as the following.

- (62) The NP complement of a determiner must move out the minimal NP containing the determiner and its complement.

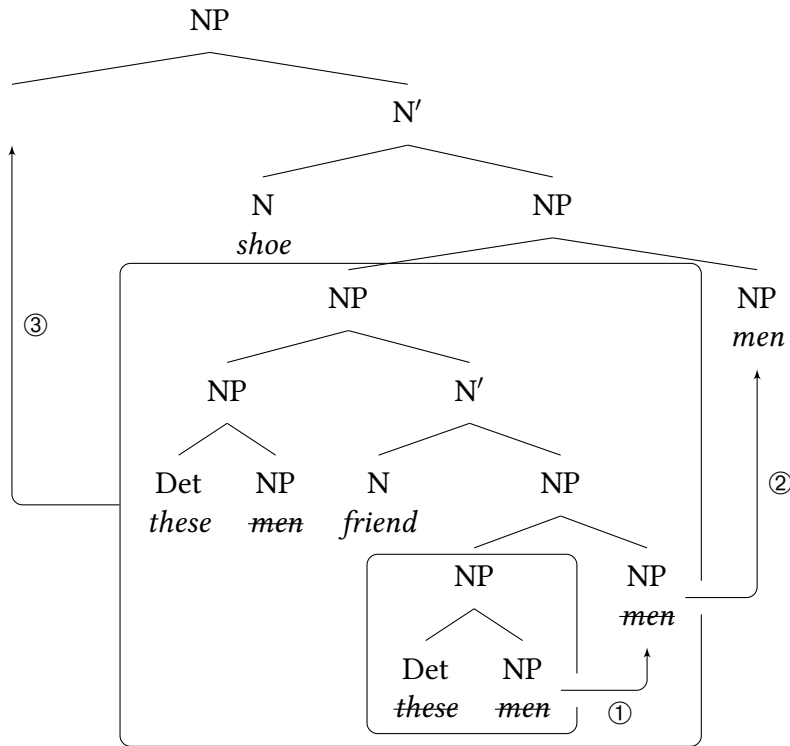
This applies relatively straightforwardly to cases where the determiner modifies the possessum, as shown in (63).

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



When we want to derive the appearance of non-constituency when the determiner is associated with the possessor, however, we require an additional evacuation step of ‘men’ out of the larger NP constituent, i.e. step ② in (64).

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



This step has no independent motivation. All else being equal, we might expect to find the word order **these friend men shoe*, which what we would get without the additional step in ②. It is always possible to stipulate additional evacuation steps in a remnant movement analysis, but 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 unable to provide any insight into why the PPG exists.

3.4.3 Grammaticalization

A final possibility we should mention is the position advocated in Hansen (2011) that the word order we find with split NP constructions can explained as the result of an ongoing grammaticalization process in Iquito in which determiners are undergoing reanalysis from a demonstrative pronoun to a definite article, a well-established grammaticalization path for other languages (Diessel 1999). Hansen (2011) provides supporting evidence for this view, such as the fact that number agreement is no longer obligatory, suggesting it is being lost. The crucial question for our purposes, however, is what the synchronic status of Iquito determiners is.

Beier et al. argue that from a synchronic perspective, although the determiner forms a constituent with a noun phrase, ‘the relationship between them is a loose relationship of quasi-apposition, rather than a head-dependent relationship’ (2011: 89). We believe that this view is compatible with our proposal that determiners are adjuncts to NP, rather than the head of a DP projection. Bošković’s (2008) assumes that it is only in languages that lack genuine articles (the head of a DP) that determiners can appear discontinuously from the rest of the NP.

But can the grammaticalization view shed light on the PPG from a synchronic perspective?

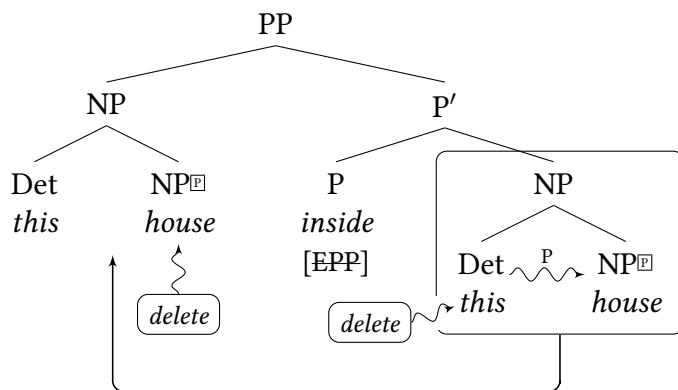
Hansen (2011) in particular views NP splits as a remnant of an earlier stage of the language in which the determiner was still a free demonstrative pronoun and could occur independently from it, while standing in an anaphoric relation to a noun phrase in apposition (also see Beier et al. 2011: 89). Hansen’s (2011: 175) proposal is that the determiner lost its pronominal qualities over time, but the discontinuous word order became fixed in the irrealis, thereby leading to a kind of grammaticalized discontinuous construction for determiners. However, this view does not account for the PPG as it exists synchronically. Why do we have possessum pied-piping, but not possessor pied-piping? Hansen (2011: 161) tries to link the possessum pied-piping construction to the hypothesis that, in an earlier stage of the language, determiners used to be allowed to appear adjacent to the nouns they modify. However, this does not explain the fundamental pied-piping asymmetry we find between possessum and possessor and why the adjacent noun cannot be interpreted as the one modified by the determiner. Furthermore, we have seen that the PPG also holds within NP and PP domains. It is not clear how the idea of a fossilized irrealis construction can provide a unified account of these domains. We have shown that this is indeed possible if what unifies all three of them is the presence of phrasal movement.

3.5 Deriving NP splits in PPs

Now, let us briefly see how the analysis of the PPG we developed above also applies to NP splits in the PP domain. Recall that PP-internal word order has a parallel derivation to NP-internal word order in that all P heads bear an [EPP]-feature triggering movement of their complement. In an example such as (65), the determiner in the complement of P assigns a P-mark to its complement. Under movement to Spec-PP, we then derive a split NP configuration and thus the desired word order.

- (65) [_{PP} iina jinakuma iita]
 DET inside house
 ‘inside this house’

(Michael 2004b: 5, (14b))

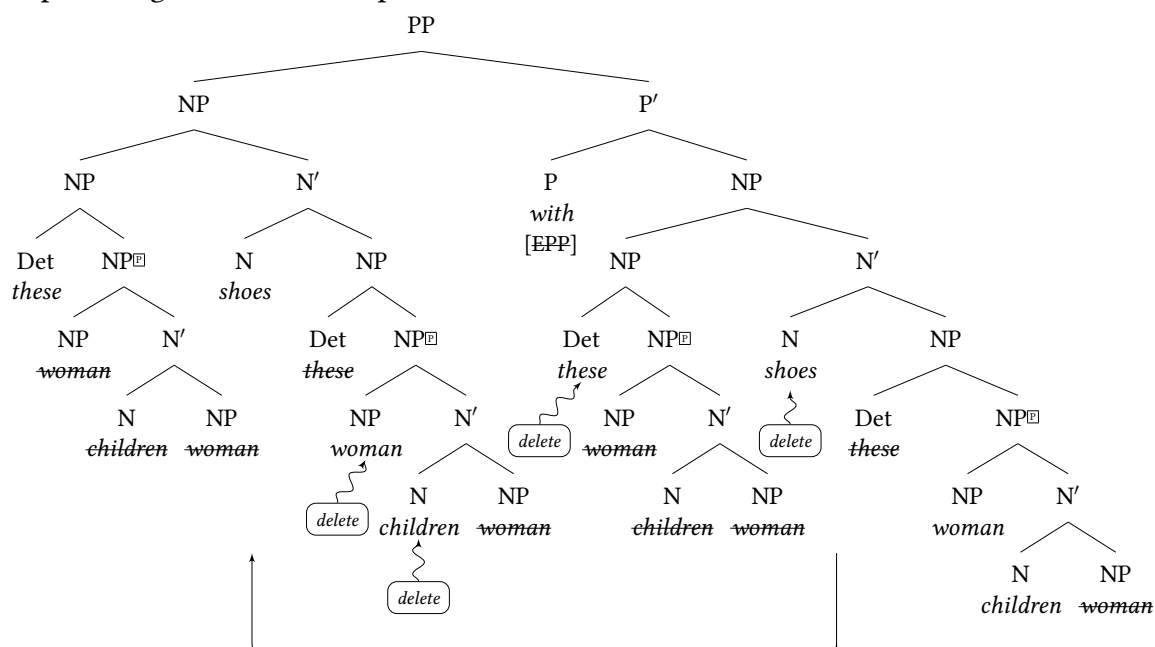


We also saw the example in (66), which we argued instantiates the PPG as both the determiner and the possessum precede the adposition in the PP.

- (66) Ku-asa-ki-ø [_{PP} iina amiiku aakuji ikwani]
 1SG-eat-PFV-NPST DET friend before man
 ‘I ate before the friend of this man’

(Michael 2003: 5, (22a))

(70) Step 2: Merge and move complement to P



In general, our analysis of the PPG predicts the effect we find in (70), as any material not contained in the c-command of a determiner will be ‘pied-piped’ under movement to a higher position. This account makes some further interesting predictions. For example, if the PP in (70) were to undergo movement to some higher position, our Copy Deletion algorithm predicts that the higher copy of the PP would contain not only the determiner and the possessum, but also the adposition, as none of these elements are dominated by a P-marked node in the structure. We will show that this prediction is indeed borne out. In the following section, we turn the final domain for the PPG, clause-level movement, and show how it further supports the analysis developed in this section.

4 Clause-level movement

4.1 The irrealis position

One important domain for (what we argue to be) clause-level movement in Iquito concerns the marking of reality status. In Iquito, finite clauses are obligatorily marked for reality status, which is an inflectional category that distinguishes between realized events and 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 post-verbal 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. 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 marker. However, more recent work has 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 the adjacency of subject and verb. For example, the contrast in (71) is between the canonical SVO order in (71a) (realis mood) and the alternative SOV order in (71b), where the placement of the object between the subject and verb marks irrealis mood.

(71) *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))

In fact, placing any constituent between the subject and the verb is sufficient to mark irrealis mood in Iquito. For example, an intervening adverb between the subject and the verb also leads to an obligatory irrealis interpretation (72b).

(72) *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 (73), where an adpositional phrase fills the irrealis position.

(73) *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))

If it is possible for any phrase to occupy the irrealis position, we might expect cases of optionality. This is what we find with ditransitives, for example. With ditransitive verbs, it is possible for either the indirect object (74b) or the direct object (75b) to move to the position between the subject and the verb to signal irrealis mood.

(74) *IO of ditransitive in the irrealis position*

- a. Kí=masíítií-ríi-kura [NP Jaime] nuú (realis)
1SG=sell-MMTPFV-RPST Jaime 3SG
'I sold it to Jaime.'
- b. Kí= [NP Jaime] masíítií-ríi-Ø nuú (irrealis)
1SG= Jaime sell-MMTPFV-NPST 3SG
'I will sell it to Jaime.'

(Beier et al. 2011: 78, (22a, b))

(75) *DO of ditransitive in the irrealis position*

- a. Kí=masíítií-yaa-Ø [NP nuú] Jaime (realis)
1SG=sell-IPFV-NPST 3SG Jaime
'I am selling it to Jaime.'
- b. Kí= [NP nuú] masíítií-ríi-Ø Jaime (irrealis)
1SG= 3SG sell-MMTPFV-NPST Jaime
'I will sell it to Jaime.'

(Beier et al. 2011: 78, (21a, b))

As shown in the introduction of the paper (example (2)), another option is for part of a split noun phrase to appear in the irrealis position, as shown by (76b). We turn to more complex split examples in section 4.3.

(76) *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))

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 post-verbal particle *kaa* and a verbal suffix *-ji*, as shown in (77a). The negative particle *kaa* can surface between the subject and the verb, leading to an irrealis interpretation (77b).

(77) *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**] paaji-'**ji**-ríi-Ø? (irrealis)
which book 1SG= NEG study-NEG-MMTPFV-NPST
'Which book won't I read?'

(Hansen 2018: 146, (52), 149, (59))

We assume that this bipartite negation is similar 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 (78) where *kaa* is a phrasal projection in

Spec-NegP and *-ji* is the head of Neg.

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

Given the examples introduced thus far, we can make the following descriptive generalization about the word order component of irrealis marking:¹⁰

(79) *Irrealis generalization*

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

4.2 Analysis of irrealis movement

In order to capture the generalization in (79), we propose a movement-based account of the irrealis position. Specifically, we argue that this position is derived by movement to 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 (80a). Movement of the subject is triggered by an [EPP] feature on T. In irrealis clauses, the T head bears a second [EPP] feature. We take this to be part of the lexical specification of irrealis T. This additional [EPP] feature triggers movement of a second phrasal constituent (presumably the structurally closest one) to an inner specifier of T (80b).¹¹

¹⁰A 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 [pɪ̃] (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 /ɪ̃i/ (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 [ɪ̃] (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 *pɪ̃* 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 (79).

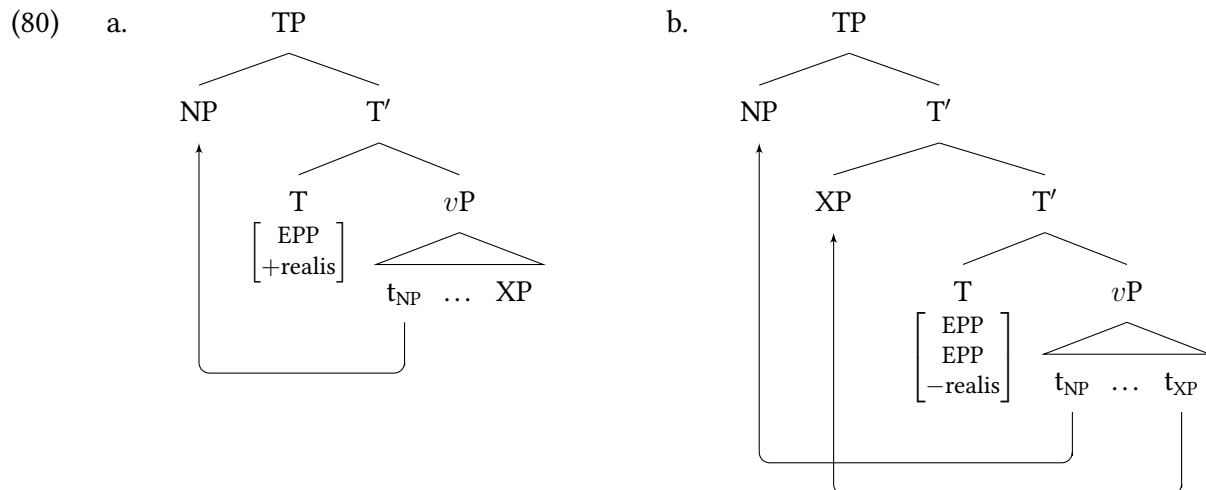
- | | | | |
|-----|--|------|---|
| (i) | [pɪ̃.kwa.ki]
Pɪ̃=iikwa-ki-∅
1PL.INCL=go-PFV-NPST
'We went.' (<i>realis</i>) | (ii) | [pɪ̃.í.kwa.ki]
Pɪ̃=iikwa-ki-∅
1PL.INCL=go-PFV-NPST
'We will go.' (<i>irrealis</i>) |
|-----|--|------|---|

(Beier et al. 2011: 91, (56, 57))

¹¹Multiple specifiers of T have been proposed for languages with so-called 'broad subjects' (Doron & Heycock 1999, 2010; Alexopoulou et al. 2004; but cf. Landau 2011), e.g. for multiple nominative constructions in Japanese (i).

- (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))



Both of the movements to Spec-TP must be order-preserving. This can be achieved by Richards's (2001) notion of 'tucking-in', where this is a general property of movement to multiple specifiers. 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.

A possible supporting argument for the multiple specifier analysis comes from the adjacency restrictions found in both realis and irrealis clauses. For example, it is ungrammatical for an adverb (or any other phrase) to intervene between the subject and the verb in a realis clause (81).

- (81) *No subject-verb intervention in realis*
 *Ikwani maakwárika 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))

We suggest that this can be captured by a general constraint ruling out bar-level adjunction (82), an assumption often assumed to follow from Bare Phrase Structure (see e.g. Chomsky 1994; also see Landau 2020: 378 for a more general version of this constraint). Recall, as outlined above, that the subject occupies Spec-TP and the finite verb moves to T.¹²

¹²An anonymous reviewer points out that this view might be challenged by the fact that adverbs may intervene between modals/auxiliaries in English (i), even though the most natural order appears to be one in which the adverb follows the modal.

- (i) The man probably can climb the fence.

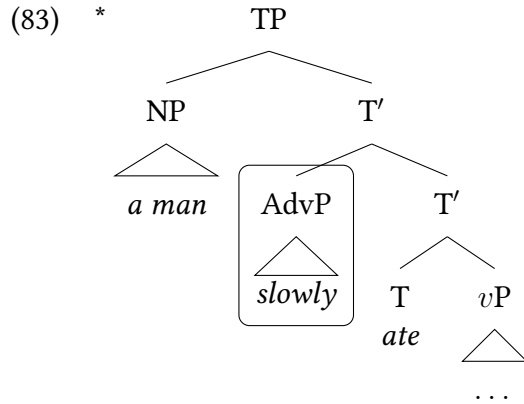
For cases such as (i), one could assume that the modal typically undergoes head movement from the head of ModP (to which the adverb is adjoined) to T, rather than being base-generated in T directly (a conclusion supported by scope interactions with adverbs and negation; see Ernst 2002; Iatridou & Zeijlstra 2013):

- (ii) [TP The man [_{T'} [_T can] [_{ModP} probably [_{ModP} can [_{vP} climb the fence]]]]]

In the relatively marked word order in (ii), the modal is pronounced in its base position. This seems to be linked to the need for *probably* to linearly precede the modal in order to derive the particular verum focus interpretation associated with this particular word order. Our claim is that the ban on bar-level adjunction works as a diagnostic for Iquito since the verb is always realized in T. Consequently, no phrase may ever intervene between the subject and the

- (82) *Ban on X'-adjunction*
Adjunction may not target intermediate projections.

This constraint then rules out (81) straightforwardly:



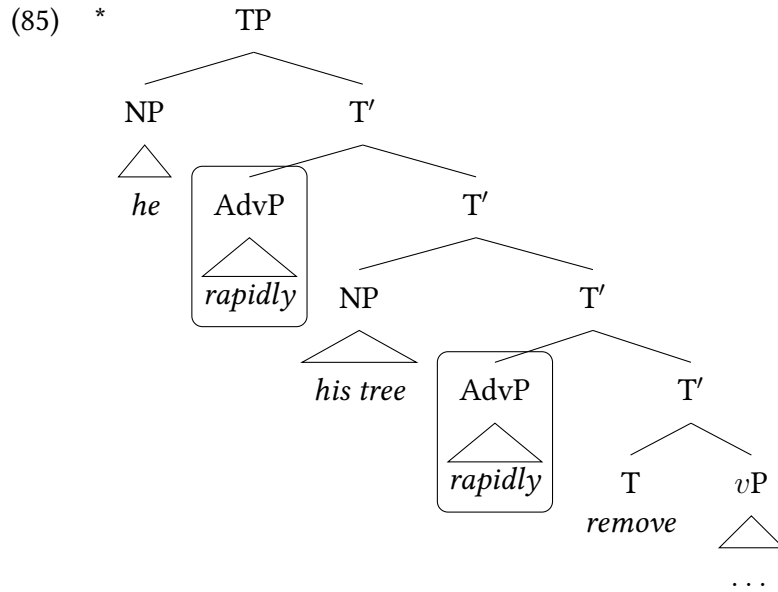
Importantly, we find the same restriction in irrealis clauses. While irrealis clauses are characterized by the obligatory presence of a constituent between the subject and the verb, Beier et al. (2011) show that no other constituent, e.g. an adverb, may occur between the phrase in the irrealis position and either the subject (84a) or the finite verb (84b).

- (84) *No multiple XPs between subject and verb*
- a. *Íina ikwani nu= nu-náana **iyarákata** jimata-rîi-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-rîi-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, the irrealis position is an inner specifier of T. For this reason, the same ban on adjunction to T' in (83) also extends to the irrealis examples in (84), as shown in (85).

main verb in Iquito, unlike in (ii).



We can therefore use the ban on bar-level adjunction to derive the adjacency requirement that the subject and verb must be immediately adjacent in realis clauses and subject-irrealis XP-verb must be immediately adjacent in irrealis clauses. In alternative analyses, this restriction does not follow as naturally.

This is not the case on an alternative view where the distinction between realis and irrealis word order is derived by head movement rather than phrasal movement, as suggested by Brown (2004*b*), Hansen (2006), and Berger (2017). As (86) shows, on this alternative approach, the verb raises to T in realis clauses (86a), while this movement is absent in irrealis clauses (86b).

- (86) a. [TP Iima [T' [T [V kapiki]]] [VP [NP asúraaja] t_V]]] (*realis*)
 Ema cook manioc
 ‘Ema cooked manioc.’
- b. [TP Iima [T' [T Ø]] [VP [NP asúraaja] kapiki]]] (*irrealis*)
 Ema manioc cook
 ‘Ema will cook manioc.’

Here, one can assume that [–realis] T lacks the feature relevant for head movement of the verb to T (in contrast to the [EPP] feature on our analysis).

This approach faces some problems though. First, in order to derive (86b), 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 other data presented in this section. If the verb remains low in irrealis clauses (86b), then it is unclear why there should be a ban on adjunction to the verb phrase leading to the adjacency restrictions discussed in section 4.2. Finally, the parallelism between the patterns of discontinuous NP realization within NPs/PPs and irrealis clauses strongly suggests that the same mechanism is at play (i.e. phrasal movement), something that would not be captured by the alternative analysis with verb movement.

4.3 Split XPs in the irrealis position

In this section, we discuss examples in which we find discontinuous NPs and PPs under movement to the irrealis position. These examples are important as they allow us to fill in certain gaps in our data and also provide the third and final context in which we have argued that the PPG holds.

4.3.1 Split NPs in the irrealis position

Recall the formulation of the PPG in (6), repeated below.

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

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

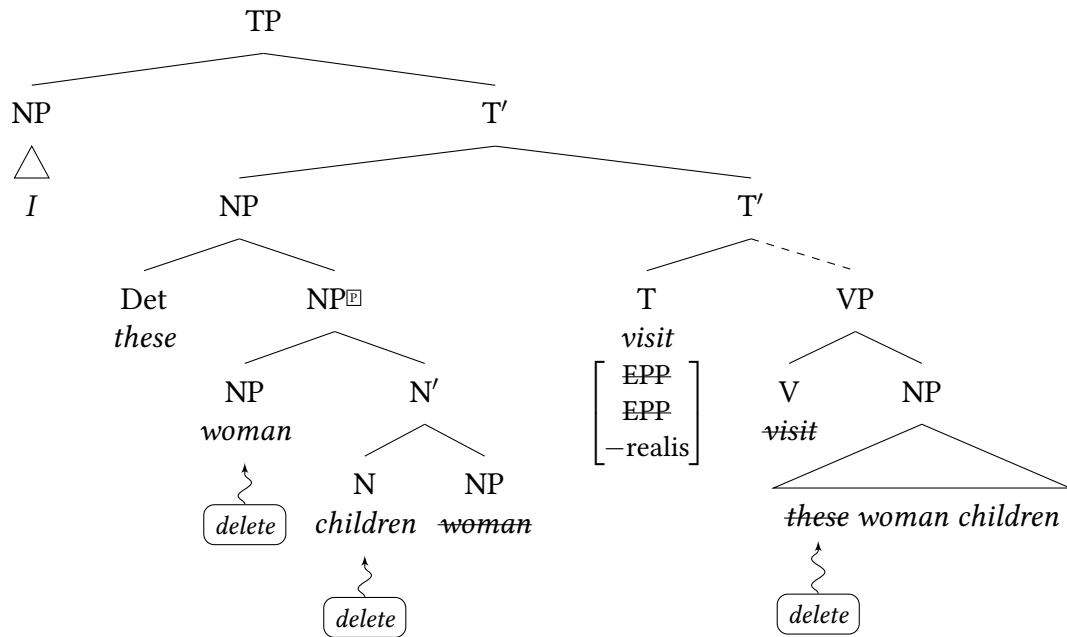
We have already shown that certain examples of NP- and PP-internal word order fall under this generalization. In addition, movement to the irrealis position does too. There are two patterns we find with irrealis clauses where the object is a possessive NP containing a determiner (see Brown 2004a; Hansen 2011 for further examples). In (88a), the determiner is associated with the possessum and only the determiner surfaces in the irrealis position. In (88b), the determiner modifies the possessor and both the possessum and the determiner occupy the irrealis position.

- (88) a. Aámiikáaka kí= iipi miwĩira-kwa-Ø [NP ____ miĩsaji mira]
 one.day.away 1SG= DET.PL.AN visit-ASP-NPST woman children
 ‘Tomorrow, I will go there to visit these children of the woman.’
-
- b. Aámiikáaka kí= iipi sinaaki sikita-riĩ-Ø [NP ____ mira-jaarika]
 one.day.away 1SG= DET.PL.AN clothes wash-ASP-NPST children.-DIM
 ‘Tomorrow, I will wash the clothes of these children.’
-

The example in (88a) is important because it provides a structure that we did not have in the patterns of NP-internal word order in (13), namely an example where the main possessum is modified by a determiner. We noted that this configuration is only possible if the phrase undergoes displacement. We can now see this in more detail.

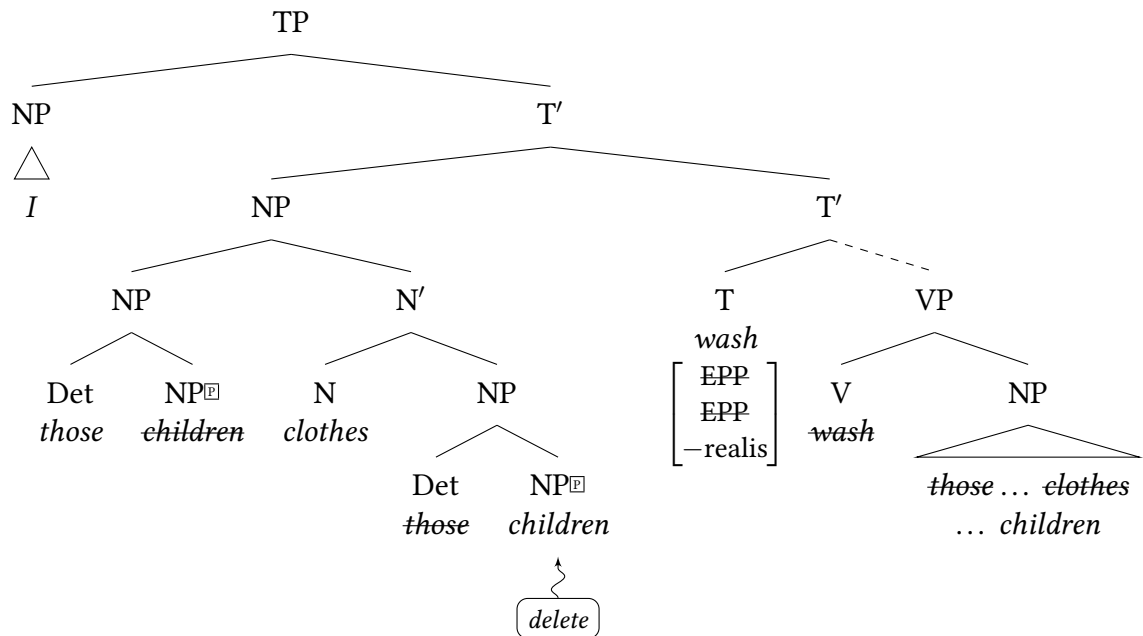
In (88a), the determiner modifies the main possessum and, as such, everything except the the determiner is dominated by a P-marked node. Following our Copy Deletion algorithm, in the higher copy, the terminals dominated by a P-marked node are deleted. In the lower copy, the terminal not dominated by a P-marked node is deleted. As shown in (89), everything except ‘these’ in the higher copy is deleted and there is corresponding deletion of ‘these’ in the lower copy.

(89)



For the structure where the determiner modifies the possessor (88b), the important difference here is that the complement of the determiner includes only the possessor. Thus, the possessum is not P-marked. When this phrase moves to the irrealis position (90), 'those' and 'clothes' are deleted in the lower copy and 'children' is deleted in the higher copy.

(90)



These examples serve to show that the PPG holds for both phrase-internal and clause-level movement. Examples such as (88a) also help to fill an important gap in NP-internal word order. They show that it is possible for a determiner to modify the highest possessum in a NP, as long as that NP undergoes movement to derive a split construction. We have already seen this with

NP-internal movement and (89) shows the same thing at the clause level.

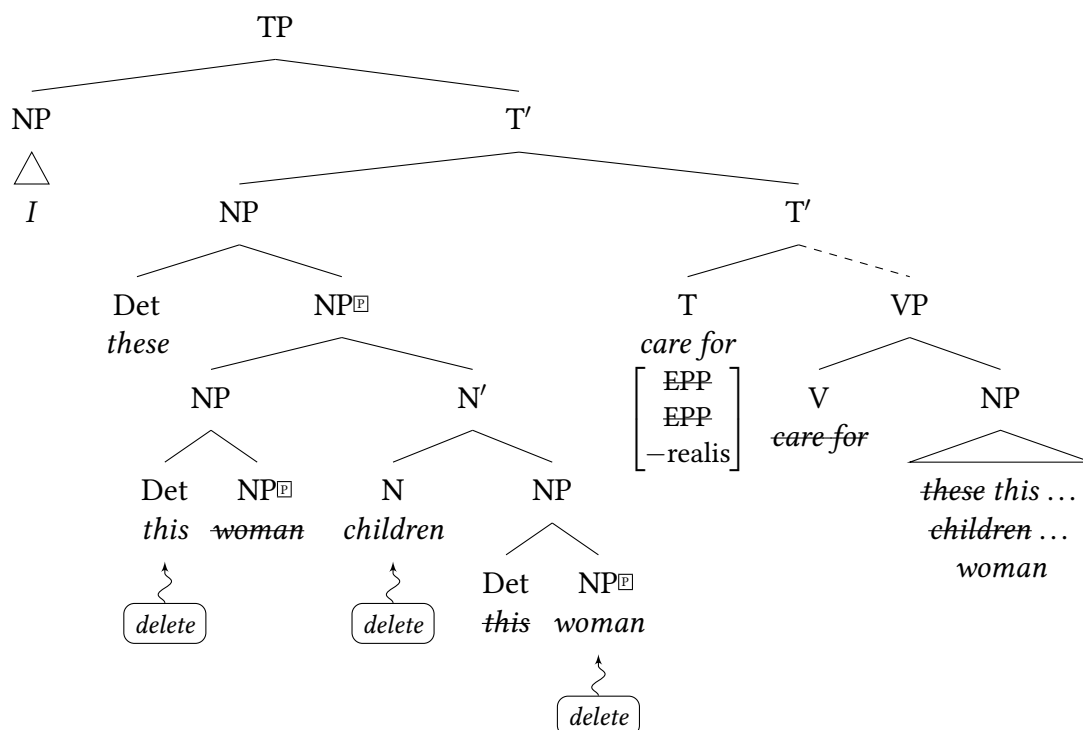
A final possibility for split NPs in the irrealis position involves a structure similar to those we discussed in section 3.3 where both the possessum and possessor of a split NP are modified by determiners, as in (91). Here, we find that the determiner associated with the possessum is realized in the irrealis position with the rest of the NP stranded postverbally. In (91a), we cannot easily tell what the determiner modifies due to the lack of agreement with either noun, though (91b) makes this clearer where plural/animacy agreement shows that it is associated with the possessum.¹³ Furthermore, this is the same pattern we saw in section 3.3 when a possessive noun phrase with two determiners moves NP-internally.

- (91) a. $\overbrace{\text{íina máaya}_i, \text{nu}_i = \text{íina}} \text{ irikatájuu-rii-}\emptyset \text{ [}_{\text{NP}} \text{ } \underbrace{\text{íina íimina ikwaáni}} \text{]}$
 DET child 3SG= DET repair-PFV-NPST DET canoe man
 ‘This child, it will repair this canoe of this man.’
- b. $\overbrace{\text{Aámiikáaka kí} = \text{íipi}} \text{ kariinii-rii-}\emptyset \text{ [}_{\text{NP}} \text{ } \underbrace{\text{íina mira miiisáji}} \text{]}$
 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))

As with the parallel NP-internal examples in section 3.3, our analysis extends naturally to cases such as (91). Below we provide the analysis for (91b).

¹³Hansen (2011: 163) initially refers to constructions such as (91a) as ‘determiner doubling’, however the translation given for (91a) makes it clear that actually both the possessor and possessum are each associated with a separate determiner. Hansen (2011: 167) subsequently appears to revise this characterization: ‘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 as meaning they are each syntactically modified by the determiner, as the distinct forms in (91b) 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.

(92)



Internal to the higher copy of the moved NP in the irrealis position, any elements that are not dominated by a P-marked node are deleted. Since the possessum is dominated by a determiner, the entire possessive NP is P-marked and we therefore correctly predict that there is no possessum pied-piping here.

4.3.2 Split PPs in the irrealis position

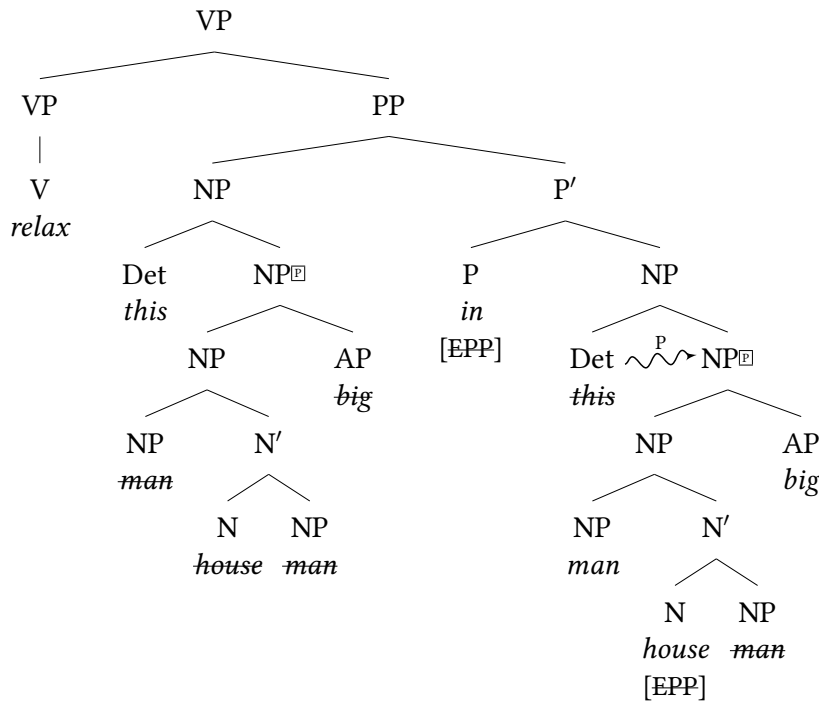
We now turn to PP splits under movement to the irrealis position. For a PP undergoing movement to the irrealis position whose complement contains a possessor, if the determiner is associated with the possessum, then both the determiner and the adposition are pronounced in the higher copy (93a). If the determiner modifies the possessor, then we find three elements in the irrealis position: the determiner, the possessum and the adposition (93b). This is a more radical discontinuity than we have previously seen, as this appears to involve not only pied-piping of the possessum, but also of the adposition.

- (93) a. Aámiikáaka kí= iina =jina samaraata-rii-Ø [PP ____ ikwani iita umaana]
 one.day.away 1SG= DET =LOC relax-ASP-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-ASP-NPST woman
 ‘Tomorrow, we will plant in the field of this woman.’
 (Hansen 2011: 171, (3.118))

It can be shown that this pattern of discontinuity is predicted by our analysis of the PPG, since all material that is not in the c-command domain of a determiner will be pied-piped under movement.

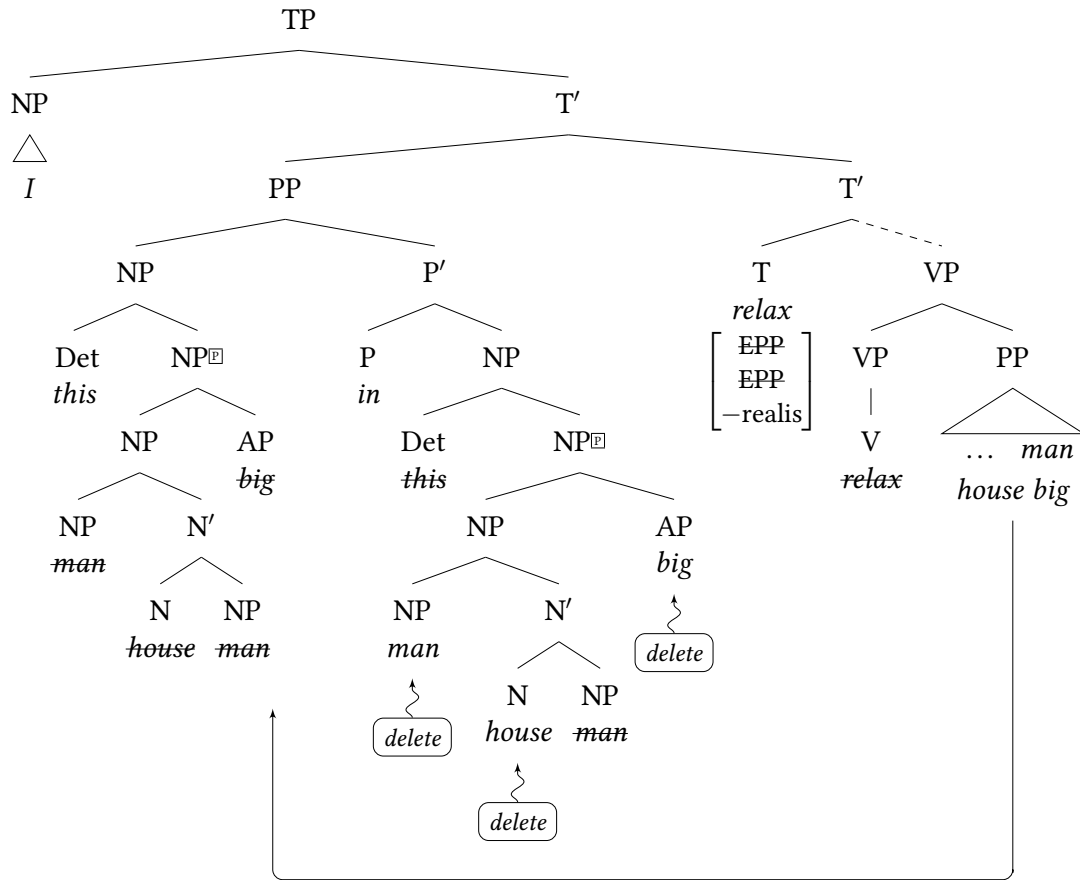
In example (93a), the relevant pre-movement structure for the PP adjunct is given in (94). The determiner modifies the possessum NP headed by 'house' (the same is true for the adjective 'big'). Recall that this is a configuration that constituted a gap in the table in (22). In this example, we have the 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 (94) in its base-position, where only the determiner is pronounced before the adposition.

(94)



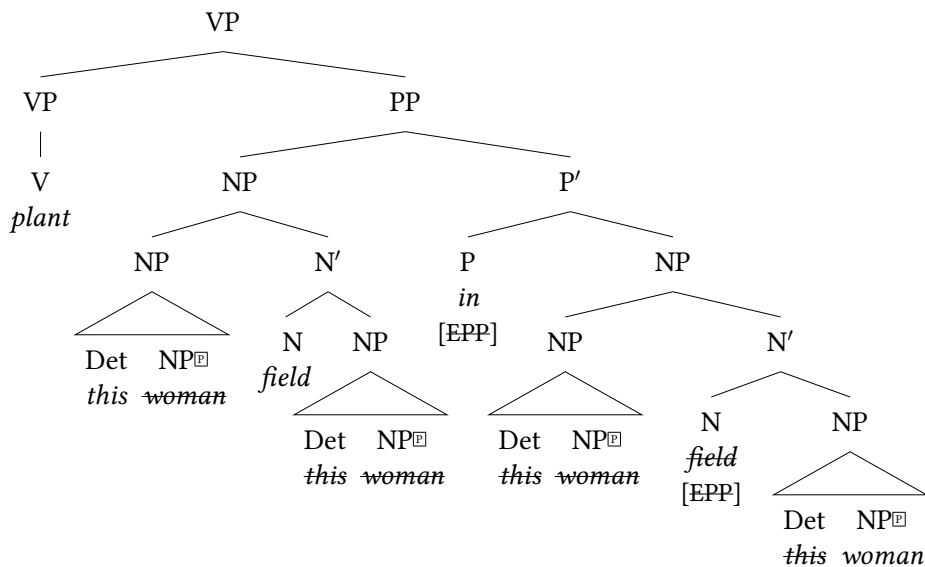
This makes the correct prediction for the surface order we find when this phrase undergoes movement to the irrealis position (95). When the Copy Deletion algorithm applies, both the determiner and the adposition are realized in the higher copy and all other PP-internal material is realized in the lower copy.

(95)



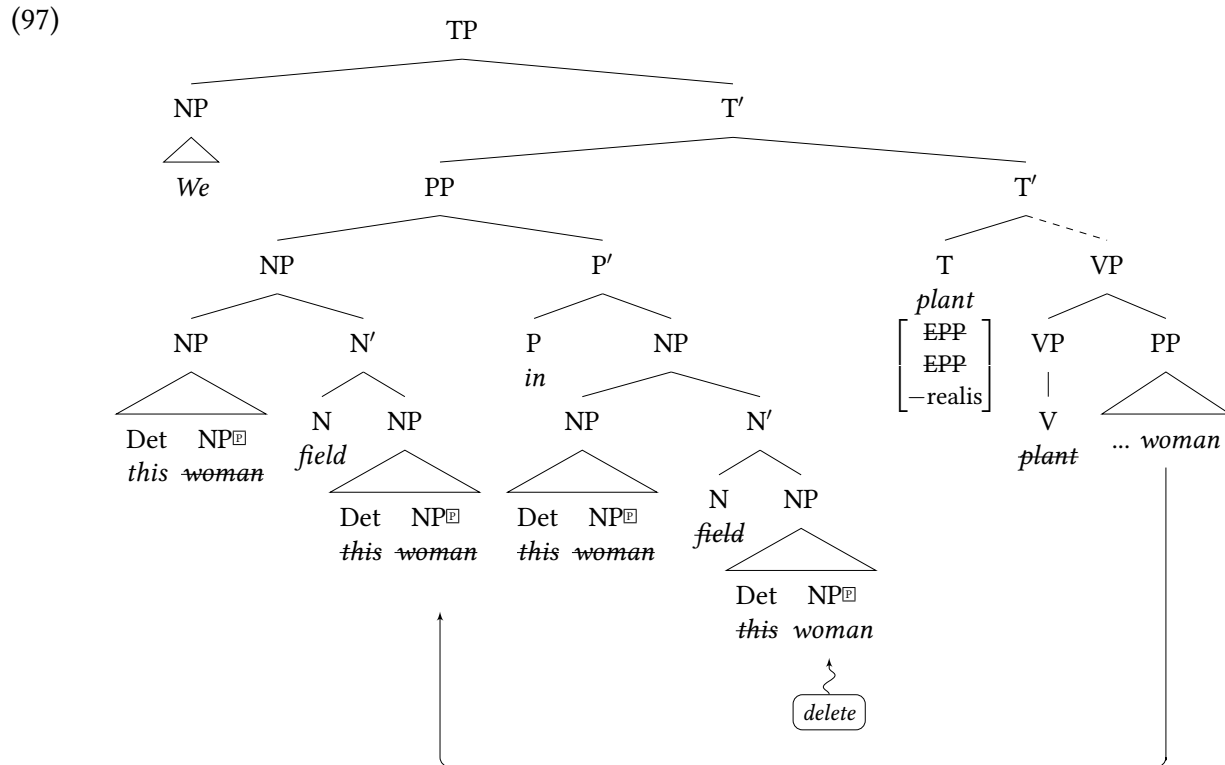
For example, (93b) where the determiner is associated with the possessor, the only element that is c-commanded by a determiner is the possessor (96).

(96)



Our analysis makes a clear prediction about these cases, since only elements c-commanded by the determiner are dominated by a P-marked node are protected from deletion downstairs, we predict

that only the possessor will be pronounced in the lowest copy, with the determiner, possessum and adposition all pronounced in the higher copy. As (97) shows, this is indeed what we find. The only still undeleted P-marked item is the lowest copy of ‘woman’ that is deleted high and pronounced low. This leads to everything else in the moved NP being pronounced, giving the effect of radical non-constituent pied-piping.



In sum, split PPs in the irrealis position allow us to examine even further predictions of the PPG. That is, although the PPG specifically references movement of possessive NPs and pied-piping of the possessum, in principle, our analysis predicts that there could be more extreme cases of pied piping. This would arise in cases precisely like split PPs in the irrealis position, where a possessive NP is embedded under an adposition and then that PP is itself moved. We predict that the adposition will also be ‘pied-piped’ as it is outside the c-command domain 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.

4.4 Split NPs in subject position

The final cases of clause-level movement that we would like to discuss involves movement of the the subject from Spec-*vP* to Spec-TP. In this section, we discuss some further intricacies of split NP constructions involving movement to subject position. In Iquito, NP splits are obligatory with intransitive verbs such as *makii* ‘sleep’.

- (98) 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 (99) shows.

- (99) *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 pre-verbal subject position (100).¹⁴ This constitutes the only construction we are aware of in which a moved NP containing a determiner does not surface as a split-NP.

- (100) 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 siinaki- \emptyset -kura iina kaaya
 DET dog bite-PFV-RPST DET person
 That dog bit that person (yesterday). (Lai 2009: 54, (18))

Interestingly, the impossibility of split transitive subjects is lifted when the direct object undergoes displacement to clause-initial position. This can be seen both with wh-movement (101a) and focus fronting (101b).

- (101) a. Saakaá₁ iina irikatájuu-yaa- \emptyset ikwani ___₁ ?
 what DET repair-IPFV-NPST man
 ‘What is this man going to repair?’ (Michael 2004b: 4, (8b))

¹⁴Example (100a) 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 (100a) 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.

- 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 (102).

- (102) *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 *vP*.

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 (103a), 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 (103b).¹⁵

- (103) a. [TP [PP Into the room] [T' walked [_{vP} a child —_V —_{PP}]]]
 b. *[TP [PP Into the room] [T' kicked [_{vP} a child —_V a ball]]]

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 post-verbally, as in (104a). However, this is generally not possible with transitive verbs (104b).

- (104) a. Je me demande [CP quand partira [_{vP} ton ami —_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 quand achèteront [_{vP} les consommateurs —_V les pommes]]
 I wonder when will.buy the consumers the apples
 Int. ‘I wonder when the the consumers will buy the apples.’

¹⁵Indeed, the same restriction emerges when the subject movement is blocked, perhaps more uncontroversially, by an expletive occupying the canonical subject position (see e.g. Bobaljik & Jonas 1996):

- (i) a. Suddenly, there walked a child into the room.
 b. *Suddenly, there kicked a child a ball (into the room).

(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, (104b) also falls under the SSG.

Importantly, the SSG predicts that movement of the direct object out of *vP* should void this effect. As (105) shows, this is indeed borne out, parallel to what we saw with Iquito splits in (101).

- (105) Que₁ crois-tu [CP que manquet [vP un grand nombre d’étudiants ____v ___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 there is a direct object pronounced inside *vP*. Thus, a split with an intransitive verb is unproblematic (98b), as only a single NP is pronounced inside the *vP* (106a). With a transitive verb, as we saw in (99), both the head nouns associated with the subject and the object are pronounced within *vP* (106b), 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 (106c), as shown by (101).

- (106) a. [TP [NP this man] [T’ sleep [vP [NP this man] t_v]]]
b. *[TP [NP this man] [T’ repair [vP [NP this man] t_v [NP this canoe]]]]
c. [CP [NP what] [TP [NP this man] [T’ repair [vP [NP this man] t_v [NP what]]]]]

Iquito can therefore provide a new domain for the SSG. The important difference in the Iquito data, however, is that the SSG also holds with split constructions, where only part of the subject remains *vP*-internal. From a theoretical perspective, this means that the analysis of the SSG cannot be linked to the complete absence of movement to subject position.

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 (99), even though that is what our Copy-Deletion algorithm predicts. That is, since the determiner assigns a P-mark to its complement ‘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.

5 Conclusion

In this paper, we have developed an analysis of discontinuous constituents in Iquito, both phrase-internally (i.e. in NPs and PPs) and under clause-internal movement to the irrealis/subject position. We argued that it is possible to make sense of the range of different attested word orders with a distributed deletion analysis in which Copy Deletion in movement chains applies cyclically within the derivation, i.e. after each movement step. Crucially, we propose restricting distributed deletion in Iquito by way of a special property of determiners, whereby they assign a diacritic to

their complement. Material marked with this diacritic (a P-mark) is protected from deletion in the lower copy.

We observed that an overarching generalization for split constituents in both phrase-internal and phrase-external positions is that the possessum of a noun phrase is also displaced together with a determiner only if that determiner modifies the possessor of that possessum. We dubbed this the *Possessor Pied-Piping Generalization (PPG)*. We showed that the PPG follows naturally under the aforementioned distributed deletion analysis once we take into account an independent property of NPs/PPs in Iquito, namely that they constitute ‘second-position’ domains and therefore trigger roll-up movement of their respective complements. At each cycle of movement, the Copy Deletion algorithm applies. Since the determiner always assigns a P-mark to its complement, it is the base position of the determiner that conditions the amount of material pronounced in the higher copy. For a determiner associated with a possessor, its complement contains only the possessor and thus only the possessor is protected from deletion in the lower copy, thereby giving the impression of possessum pied-piping. Since a determiner modifying a possessum is base-generated higher, its complement contains both the possessum and possessor and therefore both are pronounced in the lower copy.

We also showed how the PPG holds for movement to the irrealis position. Previous work on Iquito had noted a typologically unusual fact about Iquito, namely its configurational marking of reality status by word order (Beier et al. 2011). We put forward a novel analysis of the so-called ‘irrealis position’ in Iquito as [EPP]-driven movement to an inner specifier of T. We argue that this accounts for various properties of irrealis marking, especially adjacency restrictions. A phrasal movement account is further motivated by the fact that the patterns of discontinuity found under movement to the irrealis position are parallel to those found within NPs and PPs. This parallelism is not captured by competing analysis involving verb movement. In addition, we discussed a transitivity restriction that emerges with split NPs in subject position. We suggested that the ungrammaticality of split subjects of transitive verbs falls under a broader cross-linguistic generalization, namely the *Subject In-Situ Generalization* (Alexiadou & Anagnostopoulou 2001).

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. Finally, our analysis supports the assumption that Copy Deletion applies cyclically throughout the derivation (after each movement step). This suggests that there may in fact be 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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