

Pseudo Noun Incorporation as Covert Noun Incorporation: Linearization and Crosslinguistic Variation*

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Pseudo noun incorporation (PNI) constructions in Sakha and Tamil obey a strict linear adjacency condition, such that not only the noun phrase (NP) but its head noun must be adjacent to the verb at phonological form (PF). I argue that this adjacency condition can be explained if the head of the NP adjoins to the verb to create a unit interpreted as a complex predicate at logical form (LF). The resulting structure can be linearized at PF if and only if no syntactic expression comes between the two copies of the noun, forcing adjacency on the construction. I also discuss two sources of variation in the syntax of pseudo noun incorporation: the fact that pseudo-incorporated nominals are invisible for case and agreement in some languages (Tamil and Sakha) but not others (Hindi and Hungarian), and the fact that the adjacency condition is canceled in languages like Hindi, where Verb-to-Tense movement serves to break up the verb-noun phrase (V-NP) cluster.

Key words: adjacency, head movement, linear order, linearization, pseudo noun incorporation

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Abbreviations used in the glosses include: ABS, absolutive case; ACC, accusative case; ADV, adverbial; AGR, agreement; AOR, aorist; C, complementizer; DAT, dative case; DEF, definite; ERG, ergative; FEM, feminine; FOC, focus; FUT, future tense; IMPF, imperfective aspect; INF, infinitive; LK, linker; LOC, locative case; NEG, negative; PASS, passive; PAST, past tense; PF, perfective aspect; PL, plural; PRES, present tense; PTPL, participle; REL, relative complementizer; SG, singular; UNM, unmarked case; Wh.OBJ, wh-agreement with object. Agreement affixes are often expressed by a number that indicates person (1, 2, 3), a lower case letter that indicates gender or number (m, f, n, s, p), and an upper case letter that indicates the grammatical function of the agreed-with nominal (S, O, or P (possessor)). For Tamil, I use the spelling conventions of Asher & Annamalai (2002), and, as much as possible, I have ‘normalized’ the words in my examples with their vocabulary list rather than trusting my own phonological transcriptions.

1. Introduction

The phenomenon of so-called Pseudo Noun Incorporation (PNI) provides an interesting challenge to our theories of the relationship between syntax and semantics. First, these constructions seem to have a special semantics, in which the erstwhile object of the verb is interpreted as a predicate, rather than an argument, with consequences for its scope relative to verb phrase operators, among other things (see especially Dayal 2011). These constructions also seem to have a special syntax, at least in some languages, in that the object must be strictly adjacent to the verb in the surface syntactic structure and is not marked for accusative case the way that other objects are (see especially Massam 2001). However, it has not been clear so far why this particular syntax should go along with this particular semantics. Massam, for example, discusses the syntax of PNI in Niuean in some detail, but is not very explicit about its semantics. In contrast, Dayal goes into the semantics of PNI in Hindi in some detail, but denies that anything very special needs to be said about its syntax, beyond that the noun phrase (NP) interpreted as a predicate is the complement of the verb (V). While that may be approximately true for Hindi, it is not true for languages like Sakha and Tamil, where the PNied NP needs to be strictly adjacent to the verb in the surface structure of the clause.

Furthermore, on the syntactic side it is not at all clear theoretically how a strict surface adjacency can even be enforced. Syntax provides many ways of forcing adjacency between two elements X and Y at some point in the syntactic derivation—say by stipulating that X is the complement of Y, or that X is the specifier of Y, or that X is the specifier of the complement of Y. But it is usually possible for that adjacency to be disrupted by a further movement of some kind, which subsequently displaces either X or Y. Why this should be impossible in PNI, just when there is a rather special semantic interpretation, is far from obvious.

With these issues in mind, the goals of this article are as follows. First, I show that the relevant syntactic condition in several languages is indeed a strong form of surface adjacency, which cannot be disrupted by the addition of an adjoined modifier or by the movement of the NP. I illustrate this primarily with new data from Sakha (also called Yakut, a Turkic language spoken in Siberia) and Tamil (a Dravidian language, spoken in Southern India)—two unrelated but typologically similar languages spoken in different corners of Asia, in which PNI behaves very similarly. Then I suggest a new way of thinking about this sort of surface string-adjacency. I claim that it is a result of forming a complex predicate for semantics by way of syntactic movement. This movement has to be string-vacuous because neither member of the movement chain can be deleted for free. The result of this is that the structure can only be linearized at PF if nothing else is linearized between the two copies so as to create contradictory linearization statements. I also touch briefly on data from Niuean, Chamorro, and Spanish, so as to give a sense of how the core idea interacts with the head-directionality parameter. Then, in the last two sections of this article, I turn to two types of cross-linguistic variation that are found in the syntax of PNI constructions. First, I contrast Tamil and Sakha, where the PNied NP is invisible to case assignment and agreement, with Hindi and Hungarian, where it is not. Second, I contrast Tamil and Sakha, where the adjacency requirement is quite

strict, with Hindi and Amharic, where it is notably less strict because (I claim) the NP + V cluster has been broken up by Verb-to-Tense movement. In this way, I show that my proposal can be flexible enough to account for a degree of variation in PNI constructions that is nontrivial, but still limited and patterned.

Throughout this article, I concentrate on presenting a new leading idea about what is at the root of the special syntax of PNI constructions and how it relates to their special semantics, and showing the potential that the idea has to shed light on a rather wide range of linguistic data. I am not able to present here a full implementation of this idea which is worked out in all its technical details. Making that extra step would involve taking stands on many hotly disputed matters about the nature of simple word order generalizations, exactly how syntax is mapped on to PF and so on. It is, of course, essential that my leading idea can eventually be worked out in full detail in at least one way, with no contradictions. But I assume that the first step along this path is to show that the leading idea is worth working out at this higher level of detail because of its conceptual interest and empirical power. That first step is enough to fill up one article.

2. Background on pseudo noun incorporation

Massam (2001) first argued that certain bare nominal constructions that were analyzed as noun incorporation (NI) in ‘classic’ literature on the topic (Baker 1988; Mithun 1984) are better analyzed as simple NP complements of the verb. Her focus was on the Austronesian language Niuean, but her observations seem to carry over to many other languages. For example, (1) shows that direct objects in Sakha and Tamil are normally marked with overt accusative case (*-(n)I* in Sakha, *-e* in Tamil).

- (1) a. Erel kinige-ni atylas-ta. (Sakha)
 Erel book-ACC buy-PAST.3sS
 ‘Erel bought the book/a certain book.’
- b. Maala veegamaa anda pustagatt-e paqi-cc-aa. (Tamil)
 Mala quickly the book-ACC read-PAST-3fS
 ‘Mala read the book quickly.’

Direct objects of this sort do not need to be next to the verb, given that these languages allow some variation in word order, presumably due to scrambling. For example, the object can easily be separated from the verb by an adverb or by a PP/dative NP, as shown in (2). It can also scramble to before the subject in both languages, deriving object-subject-verb orders.

- (2) a. Masha salamaat-y turgennik sie-te. (Sakha)
 Masha porridge-ACC quickly eat-PAST.3sS
 ‘Masha ate the porridge quickly.’

- b. Min kinige-ni Masha-qa bier-di-m. (Sakha)
 I book-ACC Masha-DAT give-PAST-1sS
 ‘I gave the book to Masha.’
- c. Maala anda pustagatt-e veegamaa paḍi-cc-aa. (Tamil)
 Mala the book quickly read-PAST-3fS
 ‘Mala read the book quickly.’
- d. Naan oru pustagatt-e anda pombale-kitte kuḍu-tt-een. (Tamil)
 I a book-ACC the woman-LOC give-PAST-1sS
 ‘I gave a book to the woman.’

However, objects that are interpreted as nonspecific indefinites can omit the accusative case marker, showing up as caseless nominals (not distinct from nominative case in these languages), as shown in (3). (See also Öztürk 2005:27, 32 for Turkish.)

- (3) a. Erel kinige atylas-ta. (Sakha)
 Erel book buy-3sS
 ‘Erel bought a book/books.’
- b. Masha türgennik salamaat sie-te. (Sakha)
 Masha quickly porridge eat-PAST.3sS
 ‘Masha ate porridge quickly.’
- c. Min Masha-qa kinige bier-di-m. (Sakha)
 I Masha-DAT book give-PAST-1sS
 ‘I gave Masha books/a book.’
- d. Maala veegamaa pustagam paḍi-cc-aa. (Tamil)
 Mala quickly book read-PAST-3fS
 ‘Mala read a book/books quickly.’
- e. Naan anda pombale-kitte pustagam kuḍu-tt-een. (Tamil)
 I the woman-LOC book give-PAST-1sS
 ‘I gave a book to the woman.’

Unlike their accusative cousins, these caseless indefinite objects cannot be separated from the verb by any clausal constituent: they must be left-adjacent to the verb (see also Kornfilt 1997:400–401; Öztürk 2005:35–36, 50–51 for Turkish). (4) thus contrasts with (2).

- (4) a. *Masha salamaat türgennik sie-te. (Sakha)
 Masha porridge quickly eat-PAST.3sS
 ‘Masha ate porridge quickly.’
- b. *Min kinige Masha-qa bier-di-m. (Sakha)
 I book Masha-DAT give-PAST-1sS
 ‘I gave (a) book(s) to Masha.’

- c. *Maala pustagam vegamaa paḍi-cc-aa. (Tamil)
 Mala book quickly read-PAST-3fS
 ‘Mala read a book quickly.’
- d. *Naan pustagam anda pombale-kitte kuḍu-tt-een. (Tamil)
 I book the woman-LOC give-PAST-1sS
 ‘I gave a book to the woman.’

It is this linear adjacency effect that I seek to explicate in this article.

The adjacency of the noun to the verb is (along with its caselessness) part of what led some researchers before Massam (2001) to analyze this as true noun incorporation: in addition to Mithun (1984) and Baker (1988), see Dixon (1988) on Fijian, Mohanan (1995) on Hindi, among others. If the noun and the verb in fact form a kind of complex word, then we expect that no syntactic constituent can come between them. This then seems like a possible explanation of the facts in (1)–(4).

But there are good reasons to say that this is not strictly true. For example, the PNied nominal can have a phrasal structure, including modifiers and complements (although not determiners or other functional categories), as Massam (2001:158–161) emphasizes for Niuean. (5) gives examples for Sakha and Tamil.

- (5) a. Min saharxaj sibekki ürgee-ti-m. (Sakha)
 I yellow flower pick-PAST-1sS
 ‘I picked (a) yellow flower(s).’
- b. Masha saṇa oqo kinige-te atyylas-ta. (Sakha)
 Masha new child book-3sP buy-PAST.3sS
 ‘Masha bought (a) new children’s book(s).’
- c. Naan nalla paṇam tee-r-een. (Tamil)
 I good fruit seek-PRES-1sS
 ‘I am looking for (some/a) good fruit(s).’
- d. Baala paṇeya pustaga-nga vi-tt-aan. (Tamil)
 Bala old book-PL sell-PAST-3mS
 ‘Bala sold old books.’

See also Öztürk (2005:39–40) for Turkish, Chung & Ladusaw (2004:85–87, 138–140) for Chamorro and Maori, Dobrovie-Sorin et al. (2006:61) for Spanish and Romanian, and Dayal (2011:136) for Hindi.¹ In contrast, the noun in a noun + verb compound cannot generally be modified directly or take a complement. Apparently, then, PNI is a relationship between an NP and a verb, not between a noun and a verb, and hence it is not a standard form of compounding.

¹ Öztürk (2005:67–68) also shows that a nominal containing *bir* ‘one, a’ can undergo PNI in Turkish, showing that it can behave more like an adjective than like a true determiner. This is also possible with *oru* ‘one, a’ in Tamil.

It can also be shown that, at least in Tamil, PNI does not have the phonology of a compound (see Lidz 2006:19–20 for a similar argument in Kannada). A feature of colloquial Tamil is that nasals are deleted word finally, surfacing only as nasalization on the preceding vowel (as in (6a)). But this rule does not apply inside a compound: rather, the nasal assimilates in place to a following stop, the stop becoming voiced (as in (6b)). Given this, we can ask for a PNI example like (6c) whether the nasal at the end of the noun is treated like a word final nasal (deleting and affecting the vowel quality) or like a compound-internal one. The answer is clearly that it deletes.

- (6) a. Tamil words: nasal deletion word finally
 maram ‘tree’ → marō; maram-aa → maramaa ‘is it a tree’
- b. Tamil compounds: nasal assimilation, voicing
 maan ‘mango’ + pazam ‘fruit’ → maambazō ‘mango fruit’
 maan ‘mango’ + kaa ‘unripe fruit’ → maangaa ‘unripe mango’
- c. A PNI that ends in a nasal behaves like it is word final, not word medial:
 Maala veegamaa pustagam paḍi-cc-aa. =[...gōpa...]
 Mala quickly book read-PAST-3FS Not: [...gamba...]
 ‘Mala read a book quickly.’

This makes sense if the PNied nominal and the verb are indeed separate words, with a boundary between them. So we seem to have syntactic juxtaposition of an NP and a V, not union of an N and V into a single word on the surface (see also Öztürk 2005:85, n.17 on Turkish). This is, essentially, what Massam means by pseudo noun incorporation (and Mithun 1984 by the ‘composition by juxtaposition’ type of noun incorporation).² But if we have a full phrase, then it is not clear why that phrase cannot move in syntax, or why some other constituent cannot move between it and the verb, resulting in a lack of surface-adjacency. We need a syntactic solution to this, not a quasi-morphological one.

This article does not offer a complete analysis of the PNI construction. Some aspects of its syntax and semantics have already been well-treated, in particular by Massam (2001) and Dayal (2011), and I adopt their views as far as they go. Other issues remain to be given a better treatment. For example, I have nothing to say about why there are lexical restrictions on which verbs allow

² Other considerations that are taken to point toward PNI rather than NI are the possibility of conjoining caseless NPs (see Öztürk 2005:39 for Turkish, Massam 2001 for Niuean, Chung & Ladusaw 2004:87 for Chamorro, Dobrovie-Sorin et al. 2006:61 for Spanish and Romanian, Dayal 2011:136–137; it is also possible in Tamil) and the possibility of having a focus particle between the N and the V (see Öztürk 2005:39 for Turkish, also true in Sakha). These possibilities are not fully analyzed here. I tentatively take conjunction to be a multi-dimensional structure, such that [Subj NP1 and NP2 V] is well-formed if and only if [Subj NP1 V] and [Subj NP2 V] are both well-formed. Focus particles may not be a problem if they cliticize to the noun prior to linearization, and hence do not count as distinct elements for the linearization procedure. I leave it to future research to work out these ideas, or better ones.

PNI in some languages (see note 6), whereas the construction seems to be quite free and productive in Sakha and Tamil. But about the linear adjacency shown in (4) versus (2) and (3), I do have a new idea to propose.

3. The need for a surface adjacency condition

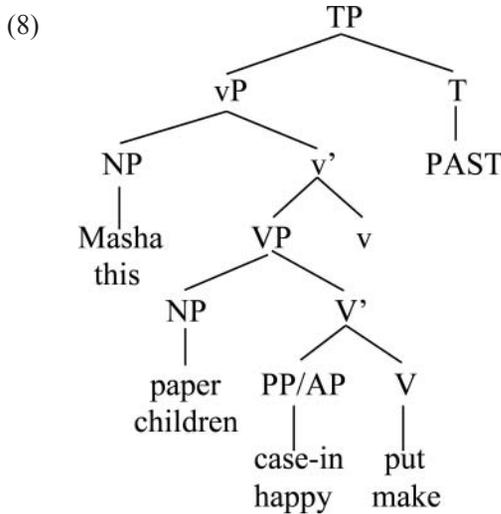
In fact, Massam (2001) already proposed a simple, plausible, and influential account for why the verb needs to be next to the PNied NP in Niuean. She claimed that a PNied nominal is an NP which is generated as the complement of the verb. Since it is an NP, not a DP, it is interpreted as a predicate rather than as a term or a generalized quantifier, accounting for its indefiniteness. Since it is an NP, not a DP, it is not marked for case, or case is not realized on it. And, most importantly here, since it is an NP, not a DP, it does not undergo the same syntactic movement processes as DPs commonly do. In particular, it does not move to case licensing positions. The adjacency effect in PNI constructions is then taken to follow simply from this: the NP is generated as the immediate complement of the verb (hence is adjacent to it) and it cannot leave that position. That is all that Massam and those who follow her need to say about the syntax of PNI, and it is an elegant view. It falls on me, then, to show why something more needs to be added to this account. I present two primary reasons, which also help point toward what the other factor in the account should be.

3.1 PNI and resultative complements

My first argument is that simply saying that the PNied NP does not undergo case-driven object shift or scrambling is insufficient to explain the PNied NP's adjacency to the verb in full generality. A missing piece is seen by considering resultative constructions. Sakha and Tamil have sentences that contain PP or AP resultative phrases as well as a subject and a direct object, as shown in (7).

- (7) a. Misha kumaaqy-ny xoruopka-qa uk-ta. (Sakha)
 Misha paper-ACC case-DAT put-PAST.3sS
 'Misha put the paper in the case.'
- b. Bu oqo-lor-u djolloox oŋor-but-a. (Sakha)
 this child-PL-ACC happy make-PTPL-3sS
 'This made (the) children happy.'
- c. Baala pustagatt-e meese kii|e va-kkir-aan. (Tamil)
 Bala book-ACC table under put-PRES-3mS
 'Bala puts the book under the table.'
- d. Adu pazatt-e peris-aa aakkar-idu. (Tamil)
 it fruit-ACC big-ADV make.PRES-3nS
 'It makes (the) fruit big.'

In Chomskian theory since Larson (1988), these resultative phrases are usually analyzed as the complements of the verb, with the theme generated higher, as the specifier of some sort of verb phrase (VP) shell. The structure of (7a and b) is thus roughly as in (8).³



Evidence that the AP, not the NP, is the complement of V in (7b,d) comes from the fact that the AP cannot move, and must itself surface next to the verb, as shown in (9).

- (9) a. *Bu djolloox Masha-ny oŋor-or. (Sakha)
 this happy Masha-ACC make-AOR.3sS
 ‘This made Masha happy.’
- b. *Adu peris-aa pazatt-e aakkar-idu. (Tamil)
 it big-ADV fruit-ACC make.PRES-3nS
 ‘It makes fruit big.’

For resultative PPs, the matter is a bit more subtle since they can undergo movement; hence one might wonder whether (7a) or (10) reflects the more basic structure.

- (10) Misha serenen xoruopka-qa kumaaqy-ny uk-ta. (Sakha)
 Misha carefully case-DAT paper-ACC put-PAST.3sS
 ‘Misha carefully put THE PAPER in the case.’ (focus on ‘the paper’)

However, the order in (10) seems to be the more marked one, requiring focus, and this can be confirmed by certain syntactic tests involving c-command. For example, Baker & Vinokurova (2010:628) argue that (7a) has the structure in (8) based on properties of agreement in reduced relative clauses, given the contrast in (11).

³ Öztürk (2005:154–156) claims that similar structures exist in Turkish. She does not say how they interact with PNI, however.

- (11) a. Suruk ostuol-ga uur-ulun-na.
 letter table-DAT put-PASS-PAST
 ‘The letter was put on the table.’
 → suruk uur-ullu-but ostuol-a
 letter put-PASS-PTPL table-3sP
 ‘the table that the letter was put on’
- b. Misha-qa suruk yyt-ylyn-na.
 Misha-DAT letter send-PASS-PAST
 ‘The letter was sent to Misha.’
 → ?*suruk yyt-ylylly-byt kihi-te
 letter send-PASS-PTPL person-3sP
 ‘the person that the letter was sent to’

Baker and Vinokurova ask why agreement is possible on the head noun of the relative clause with the theme argument inside the passivized relative clause in (11a) but not in (11b). Our answer was that the trace of the dative argument intervenes structurally between the agreeing head and the theme argument, creating a kind of intervention effect, in (11a) but not in (11b). This then suggests that the animate goal of a verb like ‘send’ is higher than the theme (in Spec VP or Spec, ApplP), but the inanimate goal of a verb like ‘put’ is lower than the theme, generated as the verb’s complement, as shown in (8). This structural distinction is also familiar from other languages: see, for example, McFadden (2004) on German and Icelandic and Dvořák (2010) on Czech.

Given the structures in (8), then, what is predicted if we assume that PNied nominals are simply NPs that cannot move from their base positions, as Massam suggests? Then there should be analogs of (7) in which the theme argument is indefinite and caseless but not adjacent to the verb; rather, they would be separated from the verb by the resultative phrase. However, such examples are clearly bad, as shown in (12).

- (12) a. *Misha (serenen) kumaaqy xoruopka-qa uk-ta. (Sakha)
 Misha carefully paper case-DAT put-PAST.3sS
 ‘Misha put a paper/papers in the case (carefully).’
- b. *Bu oqo djolloox oŋor-or. (Sakha)
 this child happy make-AOR.3sS
 ‘This makes a child/children happy.’
- c. *Baala pustagam meese kiile va-kkir-aan. (Tamil)
 Bala book table under put-PRES-3mS
 ‘Bala puts book(s) under the table.’
- d. *Adu pazam perisaa aakkar-itu. (Tamil)
 it fruit big make.PRES-3nS
 ‘It makes fruit big.’

This cannot be attributed to a semantic condition on PNI, because if the PP moves away from the verb, as in (13), then the theme argument can appear in bare NPied form.⁴

- (13) a. Misha serenen xoruopka-qa kumaaqy uk-ta. (Sakha)
 Misha carefully case-DAT paper put-PAST.3sS
 ‘Misha carefully put a paper/papers in the case.’
 b. Baala petti u||e pazam va-kkir-avan. (Tamil)
 Bala box in fruit put-PRES-PTPL-he
 ‘Bala is the one who puts fruit(s) in (the) box(es).’

I conclude that there is a condition of strict *surface* adjacency that holds between the bare NP and the verb in these languages. This cannot be reduced to a condition on the base position of the NP, such as saying that only the lowest argument of V can undergo PNI. Movement of a theme away from the verb can lead to a violation of this condition, as in (4), and movement of the goal away from the verb can lead to its satisfaction, as in (13). These details do not follow from saying that the bare NP is the verb’s complement.⁵

3.2 PNI and NP-internal word order

There is another adjacency condition to consider as well. At the heart of Massam’s view is the insight that PNI is a relationship between a noun phrase and a verb, not between a noun and a verb. Given only this, we would expect the condition to be that the NP as a whole must be adjacent to the verb. But there is some reason to think that a stronger condition holds, that the N inside NP must itself be adjacent to the verb. This is true in standard examples in the literature, as well as in my Tamil and Sakha examples.

⁴ The grammaticality of the examples in (13) also shows that the badness of (12) cannot be explained by saying that the theme argument is the subject of a small clause, with the AP or PP as the predicate of the small clause (an alternative to (8), where NP and AP/PP form a constituent which the verb takes as its complement). On the small clause analysis, one might say that (12) is bad because a subject cannot be a bare NP—but then (13) should be bad too. (I thank an anonymous reviewer for pointing this out.)

⁵ In a head initial language, the base order (pace V-raising in Larsonian shells) is verb-object-PP/AP. Since the resultative phrase does not come between the theme and the verb, we do not expect it to inhibit PNI in such a language. Massam (2001) does not give any relevant examples in Niuean, and her claim that PP arguments adjoin to VP so that they are not carried along by VP-fronting would complicate the issue. But (i) shows that the expectation is true in Spanish (Dobrovie-Sorin et al. 2006:54).

- (i) Van a poner-le ascensor al edificio.
 go.3pS to put-it.DAT elevator to.the building
 ‘They are going to put (an) elevator in the building.’

- (14) a. Min saharxaj sibekki ürgee-ti-m. (Sakha (=5a))
 I yellow flower pick-PAST-1sS
 ‘I picked (a) yellow flower(s).’
 b. Naan nalla pazam tee-r-eeen. (Tamil (=5c))
 I good fruit seek-PRES-1sS
 ‘I am looking for (some/a) good fruit(s).’

For these two languages, there is nothing striking about these examples. Modifier-noun (and complement-noun) is the standard order inside NPs in Sakha and Tamil. So if the noun is final in NP, and the PNed NP as a whole is left-adjacent to the verb, it follows that the noun itself is left-adjacent to the verb. Niuean is the mirror image of this: the noun comes before the modifier in NP (Massam 2001:156), and NP follows the verb, so the noun is right-adjacent to the verb (see also Chung & Ladusaw 2004:136–141 for Maori).

- (15) Ne holoholo kapiniu kiva fakaeneene a Sione.
 PAST wash dish dirty carefully ABS Sione
 ‘Sione washed dirty dishes carefully.’ (Niuean: Massam 2001)

But Chung & Ladusaw’s (2004) description of another Austronesian language, Chamorro, suggests that a stronger condition holds. Like Niuean, Chamorro is a verb-initial language. But Chamorro happens to allow certain NP-internal modifiers to come either before or after the head noun, as shown in (16) (Chung & Ladusaw 2004:80, 143).

- (16) a. ädyu i [yä-hu] na lepblu
 that the Wh.OBJ.like-AGR LK book
 ‘that book which I like’
 b. ädyu i lepblu [ni yä-hu].
 that the book C Wh.OBJ.like-AGR
 ‘that book which I like’

Interestingly, this freedom of word order inside NP does not extend to examples in which the NP undergoes PNI with a possessive verb.⁶ In that case, only the noun-initial order is possible (Chung & Ladusaw 2004:143–144), with the effect that the N appears right-adjacent to the verb.

⁶ PNI in Chamorro is limited to the two verbs *gäi*- ‘have’ and *täi*- ‘not have’ (Chung & Ladusaw 2004:82), and is thus more restricted than in the other languages discussed here. Spanish allows more options than Chamorro, but not as many as Sakha and Tamil, PNI in Spanish being limited to a fairly broad class of transitive possession verbs (Dobrovie-Sorin et al. 2006:55–56). Niuean does not limit PNI to existential/possessive verbs, but PNI with these verbs has slightly different properties in terms of being able to antecede personal and relative pronouns (Massam 2001). Dayal (2011) discusses some less systematic lexical restrictions in Hindi. I have nothing to offer in terms of understanding lexical restrictions in those languages that have them, and I assume they are orthogonal to the adjacency issue.

- (17) a. Si Juan gāi-[kareta agāga].
 UNM Juan have-car red
 ‘Juan owns a red car.’
- b. Tāi-[amiga ni yā-hu] si Carmen.
 AGR.not.have-friend C Wh.OBJ.like-AGR UNM Carmen
 ‘Carmen has no women friends who I like.’
- (18) a. *Gāi-[agāga na kareta] yu’.
 have-red LK car I
 ‘I own a red car.’
- b. *Gāi-[yā-hu na kareta] si Juan.
 AGR.have-Wh.OBJ.like-AGR LK car UNM Juan
 ‘Juan owns a car that I like.’

This shows that it is not enough for the PNied NP as a whole to be adjacent to the verb; in addition, the N itself must be adjacent to it.⁷ Similar contrasts between N-A order and A-N order for PNI in head initial languages can be observed in Tongan (Ball 2005) and in Catalan and Spanish (Teresa Espinal, personal communication, 2008).

More generally, there are subject-object-verb (SOV) languages with noun-adjective order inside NP (like Choctaw), and subject-verb-object (SVO) languages with adjective-noun order inside NP (like English). Nevertheless, there are no reported cases of PNI in such languages, such that we see [N-A]-V order or V-[A-N] order. I take this to be significant, and it does not follow from Massam’s baseline theory. Examples (16)–(18) cause Chung and Ladusaw to be rather ambivalent as to whether Chamorro has Massam-style PNI⁸ or Baker-style true NI, noting that these examples point toward the latter. But in fact it seems like both are in some sense true simultaneously. I turn then to a new proposal that can capture this seeming paradox.⁹

⁷ In fact, Chung & Ladusaw (2004:145) show that the adjacency between verb and noun is stronger in Chamorro than the adjacency of noun and modifier, since a lowered subject can appear between the PNied N and its modifier, although that is not its most typical position. This may be due to a kind of relative clause extraposition of the modifier. (Note also that Chamorro is known not to have strong word order constraints on the relationship of a noun and its modifier inside NP anyway, given the data in (16).)

⁸ Specifically, the Massam-like alternative that they consider for Chamorro, and adopt for Maori, is one in which the verb and the NP form a kind of compound verb, not a VP, as in Massam’s account. This difference is not crucial for my purposes, however.

⁹ One other, more theory-internal concern with Massam’s (2001) account of PNI is that it may be incompatible with the analysis of ordinary determinerless NPs in Chierchia (1998), Dayal (2004), and Baker (2003). Tamil and Sakha are both languages that do not have true article systems. As a result, NPs without overt determiners are common on the surface, even apart from PNI. Now according to this body of work, determinerless bare plurals, for example, are analyzed as NPs denoting kinds, roughly equivalent in some contexts to narrow scope existentials because of what Chierchia calls ‘derived kind predication.’ Examples of this type from Tamil are:

4. Head movement as the vehicle of complex predicate formation

4.1 What might be gained

This brings me to my positive suggestion of what can be added to Massam's (2001) syntax to derive the strong surface adjacency conditions we have seen. The core idea is to use head movement in the sense of Baker (1988, 1996) and others.¹⁰ Here is what might be gained by this in regard to explaining the word order.

What is attractive about saying that the noun moves to adjoin to the verb is that it captures the fact that the noun needs to be next to the verb, as Chung and Ladusaw recognize. What is attractive about saying that the noun does not move, but stays inside NP, is the fact that the noun is adjacent to its modifier and still seems to form an NP-like constituent with it, as Massam recognizes. Both observations seem true and important. Now movement in general is currently understood as a copying process in the syntax, with subsequent PF resolution of the linearization problems associated with pronouncing the same element twice (Bobaljik 2002; Chomsky 1995). So using head movement in the analysis of PNI is literally saying that the noun is in both positions at the same time. Done properly, this might give us the right resources to capture the full network of adjacency relations, both modifier with noun and noun with verb. My proposal, then, is that (19) is the representation of a PNI example like (5a) in the syntax and at LF. Then at PF 'flower' is pronounced once rather

-
- (i) a. Naan town-le pombale-nga|e paa-kka-lle. (Tamil)
 I town-LOC woman-PL-ACC see-INF-NEG
 'I didn't see (any) women in town.' (Neg > ∃ only)
- b. Naan pustaga-nga|e tirumba tirumba vaangu-n-een.
 I book-PL-ACC again again buy-PAST-1sS
 'I bought books again and again.'

Unlike PNied nominals, these bare NPs are marked for accusative case and do not need to be next to the verb. So if, following the Chierchia–Dayal view, these are NPs that denote kinds, then bare NPs can undergo movement and can receive case outside the minimal VP after all. It follows that the fixed position of PNied nominals cannot be derived solely from their being NPs, as Massam suggests. (This consideration need not worry linguists who are content to invoke a null determiner in examples like (i), such as Longobardi 1994 and many others.)

¹⁰ While I take the notion of head movement to be empirically well-supported by these studies and related work, it is not uncontroversial in the current climate, given certain minimalist-theoretical concerns. Koopman & Szabolcsi (2000), for example, take a strong stand that head movement should be rejected in favor of remnant phrase movement, and Matushansky (2006) partially reduces head movement to movement to specifier positions. See Baker (2009) for a recent defense of the head movement view over certain alternatives, particularly for noun incorporation.

than twice, for reasons to be made explicit in §5. This results in the observed form ‘I yellow flower pick.’¹¹

- (19) I [_{VP} [_{NP} yellow flower] [_V flower-pick]]
 | | |
 adjacency identity adjacency

4.2 The semantic connection

Why does the noun move to adjoin to the verb in these constructions? It is clearly not for the same reason that true noun incorporation happens in Inuit and Mohawk, where it takes place for morphological reasons such as the verb being specified as an affix. But another natural reason is that this is what is required to have the noun and the verb interpreted as forming a complex predicate at LF, as in Dayal’s (2011) semantics.

I mentioned above that PNied NPs are interpreted semantically as nonspecific indefinites. More specifically, they have a rather distinctive interpretation that has received significant attention in the semantics literature. Not only are they existentially quantified, but the existential takes narrow scope with respect to all other operators (Bittner 1994; Chung & Ladusaw 2004:137; Dayal 2011; Dobrovie-Sorin et al. 2006:68–69; Farkas & De Swart 2003:103–105; Massam 2001:168–169; Van Geenhoven 1998). For example, (20a–c) in Tamil show that the PNied nominal takes only narrow scope with respect to negation, with respect to a repetitive adverb, and with respect to imperfective aspect.

- (20) a. Naan pustagam vanga-lle. (#Adu meese mele iru-kk-itu.)
 I book buy-NEG it table on be-PRES-3nS
 ‘I didn’t buy (any) book.’ (#It is on the table.) (Neg > ∃ only)
- b. Naan tirumba tirumba pustagam vang-an-een. (Tamil)
 I again again book buy-PAST-1sS
 ‘I bought book(s) again and again.’ (a different book each time)

¹¹ This leading idea is both similar to and different from Ball’s (2005) analysis of PNI in Tongan, using the framework of Head-driven Phrase Structure Grammar (HPSG). Ball seeks to capture the same range of facts that I do, in a somewhat similar way. But technically he says that the adjectival modifier does not modify the object noun itself, but rather the noun + verb unit as a whole, the complex verb inheriting the ability to be modified by an adjective from the noun that it contains. In contrast, I claim that the noun itself is modified by the adjective, while simultaneously forming a compound with the verb. Empirical differences would arise in (for example) a head initial language with N-A order, but where the N comes before the V inside the compound. Ball’s account predicts that a PNI construction like [_{VP} [_V flower+pick] yellow] could be possible in such a language, whereas I predict that this would be impossible because the adjective ‘yellow’ is not adjacent to the noun it modifies: ‘flower’. I do not yet know of a language with the right word order properties to test this, however. (I thank an anonymous reviewer for bringing Ball’s work to my attention.)

- c. Paale variṣim-aa avenge ponnu paa-tt-ange.
 a.lot year-ADV they girl see-PAST-3pS
 ‘For many years they have been seeing girl(s).’ (different ones different times)

In contrast, an indefinite NP that is marked with the quasi-indefinite article *oru* ‘a, one’ and accusative case can and sometimes must take wider scope than these operators. For example, (21) contrasts with (20b) in that it has only the less likely meaning in which there is a book that the speaker bought over and over again.

- (21) Naan tirumba tirumba oru pustagatt-e vang-an-een.
 I again again a book-ACC buy-PAST-1sS
 ‘I bought a (particular) book again and again.’ (the same book, over and over)

Dayal (2011) shows that this property of PNI is also what gives the impression of number neutrality for the PNied NP, where a formally singular NP can be translated into English as singular or plural, as seen in (20b) and (20c). If the event expressed by the verb is repeated, and the existential takes narrow scope with respect to imperfective aspect and pluractional operators, then one can have different entities involved in the different events, resulting in a plurality of entities overall. For number neutrality of the PNied NP, see also Farkas & De Swart 2003:101–102 and Öztürk 2005:45 on Turkish.

At the heart of Dayal’s (2011) analysis of the semantics of PNI is the idea that the PNI nominal is interpreted as a predicate, not as a term or a generalized quantifier, as most other nominals are. The nominal then combines with the verb via predicate modification to create something that is a predicate of events—subtypes of the events that the verb root itself is a predicate of. This is shown for a simple Hindi example in (22).

- (22) a. main-ne kitaab paRhii. (Hindi: Dayal 2011)
 I-ERG book read.FEM.SG
 ‘I book-read.’
 b. book = λx [book(x)]
 read = $\lambda P \lambda x \lambda e$ [P-read (e) & Agent(e, x)]
 [_{VP} book read] = $\lambda x \lambda e$ [book-read (e) & Agent(e, x)]
 ...where $\exists e$ [book-read (e) & Agent(e, x)]
 → $\exists e$ [read (e) & Agent(e, x) & $\exists y$ [book(y) & Theme(e, y)]]

For Dayal, an event counts as a book-reading event only if there is a book that is involved in the event as its theme, but this is a kind of semantic equivalence, not part of the explicit representation of the clause. Since existential quantification over the theme argument is built into the meaning of the verb, syntax and semantics cannot manipulate its scope to give it wider scope than other operators in the representation. As a result, anything that takes scope over the verb automatically takes scope over the PNied nominal that forms a complex predicate with it. This is Dayal’s account for the special scope properties of PNied NPs, including the appearance of number-neutrality in some contexts.

Now nouns and their projections are generally the quintessential arguments, according to Baker (2003) among others. One might think, then, that the post-LF semantic interpretative system (the ‘conceptual–intentional interface’) needs some explicit indication of when an NP is to be given an atypical interpretation as a predicate. Many linguists assume that the interpretation of a nominal is determined by whether it is embedded in a DP or not: a bare NP is a predicate, whereas a DP is an argument type. However, this may be inadequately general, since bare NPs can also be understood as arguments in some schemes (see note 9). Now, given that only a very limited number of syntactic configurations and operations are available (such as Chomsky’s 1995, 2000, 2001 Merge and Move, with no special symbols or diacritics added, by the inclusiveness condition), there is a very restricted range of alternatives. We might conjecture, then, within broadly minimalist terms, that head movement is the vehicle for this kind of complex predicate formation. In other words, we might assume a principle like (23).¹²

- (23) Interpret X and Y as a complex predicate at LF if [and only if] X and Y form a complex head (an X^0).

The idea, then, is that Dayal’s complex predicate $\lambda x \lambda e$ [flower-pick (e) & Agent(e, x)] in (22b) does not come automatically from simple function application (as Dayal assumes), because an NP on its own does not automatically have the predicate interpretation λx [book(x)] (Baker 2003). However, the

¹² I leave open exactly what the scope of (23) might be beyond the domain considered here. In Tamil and Sakha, one seems to get a narrowest scope interpretation for the object if and only if it has the syntactic properties of PNI (caselessness and adjacency to the verb). However, it is conceivable that particular languages make available other ways of signaling to LF that a nominal is to be interpreted as a predicate. For example, it might be that occupying the special ‘predicate operator’ position before the verb complex indicates that an NP is to be interpreted as a predicate in Hungarian (Farkas & De Swart 2003), and that being marked with the determiner *he* is a sign of this in Maori (Chung & Ladusaw 2004:Chapter 2). (Certainly being the complement of the special functional head Pred indicates this interpretation in the system of Baker 2003.) But both Hungarian and Maori have other complexities that might point to a closer relationship to PNI as analyzed here: the predicate operator in Hungarian is typically adjacent to the verb, and Maori DPs headed by *he* are only possible as direct objects and as subjects of passive and unaccusative verbs (Chung & Ladusaw 2004:56–60). This makes it conceivable that they also undergo some sort of covert NI. The exact relationship between these constructions and those discussed here must thus remain open for now.

An anonymous reviewer asks *why* should (23) be true (assuming it is): could there not be purely semantic operations that accomplish the same purpose? The standard view among semanticists is, I take it, yes, there could be. The empirical question, then, is whether that view over-generates by allowing ‘semantic incorporation’ too freely, without PNI or some similar special syntax. From the range of data I have seen so far, I think that the answer may be that it does overgenerate, that one does not get the special semantics without some kind of special syntax along these lines. If so, then perhaps one wants a semantics that is more constrained in some way (e.g. one in which type shifting between predicative and argument-type meanings is not free). However, I am not the right person to say what this more constrained semantics should look like, and perhaps we should wait for a fuller empirical picture before we go to too much trouble seeking it.

N is given this interpretation when it is immediately dominated by a V^0 node. Then the two predicates can compose in the distinctive way of Dayal's semantics and related work. (Compare Baker 2003: 149–151 on the need to use head movement to interpret AP and VP complements in various languages, given that these categories cannot be true arguments and can only be interpreted by forming complex predicates along the lines of (23)).¹³

Putting this in a slightly more general context, I assume that moving the N to adjoin it to V is possible as a free option in the syntax, neither forced by feature checking nor blocked by its absence. We might think that standard minimalist feature-checking is the driving force behind most or all instances of phrasal movement, but not of head movement. However, head movement will only make a difference if it leads to a distinctive interpretation at one (or both) of the interpretative interfaces: PF or LF. On the one hand, there will be vindication for doing the head movement at PF if the noun + verb combination is interpreted as a single morphological word at that level. This is the case in languages with true noun incorporation, like Mohawk and Greenlandic, although not in Sakha or Tamil. On the other hand, there will be vindication for doing the head movement at LF if the noun + verb is interpreted as a single semantic predicate at LF, as described above. This is the case in languages with PNI, like Tamil and Sakha, although not necessarily in Mohawk. If the head movement was untriggered and not interpreted at either interface, then it is ruled out by economy conditions, we may assume. Therefore, there are two distinct but conceptually parallel reasons for doing noun incorporation, which reflect the characteristic notions of 'complex verb/predicate' that are relevant at the two interfaces.¹⁴

¹³ But see also the concluding remarks and note 31 for some comments on extending (23) to P + V and V + V complex predicates.

Some reviewers have wondered how orthodox (23) is within minimalist syntax. One concern is that it may involve a degree of 'look ahead', since movement in the syntax is only justified later in the semantics (or in the morphology). I simply assume that the head movement happens as a free option, and then LF interprets the results in a systematic way. LF then does not formally trigger noun movement in the syntax, but whether a noun moves in the syntax can have consequences at LF. In this view, we do have unforced movement—but not entirely standard—but no true look ahead paradox.

Another concern is whether (23) can be stated in terms of a bare phrase structure system (Chomsky 1995), which does not sharply distinguish heads from phrases. I agree that (23) stretches the notion of bare phrase structure somewhat, but perhaps not to the breaking point. Minimal lexical items can be detected in bare phrase structure, since they are the atoms of the representation, and Chomsky maintains a distinction between adjunction and ordinary merge. So 'complex head' in (23) can be defined as a minimal lexical item plus any minimal lexical items that are adjoined to it.

¹⁴ The literature on true NI in languages like Mohawk (especially Baker 1996:Chapter 7) shows that sometimes an NI structure is interpreted as a complex predicate, but sometimes it is not: an incorporated noun can also be interpreted as a normal argument of the verb, either definite or kind-like. This suggests that, when NI is justified for morphological reasons enforced at PF, then the copy of the noun adjoined to the verb can be deleted at LF. When that happens, the structure is not interpreted as a complex predicate, according to (23). Since the overall framework allows different copies in a chain to be interpreted at PF and LF (Bobaljik 2002), mismatches between morphological (PF) incorporation and 'semantic incorporation' are possible. This seems

4.3 Consequences for what can be pseudo-incorporated

Additional support for the idea that head movement is involved in PNI constructions comes from the fact that it can help explain which nominals can be involved in PNI. In particular, it can explain the fact that PNI is only possible with NPs that are direct internal arguments of a verb. This does not go without saying, and does not obviously follow just from the semantics of PNI as complex predicate formation. I can imagine that, among the various reading events, a common and natural subtype is reading-to-children events, and that, among the various staying events, a common and natural subtype is staying-in-hotel events. Nevertheless, goal and location arguments cannot undergo PNI in Sakha or Tamil. In other words, they cannot have their case marker omitted when they are adjacent to the verb, thereby achieving a number-neutral, narrowest scope existential reading. This is shown in (24) and (25). (See also Kornfilt 1997:401–402 for Turkish.)

- (24) a. Misha at-y oqo-*(lor-go) bier-de. (Sakha)
 Misha horse-ACC child-PL-DAT give-PAST.3sS
 ‘Misha gave (the) children the horse.’
- b. Bala anda pustagatt-e kolande-nga!-(ukku) pađi-kka virumb-an-aan.
 Bala that book-ACC child-PL-*(DAT) read-INF like-PAST-3mS
 ‘Bala likes to read that book to children/a child.’ (Tamil)

typical of the languages with true NI discussed in Baker (1996)—although more detailed semantic studies of them would be welcome.

The Inuit languages like Greenlandic seem to be a bit different, in that NI is clearly morphological, but the result also needs to be understood as a complex predicate at LF, according to Van Geenhoven (1998). The question arises, then, why the N adjoined to V can be deleted at LF in Mohawk but not in Greenlandic. I have no fully worked-out proposal, but my hunch is that this is related to the fact that the verbs that permit NI in the Inuit languages are a closed class of verbs with rather vague and variable meanings, called light verbs by Johns (2007), who emphasizes the significance of this. This could mean that the V morphemes in Greenlandic are underspecified semantically, so that they cannot count as predicates by themselves at LF. Therefore the N adjoined to V cannot be deleted in Inuit, and this has consequences for the interpretation of N, making NI in Inuit more like PNI in (say) Hindi than like NI in Mohawk from a semantic point of view. (I thank an anonymous reviewer for raising this issue.)

I leave open whether the copy of N inside the NP is also interpreted at LF, and, if not, how an adjective inside the NP is included in the interpretation. There are several possibilities that could work. One is interpreting the noun adjoined to the verb not as saturating the verb’s internal argument, but as combining with it by something like Chung & Ladusaw’s (2004) Restrict. Then the interpretation of (19) would be either ‘I flower-picked a yellow flower’ or ‘I flower-picked a yellow one’, depending on whether the noun is also interpreted inside the NP or not. Alternatively, one could say that when there is a stranded adjective, the interpretation of the complex verb is type-shifted so that it can absorb the adjective into the complex predicate as well, as Van Geenhoven (1998) does for modifiers stranded by NI in Greenlandic. Then the interpretation of (19) would be something like ‘I yellow-flower-picked.’ This is a topic for future research. (I thank Veneeta Dayal, personal communication, 2011, for discussion of these possibilities.)

- (25) Bala hotel-*(le) tanga virumb-an-aan. (Tamil)
 Bala hotel-LOC stay.INF like-PAST-3mS
 ‘Bala likes to stay in hotels/a hotel.’

Nor can agentive subjects undergo PNI in these languages. Given that subjects are not marked overtly for case anyway in Sakha or Tamil, we cannot see this by looking for the omission of an otherwise-expected case marker. However, (26) shows that a bare singular subject cannot have a narrowest scope, number-neutral interpretation in Tamil, even if it is adjacent to the verb.¹⁵

- (26) #Bala-ve tirumba tirumba naaji keđi-cc-icci. (Tamil)
 Bala-ACC again again dog bite-PAST-3nS
 ‘A dog bit Bala again and again.’ (only the same dog bit him over and over)

In contrast, PNI is possible with the theme subjects of (at least some) unaccusative verbs in these languages, as shown by the number-neutral interpretation of ‘rock’ in (27). (See also Baker & Vinokurova 2010:631–632 for Sakha, and Kornfilt 1997:399 and Öztürk 2005:32 for Turkish.)

- (27) Male-le-rundu tirumba tirumba pare urun-nd-icci.
 hill-LOC-from again again rock roll-PAST-3nS
 ‘Again and again rock(s) rolled down from the hill.’
 (different rocks different times; this reading is lost if *pare* is sentence-initial)

This matches very closely the distribution of true morphological incorporation in Mohawk (among others), where direct objects and the subjects of unaccusatives can incorporate, but goals, locations otherwise realized in PPs, and agentive subjects cannot (Baker 1996:§7.3). In Baker (1988, 1996) I derived this pattern in morphological NI from independently motivated principles of movement, particularly the Head Movement Constraint.¹⁶ If PNI also involves head movement, then that

¹⁵ Some languages apparently do allow the PNI of transitive subjects, notably Turkish (Kornfilt 1997:396–397; Öztürk 2005:42), although Kornfilt says it is rather rare. Typical examples involve less agentive subjects (e.g. ‘Bee(s) stung Ali’), which is probably significant. There is also a small number of languages that are said to allow overt morphological incorporation of similar subjects (e.g. Athapaskan languages), but I have no direct experience with such languages, and thus leave this point of variation aside.

Massam (2001) shows that instrumental and means nominals sometimes undergo PNI in Niuean, but she does not go into much detail about this construction, and neither will I. Hungarian allows not only transitive subjects but even various obliques to ‘incorporate’; this is some reason for doubting that Hungarian has PNI in the same sense as discussed here; see note 12 for a possible suggestion.

¹⁶ One clear difference between PNI and true NI, however, is that plural nouns can be PNied in Hindi, Tamil, Turkish (Kornfilt 1997:279), Spanish, and Romanian, although not in Sakha, Niuean (Massam 2001), or Kannada (Lidz 2006:25). In contrast, plural nouns cannot be morphologically incorporated in any known language. This might imply that the constraint against the latter is morphological rather than syntactic in nature (e.g. it should not be derived from ‘Li’s Generalization’, as I suggested in Baker 2008:36.)

explanation carries over to explain which NPs can be involved in PNI and which cannot—a positive result given the strong parallels. And if this same assumption can also now be used to provide the basis for an account of the surface adjacency condition, so much the better.

5. Adjacency and the mapping to PF

5.1 Guiding principles

It remains, then, to flesh out to some extent my idea about how a representation like (19) avoids crashing at PF, but rather is realized as ‘I yellow flower pick’, with ‘flower’ adjacent to both ‘yellow’ and ‘pick’.

In most cases, a moved expression is only pronounced once. Nunes (2004:24–25) and many others suggest that this follows from constraints on linearization, imposed by the need to pronounce words in a well-defined order at PF. A moved element X has (by definition) more than one syntactic position. Hence, there will usually be another element Y in the structure such that one copy of X c-commands Y but Y c-commands the other copy of X . Hence, in standard frameworks for linearization (e.g. Kayne 1994), we end up with statements like $X_1 < Y$, and $Y < X_2$, but $X_1 = X_2$ —which is a contradiction (here $a < b$ indicates ‘ a precedes b ’). The usual solution is to delete one of the copies, often the lower one (Nunes 2004), but sometimes the higher one (Bobaljik 2002).

However, let us imagine the possibility that copy deletion cannot be done for free (cf. Nunes 2004:27), and that the standard ways of determining which copy to delete do not apply to the particular kinds of structures we are considering here.¹⁷ Nunes’s (2004) proposal was that it is the copy in the derived position that is retained for economy reasons, because its uninterpretable features have already been deleted by feature checking. We may continue to assume that this applies to most or all cases of phrasal movement, which is driven by feature checking. But I assumed above that head movement (or N to V , anyway) does not happen for reasons of feature checking, but rather to create a complex predicate at PF or LF. If so, Nunes’s principle does not apply in this case. Suppose then that the $N + V$ combination is interpretable as a morphological word at PF, either because one of the parts is an affix (e.g. the verb, in Greenlandic) or because the language allows the right kind of noun-verb compounds (Mohawk). Then we may assume that these morphological properties justify retaining the copy of N adjoined to V at PF, and deleting the other copy. This will also be true for most other familiar cases of head movement, such as V moving to T to derive a finite inflected verb in many languages. But neither of these relatively familiar considerations tells us which copy should be pronounced in instances of PNI, given that the movement is not driven

¹⁷ This is the least fully worked out part of my proposal, in that I do not have anything like a general theory of how copy deletion can or cannot apply to members of a movement chain. But I think it is not hard to imagine that there will be gaps in that theory, and that those gaps might lead to some movements being (in effect) string vacuous, for the reasons being discussed.

by feature checking in the syntax, nor does it lead to a specialized unit at PF itself.¹⁸ Neither can deletion at PF see whether the copy of N attached to V is interpreted at LF or not, given standard assumptions about the relative independence of these two interfaces.

Suppose, then, that PF finds itself with no principled way of choosing one copy of the head-movement chain to pronounce, and yet it needs a consistent linear ordering. I suggest that this does lead to a contradiction except in one special case: when the movement is so short that in fact nothing comes between the two copies in the relevant sense. Short, string vacuous movement does not lead inevitably to the usual ordering paradoxes, so that is what head movement in order to form a complex predicate must be.

A technical innovation that can help make this work is to assume that the so-called ‘Laws of Precedence’ (term from Fox & Pesetsky 2004:40), whatever their exact details are, map syntactic relations between *x* and *y* onto the relation ‘*x* does not follow *y*’ (\leq) rather than ‘*x* precedes *y*’ ($<$). For concreteness, let us assume a classical head-final/head-initial parameter along the following lines.¹⁹

- (28) a. If atomic category *X* set-merges with phrase *Y*, then
X does not follow (\leq) *Y* (Tamil, Sakha, Amharic, Hindi...) *or*
Y does not follow (\leq) *X* (Spanish, Niuean, Chamorro...)
- b. If a nonatomic category *X* set-merges with *Y* and *X* labels the result, then *Y* does not follow (\leq) *X* (all languages?).
- c. If *X* and *Y* are pair-merged and *X* labels the result, then *X* does not follow *Y* or *Y* does not follow *X* (may be constrained by lexical/language specific factors).

Using bare phrase structure style terminology from Chomsky (1995, 2000), (28a) says that the order of a head and its complement varies parametrically, (28b) says that specifiers precede the head (perhaps universally), and (28c) says that the order of an adjunct and the category that it adjoins to can be free or constrained by idiosyncratic factors that we need to understand better (e.g. English $\{I\ will\ now\ go.\}$ or $\{I\ will\ go\ now.\}$, but $\{He\ barely\ survived.\}$ versus $\{*He\ survived\ barely.\}$).

¹⁸ Another way of realizing NI chains at PF that has been proposed in the literature is inserting two different roots in the two positions. This is Haugen’s (2009) proposal for generating certain kinds of ‘classifier incorporation’, including a particular possessive construction in some Uto-Aztecan languages. I assume here that lexical roots are inserted earlier, before movement, so this option is not available. I am inclined to analyze the relevant Uto-Aztecan possessive constructions as having verbs that take three arguments underlyingly (‘*x* has *y* as a *z*’), so that the incorporated nominal and the surface object represent distinct arguments of the verb, not two members of the same chain.

¹⁹ As far as I know, the same results could be derived using other well-defined ordering algorithms, such as Kayne’s (1994) way of mapping asymmetric c-command relationships onto precedence relationships. Then I would say roughly ‘If *X* asymmetrically c-commands *Y*, then *X* does not follow *Y*.’ I use (28) for simplicity and expository convenience, because then we do not have to think about what kind of movement puts the object before the verb in verb final languages. This is one place where one would have to look carefully for contradictions in a more detailed treatment.

In most contexts, it makes no difference whether the fundamental relation of linear order is ‘precedes’ or ‘does not follow.’ X precedes Y and X does not follow Y amount to the same thing if X is distinct from Y, given that spoken language does not permit distinct elements to be uttered simultaneously. But the change does make a crucial difference when X is not distinct from Y: a statement like ‘X precedes X’ is a contradiction, but ‘X does not follow X’ is not. On the contrary, it is satisfied any time that X is uttered. That is how PNI constructions can survive at PF, I claim, and this is what forces string adjacency on them. The range of known possibilities for realizing a chain at PF is thus summarized as in (29).²⁰

- (29) If a chain consists of more than one link, then at PF:
- a. Delete the copy that has more features as a result of feature checking, if any (Nunes 2004).
 - b. If one copy is part of a complex morphological object, delete the other copy (compare the so-called Stray Affix Filter).
 - c. Otherwise, all the ordering statements relevant to both copies must be respected, while still uttering the lexical item only once. (Consequence: the movement must be, in effect, string vacuous.)

5.2 Sample derivations

Let us consider, then, some sample derivations. For explicitness, I also assume (30), based on Fox & Pesetsky (2004:9) (see also Marantz 1988).²¹

- (30) ‘A complex expression X does not follow a complex expression Y’ means that the last element dominated by X does not follow the first element dominated by Y.

How then does simple PNI take place on this view? By hypothesis, the syntax is (31a).

- (31) a. I [_{VP} [_{NP} yellow flower] pick] → (=5a)
 I [_{VP} [_{NP} yellow flower] flower + pick] Noun incorporation

²⁰ This list is not necessarily exhaustive; see disclaimer in note 17. For example, I do not wish to rule out that sometimes in cases of phrasal movement the lower copy might be pronounced rather than the higher copy to satisfy other PF conditions, as in Bobaljik (2002) and related work. (29) is simply intended to give a general idea of how the head movement chains discussed here might fit into a larger picture, with just enough detail to give a sense of how the range of derivations considered here might work.

²¹ Note however that I do not adopt Fox & Pesetsky’s revised version of (30), which is designed to get the fact that the highest copy in a chain is the one that is pronounced directly out of the linearization principle itself. Rather, I assume that nontrivial chains do pose a potential problem for linearization at PF, one that must be resolved somehow, as outlined in (29).

- b. Ordering at PF:
- | | |
|---|---|
| flower \leq pick in V | (left-adjunction, a free choice by (28c)) |
| yellow \leq flower in NP | (by (28b) or (28c) in Dravidian/Turkic) |
| NP \leq V in VP | (by (28a), Dravidian/Turkic version) |
| \rightarrow flower \leq flower, by (30) | OK since flower = flower |
- Consistent ordering: yellow - flower - pick*

Then this structure is ordered at PF as in (31b). Working cyclically from bottom up, normal ordering principles give us ‘flower’ \leq ‘pick’ in V, assuming that the noun adjoins to the left of the verb, and ‘yellow’ \leq ‘flower’ in NP, which is the normal order of a modifier and head in Turkic and Dravidian languages. Moving up to the VP level, we get NP \leq V in VP by (28a), because Sakha and Tamil are head final languages. Applying (30) to this last statement gives us ‘flower’ \leq ‘flower’, because one copy of ‘flower’ is the last thing in NP and the other copy is the first thing in V. Putting it all together, we get the conditions: ‘yellow’ \leq ‘flower’ \leq ‘flower’ \leq ‘pick’. These ordering conditions are complete and consistent. They are satisfied by uttering ‘yellow flower pick’—and that is what Sakha and Tamil speakers utter. In short, my proposal is that in this particular situation a single pronunciation of ‘flower’ can count as a realization of both copies of the N movement chain.

Now suppose there is a resultative PP between the object and the verb, as in (12a). The syntactic derivation will be (32a), and the PF ordering is sketched in (32b).

- (32) a. Masha [_{VP} [_{NP} yellow flower] [_{V'} [_{PP} box-in] put]] \rightarrow
 Noun incorporation
 Masha [_{VP} [_{NP} yellow flower] [_{V'} [_{PP} box-in] flower + put]]
- b. Ordering at PF:
- | | |
|--|--|
| flower \leq put in V | (adjunct not after head) |
| yellow \leq flower in NP | (adjunct not after head) |
| box \leq in in PP | (complement not after head) |
| PP \leq V in V' \rightarrow in \leq flower | (complement not after head, plus (30)) |
| NP \leq V' in VP | (specifier not after head, by (28b)) |
| \rightarrow flower \leq PP \rightarrow flower \leq box (by (30)) | |

Contradiction: flower \leq box \leq in \leq flower, crashes at PF

Crucially, here the PP merges with V before the theme ‘yellow flower’. Hence it is linearized between the theme and the verb (Spec-Complement-Head order, typical of head final languages). Therefore, the words contained in the PP are ordered not after the copy of ‘flower’ in its base position and not before the other copy adjoined to V. We arrive at a contradiction, since ‘flower’ is ordered both before and after ‘box’ and ‘in’. Hence, (12a) is bad.

Next consider how leftward movement of the PP saves this structure, as in (13). Much of the derivation is similar, but now there are two copies of the PP at spell-out, as well as two copies of

the noun. (29a) then applies to delete the lower copy in the scrambling chain²²—the copy that otherwise contains the words that would be ordered between the two copies of ‘flower’. As a result, there is no ordering contradiction in this version, and (13) correctly comes out as being possible.

- (33) a. Masha [_{VP} [_{NP} yellow flower] [_V box-in put]] → Noun incorporation
 Masha [_{VP} [_{NP} yellow flower] [_V box-in flower+put]] → Scrambling
 Masha [_{VP} box-in [_{VP} [_{NP} yellow flower] [_V box-in flower + put]]]
 b. Ordering at PF:
 As before, plus moved copy of [box - in] is left adjoined to (say) VP:
 PP ≤ VP in VP → in ≤ NP → in ≤ yellow
But remove lower copy of scrambling chain by (29a):
 = remove statements that include ‘box’ and ‘in’:
Consistent order: box - in - yellow - flower - put

(One thing to clarify in a more detailed execution is the precise ordering of the different processes that derive PF, such as copy deletion and linearization. But in most cases the order of these processes may not matter. If copy deletion happens before other aspects of linearization, then (33) becomes in all relevant respects the same as (31). If copy deletion happens after linearization, then ordering statements like ‘flower’ ≤ ‘box’ and ‘in’ ≤ ‘flower’ are generated, but they collapse harmlessly once these copies of ‘box’ and ‘in’ are removed from the representation.²³)

In contrast, consider examples like (4a), where the theme scrambles leftward over an adverb or PP. Even though the lower copy of the NP is deleted here too by (29a), a contradiction still arises since the copy of N adjoined to V survives. Whatever the NP scrambled over comes after the copy of the noun in the scrambled phrase, but before the copy of the noun adjoined to the verb. Thus (4a) might look like (34a) at Spell out, giving the bad ordering in (34b).

- (34) a. Masha [_{NP} porridge] [_{VP} quickly [_{VP} porridge [_V porridge + eat]]]
 b. porridge ≤ quickly ≤ ~~porridge~~ ≤ porridge ≤ eat

We thus see how XP movement can cause problems for PNI as well as solving them. In other words, this account explains why we observe a surface adjacency condition, not one that applies earlier in the syntax, prior to scrambling.

²² There is a tacit assumption here that some form of feature checking is involved in scrambling cases, presumably checking discourse-type features (or that Nunes’s derivation of lower copy deletion can be generalized to scrambling in some other way).

²³ Compare Fox & Pesetsky (2004:13) who, in considering an element deleted by ellipsis, write: ‘On such a scenario, any ordering statement that makes reference to X ... has no impact on pronunciation. For ease of exposition, we can assume that these ordering statements are generated, but are deleted as a by-product of ellipsis.’ I am making the same assumption about elements removed by copy deletion.

5.3 PNI in head initial languages

Next, let us consider what PNI derivations might look like in head initial languages like Niuean, Chamorro, and Spanish. The derivation for (35) from Niuean will be as in (36).

- (35) Ne *holoholo kapiniu kiva fakaeneene a Sione.* (Massam 2001)
 PAST wash dish dirty carefully ABS Sione
 ‘Sione washed dirty dishes carefully.’

- (36) a. [_{VP} [_{VP} wash [_{NP} dish dirty]] carefully] → Noun incorporation
 [_{VP} [_{VP} wash + dish [_{NP} dish dirty]] carefully]
 b. Ordering at PF:
 wash ≤ dish in V (adjunction on right, (28c))
 dish ≤ dirty in NP (adjunction on right, (28c))
 V ≤ NP in VP ((28a), head-initial version)
 → dish ≤ dish, by (30) OK since dish = dish

Consistent ordering: wash - dish - dirty

The fundamental difference here is that inside the VP we get the ordering statement $V \leq NP$ rather than $NP \leq V$ by the other possible setting of (28a). But PNI can still happen and yield a consistent ordering as long as we also get $N \leq A$ in NP, and $V \leq N$ in the complex V, options allowed by the relative freedom of adjunction. We derive V-N-A order, the opposite of Sakha and Tamil’s A-N-V order, but equally consistent, since there is one utterance of N correctly placed with respect to both V and A.

Chamorro is a head-initial language like Niuean, but it leaves the order of an adjoined modifier and the NP it modifies free, as seen in (16) (probably with some other differences in structure, including the use of a linker particle; the details are not unpacked here). However, it cannot take advantage of both options when there is PNI (see (17) and (18)). When the adjoined modifier is linearized after the N, the derivation is just like (36) in Niuean. But if it is linearized before N, then we would derive the ordering statements ‘wash’ ≤ ‘dish’ in V, ‘dirty’ ≤ ‘dish’ in NP, and ‘dish’ ≤ ‘dirty’ in V’, a contradictory set. This derives the facts seen in §3.2. In particular, we see that an adjective in the wrong place inside NP can make PNI fail in very much the same way that an adverb or PP in the wrong place inside VP can.

A language may have other phrasal movements, of course, but those typically will not disrupt the account. For example, Massam (2001) argues that Niuean sentences like (35) involve a process of predicate fronting, which moves the VP to SpecTP, thereby deriving VOS order. We may follow her in this, while still assuming that head movement applies inside the moved VP. This fuller syntactic derivation is in (37a).

- (37) a. [_{TP} TENSE [Sione [_{VP} wash [_{NP} dish dirty] carefully]]] → NI
 [_{TP} TENSE [Sione [_{VP} wash + dish [_{NP} dish dirty] carefully]]] → Pred fronts
 [_{TP} [_{VP} wash + dish [_{NP} dish dirty] carefully] TENSE [Sione [_{VP} wash...]]]

b. At PF:

$[_{TP} [_{VP} \text{ wash + dish } [_{NP} \text{ dish dirty}] \text{ carefully}] \text{ T Sione } [_{VP} \text{ --}]]$ (by (29a))
 Otherwise, ordering inside VP as in (36).

The crucial assumption is that in VP fronting, as in other instances of overt phrasal movement, the lower copy deletes at PF by (29a). Given this, the ordering principles interpret the higher copy of the VP at PF the same way that they would interpret an unmoved VP, as sketched in (36). This gives the desired result. In general, movement of larger phrases will not affect the possibility of PNI inside those larger phrases.

5.4 PNI and complex predicate formation

Finally, we can ask whether PNI can happen with a predicate that is already complex. According to my analysis, this should depend on the details of the complexity. Some kinds of complex predicates are apparently incompatible with PNI: for example, PNI is blocked for the object of a verb-plus-resultative-AP complex predicate (see (12b,d)). This follows from my assumptions, given the structure in (8). We may assume that the adjective must adjoin to the verb to form a complex predicate with it (as in Baker 2003). This accounts for the fact that the AP must be adjacent to the verb, just as a PNied NP must be, as shown in (9). Suppose then that the head of the NP also adjoins to the verb and we try to interpret the result at PF, as in (38).

- (38) a. This $[_{VP} [_{NP} \text{ fruit}] [_V [_{AP} \text{ big}] \text{ make}]] \rightarrow$ adjective incorporation
 This $[_{VP} [_{NP} \text{ fruit}] [_V [_{AP} \text{ big}] \text{ big+make}]] \rightarrow$ noun incorporation
 This $[_{VP} [_{NP} \text{ fruit}] [_V [_{AP} \text{ big}] \text{ fruit+big+make}]]$
- b. Ordering at PF:
 $\text{big} \leq \text{make in V}$ (adjunction, (28c))
 $\text{fruit} \leq \text{V in V} \rightarrow \text{fruit} \leq \text{big}$ (adjunction, (28c) plus (30))
 $\text{AP} \leq \text{V in V}' \rightarrow \text{big} \leq \text{fruit}$ (complement, (28a) plus (30))
 $\text{NP} \leq \text{V}' \text{ in VP} \rightarrow \text{fruit} \leq \text{AP} \rightarrow \text{fruit} \leq \text{big}$ (specifier, (28b) plus (30))
Contradiction: fruit ≤ big, big ≤ fruit

Assuming that ‘big’ adjoins to the verb before ‘fruit’ does, we get the orders ‘big’ ≤ ‘make’ in the smaller V and ‘fruit’ ≤ V in the larger V, which implies ‘fruit’ ≤ ‘big’ by (30). Then we get AP ≤ V in V’, implying ‘big’ ≤ ‘fruit’, ‘fruit’ being the first element in the largest V. Finally, we get NP ≤ V’ in VP, which implies ‘fruit’ ≤ AP, which implies ‘fruit’ ≤ ‘big’. This is a contradictory set of ordering statements, because it includes both ‘fruit’ ≤ ‘big’ and ‘big’ ≤ ‘fruit’. Note that we would do no better if we assumed that the noun adjoined to the verb before the adjective did. Then the ordering inside the complex verb would be ‘fruit’ ≤ ‘make’ and ‘big’ ≤ V implying ‘big’ ≤ ‘fruit’. The last of these statements contradicts ‘fruit’ ≤ ‘big’, derived from ordering the VP node. Therefore, we derive the fact that complex predicate formation of this sort cannot iterate: the pseudo-incorporation of one phrase makes it impossible to pseudo-incorporate another one.

However, if there were no copy of the nonverbal part of the complex predicate in between the object and the verb, then PNI of the object could succeed. There are two ways in which this could arise. First, we could have the same structure and syntactic derivation as in (38), but with the verb counting as an affix that attaches to adjectives at PF, as in deadjectival verbs like *en + large* in English. If V is interpretable at PF as an affix, this privileges the copy of A that is adjoined to V for PF pronunciation, allowing the other copy to delete, as in (29b). When the copy of A in the AP deletes, so do all of the ordering statements that mention it, including the problematic ‘fruit’ \leq ‘big’ derived from ordering the VP node. Then there is no contradiction, and we expect the order *fruit-big + verb*. Hence, we predict that PNI could be possible with deadjectival verbs, deriving sentences like *This fruit big + CAUS*, meaning ‘This enlarges fruit’.²⁴ Unfortunately the prediction is unconfirmed at this point, since Tamil does not have deadjectival verbs (Asher 1982:202), and Sakha does, but the small amount of data I have concerning PNI with them is inconsistent.

The other way that PNI might be possible with a complex predicate would be if the nonverb is base-generated in a position adjoined to the verb, rather than arriving there by head movement from the verb’s complement. I tentatively assume that this is the case in Light Verb Constructions (LVCs) in Turkish, discussed by Öztürk (2005:57). The LVC consists of an event-denoting nominal element together with the dummy verb ‘do’, and the theme object of such a complex predicate can be pseudo-incorporated.

- (39) Doctor hasta-(y)ı muayene et-ti.
 Doctor patient-(ACC) examination do-PAST.3sS
 ‘The doctor examined the patient/did some patient-examining.’

The crucial difference between this case and the one in (38) is, I assume, that there is no relationship of thematic role assignment or syntactic selection between ‘do’ and ‘examination’ (cf. Öztürk 2005:56), whereas there is one between ‘make’ and ‘big’. Therefore, ‘examination’ does not need to be projected as a complement of ‘do’ in the syntax; it can be adjoined to ‘do’ from the start (Öztürk 2005:87–88, n.31). Then, ‘patient’ can adjoin to the verb in the syntax, and the structure can be consistently ordered at PF.

- (40) a. Doctor [_{VP} [_{NP} patient] examination + do]] \rightarrow noun incorporation
 Doctor [_{VP} [_{NP} patient] patient + examination + do]
 b. Ordering at PF:
 examination \leq do in V
 patient \leq V in V \rightarrow patient \leq examination
 NP \leq V in VP \rightarrow patient \leq V \rightarrow patient \leq patient
 Consistent: patient - examination - do

²⁴ Of course, if the verb is simply derived from the adjective in the lexicon, we would make the same prediction: that PNI between an NP and the deadjectival verb is possible. No clear argument for or against lexical word formation is expected here.

I conclude that this approach makes some rather detailed predictions about when PNI is possible and when it is not, with respect to issues of word order and linear adjacency. The basic consequences are correct, and those involving complex predicates of different types look promising and worthy of further investigation.

6. When the PNied NP is invisible for case and agreement

In the last two sections of this article, I turn to a few salient points of crosslinguistic variation in the syntax of PNI. The first concerns the matter of case marking. If the PNI is a normal full NP in syntax, why does it not get marked for accusative case in Sakha or Tamil?

If what I have said so far is correct, the explanation cannot simply be that the bare NP stays inside VP—as Baker & Vinokurova (2010) proposed for Sakha. The reason is because, at least in Tamil, bare plurals with existential readings presumably also remain in VP (cf. Diesing 1992), but these do get accusative case in Tamil, as shown in (41).

- (41) Naan town-le pombale-nga|e paa-kka-lle. (Tamil)
 I town-LOC woman-PL-ACC see-INF-NEG
 ‘I didn’t see (any) women in town.’ (Neg > ∃ only)

Similarly, an example like (41) shows that it is not sufficient to say that DPs realize case and NPs do not (as proposed by Lidz 2006 for Kannada, and Baker 2012 for Amharic), because these bare plurals also have no D (Dayal 2011).

Moreover, it does not seem to be universally true that PNied objects are morphologically caseless; PNied NPs apparently do bear accusative in Hungarian, as shown in (42). So our account of this fact about PNI in Sakha and Tamil should permit some plausible parameterization.²⁵

- (42) János újságo-t olvas. (Kiss 2002:68)
 John newspaper-ACC reads
 ‘John is engaged in newspaper-reading.’

The idea about this that I wish to propose is that accusative case assignment does happen to the PNied nominal, as normal, at least in Tamil. However the accusative case feature is removed from the representation prior to being spelled out as an overt case affix, as a result of head movement. This can be seen as part of a more general phenomenon. In their analysis of morphological variation in languages with morphological noun incorporation, Baker et al. (2005) propose the following parameter:

²⁵ See notes 12 and 15 for some ambivalence about whether PNI in Hungarian is really the same phenomenon as the one studied in the bulk of this paper. However, for purposes of this section, I tentatively follow the literature and assume that it is, seeing where that assumption leads us with respect to the case and agreement properties of PNI.

- (43) Phi-features are deleted on the trace of NI in some languages (Mapudungun, Nahuatl, Chukchi, Ainu) and not in others (Mohawk, Southern Tiwa, Mayali, Wichita).

This parameter explains the fact that noun incorporation seems to have a detransitivizing effect, such that the verb does not agree with the incorporated object, in some polysynthetic languages but not others. (44) shows that noun incorporation bleeds normal object agreement with the understood object in Mapudungun, but not in Southern Tiwa.

- (44) a. Ngilla-waka-(*fi)-n. Compare: Ngilla-fi-ñ ti waka. (Mapudungun)
 buy-cow-3O-IND.1sS buy-3O-IND.1sS the cow
 ‘I bought a cow.’ ‘I bought the cow.’
- b. Bi-seuan-mu-ban. Compare: Wisi seuan-in bi-mu-ban. (S. Tiwa)
 1sS/BO-man-see-PAST two man-PL 1sS/BO-see-PAST
 ‘I saw men.’ ‘I saw two men.’

Mapudungun is thus a language in which (43) is set positively, and Southern Tiwa is a language in which it is set negatively. Baker et al. also demonstrate some other consequences of this parameter, including whether NI is possible with a wide range of unaccusative verbs or not, and whether NI can strand adjectival modifiers or not.

Now given my hypothesis that PNI also involves head movement of the noun to adjoin to the verb, we might expect (43) to apply to PNI structures as well. And there is some reason to think that it does. For example, it is well-known that the verb can still agree with a PNied NP in Hindi, as long as the subject is marked ergative (i.e. in a perfective clause). PNied NPs in Hindi are no different in this respect from other objects.

- (45) main-ne kitaab paRh-ii. (Hindi: Dayal 2011)
 I-ERG book(F) read-FEM.SG
 ‘I book-read.’

But Tamil seems different from Hindi in this respect. Tamil does not have Hindi-style split ergativity, but it does have verbs that have lexical dative case on their subjects and nominative objects. Like much-discussed Icelandic, the finite verb agrees with the nominative object in these dative-nominative constructions, when the object is definite (Sarma 2009).

- (46) a. En-akku anda ponnu teve-ppaḍ-r-aa. (*teve-ppaḍ-itu)
 I-DAT the girl need-suffer-PRES-3fs need-suffer-3nS
 ‘I need the girl.’ (one out of an established group)
- b. Mala-kku anda kolande-nge keḍe-cc-ange. (??keḍe-cc-icci)
 Mala-DAT the child-PL get-PAST-3prS get-PAST-3nS
 ‘Mala got these children (for the play).’

However, if the object NP is adjacent to the verb and interpreted nonspecifically, then agreement on the verb in Tamil is default third person neuter, agreeing with neither the dative subject nor the indefinite object.

- (47) a. En-akku ponnu teve-ppaḍ-itu.
 I-DAT girl need-suffer-PRES.3nS
 ‘I need a girl (a bride).’ (no specific one in mind)
- b. Mala-kku kolande-nge keḍe-cc-icci.
 Mala-DAT child-PL get-PAST-3nS
 ‘Mala got (some) children (for the play she is producing).’

I conclude two things from this: first, that nominative objects in Tamil can also undergo PNI (as expected), and second, that PNI in Tamil bleeds agreement with the PNied NP, unlike in Hindi. This contrast between Tamil and Hindi seems quite similar to the contrast between Mapudungun and Southern Tiwa shown in (44), so I suggest that it is also attributable to the parameter in (43): Tamil is a language in which the phi-features on the original copy of the noun are deleted; Hindi is a language in which they are retained.

Given this, I suggest that the reason that accusative case is not realized on a PNied object in Tamil is also due to (43). It is plausible to say that case features, once they have been assigned in the syntax, become part of the phi-feature bundle of the relevant noun phrase, on a par with that noun’s inherent features of person, number, and gender. One consequence of this is that, in the more richly inflecting Indo-European languages (Latin, Greek, Russian, Icelandic, etc.), when a modifier or predicate of some kind undergoes concord with a noun, it typically agrees with that noun in case as well as in number and gender. Given this, we may assume that, when the phi-features of the original copy in a noun movement chain are deleted in Tamil, the relevant NP loses its case feature as well as its number and gender features. That is why accusative case is not spelled out on a PNied NP in Tamil, I claim.

This analysis predicts that there should be a correlation between whether a PNied NP can trigger agreement on the verb and whether a PNied NP can manifest structural case marking, all things being equal.²⁶ And there is some support for this. Whereas in Tamil PNied NPs cannot be

²⁶ Of course, whether this correlation is observable or not in a given language depends also on the details of its case markers and its agreement configurations. For example, PNied NPs in Hindi trigger agreement on the verb, but they cannot bear the overt accusative/dative marker *-ko*, because this is not a pure structural case marker: it also triggers a definite-type interpretation similar to a definite article (Dayal 2011). As a result, it is incompatible with PNI for semantic reasons. Another language might have accusative realized on the PNied object, but T could fail to agree with the PNied object simply because the language has no ergative or dative subject constructions, so T always agrees with the subject and never gets a chance to agree with the PNied object. None of this is problematic for my hypothesis, but it does decrease the opportunities to observe the predicted correlation.

agreed with and do not bear accusative case, we saw in (42) that PNied NPs in Hungarian do bear accusative case. We predict, then, that PNied NPs in Hungarian should also trigger agreement on the verb, when the circumstances are right. Example (48) confirms this, where the plural PNied NP ‘tree’ triggers plural agreement on the verb ‘take’.

- (48) A kastélyt fák vették körül.
 the castle.ACC tree.PL take.PAST.3pS around
 ‘The castle was surrounded by trees.’

(Note that this is PNI of the subject, allowed in Hungarian but not in some other languages; see note 15.) On the other hand, languages that are like Tamil with respect to both case and agreement are Turkish (subject PNI not agreed with), Oceanic (if the transitive suffix is a realization of object agreement), and Sakha (PNied subjects of unaccusatives are not agreed with; Baker & Vinokurova 2010). I take this to be support for my analysis of the caselessness of PNied NPs in some languages in terms of (43).

7. Verb movement and scrambling in PNI constructions

Finally, there is some crosslinguistic variation to consider when it comes to the strength of the adjacency condition that I have analyzed here. Although the adjacency requirement seems to be quite strict in Tamil, Sakha, and Oceanic languages, it happens not to be so strict in Hindi (despite Mohanan’s 1995 original description). For example, the negative particle *nahiiN* can come between the PNied NP and the verb in negative clauses. Indeed this is the only possible order.

- (49) Anu bacca nahiiN sambhaalegii. (Dayal 2011:137)
 Anu child not look.after-FUT-3f
 ‘Anu will not look after children.’

The key to understanding this, I believe, is verb movement and how it interacts with PNI. The placement of the negative particle with respect to the verb in (49) suggests that V-to-T movement has moved the verb past negation, as in the classic Emonds (1978)–Pollock (1989) analysis of French (see Kumar 2003). In constituent negation, *nahiiN* follows the negated phrase, as one might expect in a largely head-final language given that negation is a head (see (53a) below). When it is a clause that is being negated, then, we might expect clause-negation order, and we almost get it: *nahiiN* follows everything in the clause except the finite verb. This makes sense if the underlying structure is [[[Subject Object Verb] Neg] Tense] and V moves to T to give [[[Subject Object --] Neg] Verb + Tense]. Furthermore, in auxiliary constructions, negation can appear between the main verb and the auxiliary (NP verb *nahiiN* aux + T order), as expected if only the auxiliary verb moves past Negation to T, again as in French.²⁷

²⁷ However, Object-Neg-Verb-Aux-T order is also possible (and indeed preferred; see Kumar 2003:Chapter 2). This suggests that the main verb and the auxiliary can also move as a unit in Hindi.

So V-raising is motivated apart from PNI in Hindi. The question then is how does this verb raising interact with PNI. The syntactic derivation would be as in (50).

- (50) $[_{TP} \text{Anu } [_{XP} [_{VP} \text{child watch}] \text{NEG}] \text{Tense} + \text{AGR}] \rightarrow$ (NI)
 $[_{TP} \text{Anu } [_{XP} [_{VP} \text{child child} + \text{watch}] \text{NEG}] \text{Tense} + \text{AGR}] \rightarrow$ (V-to-T)
 $[_{TP} \text{Anu } [_{XP} [_{VP} \text{child child} + \text{watch}] \text{NEG}] \text{watch} + \text{Tense} + \text{AGR}]$

At PF we are allowed to delete the lower copy of the verb by (29b), given that the higher copy forms a PF-interpretable word together with Tense, giving (51). (Since this deletion is at PF only, child + watch survives at LF to be interpreted as a complex predicate there.)

- (51) $[_{TP} \text{Anu } [_{XP} [_{VP} \text{child child} + \text{---}] \text{NEG}] \text{watch} + \text{Tense} + \text{AGR}]$

This can easily be linearized to give (49), by normal linearization principles for a head final language, with ‘child’ uttered only once, before negation.

Generalizing on this result, we expect that head movement of the verb can have the effect of breaking up a PNI N + V cluster, although XP movement of the NP cannot, as we saw in §5. Dobrovie-Sorin et al. (2006:62) observe this in Spanish and Romanian, writing that ‘in Romance languages, the verb itself undergoes head movement, breaking the adjacency between the verb and the object, even if the object is a bare NP’. As a result, bare singulars can be separated from the verb by an adverb on the left edge of the VP in these languages.

- (52) Juan tiene todavía casa en su ciudad natal. (Spanish)
 Juan has still house in his village home
 ‘Juan still has [a] house in his home village.’

We can also build further on this to address a more radical problem that Dayal (2011:137) poses for the adjacency condition on PNI. She shows that PNied NPs in Hindi can in some cases undergo scrambling, as long as the pragmatics is right.

- (53) a. kitaab anu becegi, akhbaar nahiiN. (Dayal 2011)
 book Anu sell-FUT.3f newspaper not
 ‘Anu will sell books, not newspapers.’
 b. kitaab anu bhii becegi.
 book Anu also sell-FUT.3f
 ‘Anu will also sell books.’
 c. kitaab anu zaroor becegi.
 book Anu definitely sell-FUT.3f
 ‘Anu will definitely sell books.’

The result is again the NP being separated from the verb. Hindi seems to contrast with Tamil in this respect. (54b–d) are analogs of Dayal’s examples, but they are not considered acceptable.

- (54) a. Maala kaṇḍippaa pustagam vi-tt-aa. (Tamil)
 Mala definitely book sell-PAST-3fS
 ‘Mala definitely sold books.’
- b. ??Pustagam Maala kaṇḍippaa vi-tt-aa.
 book Mala definitely sell-PAST-3fS
 ‘Mala definitely sold books.’
- c. *Pustagam Maala vi-tt-aa, pazam ille.
 book Mala sell-PAST-3fS fruit NEG
 ‘Mala sold BOOKS, not fruit.’
- d. *Pustagam Maala-um vi-tt-aa.
 book Mala-also sell-PAST-3fS
 ‘Mala also sold books.’

One might worry, then, that I have done too good a job of deriving the adjacency condition. If it follows from fundamentals of how complex predicates are represented at LF plus how chains can be realized at PF, how can languages differ in this respect?

I suggest that the freer word order in Hindi is a further consequence of the fact that V-to-T raising has broken up the NP-V cluster. Once this happens, the PNied NP is freed up to scramble leftward. The syntactic steps of the derivation would be as in (55), with scrambling added to incorporation and verb raising.

- (55) [_{TP} Anu [_{VP} definitely [_{VP} book sell]] Tense + AGR] → (NI)
 [_{TP} Anu [_{XP} definitely [_{VP} book book + sell]] Tense + AGR] → (V-to-T)
 [_{TP} Anu [_{XP} definitely [_{VP} book book + sell]] sell + Tense + AGR] → (scrambling)
 [_{TP} book Anu [_{XP} definitely [_{VP} book book + sell]] sell + Tense + AGR]

The lower copy of the NP ‘book’ is deleted at PF, as in normal XP chains. That was not enough to allow object scrambling before, because the copy of noun adjoined to the verb survived to create a contradiction in linearization (see (34)). But now let us consider more carefully what counts as the lower member of the verb-movement chain for purposes of deletion. Is it the minimal verb consisting only of the verb stem, as I assumed without comment above in (51), or is it the maximal verb, consisting of the verb stem plus anything that is adjoined to it to form a complex X^o? Suppose we assume that either option is possible. This kind of indeterminacy is familiar in the syntax literature, where there is often some ambiguity about whether something adjoined to a phrase counts as inside that phrase or outside it (see, e.g. Chomsky 1986). If then it is possible to delete the larger V in this structure, then (55) can be represented at PF as (56) prior to linearization.

- (56) [_{TP} book Anu [_{XP} definitely [_{VP} -- --]] sell + Tense + AGR]

This can be linearized to give (53c), by normal linearization principles. In particular, there are no longer two copies of the PNied NP to worry about, since one was deleted along with the lower copy of the verb and another as the lower trace of an XP chain.²⁸

Given this account of Hindi, I had better hope that V-to-T raising does not happen in Tamil and other languages in which the adjacency restriction is visibly in force. These languages should be more like English than like French in this respect. There is some evidence that this is true. In Tamil, the usual form of negation is a particle that can stand alone ((57)) and that is at the right edge of a nonverbal constituent that it negates ((58)).

- (57) *Ille, naan viitt-ukku poo-r-een.* (Asher & Annamalai 2002:25)
 NEG I home-DAT go-PRES-1sS
 ‘No, I am going home.’
- (58) *Idu en viidu ille.* (see also (54c))
 This my house NEG
 ‘This is not my house.’

Tamil is like Hindi in these respects. *Ille* is thus the sort of particle that one can imagine a verb raising over on its way to T. But Tamil never has [... NP *ille* V + tense + AGR] order, the way Hindi does. Rather, *ille* must follow the verb, and it blocks any overt realization of tense and subject agreement, the verb showing up in infinitival form.

- (59) *Baala poo-ga-lle.* (Schiffman 1999:143)
 Baala go-INF-NEG
 ‘Bala didn’t go, isn’t going.’

So we have no evidence of verb raising here. On the contrary, we could say that Tamil normally has ‘affix-lowering’ (however this is analyzed theoretically), and negation blocks this in Tamil, just as it does in English (Pollock 1989). In English, the stranded Tense and agreement are rescued by do-insertion; in Tamil, the stranded affixes are simply left unpronounced. Given that verb raising does not happen in Tamil, there is no motivation for deleting the (noun+)verb in its base position, and adjacency is needed for linearization of the noun, as before. This explains the Tamil–Hindi difference in scrambling in terms of an independently observable difference between the languages.

²⁸ One might entertain two different views about the option of deleting the N adjoined to V along with the trace of verb raising: either all languages freely allow deletion of the larger or smaller verb, or languages specify one or the other parametrically. If the latter possibility is correct, we might expect to find a language in which the PNied NP is held close to the base position of the verb, but not to its surface position. Such a language could be like Hindi with respect to negation as in (49), but like Tamil in not allowing PNied NPs to scramble ((54)). I do not know if there are such languages or not. (Spanish as shown in (52) is a possibility, but it is not clear that Spanish has scrambling anyway.)

This account can probably carry over to the other languages as well. For example, negation in Sakha shows up (as an affix) after the verb root and before T, consistent with saying that the verb does not raise past it (Vinokurova 2005:207). There is also a particle in Sakha (*daqany* ‘so much’) that appears between a verb and auxiliary, but after the inflected verb (e.g. ‘Masha soup like-PTPL so.much AUX-past-3sS’ and ‘Masha soup like-past-3sS so.much’, but not ‘*Masha soup so.much like-past-3sS’). These orders also suggest ‘affix lowering’ rather than verb raising. Moreover, Massam’s (2001) account of predicate initial order in Niuean in terms of VP moving to SpecTP implies that V does not move to T in this language. So the assumption that V-to-T movement does not happen in languages where the PNied NP cannot scramble checks out well.

We now have two ways in which Hindi differs from Tamil and Sakha: it is different both in whether the verb can agree with the PNied NP and in whether the PNied NP can scramble away from the verb. We should ask, then, whether these differences are correlated across languages, suggesting that they should be related theoretically. The accounts that I have given predict that the answer should be no: the two phenomena have independent explanations, one in terms of feature deletion, and the other in terms of verb raising. I believe that this is probably correct. Thus, consider the Amharic language of Ethiopia. This language is known to allow bare nouns as objects with number neutral interpretations (Kapeliuk 1994:10–13; Kramer 2009:169; Leslau 1995:179).

- (60) *lidʒ-u mäs’əhaf wəssəd-ə.*
 Child-DEF book take.PF-3mS
 ‘The child took a book/some books.’

Such objects take narrow scope with respect to repetitive adverbs, a sign of PNI in the semantic sense, of the noun being interpreted as a complex predicate with the verb.²⁹

- (61) *Ləmma əndəgəna əndəgəna mäs’əhaf gəzz-a.*
 Lemma again again book buy.PF-3mS
 ‘Lemma repeatedly bought book(s).’ (different books different times)

This number-neutral lowest scope meaning is lost if there is an indefinite determiner with the object, or if the bare NP is a subject not adjacent to the verb.

- (62) *Ləmma əndəgəna əndəgəna and mäs’əhaf gəzza.*
 Lemma again again a book buy.PF-3mS
 ‘Lemma repeatedly bought a book.’ (the same book over and over again)
- (63) *wiffa Almaz-in əndəgəna əndəgəna nəkkəs-at.*
 Dog Almaz-ACC again again bit.PF(3mS)-3fO
 ‘A dog bit Almaz again and again.’ (the same dog in each event)

²⁹ I thank Mengistu Amberber (personal communication, 2011) for insightful discussion of the Amharic facts. The sentences below that are not otherwise attributed come from him.

Hence the number-neutral interpretation is a sign of PNI, not of mere indefiniteness or of being a bare singular NP per se. Amharic therefore seems to have PNI comparable to the other languages discussed.

Now it is clear from these examples that the PNied NP in Amharic does not bear overt accusative case. The normal exponent of this case in Amharic is the suffix *-n*, which can be seen for example in (63), but this is not present in the transitive PNI examples in (60) and (61). Furthermore, Amharic has object agreement which is normally optional with determined DPs, but object agreement is impossible with bare NPs, as shown in (64) (Amberber 2005:299; Kramer 2010:9; Leslau 1995:182, 187).

- (64) a. Ləm̩mma *wiffa-u-n* j-aj-(əw)-al.
 Lemma dog-DEF-ACC 3mS-see-(3mO)-AUX(3mS)
 ‘Lemma sees the dog.’
 b. Ləm̩mma *wiffa* j-aj-(*əw)-al.
 Lemma dog 3mS-see-(*3mO)-AUX(3mS)
 ‘Lemma sees a dog.’

Bare indefinite NPs can trigger agreement in other contexts in Amharic—when they are the subject of the verb, for example—showing that they normally do have the phi-features needed to participate in agreement. But they do not participate in agreement in this environment, and (43) can explain why. Amharic is thus like Tamil and Sakha rather than like Hindi and Hungarian in that phi-features including case features are deleted on a nominal involved in head movement.

However, with respect to verb movement, Amharic seems to pattern with Hindi rather than with Sakha and Tamil. Negation in Amharic is a particle (written as a prefix) that comes before the main verb, consistent with V raising past it to T.

- (65) *kä-hullu yä-mmiyans-ä-w ləg mən-əmm əl-agäññ-ä-m.*
 from-all REL-little-3mS-DEF child anything.ACC-FOC NEG-get-3mS-FOC
 ‘The littlest child did not get anything.’ (Leslau 1995:293)

Indeed, there is even evidence of $V \rightarrow T \rightarrow C$ movement in Amharic, in that complementizers show up before the finite verb but after all of its complements and modifiers, exactly where negation does in Hindi.

- (66) *mäk^wännən-u wättaddär-u-n [bet-u ənd-i-hed]*
 officer-DEF soldier-DEF-ACC house-DEF that-3mS-go.IMPF
fäqqäd-ä-ll-ät.
 permit-to-3mO
 ‘The officer permitted the soldier that he go home.’ (Leslau 1995:690)

And if there is an auxiliary, then one can get ‘verb C-aux’ order, as expected.

Given this result, we predict the scrambling of PNied NPs to be possible in Amharic, as in Hindi but not Tamil. And that is confirmed: (67) shows caseless bare NP objects separated from the verb by an adverb and/or the subject; they still have the distinctive number neutral, lowest scope interpretation that is characteristic of PNI.

- (67) a. Ləm̩ma mäs'əhaf əndəgəna əndəgəna gəzz-a.
 Lemma book again again buy.PF-3mS
 'Lemma repeatedly bought book(s).' (different books in different events)
- b. mäs'əhaf Ləm̩ma əndəgəna əndəgəna gəzz-a,
 book Lemma again again buy.PF-3mS
 magazine gən mən̩nəm.
 magazine not-any
 'It's books that Lemma bought repeatedly, not magazines.' (different books)

I conclude that the correlation between verb raising and the possibility of scrambling the PNied NP holds over this nontrivial set of languages. At the same time, the possibility of verb raising and scrambling seems to be independent of whether or not PNied NPs are visible for case and agreement: they are in Hindi, but not in Amharic. Of course, a thorough proof that the correlations and noncorrelations predicted by this analysis are truly universal requires more data, and must be left to future research.³⁰

8. Concluding remarks

In this article, I have argued that there is more to PNI than simply generating an NP as the complement of a verb and never moving it from that position, as proposed by Massam (2001) and others. I show that PNI is subject to additional adjacency constraints, such that the head noun inside the NP must be string-adjacent to the verb in the derived structure. This can be explained if the head of the NP moves 'covertly' to adjoin to the verb to create what is interpreted as a complex predicate at LF. In addition to indicating which nouns are to be interpreted as predicate modifiers rather than as arguments in a transparent way, this can be used to derive the syntactic distinctives of the construction. In particular, the surface adjacency conditions follow from constraints on linearization, such that a single pronunciation of the noun satisfies both the ordering conditions fixed inside NP and the ordering conditions fixed inside the complex verb. If, however, the language has V-raising to T, this can loosen the connection between the PNI and the verb, allowing the NP to scramble away from the verb in Hindi and Amharic, but not in Tamil, Sakha, or Niuean. Taken

³⁰ It is not crucial to the analysis that the verb raise all the way to T (or C): verb movement to a lower functional head, such as Aspect, should be enough to permit scrambling of the PNied NP as well. (I leave open whether raising from one V position to another within a Larsonian shell would have this effect or not.)

together, this cluster of ideas advances, I hope, our understanding of both the syntax of pseudo-noun incorporation and the factors that influence how syntactic structures are realized at PF.

How general might this account prove? Can the idea of movement needing to be string vacuous to avoid linearization contradictions explain other adjacency phenomena in natural language? Answering this will require further research, of course. But a good guess is that it will account for some other adjacency phenomena, but not all. In particular, it should be possible to extend it to other instances in which adjacency is related to the formation of a complex predicate. I have already taken one step in this direction by saying that string-adjacency between a predicate adjective or noun and a governing verb like ‘be’, ‘become’, or ‘make’ in Sakha and Tamil can be explained in the same way as PNI, assuming that the predicate A or N adjoins to the linking verb (see (7), (9), (38)). Other plausible uses of the idea might be to explain adjacency between the verb and an adposition in pseudopassive constructions (e.g. *George Washington slept (often) in this bed* versus *This bed was slept (*often) in*) (Hornstein & Weinberg 1981) and any adjacency effects that hold between the two verbs in a restructuring construction (Rizzi 1982) (pace V-to-T movement).³¹ If these possibilities check out, my account could have significant generality.

It is not likely, however, that all linear adjacency constraints in natural language are to be explained in this way. For example, it is well known that the direct object in English must be strictly adjacent to the verb, with no adverb or PP intervening (Stowell 1981).³² Nonetheless, this is unlikely to have anything to do with head movement or complex predicate formation, given that it holds for all nominals in English—definite DPs, pronouns, proper names, quantified expressions, etc.—not just those interpreted as predicates. One could only account for this pattern along the lines discussed here if one assumed that all English NPs had some covert head (a Case head??) that incorporates into the verb and needs to be linearized consistently—an assumption for which I know of no compelling evidence. Unless that sort of extension turns out to be warranted, it is likely that other, less strict adjacency phenomena should still be explained in the usual ways—like X and Y being adjacent because X is the complement or specifier of Y and neither moves away. Different kinds of adjacency then will have different formal explanations.

³¹ It is controversial, however, whether there are special adjacency effects in V-V restructuring contexts. Wurmbrand (2007), for example, argues forcefully that there are not in German. This might in large part be explained by the fact that the highest verb in a sequence of verbs clearly moves to T (and even C, in V2 contexts) in German. This is expected to break up any V-V cluster in German, just as V to T movement breaks up the N-V cluster in Hindi. However, this may not be the whole story for German, since Wurmbrand also shows that in clusters of three verbs, the first verb can topicalize away from the second, even though only the third moves to T. At the same time, it is not clear that V-V complexes in restructuring constructions have any special semantics, parallel to that of the Ns in PNI constructions, such that (23) applies in this case (although Napoli 1981 makes intriguing observations about the semantics of restructuring in Italian that might be relevant.) (I agree with Wurmbrand that head movement is not necessary to make the lower VP permeable for NP movement, case assignment, and agreement, the usual syntactic diagnostics for restructuring.) Overall, the issues are complex along several dimensions, and go beyond what can be discussed responsibly here.

³² I thank Guglielmo Cinque (personal communication, 2011) for posing to me the question of whether my account would extend to this adjacency effect in English.

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準名詞併入爲隱性名詞併入： 線性化與跨語言變異

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在沙卡語和塔米爾語裡，準名詞併入有嚴格的線性鄰接限制——在 PF 裡，不但是名詞組，連名詞也要與動詞鄰接。筆者主張，此一鄰接限制可以以如下的方式來解釋：在 LF 裡，名詞組主要語加接到動詞上，與動詞形成一個複雜調語的語意單元；在 PF 裡，如果沒有任何句法成份阻隔，名詞組主要語與其痕跡之間就會有鄰接限制。同時，筆者也討論準名詞併入之句法變異：(一) 在某些語言裡（如沙卡語和塔米爾語），併入的名詞沒有格位與呼應，但在其他語言裡（如印地語與匈牙利語），併入的名詞則有格位與呼應；(二) 在印地語這一類的語言裡，動詞移位到時制破壞了動詞與併入名詞的連結，因此就沒有鄰接限制。

關鍵詞：鄰接，線性次序，準名詞併入，主要語移位，線性化