

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

Mark C. Baker

Rutgers University

Abstract: Pseudo noun incorporation (PNI) constructions in Sakha and Tamil obey a strict linear adjacency condition, such that not only the NP but its head noun must be adjacent to the verb at 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 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 PNI: 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 V-to-Tense movement serves to break up the V-NP cluster.

Keywords: adjacency, linear order, pseudo noun incorporation, head movement, linearization*

* Important new data for this paper was gathered through discussion and collaboration with three native-speaker linguists: Nadya Vinokurova for Sakha, Nagarajan Selvanathan for Tamil (Singaporean dialect), and Mengistu Amberber for Amharic. My greatest thanks go to them. Special thanks also go to Teresa Espinal for getting me reinterested in this topic, and to Veneeta Dayal for getting me rereinterested in the topic, as well as for some very valuable discussions of its syntax and semantics. I have had the opportunity to present different stages of this work in three international venues: a mini-course at the University of Barcelona, a workshop on bare nominals at the University of Paris, and a workshop at the Academia Sinica in Taipei, Taiwan. I thank the organizers of those events and the people who participated in them for valuable input, including (but not

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

limited to) Teresa Espinal, Carmen Dobrovie-Sorin, Hagit Borer, Veneeta Dayal, James Huang, Anna Szabolsci, and Guglielmo Cinque. I also thank several anonymous reviewers of an earlier version of this paper. Errors of fact or interpretation that remain are my responsibility.

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)). C&L stands for Chung and Ladusaw 2004. For Tamil, I use the spelling conventions of Asher and 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.

be said about its syntax, beyond that the NP interpreted as a predicate is the complement of the verb. 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 moves 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 paper 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 propose 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, with the result that the structure can only be linearized at PF if nothing else is linearized

between the two copies to create contradictory linearization statements. I also touch briefly on data from Niuean, Chamorro, and Spanish, so as to show how the core idea interacts with the head-directionality parameter. Then, in the last two sections, I turn to two types of crosslinguistic variation that is 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 is flexible enough to account for a degree of variation in PNI constructions that is nontrivial, but still limited and patterned.

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 paḍi-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 OSV orders.

(2) a. Masha salamaat-y tūrgennik 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-kitṭe 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 tǔrgennik 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-kiṭṭe 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 Kornfilt 1997:400-401, Öztürk 2005: 35-36, 50-51 for Turkish). (4) thus contrasts with (2).

- (4) a. *Masha salamaat tǔrgennik 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 paper.

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, etc. If the noun and the verb in fact form a kind of complex word, then we expect no syntactic constituent to 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 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 saṅa 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 pazam tee-r-een. (Tamil)

I good fruit seek-PRES-1sS

‘I am looking for (some/a) good fruit(s).’

d. Baala pazeya pustaga-nga vi-tt-aan.

Bala old book-PL sell-PAST-3mS

‘Bala sold old books.’

See also Öztürk 2005:39-40 for Turkish, Chung and 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.

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 ((6a)). But this rule does not apply inside a compound: rather the nasal assimilates in place to a following stop, the stop becoming voiced ((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’ → marõ; maram-aa → maramaa ‘is it a tree’

b. Tamil compounds: nasal assimilation, voicing

maan ‘mango’ + pazam ‘fruit’ → maambazõ ‘mango fruit’

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.

maan ‘mango’ + kaa ‘unripe fruit’ → maṅṅaa ‘unripe mango’

c. A PNI that ends in a nasal behaves like it is word final, not word medial:

Maala veegamaa puṣṭagam paḍi-cc-aa. =[…gõpa..]

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 2005:85n.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 paper 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 will have nothing to say about why

² Other considerations 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, C&L: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 algorithm. I leave it to future research to work out these ideas, or better ones.

there are lexical restrictions on which verbs allow PNI in some languages (see note 5), 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 something to add.

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 cannot leave that position. That is pretty much all that Massam and her followers need to say about the syntax of PNI, and it is an elegant view. It falls on me, then, to show why something needs to be added to this account. I present three reasons, two of which help point toward what the other factor should be.

3.1 Other NP complements

The first consideration is somewhat theory internal, but not insignificant. This is the fact that, on some analyses, the NP-DP distinction does not match up exactly with the PNI/no PNI distinction. Tamil and Sakha do not have article systems. As such, NPs without overt determiners are common on the surface, even apart from PNI examples. Of course, many linguists invoke a null determiner in such cases (Longobardi, 1994) among many others),

but a nontrivial minority do not, including Chierchia (1998), Dayal (2001), and Baker (2003). According to the latter view, determinerless bare plurals, for example, are analyzed as denoting kinds, roughly equivalent in some contexts to narrow scope existentials because of what Chierchia calls “derived kind predication”. Examples of this type exist in Tamil, as shown in (7). However, unlike PNied nominals, these NPs are marked for accusative case and do not need to be next to the verb.

- (7) 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 > \exists 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.’

So if, following the Chierchia-Dayal view, there are NPs that denote kinds in natural languages, then NPs can undergo movement and can receive case outside the minimal VP after all. Then the rigidly fixed position of PNied nominals cannot be derived *solely* from their being NPs, although that may be part of the answer. Something more is required.

3.2 PNI and resultative complements

My second argument is more central to the current project. I claim 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 (8).

- (8) 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 oɲor-but-a. (Sakha)

this child-PL-ACC happy make-PTPL-3sS

‘This made (the) children happy.’

c. Baala pustagatt-e meese kiile va-kkir-aan. (Tamil)

Bala book-ACC table under put-PRES-3mS

‘Bala puts the book under the table.’

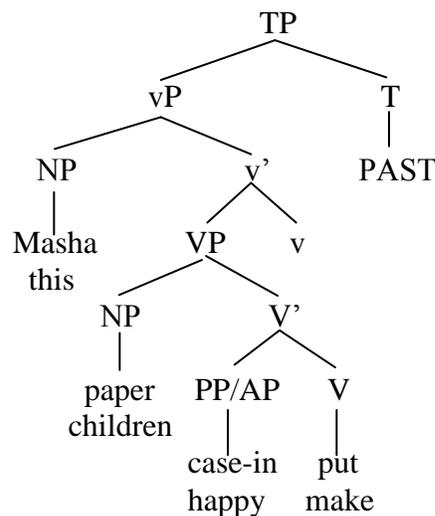
d. Adu pazatt-e peris-aa aakkar-idu. (Tamil)

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 inner specifier of some sort of VP shell. The structure of (8a,b) is thus roughly as in (9).

(9)



Evidence that the AP, not the NP, is the complement of V in (8b,d) comes from the fact that the AP cannot move, and must itself surface next to the verb, as shown in (10).

(10) a. *Bu djolloox Masha-ny onjor-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 (8a) or (11) is the more basic structure.

(11) Misha serenen xoruopka-qa kumaaqy-ny uk-ta.

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 (11) seems to be the more marked one, requiring focus, and this can be confirmed by certain syntactic tests involving c-command. For example, Baker and Vinokurova (2010:628) argue that (8a) has the structure in (9) based on properties of agreement in reduced relative clauses, given the contrast in (12).³

(12) a. Suruk ostuol-ga uur-ulun-na. → suruk uur-ullu-but ostuol-a

letter table-DAT put-PASS-PAST letter put-PASS-PTPL table-3sP

‘The letter was put on the table.’ ‘the table that the letter was put on’

b. Misha-qa suruk yyt-ylyn-na → ?*suruk yyt-yilly-byt kihi-te

Misha-DAT letter send-PASS-PAST letter send-PASS-PTPL person-3sP

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

‘The letter was sent to Misha.’ ‘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 (12a) but not in (12b). Their answer is that the trace of the dative argument intervenes structurally between the agreeing head and the theme argument creating a kind of intervention effect in (12a) but not in (12b). 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 (9). 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 (9), 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 (8) 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 (13).

- (13) 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 (11), then the theme argument can appear in bare NPied form:

(14) 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 peṭṭi ulle 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 (14).

These details do not follow from saying that the bare NP is the verb’s complement.⁴

⁴ 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

2.3 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.

(15) 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-een. (Tamil (=5c))

I good fruit seek-PRES-1sS

'I am looking for (some/a) good fruit(s).'

For these two languages, there is nothing particularly 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 PNied 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 is before the modifier in NP (Massam 2001:156), and NP follows the verb, so the noun is expected to be right-adjacent to the verb (see also C&L 136-141 for Maori).

(16) Ne holoholo kapiniu kiva fakaeneene a Sione.

Pst wash dish dirty carefully ABS Sione

'They are going to put (an) elevator in the building.'

‘Sione washed dirty dishes carefully.’ (Niuean: Massam 2001)

But Chung and 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 (17) (C&L:80, 143).

(17) 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.⁵ In that case, only the noun-initial order is possible (C&L:143-144), such that the N appears right-adjacent to the verb.

(18) a. Si Juan gäi-[kareta agäga].

Unm Juan have-car red

‘Juan owns a red car.’

b. Täi-[amiga ni yä-hu] si Carmen.

⁵ PNI in Chamorro is limited to the two verbs *gäi*- ‘have’ and *täi*- ‘not have’ (C&L:82), and is thus more restricted than in the other languages discussed. 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.

Agr.not.have-friend C WH.obj.like-AGR Unm Carmen

‘Carmen has no women friends who I like.’

(19) a. *Gäi-[agäga na kareta] yu’.

have-red LK car I

‘I own a red car.’

b. *Gäi-[yä-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.⁶ Similar contrasts can be observed in Catalan and Spanish (Teresa Espinal, personal communication).

More generally, there are SOV languages with noun-adjective order inside NP (like Choctaw), and 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. (17)-(19) cause Chung and Ladusaw to be rather ambivalent as to whether Chamorro has Massam-style PNI⁷ or Baker-style true NI, noting that these

⁶ In fact, C&L: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, given the data in (17).)

⁷ Specifically, the Massam-like alternative that they consider for Chamorro, and adopt for Maori, is one in which the verb and NP form a kind of compound verb, not a VP, as in Massam’s account. This difference is not crucial for my purposes, however.

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), van Geenhoven (1998), Massam 2001:168-169, Dayal 2011, Farkas and de Swart 2003:103-105, C&L:137, Dobrovie-Sorin et al. 2006:68-69). For example, (21a-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.

- (21) 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 > \exists 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)
- 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, (22) contrasts with (21b) in that it has only the less likely meaning in which there is a book that the speaker bought over and over again.

(22) 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 (21b) and (21c). 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 and 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 (23).

(23) a. main-ne kitaab paRhi. (Hindi: Dayal 2011)

I-ERG book read.FEM.SG

‘I book-read.’

b. book = λx [book(x)]

read = $\lambda P \lambda x \lambda e [P\text{-read}(e) \ \& \ \text{Agent}(e, x)]$

[_{VP} book read] = $\lambda x \lambda e [\text{book-read}(e) \ \& \ \text{Agent}(e, x)]$

...where $\exists e [\text{book-read}(e) \ \& \ \text{Agent}(e, x)]$

→ $\exists e [\text{read}(e) \ \& \ \text{Agent}(e, x) \ \& \ \exists y [\text{book}(y) \ \& \ \text{Theme}(e, y)]]$

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 direct 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, giving it wider scope than other operators in the representation. Rather, anything that takes scope over the verb automatically takes scope over the PNied nominal that forms a complex predicate with it as well. 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 overt 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, we have already seen that this may be inadequately general (see (7)), since bare NPs can also be understood as arguments in some schemes. Now, given that only a very limited number of syntactic configurations and operations are available (such as Chomsky's Merge and Move, with no special symbols or diacritics added, by the inclusiveness condition), there is a 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 (24).⁸

(24) Interpret X and Y as a complex predicate at LF if [and only if] X and Y form a complex head (an X°).

The idea, then, is that Dayal's complex predicate $\lambda x \lambda e$ [flower-pick (e) & Agent(e, x)] in (23b) does not come automatically from simple functional application (as Dayal assumes), because an NP on its own does not automatically have the predicate interpretation λx [book(x)] (Baker 2003). However, the N is given this interpretation when it is immediately dominated by a V° 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 as in (24)).⁹

⁸ I leave open exactly what the scope of (24) 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 and de Swart 2003), and that being marked with the determiner *he* is a sign of this in Maori (Chung and Ladusaw 2004:ch.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 (C&L:56-60), making it conceivable that they also undergo some sort of covert NI. The exact relationship between these constructions and those focused on here must thus remain open for now.

⁹ But see also the conclusion and note 25 for some comments on extending (24) to P+V and V+V complex predicates.

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 the level of PF. 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,

Some reviewers have wondered how orthodox (24) 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 syntactic 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 noun movement in the syntax can have consequences at LF. In this view, we do have untriggered movement—not entirely standard—but no true look ahead paradox.

Another concern is whether (24) can be stated in terms of a bare phrase structure system (Chomsky 1995), which does not sharply distinguish heads from phrases. I agree that (24) 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 also maintains a distinction between adjunction and ordinary merge. So “complex head” in (24) can be defined in these terms as a minimal lexical item plus any minimal lexical items that are adjoined to it.

which reflect the characteristic notions of “complex verb/predicate” that are relevant at the two interfaces.¹⁰

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 from the semantics of PNI as complex predicate formation. I can imagine that, among the various reading events, a common and natural subtype are reading-to-children events, and that, among the various staying events, a common and natural subtype are 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

¹⁰ The literature on true NI (especially Baker 1996:ch.7) shows that sometimes an NI structure in a language like Mohawk 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 (24). 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.

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 and Ladusaw’s (2004) Restrict. Then the interpretation of (20) 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 (1996) does for modifiers stranded by NI in Greenlandic. Then the interpretation of (20) would be something like ‘I yellow-flower-picked.’ This is a topic for future research. (I thank Veneeta Dayal, personal communication, for discussion of these possibilities.)

are adjacent to the verb, thereby achieving a number-neutral, narrowest scope existential reading, as shown in (25) and (26). (See also Kornfilt 1997:401-402 for Turkish.)

(25) 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) paḍi-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)

(26) 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 languages, we cannot look for the omission of an otherwise-expected case marker. However, (27) shows that a bare singular subject cannot have a narrowest scope, number-neutral interpretation in Tamil, even if it is adjacent to the verb.¹¹

(27) #Bala-ve tirumba tirumba naaji keḍi-cc-icci. (Tamil)

¹¹ 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 are also a small number of languages that are said to allow 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 8 for a possible suggestion.

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 (28). (See also Baker and Vinokurova 2010:631-632 for Sakha, and Kornfilt 1997:399 and Öztürk 2005:32 for Turkish.)

(28) 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:sec. 7.3). In Baker (1988, 1996) I derived this pattern in morphological NI from independently motivated principles of movement, particularly the Head Movement Constraint.¹² If PNI also involves head movement, then that 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 provide the basis for an account of the surface adjacency condition, so much the better.

5. Adjacency and the mapping to PF

¹² 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.)

5.1 Guiding principles

It remains, then, to fill in the details of how a representation like (20) 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, it is plausible to think that the standard ways of deciding which copy to delete do not apply to the case we are focusing on here. Nunes’s (2004) proposal was that 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 does not happen for reasons of feature checking, but rather to create a complex predicate at PF or LF. Then 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 this justifies 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 by feature checking in the syntax, nor does it lead to a specialized unit at PF itself.¹³ Nor can 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 indeed 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 make this work is to assume that ordering rules, whatever their exact details, map syntactic relations between x and y (such as “x asymmetrically c-commands y”) onto the relation “x does not follow y” (\leq) rather than “x precedes y” ($<$). In most contexts, this makes no difference: X precedes Y and X does not follow Y amount to the same thing if X is distinct from Y, given that spoken language

¹³ 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 is 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.

does not permit distinct elements to be uttered simultaneously. But it does make crucial a difference when X is not distinct from Y : a statement like $X < X$ would still be a contradiction, but $X \leq X$ is not. On the contrary, it is satisfied whenever X is uttered. That is how PNI constructions can survive at PF, I claim, and this is what forces string adjacency on them. This range of possibilities is summarized in (29).¹⁴

- (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 have been string vacuous.)

5.2 Sample derivations

Let us consider, then, some sample derivations. For explicitness, I also assume (30), based on Fox and Pesetsky (2004:9) (see also Marantz, 1988).¹⁵

¹⁴ This list is not necessarily exhaustive. 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. But there is not yet any overall theory of what these additional conditions are, so I do not integrate them into this discussion. (29) is simply intended to give a general idea of where the head movement chains discussed here might fit into a larger picture, enough to support the range of derivations considered here.

¹⁵ Note however that I do not adopt Fox and 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. Rather, I assume that nontrivial chains do pose a serious potential problem for linearization at PF, one that must be resolved somehow, as outlined in (29).

(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

b. Ordering at PF:

flower ≤ pick in V (left-adjunction, a free choice)
 yellow ≤ flower in NP (NP order in Turkic, Dravidian)
 NP ≤ V in VP (head final VP)
 → flower ≤ 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’ ≤ ‘pick’ in V, assuming that the noun adjoins to the left of the verb, and ‘yellow’ ≤ ‘flower’ in NP, which is the normal NP-internal order in Turkic and Dravidian languages. Moving up to the VP level, we get NP ≤ V in VP, because Sakha and Tamil are head final languages, however exactly this is derived. Applying (30) to this last statement gives us ‘flower’ ≤ ‘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’ ≤ ‘flower’ ≤ ‘flower’ ≤ ‘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 utterance of ‘flower’ can count as a realization of both copies of the N movement chain, without saying ‘flower’ twice.

Now suppose there is a resultative PP between the object and the verb, as in (13a).

The syntactic derivation will be (32a).

(32) a. Masha [_{VP} [_{NP} yellow flower] [_{V'} [_{PP} box-in] put]] → Noun incorporation

Masha [_{VP} [_{NP} yellow flower] [_{V'} [_{PP} box-in] flower+put]]

b. Ordering at PF:

flower ≤ put in V (left adjunction)

yellow ≤ flower in NP (NP internal order)

box ≤ in in PP (head final)

PP ≤ V in V' → in ≤ flower (head final, plus (30))

NP ≤ V' in VP (spec initial)

→ flower ≤ PP → flower ≤ box (by (30))

Contradiction: flower ≤ box ≤ in ≤ flower, crashes at PF

Ordering this at PF, we get ‘flower’ ≤ ‘put’ in V and ‘yellow’ ≤ ‘flower’ in NP, as before.

Inside PP, we get ‘box’ ≤ ‘in’, since these languages are head final. Moving up to VP, we get PP ≤ V in V'; this then gives us ‘in’ ≤ ‘flower’ by (30). Next to consider is the full VP: here we get NP ≤ V', since these languages have initial specifiers. This unpacks as ‘flower’ ≤ ‘box’, again by (30). Collecting these statements together, we get ‘yellow’ ≤ ‘flower’ ≤ ‘box’ ≤ in ≤ ‘flower’ ≤ ‘put’. This is a contradiction, since ‘flower’ is ordered both before and after ‘box’ and ‘in’. Hence, (13a) is bad.

Next consider how leftward movement of the PP saves the structure, as in (14).

Here there are two copies of the PP at spell-out, as well as two copies of the noun:

(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 leftward moved copy of [box –in]

PP ≤ VP in VP → in ≤ NP → in ≤ yellow

But remove lower copy of scrambling chain by (29a):

= remove statements with “box” and “in”: flower ≤ box ≤ in ≤ flower

Consistent order: box- in - yellow - flower - put

The lower part of this syntactic structure is identical to the one in (32), so there is risk of it leading to an ordering contradiction. But this time the copies of ‘box’ and ‘in’ that are between the two copies of ‘flower’ are themselves the lower members of a two-member chain. As such, they are deleted at PF by (29a), the normal principle that resolves XP chains (assuming that some form of feature checking is involved in scrambling, presumably checking discourse-type features). If this deletion happens before other aspects of linearization, then there is clearly no problem: (33) becomes in all relevant respects like (31). Even if copy deletion happens after linearization, there is presumably no problem. 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.¹⁶ So (14) comes out as being possible.

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

¹⁶ Compare Fox and 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.

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.

5.3 PNI in head initial languages

Next, let us consider PNI derivations 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)
 Pst 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 (right-adjunction, a free choice)

dish ≤ dirty in NP (NP order in Oceanic)

V ≤ NP in VP (head initial VP)

→ dish ≤ dish, by (30) OK since dish=dish

Consistent ordering: wash - dish - dirty

By definition, the fundamental difference here is that inside the VP we get the ordering statement $V \leq NP$ rather than $NP \leq V$. But PNI can still happen and yield a consistent ordering as long as we also apply $N \leq A$ in NP, and $V \leq N$ in the complex V. Then we get V-N-A, 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. As for $V \leq N$, I simply assume that the noun can adjoin freely to either side of the verb if there are no morphological properties at PF that say otherwise; each language automatically selects the option that fits best with its other word order properties. As for $N \leq A$ in NP, that is the normal order in Niuean, and nothing special needs to be said about it. Chamorro, however, also allows $A \leq N$ in NP (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 this second option in this particular context, because then it would derive 'wash' \leq 'dish' in V, 'dirty' \leq 'dish' in NP, and 'dish' \leq 'dirty' in V', a contradictory set of ordering requirements. This derives the facts seen in section 3.3. 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 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 Spec, TP, thereby deriving VOS order. We may follow her in this, while still assuming that covert head movement applies inside the moved VP. This fuller syntactic derivation is in (37a).

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

[_{TP} [_{VP} wash+dish [_{NP} dish dirty] carefully] TENSE [Sione [_{VP} wash...]]]

b. At PF:

[_{TP} [_{VP} wash+dish [_{NP} dish dirty] carefully] T Sione [_{VP} --]] (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 simply 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 or its results.

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 (13b,d)).

This follows from my assumptions, given the structure in (9). 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 (10). 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} fruit] [_{V'} [_{AP} big] make]] → Adjective Incorporation

This [_{VP} [_{NP} fruit] [_{V'} [_{AP} big] big+make]] → noun incorporation

This [_{VP} [_{NP} fruit] [_{V'} [_{AP} big] fruit+big+make]]

b. Ordering at PF:

big ≤ make in V

fruit ≤ V in V → fruit ≤ big by (30)

AP ≤ V in V' → big ≤ fruit by (30)

NP ≤ V' in VP → fruit ≤ AP → fruit ≤ big by (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 also 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, that the pseudo-incorporation of one phrase does not make it possible 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’ ≤ ‘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’.¹⁷

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

¹⁷ 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.

syntax; it can be adjoined to ‘do’ from the start (Öztürk 2005:87-88n.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]] → noun incorporation

Doctor [_{VP} [_{NP} patient] patient+examination+do]

b. Ordering at PF:

examination ≤ do in V

patient ≤ V in V → patient ≤ examination

NP ≤ V in VP → patient ≤ V → patient ≤ patient

Consistent: patient – examination – do

I conclude that this approach makes some rather detailed correct 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 paper, 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 doesn’t it 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 and Vinokurova (2010) proposed for Sakha. The reason is because, at least in Tamil, bare plurals with existential readings presumably also remain in VP (Diesing, 1992), but those do get accusative case in Tamil.

(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 In press 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 ACC in Hungarian, as shown in (42). So our account of this fact about PNI in Sakha and Tamil should permit some plausible parameterization.¹⁸

(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 part of a more general phenomenon. In their analysis of morphological variation in languages with morphological noun incorporation, Baker, Aranovich and Golluscio (2005) propose the following parameter:

(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).

¹⁸ See notes 8 and 11 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.

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.1S 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, Aranovich, and Golluscio 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-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 3rd 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).’

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. Now 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 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.¹⁹ And there is some support for this. Whereas in

¹⁹ 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 had 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.

Tamil PNied NPs cannot be 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 vetták 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 11.) 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 transitive suffix is object agreement), and Sakha (PNied subjects of unaccusatives are not agreed with; Baker and 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 *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.²⁰

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 Anu [XP [VP child watch] NEG] Tense+AGR] → (NI)
[TP Anu [XP [VP child child+watch] NEG] Tense+AGR] → (V-to-T)
[TP Anu [XP [VP child child+watch] NEG] watch+Tense+AGR]

At PF we are allowed to delete the lower copy of the verb by (29b), given that the higher one 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.)

²⁰ However, Object-Neg-Verb-Aux-T order is also possible (and indeed preferred, see Kumar 2003:ch.2). This suggests that the main verb and the auxiliary can also move as a unit in Hindi.

(51) [TP Anu [XP [VP child child+----] NEG] watch+Tense+AGR]

And 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 section 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 are right:

(53) a. kitaab anu becegii, akhbaar nahiiN (Dayal 2011)

book Anu sell-FUT.3f newspaper not

‘Anu will sell books, not newspapers.’

b. kitaab anu bhii becegii.

book Anu also sell-FUT.3f

‘Anu will also sell books.’

c. kitaab anu zaroor becegii.

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. (45b-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 claim 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 the scrambling before, because the copy of ‘book’ adjoined to the verb survived to create a contradiction in linearization. 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^0 ? 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, for example, 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.²¹

²¹ 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

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 and 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

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.)

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 doesn't 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 root, as before. This explains the Tamil-Hindi difference in scrambling in terms of an independently observable difference between the languages.

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', 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 Spec, TP implies that V does not move to T in this language. So the assumption that V-to-T movement doesn't 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: they are different both in whether the verb can agree with the PNied NP and 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 is 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

Eithiopia. 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 wässəd-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.²²

- (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-ɨn 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)

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.

²² I thank Mengistu Amberber (personal communication) for insightful discussion of the Amharic facts. The sentences below that are not otherwise attributed come from him.

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) (WL:182, 187, Amberber 2005:299, Kramer 2010:9).

- (64) a. Ləmma *wiffā-u-n* j-aj-(əw)-al.
 Lemma dog-DEF-ACC 3mS-see-(3mO)-AUX(3mS)
 ‘Lemma sees the dog.’
- b. Ləmma *wiffā* 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 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 lög mən-əmm al-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 fäqqäd-ä-ll-ät.*
 officer-DEF soldier-DEF-ACC house-DEF that-3mS-go.IMPF 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, we expect the scrambling of PNied NPs to be possible in Amharic, as in Hindi but not Tamil. And that is confirmed: (67) shows a caseless bare NP object separated from the verb by an adverb and/or the subject; it still has the distinctive number neutral, lowest scope interpretation that is characteristic of PNI.

- (67) a. *Ləmma məs’əhaf əndəgəna əndəgəna gəzza.*
 Lemma book again again buy.PF-3mS
 ‘Lemma repeatedly bought book(s).’ (different books in different events)
- b. *məs’əhaf Ləmma əndəgəna əndəgəna gəzz-a, magazine gən mənnəm.*
 book Lemma again again buy.PF-3mS magazine not-any
 ‘Its 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 must be left to future research.²³

8. Concluding Remarks

In this paper, I have argued that there is more to pseudo-noun incorporation 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 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.

²³ 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.)

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 covertly to the linking verb (see (8), (10), (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* vs. *This bed was slept (*often) in*) (Hornstein and Weinberg, 1981) and any adjacency effects that hold between the two verbs in a restructuring construction (Rizzi, 1982) (pace V-to-T movement).²⁴ If these possibilities pan out, my account could have significant generality.

²⁴ 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 (24) 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.

However, it is not likely 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).²⁵ However, 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 (Kase??) 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 are adjacent because X is the complement or specifier of Y and neither moves away. Different kinds of adjacency then will have different formal explanations.

References

- Asher, R.E. 1982. *Tamil*. Amsterdam: North Holland Publishing Company.
- Asher, R.E., and Annamalai, E. 2002. *Colloquial Tamil*. London: Routledge.
- Baker, Mark. 1988. *Incorporation: a theory of grammatical function changing*. Chicago: University of Chicago Press.
- Baker, Mark. 1996. *The polysynthesis parameter*. New York: Oxford University Press.
- Baker, Mark. 2003. *Lexical categories: Verbs, Nouns, and Adjectives*. Cambridge: Cambridge University Press.
- Baker, Mark, Aranovich, Roberto, and Golluscio, Lucia. 2005. Two types of syntactic noun incorporation: noun incorporation in Mapudungun and its typological implications. *Language* 81:138-176.
- Baker, Mark. 2008. *The syntax of agreement and concord*. Cambridge: Cambridge University Press.
- Baker, Mark, and Vinokurova, Nadezhda. 2010. Two modalities of case assignment in Sakha. *Natural Language and Linguistic Theory* 28:593-642.
- Bittner, Maria. 1994. *Case, scope, and binding*. Dordrecht: Kluwer.

²⁵ I thank Guglielmo Cinque (personal communication) for posing to me the question of whether my account would extend to this adjacency effect in English.

- Bobaljik, Jonathan. 2002. A-Chains at the PF-Interface: Copies and "Covert" Movement. *Natural Language and Linguistic Theory* 20:197-267.
- Chierchia, Gennaro. 1998. Reference to kinds across languages. *Natural language semantics* 6:339-405.
- Chomsky, Noam. 1986. *Barriers*. Cambridge, Mass.: MIT Press.
- Chomsky, Noam. 1995. *The Minimalist Program*. Cambridge, Mass.: MIT Press.
- Chung, Sandra, and Ladusaw, William. 2004. *Restriction and Saturation*. Cambridge, Mass.: MIT Press.
- Dayal, Veneeta. 2001. Number marking and (in)definiteness in kind terms. *Linguistics and Philosophy* 27:393-450.
- Dayal, Veneeta. 2011. Hindi pseudo-incorporation. *Natural Language and Linguistic Theory* 29:123-167.
- Diesing, Molly. 1992. *Indefinites*. Cambridge, Mass.: MIT Press.
- Dixon, R.M.W. 1988. *A grammar of Boumaa Fijian*. Chicago: University of Chicago Press.
- Dobrovie-Sorin, Carmen, Blear, Tonia, and Espinal, M. Teresa. 2006. Bare nouns, number, and types of incorporation. In *Non-definiteness and plurality*, eds. S. Vogeleeer and Liliane Tasmovski, 51-81. Amsterdam: John Benjamins.
- Dvorák, Vera. 2010. On the syntax of ditransitive verbs in Czech. In *Formal Approaches to Slavic Linguistics 18: The Second Cornell Meeting 2009*, 161-177. Ann Arbor, MI: Michigan Slavic Publications.
- Emonds, Joseph. 1978. The verbal complex V'-V in French. *Linguistic Inquiry* 9:151-175.
- Farkas, Donka, and de Swart, Henriëtte. 2003. *The semantics of incorporation: from argument structure to discourse transparency*. Stanford, CA: CSLI Publications.
- Fox, Danny, and Pesetsky, David. 2004. Cyclic linearization of syntactic structure. *Theoretical Linguistics* 31:1-46.
- Haugen, Jason. 2009. Hyponymous objects and late insertion. *Lingua* 119:242-262.
- Hornstein, Norbert, and Weinberg, Amy. 1981. Case theory and preposition stranding. *Linguistic Inquiry* 12:55-92.
- Kapeliuk, Olga. 1994. *Syntax of the noun in Amharic*. Wiesbaden: Harrassowitz Verlag.
- Kayne, Richard. 1994. *The antisymmetry of syntax*. Cambridge, Mass.: MIT Press.
- Kiss, Katalin. 2002. *The syntax of Hungarian*. Cambridge: Cambridge University Press.
- Kornfilt, Jaklin. 1997. *Turkish*. New York: Routledge.
- Kramer, Ruth. 2009. Definite markers, phi-features, and agreement: a morphosyntactic investigation of the Amharic DP, UCSC: Ph.D. dissertation.
- Kunar, Rajesh. 2003. The syntax of negation in Hindi, University of Illinois - Urbana - Champaign.
- Larson, Richard. 1988. On the double object construction. *Linguistic Inquiry* 19:335-392.
- Leslau, Wolf. 1995. *Reference grammar of Amharic*. Wiesbaden: Harrassowitz.
- Lidz, Jeffery. 2006. The grammar of accusative case in Kannada. *Language* 82:10-32.
- Longobardi, Giuseppe. 1994. Reference and proper nouns. *Linguistic Inquiry* 25:609-666.
- Marantz, Alec. 1988. Clitics, morphological merger, and the mapping to phonological structure. In *Theoretical morphology*, eds. Michael Hammond and Michael Noonan, 253-270. New York: Academic Press.

- Massam, Diane. 2001. Pseudo noun incorporation in Niuean. *Natural Language and Linguistic Theory* 19:153-197.
- McFadden, Thomas. 2004. The position of morphological case in the derivation, University of Pennsylvania: Ph.D. dissertation.
- Mithun, Marianne. 1984. The evolution of noun incorporation. *Language* 60:847-893.
- Mohanan, Tara. 1995. Woodhood and lexicality: noun incorporation in Hindi. *Natural Language and Linguistic Theory* 13:75-134.
- Napoli, Donna Jo. 1981. Semantic interpretation vs. lexical governance: clitic climbing in Italian. *Language* 57:841-887.
- Nunes, Jairo. 2004. *Linearization of chains and sideward movement*. Cambridge, Mass.: MIT Press.
- Öztürk, Balkiz. 2005. *Case, referentiality and phrase structure*. Amsterdam: John Benjamins.
- Pollock, Jean-Yves. 1989. Verb movement, Universal Grammar, and the structure of IP. *Linguistic Inquiry* 20:365-424.
- Rizzi, Luigi. 1982. *Issues in Italian syntax*. Dordrecht: Foris.
- Sarma, Vaijayanthi. 2009. Case, agreement and word order: Issues in the syntax and acquisition of Tamil, MIT: Ph.D. dissertation.
- Schiffman, Harold. 1999. *A reference grammar of spoken Tamil*. Cambridge: Cambridge University Press.
- Stowell, Timothy. 1981. Origins of phrase structure, MIT: Ph.D. dissertation.
- Van Geenhoven, Veerle. 1998. *Semantic incorporation and indefinite descriptions: semantic and syntactic aspects of noun incorporation in West Greenlandic*. Stanford, CA: CSLI Publications.
- Vinokurova, Nadezhda. 2005. Lexical categories and argument structure: a study with reference to Sakha, University of Utrecht: Ph.D dissertation.
- Wurmbrand, Susanne. 2007. How complex are complex predicates? *Syntax* 10:243-288.