Two Kinds of Structural Noun Incorporation*

Abstract: This paper proposes a novel solution to the problem of noun incorporation constructions in which both an incorporated noun and a nominal double, hyponymous object, or stranded modifier are present. Such doubling constructions have been difficult to reconcile with a syntactic approach to noun incorporation. I propose that doubling constructions arise from an underlying structure in which the incorporated nominal and the double are merged as a constituent. In doing so, I argue against the parameterized φ-deletion analysis proposed in Baker et al. (2005), pointing out some shortcomings of their analysis. This proposal also ties together doubling and stranding into a unified phenomenon, a result I show is supported by cross-linguistic evidence. I also tie doubling/stranding in with the availability of NI with unaccusatives and show how this also falls out from the current proposal. Thus, this proposal makes a strong testable prediction on the distribution of the properties of NI found in natural language.

1 Introduction

There has been no shortage of discussion on the analysis of noun incorporation (NI) in polysynthetic languages (Baker 1988; Baker 1996; Baker et al. 2005; Haugen 2008; Johns 2007; Mithun 1984; Mithun 1986; Rosen 1989; Sadock 1980; Sadock 1985; Sadock 1986; Van Geenhoven 1995; Van Geenhoven 2002). (See also the papers in Mathieu et al. 2009.) What has become apparent from these numerous earlier studies is that NI displays an impressive range of cross-linguistic variation. The current discussion focuses on variation in doubling, stranding, and the availability or lack thereof of NI with unaccusatives. I propose a structural explanation in which the incorporated element, hereafter referred to as the *incorporated noun*, IN, for convenience (though see the exchange in Kroeber 1909; and Sapir 1911 for discussion on this matter.), and the full DP double are merged as a constituent. The IN undergoes NI, forming part

of the verbal complex and the DP double either remains in situ or moves to a discourse related position in the left periphery, though the fate of the DP is not the primary focus of this paper (see Ritter & Rosen 2005; Russell & Reinholtz 1996; Russell & Reinholtz 1997, etc for the location of nominals in discourse configurational languages). I argue that stranding reduces to doubling with an elided noun. Thus, the term 'stranding' may not be the best term to describe this phenomenon, but I retain it here as it is the generally accepted term in the literature. Furthermore, I suggest that the availability of NI with unaccusatives or lack thereof also reduces to the structures argued for here.

I examine data mainly from Oneida and Onondaga (two Northern Iroquoian languages closely related to Mohawk) and Mapudungun. Since I intend to show a cross-linguistic correlation between doubling and stranding, I also bring in data from a range of other languages with NI to establish this generalization. Notably, I also discuss Southern Tiwa. The data from Northern Iroquoian is based on my own field work and on published sources. Data from all other languages is taken from other published sources as noted.

I adopt for this paper the single-engine hypothesis, whereby all word formation takes place in the syntactic component (Halle & Marantz 1993; Julien 2002; Marantz 1997; Marantz 2001; Starke 2003; Starke 2009).[i] Specifically, lexical items, which are composed of feature bundles and roots, are built up entirely in the syntax. The actual morphemes are inserted at PF.[ii] There is no pre-syntactic word formation process as such, thus obviating discussions on the lexical versus syntactic status of NI (see the references at the beginning of this section).

The remainder of this paper is structured as follows. Section 2 discusses the properties of NI that I will account for in this discussion: namely, doubling, stranding and NI with unaccusatives. Section 3 summarizes previous research on these issues and points out some

problems with the analyses. Section 4 introduces the machinery that I propose, which I will argue can account for the cross-linguistic facts of NI detailed in section 2 and account for the shortcoming of the previous analyses discussed earlier. Section 5 presents detailed analyses of the patterns of NI in Northern Iroquoian and in Mapudungun. Section 6 is a brief conclusion.

2 Properties of NI

NI has been identified as a productive phenomenon in numerous languages for well over a century now (Cuoq 1866; Kroeber 1910; Sapir 1911). For the present purposes, NI can be roughly defined as a construction in which a nominal expression appears inside the verbal complex (Gerdts 1998; Massam 2009).[iii] Consider the following Onondaga example (Woodbury 1975). [iv, v]

(1) a. waʔhahninúʔ neʔ oyɛ́kwaʔ

waʔ-	ha-	hninu	-ʔ	neʔ	o-	yɛkw	-aʔ
FACT-	3.SG.M.AG-	buy-	PUNC	NE	3.SG.NT-	tobacco-	NFS

'He bought the tobacco.'

b. waʔhayɛ́kwahninúʔ

waʔ-	ha-	yɛkw-	a-	hninu	-ʔ
FACT-	3.SG.M.AG-	tobacco-	EPEN-	buy-	PUNC

'He bought tobacco.'

In (1)a, the direct object of the verb appears as an independent full DP and is morphologically complex. In (1)b, however, the object is stripped of its functional morphology and is incorporated into the verbal complex. Numerous authors have discussed the morphological, syntactic, semantic and pragmatic properties of NI (Baker 1988; Barrie 2011; Dayal 2011; Farkas & de Swart 2003; Gerdts 1998; Massam 2009; Mithun 1984; Mithun & Corbett 1999; Van Geenhoven 2002) so I leave the reader to consult the references for more details. What's important to glean from the examples above is that the IN is typically reduced in structure compared to the unincorporated form.

2.1 Typology of NI

Since the earliest studies on NI, a plethora of descriptions of a wide variety of languages have brought to light several cross-linguistic similarities, beckoning a unified analysis. Mithun's (1984) seminal cross-linguistic study on NI set the stage for much future research on the typological properties of NI. I review here the classification set out by Mithun, where she proposes an implicational hierarchy of the types of NI, labelled types I, II, III, and IV, such that if a given language has one type of NI on the hierarchy, then it must have all lower numbered types. Type I NI involves lexical compounding and may exhibit limited productivity. The IN typically satisfies an internal argument slot, thereby preventing the expression of a full DP argument. Various Oceanic languages, for instance, exhibit type I NI. I will not touch on this type of NI much in this paper, but rather concentrate on the types II, III and IV, which I describe in more detail next.

Type II NI involves the manipulation of Case such that a full DP, such as an oblique or a possessor, can take the place of the IN and function syntactically as a direct object, once the direct object has undergone NI. Mithun (1984, ex (49)), citing Bricker (1978), offers the following example from Yucatec Mayan.

(2) a. k- in- č'ak -Ø -k če' ičil in-kool
INCOMP- I- chop -it -IMPF tree in my-cornfield
'I chop the tree in my cornfield.'

b. k- in- č'ak - če' -t -ik in-kool
INCOMP- I- chop -tree -TR -IMPF my-cornfield
'I clear my cornfield.'

In (2)a, the direct object *če'* ('tree') is a free-stranding nominal expression, assumedly a full DP. The sentence is accompanied by a locative expression, in which the nominal receives Case from the preposition. In (2)b, the form *če'* has undergone incorporation, thereby leaving accusative

Case unassigned (the tacit assumption being that INs don't need Case). The locative expression is now free to take the role of the direct object and so receives Case directly from the verb rather than from a preposition. Mithun also discusses possessor raising under the rubric of type II NI, which I discuss in more detail below. I do not present a general analysis for type II NI here, but do touch on possessor raising as it is important to the analysis. Examples of possessor raising will be given later.

Type III NI involves the manipulation of discourse properties. Here, the IN can be subsequently referred to or be used to represent backgrounded information. This class corresponds roughly to Rosen's (1989) *compound incorporation* and to Chung & Ladusaw's (2004) *saturation*, in which the IN satisfies (or saturates) an argument position of the verb. This type of NI cannot appear with additional modifiers external to the IN or with DP doubles. Baker *et al.* show that NI in Mapudungun is of this type. The following example shows that doubling and stranding are not available in Mapudungun (Baker et al. 2005 adapted from ex (9)).

(3) a. Juan ngilla-waka-n
Juan buy-cow-IND.3.SG.SUBJ
'Juan bought a cow.'

b. * Pedro ngilla-waka-y tüfachi (waka)
Pedro buy-cow-IND.3.SG.SUBJ this (cow)
('Pedro bought this cow.')

Type IV NI corresponds to *classificatory incorporation* in Rosen's description, and to *restriction* in Chung and Ladusaw (2004), where the IN restricts, but does not saturate the argument taking property of the verb. Here, the IN can be accompanied by additional modificational material such as demonstratives, relative clauses or adjectives. The IN can also be doubled, either by an exact double or by a more specific DP, although doubling by and exact double is perceived as repetitive, at least in Onondaga, a point I return to below. NI in Northern

Iroquoian languages typically instantiates type IV. Consider the following Onondaga example (Glora Williams, Nora Carrier, speakers). Here, the IN *naskw* ('animal') is doubled by the full DP *neˀ gwíhsgwihs* ('pig').

(4) waˀgnasgwahní:nǫˀ neˀ gwíhsgwihs

waˀ-	k-	naskw-	a-	hninǫ-	ˀ	neˀ	kwihskwihs
FACT-	1.SG.AG -	animal-	EPEN-	buy-	PUNC	NE	pig

'I bought a pig.'

Baker et al. (2005) review NI data from Mohawk, Mapudungun (an language of uncertain genetic affiliation spoken in Chile and Argentina), and Southern Tiwa (Kiowa-Tanoan) and draw a three-way distinction in terms of types of NI. As the analysis I present builds on their work, I review here data from these three languages, adding data from two other Northern Iroquoian languages, Oneida and Onondaga, to the Mohawk data.[vi] Most of the data in this discussion are cited from the sources noted, except Onondaga and Oneida, much of which comes from my own field work in addition to other sources.

2.2 Northern Iroquoian

NI in Northern Iroquoian was introduced above, example (1). It involves the appearance of a nominal component inside the verbal complex.[vii] These examples above also illustrate that both NI and non-NI forms are available. Similar examples can be found for other Northern Iroquoian languages.

A well-known property of NI in Northern Iroquoian is the ability of the IN to appear with a full DP double, as the following Onondaga example, repeated from above, illustrates. In such cases, the full DP is hyponymous to the IN.

(5) waˀgnasgwahní:nǫˀ neˀ gwíhsgwihs

waˀ-	k-	naskw-	a-	hninǫ-	ˀ	neˀ	kwihskwihs
FACT-	1.SG.AG-	animal-	EPEN-	buy-	PUNC	NE	pig

'I bought a pig.'

Related to the property of doubling is modifier stranding, in which an adjectival phrase or relative clause or the like modifies an IN. I illustrate this with data from Onondaga (Nora Carrier, Gloria Williams, speakers) and Mohawk (Baker 1996 p. 308, ex (52c,d)) in examples (6) and (7), respectively.

(6) a. waʔgnakdahní:nǫʔ nęgeʔ
waʔ- k- nakt- a- hninǫ- ʔ nękeʔ
FACT- 1.SG.AG- bed- EPEN- buy- PUNC DEM
'I bought that bed.'

b. John wahanakdahní:nǫ́: ahsęh niyǫh
John waʔ- ha- nakt- a- hninǫ- ʔ ahsęh niyǫh
John FACT- 3.SG.M.AG- bed- EPEN- buy- PUNC three CL
'John bought three beds.'

(7) a. Akwéku ʌ- ye- nakt- a- núhwe'- ne'
all FUT- 3.SG.F.AG- bed- EPEN- like- PUNC
'She will like all the beds.'

b. Λ- ye- nakt- a- núhwe'- ne' ne thetʌ́re' wa'khnínu'
FUT- 3.SG.F.NOM - bed- EPEN- like- PUNC NE yesterday I.bought.it
'She will like the bed that I bought yesterday.'

NI is also freely available with unaccusatives in Northern Iroquoian (see Rice 1991 for a discussion of NI as an unaccusativity diagnostic). Consider the following Onondaga examples (Woodbury 2003).

(8) a. ohahaná:węh
o- ahah- a- nawę- h
3.SG.NT.PAT- road- JOIN- wet- STAT
'The road is wet.'

b. waʔgaihwí:nyųʔ
waʔ- ka- Rihw- inyų -ʔ
FACT- 3.SG.NT.AG- matter- arrive -PUNC
'The news arrived.'

c. ęgaędyenę́ʔnhaʔ
ę- ka- Ręt- yenę -ʔ -nhaʔ
FUT- 3.SG.NT.AG- log- fall -INCH -PUNC
'The will log fall over.'

d. gojyasgwiyänų̨hwaks
go- tyaskwiR- nų̨hwak -s
3.SG.F.PAT- ankle- hurt -HAB
'Her ankle hurts.'

Note in these examples the NI does not require the presence of a double or a raised possessor, although observe that the last example shows agreement with the possessor, which I discuss next.

Northern Iroquoian languages exhibit a kind of possessor raising construction (see also Michelson 1991 for Oneida). Consider the following Onondaga data (Nora Carrier, Gloria Williams, speakers). Agreement with the possessor is obligatory, as (9)b shows. This construction is available only with inalienably possessed nouns, regardless of the presence or absence of agreement, (9)c-d.[viii]

(9) a. waʔkhenętshohaeʔ neʔ Mary
waʔ- khe- nętsh- ohae- ʔ neʔ Mary
FACT- 1.SG.AG:3.NMS.PAT- arm- wash- PUNC NE Mary
'I washed Mary's arm.'

b. * waʔgnętshohaeʔ neʔ Mary
waʔ- k- nętsh- ohae- ʔ neʔ Mary
FACT- 1.SG.AG- arm- wash- PUNC NE Mary
('I washed Mary's arm.')

c. * waʔkhenakdohaeʔ neʔ Mary
waʔ- khe- nakt- ohae- ʔ neʔ Mary
FACT- 1.SG.AG:3.NMS.PAT- bed- wash- PUNC NE Mary
('I washed Mary's bed.')

d. * waʔgnakdohaeʔ neʔ Mary
waʔ- k- nakt- ohae- ʔ neʔ Mary
FACT- 1.SG.AG- bed- wash- PUNC NE Mary
('I washed Mary's bed.')

As mentioned above, the mechanism of agreement will not play a large role in this discussion; nevertheless, it impinges on the current analysis and plays an integral role, so it behooves me to mention the basic facts here. Baker (1996) originally proposed in his Morphological Visibility Parameter that agreement and IN are in complementary distribution.[ix]

The following Onondaga examples illustrate this property (Nora Carrier and Gloria Williams, speakers).

(10) a. gwiyänǫ́hweʔs
k- wiR- nǫ́hweʔ- s
1.SG.AG- baby- like PUNC
'I like the baby.'

b. khenǫ́hweʔs neʔ owiyäʔ.
khe- nǫ́hweʔ- s neʔ o-wiR-aʔ
1.SG.AG:3.NMSG.PAT- like PUNC NE AGR-baby-NFS
'I like the baby.'

Northern Iroquoian, however, does show agreement in some circumstances, aside from agreement in inalienable possessor-raising constructions with NI discussed above. Koenig & Michelson (2008) offer the following Oneida data, where agreement is obligatory.

(11) a. waʔ- shakoti- ksaʔt- áks(ʌ)- a- ht- eʔ
FACT- 3.AG:3.SG.F.PAT- child- be.bad-EPEN- caus- PUNC
'They spoiled her, the child.'

b. waʔ- khey- atʌloʔsl- úny- ʌ- ʔ
FACT- 1.SG.AG.3.SG.F.PAT- friend- make- BEN- PUNC
'I made friends with her'

These agreement facts will not play a significant role in the analysis presented below. Rather, I focus on the properties of stranding and doubling in this paper. Nevertheless, I wish to make clear the generalization pointed out by Baker (1996) that NI and agreement are in complementary distribution. I will show below that agreement in the examples above arise by independent means.

To summarize, Northern Iroquoian languages exhibit classifier NI, where an overt hyponymous full DP can appear in addition to the IN. NI can take place with the single argument of unaccusative predicates. Possessor stranding is permitted along with stranded or bare modifiers. Finally, agreement with the object is absent in many instances of NI; however, it is

obligatory with possessor raising and in a few other circumstances. I will address this point of variation in more detail later on.

2.3 Mapudungun

As discussed in Baker *et al*. (2005), Mapudungun does not allow doubling or stranding, and does not exhibit agreement with the IN (see also Harmelink 1992). Also, Mapudungun does not allow NI with unaccusatives, unless it is accompanied by possessor raising (Baker et al. 2005).[x] Consider first doubling and stranding. The following examples, repeated from above, show that doubling and stranding are not permitted in Mapudungun (Baker et al. 2005, ex (5) and (6b), respectively).

(12) a. Juan ngilla-waka-lel-fi-y
Juan buy-cow-ben-3.obj-ind.3.sg.subj
'Juan bought a cow for him.'

b. * Pedro ngilla-waka-y tüfachi (waka)
Pedro buy-cow-IND.3.SG.SUBJ this (cow)
('Pedro bought this cow.')

Unlike Iroquoian languages, Mapudungun has overt agreement with 3rd person neuter arguments. This agreement disappears, however, in NI construction, as the following examples illustrate (Baker et al. 2005 adapted from ex (9)).

(13) a. ngilla-fi-ñ ti waka
buy-3.OBJ-IND.1.SUBJ the cow
'I bought the cow.'

b. * ngilla-waka-fi-n
buy-cow-3.OBJ-IND.1.SUBJ
('I bought a cow.')

Finally, the following examples show that NI is illicit in unaccusatives, unless accompanied by possessor stranding (Baker et al. 2005, ex (65)).

(14) a. * lüf-ruka-y
burn-house-IND.3.SUBJ
('The house burned down.')

b. Juan lüf-ruka-y
Juan burn-house-IND.3.SUBJ
'Juan's house burned down.'

To summarize, Mapudungun does not allow doubling or modifier stranding with NI and object agreement is absent in NI constructions. NI is not permitted with unaccusatives, unless accompanied by possessor stranding. I turn now to NI in Southern Tiwa.

2.4 Southern Tiwa[xi]

Southern Tiwa exhibits a complex set of restrictions on NI. With inanimate objects, NI is obligatory, but with animate objects, the obligatoriness of NI depends on number, whether the object is human or not, and whether the object is accompanied by modifiers or not. Specifically, singular human objects optionally undergo NI, while plural objects obligatorily undergo NI, unless the plural human object is modified, then it is optional. The pattern is nearly the opposite for non-human animate objects. In the singular, NI is optional when modifiers are present and optional otherwise. In the plural, NI is obligatory. See Allen et al. (1984) for further details and examples.

As just mentioned, Southern Tiwa allows INs to host stranded modifiers in certain situations, as the following examples show (Allen et al. 1984: p. 293f, ex (1), (7)).

(15) a. ti- shut- pe- ban
1.SG.A- shirt- make- PST
'I made the/a shirt.'

b. yede ti- shut- pe- ban
that 1.SG.A- shirt- make- PST
'I made that shirt.'

Baker et al. (2005) also show that while stranding is permitted in Southern Tiwa, doubling is not based on the following contrast (Baker et al. 2005, ex (23a, b)).[xii]

(16) a. yede a- diru- k'ar- hi
that 2.SG.A- chicken- eat- FUT
'You will eat that chicken.'

b. * yede diru-de a- diru- k'ar- hi
that chicken-SG 2.SG.A- chicken- eat- FUT
('You will eat that chicken.')

It is not clear, however, that the ungrammaticality of (16)b is attributed to the presence of doubling. Rosen (1989) suggests that the ungrammaticality of (16)b might be due to the fact that the doubled noun is identical to the IN. That is to say, the independent noun does not contribute any new information to the sentence and so is judged unacceptable. Indeed, in an out-of-the-blue context, an NI construction in Onondaga in which the root of the double is identical to that of the IN is generally deemed unacceptable because of the unnecessary repetition of information.

(17) # waʔgenakdahní:nǫʔ neʔ ganakdaʔ
waʔ- k- nakt- a- hninǫ- ʔ neʔ ka- nakt- aʔ
fact- 1.SG.AG- bed- EPEN- buy- PUNC NE AGR- bed- SUF
'I bought a bed.'

Like the Northern Iroquoian languages, Southern Tiwa also allows NI in unaccusatives without the benefit of a raised possessor. Consider the following examples (Allen et al. 1984: 300, ex. (59), (61)). The single argument of these verbs obligatorily incorporates if it is inanimate. An animate subject of an unaccusative remains obligatorily unincorporated, in line with the idiosyncratic properties of NI in Southern Tiwa described above.

(18) a. I- k'uru- k'euwe -m
B- dipper- old -PRES
'The dipper is old.'

b. We- fan- lur -mi
C.NEG- snow- fall.PL -PRES.NEG
'It is not snowing.'

Finally, Southern Tiwa also exhibits full agreement with the IN, in contrast to Northern Iroquoian as described above. Consider the following example. The agreement marker, A, references the noun class and number of the object (see footnote xi).

(19) Yede a- seuan- mũ -ban
that 2.SG.A- man- see -PST
'You saw that man.'

To summarize, Southern Tiwa allows stranded modifiers with NI. Baker et al. suggest that doubling is not permitted; however, I have suggested, following Rosen's discussion, that this claim may be hasty. Like Northern Iroquoian, Southern Tiwa allows NI with unaccusatives but does not require a raised possessor as in Mapudungun. Finally, agreement is obligatory with NI in Southern Tiwa, where it is generally absent in Northern Iroquoian save the few instances discussed above.

2.5 The Link between Doubling and Stranding

As Rosen (1989) points out for Mohawk, the phenomenon of stranding is independent of NI. To be sure, consider the following paradigm. Observe that the demonstrative can be stranded whether NI takes place or not. Rosen thus argued that stranded modifiers do not provide good evidence for Baker's stranding analysis. Rather, both she and I put forth that stranded elements should receive a uniform analysis independent of NI.

(20) a. John wahanasgwahní:nǫʔ neʔ gwíhsgwis
John waʔ-ha-naskw-a-hninǫ-ʔ neʔ kwihskwis
John FACT-3.SG.AG-animal-JOIN-buy-PUNC NE pig
'John bought a pig.'

b. John wahanasgwahní:nǫʔ nęgeʔ
John waʔ-ha-naskw-a-hninǫ-ʔ nękeʔ
John FACT-3.SG.AG-animal-JOIN-buy-PUNC this
'John bought this animal.'

c. John wahahní:nǫʔ nęgeʔ
John waʔ-ha-hni:nǫ-ʔ nękeʔ
John FACT-3.SG.AG-buy-PUNC this
'John bought this.'

Although Baker *et al.* argue that the distinction holds for Southern Tiwa, both Rosen and I suggest that it is difficult to draw a firm conclusion on the basis of two examples, especially when an alternative explanation exists. In this section, I examine doubling and stranding in a variety of languages for which the relevant data can be found and show that both are either present or both are absent.

Caddo (Caddoan) has robust NI and exhibits both doubling and stranding. Consider the following example (Mithun, 1984: 865, citing Chafe 1977).

(21) kas-sah-kú-n-dân-na-'na' kišwah.
should-2.AG-1.BEN-DAT-granular.substance-PL-make parched.corn

nas-sah-ú-n-dân-na- 'nih-dh
when.FUT-2.AG-1.BEN-DAT-gran.subs.-PL-make-PERF

sínátti' ci:yáhdi'a'.
then I.will.go.on

'You should make me some parched corn. When you have made it (the granular substance) for me, then I will go on.'

Now consider the following examples, where a determiner has been stranded, a phenomenon which is available independently of NI.

(22) a. ná: kan-núh-'a'
that water-run.out-will
'That water will run out.'

b. ná: 'iyúh'a'
that run.out.will
'That will run out.'

Other languages that allow both stranding and doubling include Hopi,[xiii] shown in (23) (Gronemeyer 1996, ex (22) and (26), respectively) and Rembarnga,[xiv] shown in (24), (McKay

1975, 3.4-3 (p. 291), 3.4-25 (p. 296), respectively). The Rembarnga data also show that stranding is available independently of NI.

(23) a. piikuyi-t paa-mòy-ta
milk-ACC water-have.in.mouth-CAUS
'He took a mouthful of milk to hold in his mouth.'

b. pas wuu-wupa-t angap-soma
really PL-long-ACC cornhusk.wrapper-tie
'She tied really long husks in bundles.'

(24) a. yar-kaṛi-peṭeʔ-miɲ nənta-Ø-ma
3.SG.OBJ.1.PL.TR.SUBJ-wounded-carry-PST.PUN that-NZLR-?
'We carried that wounded man.'

b. kaṭaʔ-Ø par-kaṭaʔ-ta-ŋiɲ
paperbark-NZLR 3.SG.OBJ.3PL.TR.SUBJ-paperbark-STAND.(CAUS)-PST.CONT
'They would spread paperbark (on the ground).'

c. yanta-yiʔ nənta-Ø-ma yar-na-Ø
1.AUG.PRON-ERG that-NOM-MA 3.MIN.OBJ.1.AUG.AG-see-PST.PUNC
'We saw that [place].'

Finally, I note that there are languages such as Chukchi, which Spencer (1995) reports resists both doubling and modifier stranding. Chukchi does, however, have possessor raising constructions with inalienably possessed nouns. Spencer reports the following data from Skorik (1948: 74).

(25) nə-pilgə-cwi-qin peneelʔ-ən
3.PL.SUBJ-throat-slit-3.SG.OBJ corpse-ABS
'They slit the corpse's throat.'

In contrast to Mapudungun, however, Chukchi readily allows NI with unaccusative subjects without the benefit of possessor raising. Again Spencer (1995: 451, ex (32b), (33b)) reports the following data from the literature. Spencer notes, though, that the agreement present here is a kind of default agreement which is also found with expletive subjects.

(26) a. ŋejə-k ʔele-lgə-gʔi
hill-LOC snow-thaw-3.SG.S
'The snow thawed on the hill.'

b. terk-amecat-gʔe
sun-set-3.SG.S
'The sun set.'

Baker et al. (2005) list Nahuatl as a type III language according to Mithun's typology. Indeed, Mithun (1984) gives examples of types I to III NI in Nahuatl; however, no negative evidence is given to show that type IV NI does not appear in this language. Nevertheless, Merlan (1976) gives no examples of NI with either doubling or stranding, aside from body-part incorporation, which we address separately (Merlan 1976, ex (25a)). NI with unaccusatives is available; however, the IN gives an adverbial reading to the event (Merlan 1976, ex (28a-b)). This is broadly in line with the Mapudungun facts except that NI with unaccusatives is simply unavailable. Here, the INs in the unaccusative constructions are not themes, but are rather adverbial elements of sorts. Thus, what Mapudungun and Nahuatl appear to have in common is that incorporation of the theme is unavailable in unaccusatives, a conclusion Baker *et al.* also make.[xv]

(27) Nečikšiwiteʔki
3.SG-1.SG-foot-hit
'It hit my foot.'

(28) a. Tlakatl neski
man 3.SG-appeared
'The/a man appeared.'

b. Tlakaneski
3.SG-man-appeared
'He appeared a man, appeared manly.'

Thus, although it is clear that more research needs to be done on the cross-linguistic properties of NI with regards to doubling and stranding (see footnote xv), a clear pattern emerges

suggesting that languages with NI either permit both doubling and stranding or lack both of these properties.[xvi] Deviations from this observation can be explained by language-specific properties. Again, I beg the reader's patience for the explanation of possessor stranding constructions, which I address separately below.

2.6 Summary

This section has described the properties of NI in a number of languages. Both Northern Iroquoian and Southern Tiwa allow NI with unaccusatives and also allows stranding and, in Northern Iroqouian, doubling. Mapudungun allows neither stranding nor doubling and can have NI with unaccusatives only when stranding a possessor. At the end of this section, I suggested a link between stranding and doubling – namely, that languages with NI either permit both or lack both, and that deviations from this generalization can be explained by independent properties of the language. The following chart summarizes these properties, which will serve as the basis for the subsequent analysis. The blank cells indicate that the relevant data is not available.

Language	NI with doubling	NI with stranding	Stranding, independent of NI	NI with unaccusatives	Possessor raising
Northern Iroquoian	yes	yes	yes	yes	yes
Southern Tiwa	?	yes			
Caddo	yes	yes	yes		
Hopi	yes	yes			
Rembarnga	yes	yes	yes		
Mapudungun	no	no		only with possessor raising	yes
Chukchi	no	no		yes, with expletive subjects	yes
Nahuatl	no evidence	no evidence		only with an adverbial reading	

In the next section I discuss some previous approaches to these facts and outline some problems with these analyses.

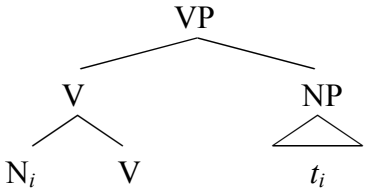
3 Previous Approaches

It is impossible to summarize the history of the analysis of NI in a single article, so I concentrate here on two recent approaches in the generative literature that take a non-lexicalist approach. The first is Baker's (1988) syntactic analysis of NI, refined in his (1996) Polysynthesis Parameter. The second is Baker *et al.*'s (2005) approach to NI, which proposes parametric deletion of φ-features. I also consider some of issues raised in Rosen's (1989) lexicalist proposal to NI, and to the arguments raised between Baker and Rosen.

3.1 The Polysynthesis Parameter

Baker (1988), later refined in Baker (1996), proposed a syntactic account of NI, whereby the nominal head of the object of the verb undergoes head movement and adjoins to the verbal head. Under the assumption that the verb takes a bare NP as complement, N-to-V raising takes place in compliance with the Head Movement Constraint (Travis 1984), and thus appears no different from other head-to-head raising processes under the microscope at the time (Koopman 1984; Pollock 1989).

(29)

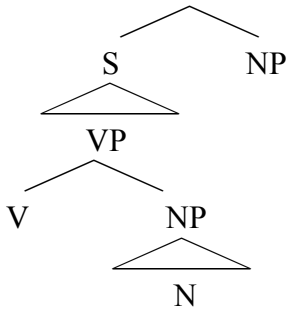


Doubling and stranding were originally problematic for syntactic accounts of NI since the double and the IN are taken to originate in the same place. Whether modifier stranding is a distinct phenomenon or not is quite controversial. Rosen (1989) argues that modifiers can appear in Mohawk independently of NI (Rosen 1989: 301):

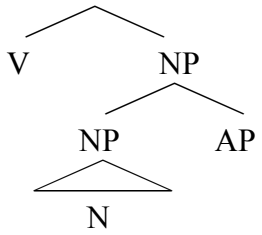
> "If one were to subscribe to a syntactic account of NI, stranding of modifiers in an NI construction and the independent existence of null-headed NPs would require two different accounts. In a syntactic account, the stranded modifiers are created by the movement of the head out of the NP, thereby leaving the modifiers behind. Stranding is then directly tied to syntactically derived NI. However, in the lexical theory proposed here, null-head modifiers in NI constructions and those independent of NI constructions both have the same source."

To account for stranded modifiers, Baker (1988) assumes that modifiers, which include demonstratives, are adjoined to the NP. Since the adjoined element does not project any new structure, the N can still raise to V without interfering with head movement. Baker's (1988; 1996) solution for doubling is to base generate the double in a position adjoined to the sentence. Thus, doubled nominals are argued to be in adjoined, clause-peripheral positions, and thus do not interfere with N-to-V head movement, (30)a. Stranded material (represented as AP in the example below) is adjoined to the nominal complement to the verb itself, and thus also does not interfere with incorporation, (30)b. Nevertheless, an analysis for stranding along the lines of (30)a is still possible, and is in fact discussed in Baker (1996).

(30) a.



b.



Consider, now, the derivation of a typical example with doubling, example (4), repeated here.

(31) waʔgnasgwahní:nǫʔ neʔ gwíhsgwihs

waʔ-	k-	naskw-	a-	hninǫ-	ʔ	neʔ	kwihskwihs
FACT-	1.SG.NOM -	animal-	EPEN-	buy-	PUNC	NE	pig

'I bought pig.'

Under Baker's approach, the nominal *neʔ gwíhsgwihs* ('pig') is externally merged in as an adjunct to the clause, as in (30)a, above. The nominal root undergoes head movement and incorporates into the verbal head.

Turning to *wh*-movement, Baker (1996: 66ff) showed that Mohawk has canonical *wh*-movement, in which the *wh*-phrase originates in argument position and raises to the left periphery. It is crucial that the *wh*-phrase be merged in argument position, since A-bar movement from an adjoined position is impossible. This predicts that *wh*-movement is incompatible with NI constructions under the model in (30).[xvii] Observe in (32)b-d that *wh*-movement and NI can co-occur (contra Baker, 1996).

(32) a. Gaęnigaeʔ waʔenasgwahní:nǫ ʔ?
kaęnikáeʔ waʔ- s- naskw- a- hninǫ -ʔ
which FACT- 2.SG- animal- JOIN- buy -PUNC
'Which animal did you buy?'

b. nwadęʔ waʔsnasgwahní:nǫʔ
nwadęʔ waʔ- s- naskw- a- hninǫ- ʔ
what FACT- you- animal- JOIN- buy- PUNC
'What did you buy?' (kind of animal presupposed)

c. gaęnigáeʔ gwíhsgwihs waʔsnasgwahní:nǫʔ
kaęnikáeʔ kwihskwihs waʔ- s- naskw- a- hninǫ- ʔ
which pig FACT- 2.SG- animal- JOIN- buy- PUNC
'Which pig did you buy?'

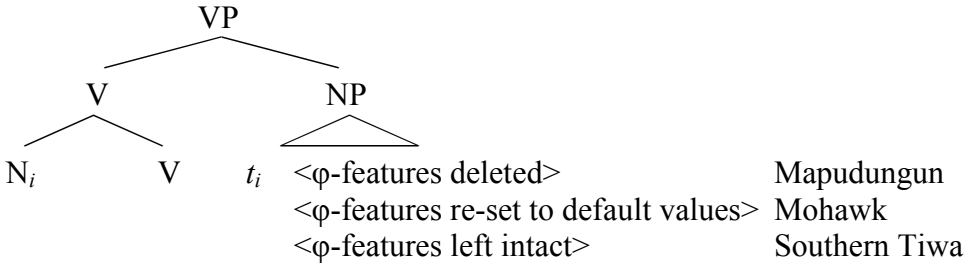
d. Gaęnigaeʔ gwíhsgwis shé:heʔ Mary waʔenasgwahní:nǫ ʔ?
which pig you.think Mary she.animal-bought.it
'Which pig do you think Mary bought?'

Based on these results, I reject the model for NI in Baker (1988, 1996) and consider Baker *et al.* (2005), which directly addresses in detail the variation observed in NI constructions discussed in section 2.

3.2 Baker et al. 2005: Parameterized φ-Deletion

Baker *et al.* capture the difference between Mapudungun, Southern Tiwa, and Mohawk by arguing for parameterized φ-feature deletion in the copy of a moved element. Baker *et al*. propose that the φ-features of the copy can either remain, be reduced to default values, or be erased. Specifically, in Mapudungun, φ-features are deleted upon N-raising, thus completely obviating agreement in that language. In Mohawk, φ-features are reduced to default values, giving rise to default agreement (which happens to be Ø, resulting in the appearance of no agreement). And in Southern Tiwa, the φ-features of the copy of N-raising remain, thus giving rise to full agreement in NI constructions.

(33)



The parameterized φ-feature deletion analysis also captures the other differences in NI described in Baker *et al*. Recall that NI is available with unaccusatives in Mohawk and Southern Tiwa, but impossible with unaccusatives in Mapudungun (unless the IN is possessed). If the φ-features are completely deleted, then there will be no features available to undergo Agree with Infl in unaccusatives, thereby leaving these features unchecked. Thus, NI is unavailable in unaccusatives in Mapudungun, but it is available in Southern Tiwa and in Mohawk (and in Northern Iroquoian in general).

This approach suffers from various problems, however. First, the deletion of copies is standardly assumed to happen at the interfaces not in the overt syntax (Bobaljik 1995; Bobaljik 2002; Bošković 2002; Chomsky 1995; Nunes 2004). If so, the φ-feature deletion process that

drives the analysis does not take place until after Spell-Out. So, it is unclear how agreement could have access to this information. One could assume that lexical insertion and allomorphy is handled post-syntactically (as in Distributed Morphology), thereby allowing deletion to happen comfortably at PF along with vocabulary insertion. The analysis that Baker *et al.* develop crucially interacts with syntactic principles such as EPP, however, so it is vital for them that copy deletion take place in the overt syntax, a conclusion that is at odds with the line of research referenced above. Even if the approach advocated in Baker *et al*. can see its way past the problem of the timing of deletion, it still seems that the analysis has important ramifications for LF. In particular, if φ-features on the copy are not deleted (as in Southern Tiwa), then it would seem that the φ-features would be present in two locations at LF, unless a second round of copy deletion takes place after Spell-Out. Conversely, if a language deletes the φ-features in the copy overtly, then LF would see these two 'copies' as two distinct elements and try to interpret them both independently, with devastating consequences, to be sure. Finally, I note that parametric φ-feature deletion goes against the Minimalist desideratum of restricting variation to the Lexicon in favour of a uniform machinery that operates on lexical items (Borer 1983; Collins 2005; Kayne 2006). Thus, we would like to account for the variation in NI constructions by differences in the lexical entries of these languages rather than by positing differences in the mechanics of the grammar. To give a metaphor, one may argue for or against various aspects of the operation Merge, but few would argue that Merge selects, say, two arguments in one language but three arguments in another.[xviii]

In defence of the φ-feature deletion analysis, Baker *et al.* adduce evidence from *wh*-movement phenomena that A-bar movement is also susceptible to differential φ-feature deletion. In particular, they cite data from Ouhalla (1993) that show anti-agreement effects with *wh*-

movement. In the following Berber examples (Ouhalla 1993, ex. (1a, b)), subject agreement is absent in the *wh*-question.

(34) a. man tamghart ay yzrin Mohand
which woman COMP see.PART Mohand
'Which woman saw Mohand?'

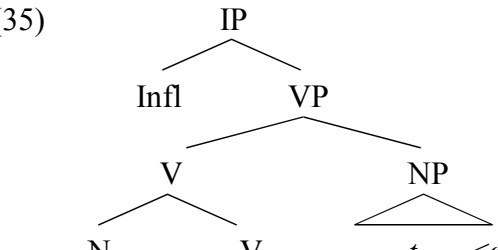
b. * man tamghart ay t-zra Mohand
which woman COMP 3.F.SG-see Mohand

Baker *et al.* argue that upon A-bar movement in Berber, the φ-features of the copy undergo deletion, thereby preventing agreement. In a language such as English, however, extracted subjects still trigger agreement, thus Baker *et al*. posit that φ-features are not deleted in English A-bar movement. Ouhalla shows, though, that the anti-agreement effect in Berber happens only with local subject extraction and that with long-distance *wh*-movement, agreement with the subject once again appears on the verb. It would be strange indeed for this effect to hold in Berber if Baker *et al.*'s proposal were true, especially given the cyclic nature of *wh*-movement. Specifically, upon initial A-bar movement of the subject to the left-edge of the CP phase,[xix] the φ-features in Berber would assumedly delete. However, upon long-distance movement to the next higher cycle, the φ-features would need to be re-instated somehow. Given this rather serious problem, the anti-agreement effect discussed by Ouhalla cannot be taken as support for parameterized φ-feature deletion.

Baker *et al.* exploit the parameterized φ-deletion hypothesis to account for the lack of NI with unaccusatives in Mapudungun (and its availability in Mohawk and Southern Tiwa). They adopt a formulation of Agree such that a probe seeks out a *nearby* goal – one in its c-command domain. They also adopt a standard model for subject agreement, in which an Infl node takes scope over the clause. With transitive verbs, NI does not affect agreement. Infl will always pick out the φ-features on the subject for agreement. With unaccusatives, however, the situation is

different. With no NI, the internal argument triggers agreement on Infl in the usual way. NI, they argue, is not available in Mapudungun for the following reason. Once the φ-features are deleted, there is nothing left for Infl to agree with, leaving unvalued features to be sent off to the interfaces (hence the need for overt copy deletion—see comments above). The derivation, thus, crashes. Consider their model, however (adapted from their Figure 3, p. 159).

(35)



<φ-features deleted>	Mapudungun
<φ-features re-set to default values>	Mohawk
<φ-features left intact>	Southern Tiwa

This explanation suffers from two problems, the first of which Baker *et al.* clearly acknowledge. While the φ-features on the trace have been deleted in Mapudungun, they still survive on the moved N. The authors argue that Agree cannot see word-internal arguments, thus the φ-features on the IN are essentially invisible. It's not clear, however, what kind of word-formation mechanism the authors have in mind. Since N-to-V movement is a syntactic operation, as is Agree, it would seem that some morphological operation takes place during the syntactic derivation after N-to-V movement, but before Infl probes for a Goal. Furthermore, in many languages N-to-D raising regularly takes place (giving rise to N-Num-D order). Thus, both N and Num are in word-internal positions; however, they are still available to be agreed with and to value higher Probes. This would seem to indicate that that the IN in the N-V complex should still be visible to Agree, too.

This proposal also makes the wrong predictions with respect to the incorporation of unaccusative subjects in Northern Iroquoian. Consider the following example (Woodbury 2003: 670).

(36) eksaʔdiyóh
e- ksaʔt- iyo -h
3.SG.F.AG- child- be.good -STAT
'She is a nice girl.'

Recall that the trace of the moved noun has its φ-features reset to its default values. We would expect, then, neuter agreement in the example above. What we observe, however, is feminine agreement, indicating that full set of φ-features of the argument of the verb are still visible.

Another empirical problem with Baker *et al*., specific to Northern Iroquoian, concerns their claim that only NI with agreement can license stranded modifiers. Recall that they must posit Ø agreement in Mohawk to account for the data in (6) and (7). This, however, predicts transitive agreement with NI constructions, a prediction which is not borne out. This line of argumentation was first made for Oneida by Koenig & Michelson (2008). In Northern Iroquoian languages subjects of intransitives in the perfect aspect ('stative' in the Iroquoianist literature) are marked with patient agreement while subjects of transitives are marked with agent agreement. Thus, if there is a Ø agreement marker for the IN, we expect to find agent agreement on the subject. If, however, there is no agreement with the IN, then we expect to find patient agreement on the subject. Consider the following Onondaga examples (Woodbury 2003, p. 456, 538).

(37) a. agadęnaʔtshähni:nǫ́h
ak- atęnaʔt- shR- a- hninǫ́ -h
1.SG.PAT- groceries- NZLR- EPEN- buy -STAT
'I have bought groceries.'

b. hǫwagę́hnaʔ
hǫwa- kę -h -naʔ
3.SG.F.AG:3.SG.M.PAT- see -STAT -STAT.PST
'She had seen him.'

Example (37)a shows that the subject is marked with object agreement, thus we conclude there is no Ø agreement marker for the object. Example (37)b, conversely, shows that when a true internal object is present and triggers patient agreement, the subject triggers agent agreement.

Recall that Baker (1996) and Baker *et al.* (2005) hold that modifier stranding is structurally distinct from true doubling and classifier incorporation (though optionally so for Baker, 1996). This stranding model predicts that elements that cannot normally appear independently can nevertheless appear in NI construction. Consider the following Onondaga paradigm (Nora Carrier, Gloria Williams, speakers).

(38) a. waʔkhní:nǫʔ neʔ ganakdaʔ

waʔ-	k-	hninǫ	-ʔ	neʔ	ka-	nakt	-aʔ
FACT-	1.SG.AG-	buy	-PUNC	NE	N.PREF-	bed	-NFS

'I bought a bed.'

b. * waʔkhní:nǫʔ neʔ

waʔ-	k-	hninǫ	-ʔ	neʔ
FACT-	1.SG.AG-	buy	-PUNC	NE

('I bought it/one.')

c. * waʔgenakdahní:nǫʔ neʔ ganakdaʔ

waʔ-	k-	nakt-	a-	hninǫ	-ʔ	neʔ
FACT-	1.SG.AG-	bed-	JOIN-	buy	-PUNC	NE

('I bought a bed.')

The first two examples show that the nominal marker *neʔ* cannot appear without an overt lexical noun. The stranding model proposed in Baker *et al.* predicts that (38)c should be possible; however, it is ungrammatical. Under the model I propose below, this paradigm receives a straightforward explanation.

Given the various problems with the analyses outlined above, I turn to the current proposal in the next section.

4 Proposal

Doubling constructions have played a large role in discussions of syntactic theory not only in the domain of noun incorporation as discussed here, but also in other areas, notably in the domain of clitic doubling in Romance languages. (See Kayne 1975; and Strozer 1976 for early discussions.) More recently, Sportiche (1988) has initiated a minor research program in which doubled constructions are analyzed as merged constituents as in following schema.

(39) $X^1 \ldots [_{YP}\ t_X\ ZP^1]$

Such an analysis has been applied to clitic doubling (Uriagereka 1995), resumptive pronouns (Boeckx 2003), condition B type pronouns (Kayne 2002), and partial control (Rodrigues 2007). I propose that doubling in NI constructions can be analyzed in a similar vein.

My proposal is that doubled NI constructions are comprised of a complex constituent that contains both the incorporated nominal and the full DP double upon Merger (see also Oxford 2008 for a similar but different approach). Consider (5) from above, repeated here. I propose that the incorporated noun, *naskw* ('animal'), and the doubled full DP, *neˀ gwíhsgwihs* ('the/a pig'), starts out with the structure in (41), in which a complex XP contains both the IN and the DP double as a single constituent.

(40) waˀgnasgwahní:nǫˀ neˀ gwíhsgwihs

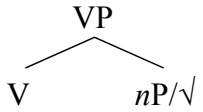
waˀ-	k-	naskw-	a-	hninǫ-	ˀ	neˀ	kwihskwihs
FACT-	1.SG.NOM -	animal-	EPEN-	buy-	PUNC	NE	pig

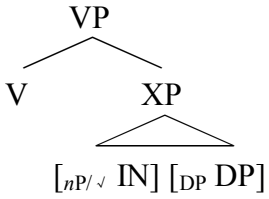
'I bought the/a pig.'

(41) $[_{VP}\ V\ [_{XP}\ [_{IN}\ naskw]\ [_{DP}\ neˀ\ kwihskwihs]]]$

To be more specific, I propose the following two kinds of structures for NI. In the first case, the verb selects a bare root or *n*P as a complement, which I argue to be the foundation of type III NI in Mithun's sense or compound incorporation in Rosen's sense. In the second case, the verb selects the complex XP, which contains both the IN, again either a root or an *n*P, and the

DP double. I argue this type of incorporation is type IV NI in Mithun's sense or classifier incorporation in Rosen's sense.

(42) a. 

b. 

I will return to the exact nature of the XP and the relationship between the phrase containing the IN and the full DP shortly. For now, let us consider the syntactic ramifications of the proposed structures. The type III NI with the bare *n*P/√ clearly does not afford the presence of additional doubling or modifying material. Furthermore, the lack of any functional nominal material (such as NumP, DP, KP, etc.) obviates Case checking, assuming that a KP or at least a DP is required for Case. The lack of Case checking entails a lack of agreement on the verb (Chomsky 2000). Recall Baker's observation that animate INs fail to trigger object agreement on the verb while non-incorporated animate nominals, of course, do trigger agreement.

Type IV NI with the IN/DP complex clearly admits the possibility of doubling and stranding. Furthermore, the presence of the DP, complete with the necessary functional projections, means that agreement on the verb is at least a possibility, depending on other properties in the clause. I will tentatively suggest below that the IN and DP could either be in a subject-predicate relationship or that the DP is an appositive; however, how this facet of the grammar interacts with agreement is the subject of future research.

Before continuing, I wish to address briefly the structure of nominal constructions in Northern Iroquoian. I have been using the label DP, common since Abney (1987); however, Baker has crucially assumed a bare NP in his work on Mohawk. Under current assumptions (Julien 2002; Marantz 1997; Marantz 2001), a bare NP is untenable in light of the complex

morphological structure of full nominals. It would also be quite a strange state of affairs if polymorphemic verbal constructions are built up by a series of syntactic operations (Baker 1988; Pollock 1989), but that nominal constructions (while still polymorphemic, albeit with somewhat less structure than verbs) are simple, flat NPs with no internal structure. I consider here one line of evidence in favour of an articulated structure of Northern Iroquoian nominal expressions.

Many nouns in Northern Iroquoian languages are derived from underlying verbal structures. The Onondaga word for "car" contains the base *ʔseht* which is normally glossed simply as 'car', as has been done in example (44). As (43) shows, however, this base is composed of a verbal root meaning drag and a causative morpheme (Woodbury 2003). The causative is fully productive in Onondaga and the root *ʔse:* ('drag') is also fully productive. (Thus, a more literal translation of 'car' is 'dragger'.) Given the syntactic independence of the components of the word for *car*, one must conclude that this form is syntactically complex.

(43) gaʔsé:hdaʔ
ka- ʔse: -ht -aʔ
N.PREF- drag -CAUS -NFS
'car'

(44) gadeʔse:hdayę́haʔ
k- at- ʔse:ht a- yę -haʔ
1.SG.AG- SRFL- car JOIN- lay.down -HAB
'I am parking my car.'

In the next section I will show how the two proposed structures accounts for the range in variation of properties of NI described above. In particular, I will discuss the correlation between doubling and stranding and the difference found in NI with unaccusatives.

5 Analysis

In this section I analyze the various properties of NI in the languages mentioned and relate them to the two structures proposed above. First, I run through the derivations of the three structural

types of NI introduced above, then I go on to show how these account for the properties summarized at the end of the previous section.

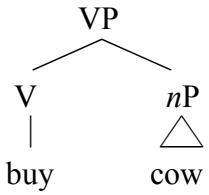
5.1 Derivations

First, let us examine the bare *n*P/√ complement structure. I propose that Mapudungun is essentially restricted to this structure. Consider the following example.

(45) Juan ngilla-waka-lel-fi-y
Juan buy-cow-BEN-3.OBJ-IND.3.SG.SUBJ
'Juan bought a cow for him.'

Recall that no doubling or stranding is permitted. Furthermore, NI is not permitted with unaccusatives, unless accompanied by possessor stranding, which I address below. These facts fall into place if we assume that Mapudungun NI involves a bare *n*P. Thus, the entire *n*P structure becomes incorporated, and no double or stranded material is possible.[xx]

(46)

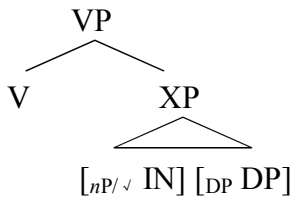


Mapudungun, Chukchi and Nahuatl do not allow agreement in NI constructions. Furthermore, Mapudungun and Chukchi do not allow doubling or stranding. It was noted above that Nahuatl has no recorded instances of doubling or stranding on record. If we assume, as I have done above for Mapudungun, that the verb in these languages takes a bare *n*P (or √) as a complement, then the agreement facts fall into place. A nominal expression this small has too little functional material to trigger agreement agreement on a Probe. (Indeed, in many languages, even indefinite nominal phrases fail to trigger object agreement.) Thus, the lack of agreement in these languages (and the lack of doubling and stranding) falls out from the structure of the IN.

Turning now to the lack of NI with unaccusatives, let us assume that the EPP is active in Mapudungun.[xxi] Since the IN in Mapudungun posited to consist only of a bare *n*P and no full DP double, it cannot satisfy the EPP. Recall, however, that NI is available with unaccusatives if it is accompanied by possessor stranding. In these situations, the possessor becomes the subject of the sentence, as evidenced by the fact that it controls agreement, thus satisfying EPP. I take up the issue of possessor stranding in the next section, however, since this phenomenon is distinct from other kinds of modifier stranding, a point Baker *et al.* make clear in their discussion of Mapudungun. Recall that NI with unaccusatives in Nahuatl gives rise to an adverbial reading. I suggest that the true subject is not the IN. Rather, the true subject is a null *pro* in the examples shown and the IN is simply an adverbial. This of course suggests that examples with an overt subject should be possible, such as *John man-appeared*, a prediction that needs to be tested. Also, Spencer indicates that in Chukchi, default agreement as is found with expletives appears in NI constructions with unaccusatives. I suggest, then, that an expletive satisfies EPP in these constructions.

Next, I consider NI in light of the structure in (42)b, repeated here.

(47)



The link between doubling and stranding is now apparent. Consider again the following Onondaga paradigm repeated from above (Gloria Williams, Nora Carrier, speakers). Observe in particular that the stranded demonstrative is completely acceptable in the absence of NI.

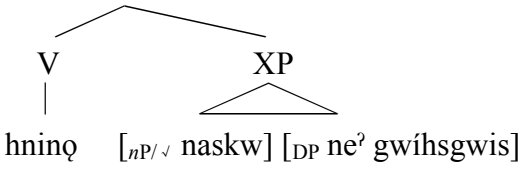
(48) a. John wahanasgwahní:nǫʔ neʔ gwíhsgwis
John waʔ-ha-naskw-a-hninǫ-ʔ neʔ kwihskwis
John FACT-3.SG.AG-animal-JOIN-buy-PUNC NE pig
'John bought a pig.'

b. John wahanasgwahní:nǫʔ nęgeʔ
John waʔ-ha-naskw-a-hninǫ-ʔ nękeʔ
John FACT-3.SG.AG-animal-JOIN-buy-PUNC this
'John bought this animal.'

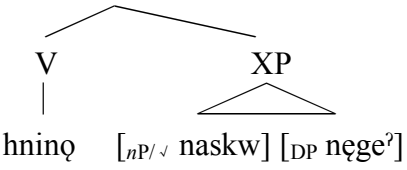
c. John wahahní:nǫʔ nęgʔ
John waʔ-ha-hni:nǫ-ʔ nękeʔ
John FACT-3.SG.AG-buy-PUNC this
'John bought this.'

As Rosen pointed out, an analysis which treats (48)b and c as distinct phenomena must posit two distinct mechanisms for what is essentially the same thing. The current analysis captures the paradigm above with a single analysis. Specifically, the stranded modifier in (48)b and the lone demonstrative in (48)c are both instances of a DP with an empty proform. To be sure, I propose the following base structures for the forms in (48).

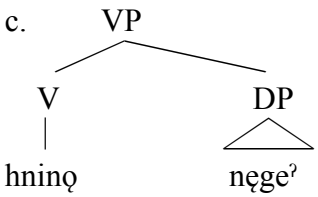
(49) a.



b.



c.



Having dealt with the basic facts of the derivations of NI as well as stranding and doubling in type IV NI languages, I move on to discuss the nature of the relationship between IN and the DP double.

5.2 Possessors

In the last section I address the derivation of possessor raising, which corresponds roughly to Mithun's type II NI. Strictly speaking, possessor raising NI forms a subset of type II NI. Possessor raising in Northern Iroquoian is sensitive to the distinction between alienable (AP) and

inalienable (IAP) possession. There are several well-known cross-linguistic differences between alienable and inalienable possessors (Alexiadou 2001; Alexiadou 2002; Guéron 2002; Tomioka & Sim 2007 inter alia). For instance, APs can be predicative, (50)a, while IAPs cannot, (50)b.[xxii] Also, IAPs can undergo core argument processes such as passivization, (51)a, but APs cannot (51)b. Many other differences have been noted between APs and IAPs, which have led researchers to conclude that these two constructions have different structures.

(50) a. The apples are John's. b. * The fingers are John's.

(51) a. John was kicked in the back. (=John's back was kicked)
b. * John was kicked in the bike. (where John's bike was kicked)

I follow this earlier work and assume two distinct structural configurations for IAP versus AP, as in (52) (see also Alboiu & Barrie 2009). (52)a shows that the inalienable possessor is merged low and the nominal domain need only project up to *n*P, while (52)b shows the alienable possessor merged higher, in SpecPossP.

(52) a. $[_{DP}\ [_{nP}$ inalienable possessor $[_{\sqrt{NP}}\ ]]]$
b. $[_{DP}\ [_{PossP}$ alienable possessor $[_{nP}\ [_{\sqrt{NP}}\ ]]]]]]]$

Such an approach is further supported by the fact that IAPs are thematically involved with the possessum (Tomioka & Sim 2007) and may be morphologically marked as Theme or Classifiers (Alexiadou 2002). The AP, on the other hand, behaves as a non-thematic element (Alexiadou 2002) and is external to the *n*P domain, where thematic relations are established.

These structures provide us with an explanation for body-part incorporation and its availability with unaccusatives in languages such as Northern Iroquoian. Let us adopt the uncontroversial assumption that possessors receive genitive Case in SpecDP.[xxiii] Thus, when a verb selects a full DP complement, either kind of possessor receives genitive Case, and the DP itself receives accusative Case. When a bare *n*P complement is selected in a language such as

Mapudungun, only an IAP can appear in the construction as APs are merged higher than *n*. Furthermore, there is no DP to assign genitive Case to the IAP, so it receives accusative Case from *v*. Since the direct object is represented only by a bare *n*P, it does not require Case.[xxiv] I propose that this type of NI (Mithun's type II) is universally derived by this kind of structure. Thus, Northern Iroquoian languages can take a bare *n*P complement.

The absence of NI in unaccusatives without possessors in Mapudungun receives an explanation similar to Baker *et al*.'s. That is, the EPP is not satisfied in Mapudungun because there is no DP double present. Recall, however, that both alienable and inalienable possessors are found with Mapudungun, a fact that does not fall out from the current proposal. An alternative analysis presents itself, though, based on the following example (Baker et al. 2005: 167, ex (64b), citing de Augusta, 1903: 293).

(53) Weñe -sanchu -e -n -eu
steal -pig -INV -1.SG.SUBJ -DS
'He stole my pig (on me).'

The raised possessor in this example could also be analyzed as an ethical dative, making the "possessor" a dependent of the verb.

5.3 What is XP?

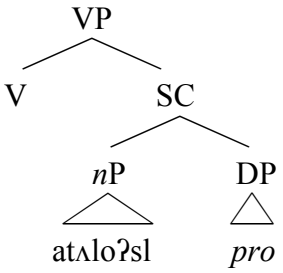
It is not the primary goal of this paper to account for agreement and NI, as such the remarks in this section are somewhat speculative. I suggest that the presence or absence of agreement is due, at least in part, to the relationship between the IN and the DP double. I suggest that when the IN is a predicate nominal of which the DP double is the subject then agreement may take place. If, however, the DP double is an appositive, then it is syntactically invisible and no agreement takes place. I discuss the first of these scenarios next.

Recall that there are instances of NI with agreement in Northern Iroquoian. Consider the following Oneida example repeated from above.

(54) waʔ- khey- atʌloʔsl- úny- ʌ- ʔ
FACT- 1.SG.AG:3.SG.F.PAT- friend- make- BEN- PUNC
'I made friends with her'

Agreement is also obligatory with Southern Tiwa as mentioned above. I propose that instances of obligatory agreement with NI constructions are the result of the verb taking a complex XP containing both a predicate nominal (the IN) and its subject (the full DP). The English translation of (54) transparently shows this relationship, where *atʌloʔsl* ('friend') is a predicate nominal with a null pronominal *pro* subject ('her'). There are several analyses of small clauses in the literature (Citko 2008; den Dikken 2006; Heycock 1995; Moro 1997), the precise analysis does not matter for our purposes. My goal here is just to argue that the IN and the full DP are merged as a constituent. The initial structure of the VP in (54), then, is as follows. I use a simple SC analysis of small clauses along the lines of Moro merely for ease of exposition, although any structure will do for our purposes.

(55)



The bare *n*P in (55) undergoes NI, while the DP double triggers object agreement on the verb. Since the bare *n*P has no relevant features for the Probe for object agreement, it does not block the Agree relation between the Probe and the DP Goal.

Recall Baker's generalization that object NI in Northern Iroquoian does not trigger agreement. A detailed investigation of agreement and NI is beyond the scope of this article, so

the following remarks should be taken as a preliminary suggestion.[xxv] Consider the following example (Gloria Williams, Nora Carrier).

(56) gwiyänǫ́hweʔs neʔ Mary

k-	wiR-	nǫ́hweʔ-	s	neʔ	Mary
1.SG.AG-	baby-	like	PUNC	NE	Mary

'I like the baby, Mary.'

I posit that the IN and the double are not in a subject-predicate relationship, but rather that the double is an appositive, as suggested by the English translation. As an appositive, the double fails to interact with the agreement system. Consider the following French example.

(57) La victime, un homme de vingt ans, est morte depuis une semaine.
'The victim, a man of twenty years, died.FEM one week ago.'

Of particular importance in this example is the feminine agreement on *morte* ('dead'), which agrees with the feminine subject *la victime* ('the victim') rather than the masculine DP *un homme* ('a man'), which appears in apposition to the subject. What still needs to be explained is why the appositive structure appears to be necessary in the majority of NI cases in Northern Iroquoian (and ruled out in languages with obligatory agreement with NI, such as Southern Tiwa).

The analysis just sketched does, however, suggest an explanation for the obligatory presence of agreement when the subject of unaccusatives undergoes NI. Assuming that the EPP is active in Northern Iroquoian, a full DP double (or *pro*), with a full set of φ-features, must appear in SpecTP, thereby triggering full agreement.

6 Conclusion

The principle claim of this article is that the cross-linguistic variety of NI can be captured by differences in the structure of the complement to the verb. In doing so, I have argued that there are fundamentally two types of NI, which correspond to Mithun's type III and type IV, in contrast to Baker *et al*., who argue for a three-way distinction. In type III NI, doubling and

stranding are not observed, and NI with unaccusatives requires the presence of a full DP possessor. Type IV NI allows both stranding and doubling, and NI is fully available with unaccusatives. A number of languages with NI were considered, and while it is clear that more field work needs to be done on the basic facts of NI, a clear trend emerges showing that doubling and stranding are either both present or both absent in languages with NI. Furthermore this analysis predicts that a lack of doubling/stranding generally entails a lack of NI in unaccusatives.

These patterns of NI, I argued, are captured by the two distinct structures for the complement to the verb. In type III NI, the verb selects a bare root or *n*P as a complement. No additional material is present that could serve as a double or as stranded material. Furthermore, NI with unaccusatives is barred as there is no element with interpretable φ-features to value the uninterpretable φ-features on Infl. Type IV NI, however, arises from an IN-DP complex that the verb takes as a complement. The IN and DP are merged as a constituent

References

ABNEY, S. 1987. The English Noun Phrase and its Sentential Aspect. Cambridge, MA: MIT Ph.D. Dissertation.

ALBOIU, G. & BARRIE, M. 2009. Phasehood, Case and Noun Incorporation. Paper presented to the NELS 38, Amherst, MA, 2009.

ALEXIADOU, A. 2001. Functional Structure in Nominals: Nominalizations and Ergativity Amsterdam/Philadelphia: John Benjamins Publishing Company.

—. 2002. Some notes on the structure of alienable and inalienable possessors. From NP to DP, ed. by M. Coene & Y. d'Hulst, 167-89. Amsterdam/Philadelphia: John Benjamins.

ALLEN, B. J., GARDINER, D. & FRANTZ, D. 1984. Noun Incorporation in Southern Tiwa. international Journal of American Linguistics 50.292-311.

BAKER, M. C. 1988. Incorporation: A Theory of Grammatical Function Changing Chicago, IL: University of Chicago Press.

—. 1996. The Polysynthesis Parameter Oxford: Oxford University Press.

—. 2009. Is head movement still needed for noun incorporation? Lingua 119.148-65.

BAKER, M. C., ARANOVICH, R. & GOLLUSCIO, L. A. 2005. Two types of syntactic noun incorporation: Noun incorporation in Mapudungun and its typological implications. Language 81.138-76.

BARRIE, M. 2011. Dynamic Antisymmetry and the Syntax of Noun Incorporation Dordrecht: Springer.

BARRIE, M. & MATHIEU, E. 2012. Head Movement and Noun Incorporation. Linguistic Inquiry 43.133-42.

BOBALJIK, J. D. 1995. Morphosyntax: the syntax of verbal inflection. Cambridge, MA: MIT Ph.D. Dissertation.

—. 2002. A-Chains at the PF-Interface: Copies and 'Covert' Movement. Natural Language and Linguistic Theory 20.197-267.

BOECKX, C. 2003. Islands and Chains: Resumption as stranding Amsterdam/Philadephia: John Benjamins.

BORER, H. 1983. Parametric Syntax Dordrecht: Foris.

BOŠKOVIĆ, Ž. 2002. On multiple Wh-fronting. Linguistic Inquiry 33.351-83.

BRICKER, V. R. 1978. Antipassive Construction in Yucatec Maya. Papers in Mayan Linguistics, ed. by N.C. England, 3-24. Columbia, MO: University of Missouri.

CHAFE, W. L. 1977. The Evolution of Third Person Verb Agreement in the Iroquoian Languages. Mechanisms of Syntactic Change, ed. by C.-N. Li, 493-524. Austin: U of Texas P.

CHOMSKY, N. 1981. Lectures on Government and Binding Dordrecht: Foris.

—. 1995. The Minimalist Program Cambridge, MA: MIT Press.

—. 2000. Minimalist Inquiries: The Framework. Step by Step: Essays on Minimalist Syntax in Honor of Howard Lasnik, ed. by R. Martin, D. Michaels & J. Uriagereka, 89-156. Cambridge, MA: MIT Press.

CHUNG, S. & LADUSAW, W. 2004. Restriction and Saturation Cambridge, MA: MIT Press.

CITKO, B. 2008. Small clauses reconsidered: Not so small and not all alike. Lingua 118.261-95.

COLLINS, C. 2005. A Smuggling Approach to the Passive in English. Syntax 8.81-120.

COMPTON, R. & PITTMAN, C. 2007. Word formation by phase in Inuit. Toronto, ON: http://ling.auf.net/lingBuzz/000480.

CUOQ, J.-A. 1866. Etudes philologiques sur quelques langues sauvages Montreal, QC: Dawson Brothers.

DAYAL, V. 2011. Hindi Pseudo-Incorporation. Natural Language & Linguistic Theory 29.123-67.

DEN DIKKEN, M. 2006. Relators and Linkers: The Syntax of Predication, Predicate Inversion, and Copulas Cambridge, MA: MIT Press.

FARKAS, D. F. & DE SWART, H. 2003. The semantics of incorporation: From argument atructure to discourse transparency Stanford, CA: CSLI Publications.

GERDTS, D. B. 1998. Incorporation. The Handbook of Morphology, ed. by A. Spencer & A.M. Zwicky, 84-100. Malden, MA: Blackwell.

GRIMSHAW, J. 1990. Argument Structure Cambridge, MA: MIT Press.

GRONEMEYER, C. 1996. Noun incorporation in Hopi. Lund University Working Papers in Linguistics 54.25-44.

GUÉRON, J. 2002. Inalienable possession and the interpretation of determiners. From NP to DP, ed. by M. Coene & Y. d'Hulst, 189-221. Amsterdam/Philadelphia: John Benjamins.

HALLE, M. & MARANTZ, A. 1993. Distributed Morphology and the Pieces of Inflection. The View from Building 20: Essays in Linguistic in Honor of Sylvain Bromberger, ed. by K. Hale & S. J. Keyser, 111-76. Cambridge, MA: MIT Press.

HARMELINK, B. L. 1992. La incorporación nominal en el mapudungun. Lenguas Modernas 19.129-37.

HAUGEN, J. D. 2008. Morphology at the Interfaces: Reduplication and Noun Incorporation in Uto-Aztecan Amsterdam/Philadelphia: John Benjamins.

HEYCOCK, C. 1995. The Internal Structure of Small Clauses. Proceedings of NELS25, ed. by J. Beckman, 223-38. Amherst: Graduate Linguistics Student Association.

HIROSE, T. 2003. Origins of Predicates: Evidence from Plains Cree London: Routledge.

JOHNS, A. 2007. Restricting noun incorporation: root movement. Natural Language and Linguistic Theory 25.535-76.

—. 2009. Additional facts about noun incorporation (in Inuktitut). Lingua 119.185-98.

JOSEFSSON, G. 1998. Minimal Words in a Minimal Syntax: Word Formation in Swedish Amsterdam: John Benjamins.

JULIEN, M. 2002. Syntactic Heads and Word Formation Oxford: Oxford University Press.

KAYNE, R. 1975. French Syntax: The Transformational Cycle Cambridge, MA: MIT Press.

—. 2002. Pronouns and Their Antecedents. Derivation and Explanation in the Minimalist Program, ed. by S. Epstein & D. Seely, 133-66. Malden, MA: Blackwell Publishing.

—. 2006. On Parameters and Principles of Pronunciation. Oraganizing Grammar: Linguistic Studies in Honor of Henk van Riemskijk, ed. by H. Broekhuis, N. Corver, R. Huybregts, U. Kleinhenz & J. Koster, 291-321. Berlin: Mouton de Gruyter.

—. 2009. Antisymmetry and the Lexicon. Linguistic Variation Yearbook 8.1-31.

KOENIG, J.-P. & MICHELSON, K. 2008. Revisiting the realization of arguments in Iroquoian. Paper presented at the Annual Meeting of the Linguistic Society of America, Chicago, IL.

KOOPMAN, H. 1984. The Syntax of Verbs: from Verb Movement rules in the Kru Languages to Universal Grammar Dordrecht: Foris.

KROEBER, A. L. 1909. Noun incorporation in American languages. Paper presented at the XVI. Internationalen Amerikanisten-Kongress, 2d, Vienna and Leipzig.

—. 1910. Noun incorporation in American languages. Paper presented at the XVI. Internationalen Amerikanisten-Kongress, 2d, Vienna and Leipzig.

MARANTZ, A. 1997. No Escape from Syntax: Don't Try Morphological Analysis in the Privacy of Your Own Lexicon. University of Pennsylvania Working Papers in Linguistics 4.201-25.

—. 2001. Words. Paper presented at the 20th West Coast Conference on Formal Linguistics, University of Southern California.

MASSAM, D. 2009. Noun Incorporation: Essentials and Extensions. Language and Linguistics Compass 3.1076-96.

MATHIEU, É. 2008. Word formation as phrasal movement: evidence from Ojibwe. Paper presented at the NELS 39, Cornell University.

—. to appear. Denominal Verbs in Ojibwe. international Journal of American Linguistics.

MATHIEU, É., CHEN, C.-H., GERBER, D. & MANOUILIDOU, C. 2009. Noun Incorporation and its Kind: Lingua.

MATTHEWSON, L. 2011. How (not) to uncover cross-linguistic variation. Paper presented at the NELS 42, University of Toronto.

MCFADDEN, T. 2003. Adventures in resolving redundancy: Case vs. the EPP. Paper presented to the 26th Annual Penn Linguistics Colloquium, 2003.

MCKAY, G. R. 1975. Rembarnga: A language of Central Arnhem Land: Australian National University Ph.D. Dissertation.

MERLAN, F. 1976. Noun Incorporation and Discourse Reference in Modern Nahuatl. international Journal of American Linguistics 42.177-91.

MICHELSON, K. 1991. Possessor Stranding in Oneida. Linguistic Inquiry 22.756-61.

MITHUN, M. 1984. The Evolution of Noun Incorporation. Language 60.847-94.

—. 1986. On the Nature of Noun Incorporation. Language 62.32-37.

MITHUN, M. & CORBETT, G. G. 1999. The Effect of Noun Incorporation on Argument Structure. Boundaries of Morphology and Syntax, ed. by L. Mereu, 49-71. Amsterdam: John Benjamins.

MORO, A. 1997. The Raising of Predicates : Predicative noun phrases and the theory of clause structure Cambridge: Cambridge University Press.

NUNES, J. 2004. Linearization of Chains and Sideward Movement Cambridge, MA: MIT Press.

OUHALLA, J. 1993. Subject-Extraction, Negation and the Anti-Agreement Effect. Natural Language & Linguistic Theory 11.477-518.

OXFORD, W. 2008. A Classifier Analysis of Direct Object Doubling. MUN Occasional Student Papers in Linguistics, ed. by C. Dunphy & W. Oxford, 19-35. St. John's, NL: Memorial University of Newfoundland.

POLLOCK, J.-Y. 1989. Verb Movement, Universal Grammar, and the Structure of IP. Linguistic Inquiry 20.356-424.

RICE, K. 1991. Intransitives in Slave (Northern Athapaskan): Arguments for Unaccusatives. international Journal of American Linguistics 57.51-69.

RITTER, E. & ROSEN, S. T. 2005. Agreement without A-Positions: Another Look at Algonquian. Linguistic Inquiry 36.648-60.

ROBERTS, I. 2010. Agreement and Head Movement: Clitics, Incorporation, and Defective Goals Cambridge, MA: MIT Press.

RODRIGUES, C. 2007. Agreement and Flotation in Partial and Inverse Partial Control Configurations. New Horizons in the Analysis of Control and Raising, ed. by W.D. Davies & S. Dubinsky, 213-29. Dordrecht: Springer.

ROSEN, S. T. 1989. Two Types of Noun Incorporation: A Lexical Analysis. Language 65.294-317.

RUSSELL, K. & REINHOLTZ, C. 1996. Hierarchical Structure in a Non-Configurational Language: Asymmetries in Swampy Cree. The Proceedings of the 14th West Coast Conference on Formal Linguistics, ed. by J. Camacho, L. Choueiri & M. Watanabe, 431-45. Stanford, CA: CSLI Publications.

—. 1997. Nonconfigurationality and the Syntax-Phonology Interface. Paper presented to the West Coast Conference on Formal Linguistics, 15, Stanford, CA, 1997.

SADOCK, J. 1980. Noun Incorporation in Greenlandic: A Case of Syntactic Word Formation. Language 56.300-19.

—. 1985. Autolexical Syntax: A Proposal for the Treatment of Noun Incorporation and Similar Phenomena. Natural Language & Linguistic Theory 3.379-439.

—. 1986. Some Notes on Noun Incorporation. Language 62.19-31.

SAPIR, E. 1911. The Problem of Noun Incorporation in American Languages. American Anthropologist 13.250-82.

SEKAQUAPTEWA, E., BLACK, M. E., MALOTKI, E. & HILL, K. C. 1998. Hopi Dictionary : Hopiikwa Lavaytutuveni Tucson, AZ: University of Arizona Press.

SKORIK, P. 1948. Očerk po syntaksisu čukotskogojazyka: inkorporatsija [Outline of Chukchee syntax: incorporation] Leningrad: Učpedgiz.

SPENCER, A. 1995. Incorporation in Chukchi. Language: Journal of the Linguistic Society of America 71.439-89.

SPORTICHE, D. 1988. A theory of floating quantifiers and its corollaries for constituent structure. Linguistic Inquiry 19.425-49.

STARKE, M. 2003. Spellout as a trigger for (some) movements. Paper presented at the Workshop on Antisymmetry and Remnant Movement, New York University.

—. 2009. Nanosyntax - A short primer to a new approach to language. In *Nordlyd* (eds) P. Svenonius, G. Ramchand, M. Starke & T. Taraldsen. special issue on Nanosyntax.

STROZER, J. 1976. Clitics in Spanish. Los Angeles: University of California Ph. D. Dissertation.

TOMIOKA, S. & SIM, C.-Y. 2007. The Event Semantic Root of Inalienable Possession. University of Delaware; Gyeongin National University of Education.

TRAVIS, L. D. M. 1984. Parameters and Effects of Word Order Variation. Cambridge, MA: Massachussets Institute of Techonology Ph.D. Dissertation.

URIAGEREKA, J. 1995. Aspects of the Syntax of Clitic Placement in Western Romance. Linguistic Inquiry 26.79-123.

VAN GEENHOVEN, V. 1995. Semantic Incorporation: A Uniform Semantics for West Greenlandic Noun Incorporation and West Germanic Bare Plural Configurations. Papers from the Regional Meetings, Chicago Linguistic Society 31.171-86.

—. 2002. Raised Possessors and Noun Incorporation in West Greenlandic. Natural Language & Linguistic Theory 20.759-821.

WILTSCHKO, M. 2009. √ Root Incorporation: Evidence from lexical suffixes in Halkomelem Salish. Lingua 119.199-223.

WOJDAK, R. 2008. The Linearization of Affixes: Evidence from Nuu-Chah-Nulth New York, NY/Berlin: Springer.

WOODBURY, H. 1975. Onondaga Noun Incorporation: Some Notes on the Interdependence of Syntax and Semantics. international Journal of American Linguistics 41.10-20.

—. 2003. Onondaga-English/English-Onondaga Dictionary Toronto, ON: University of Toronto Press.

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[i] Although Distributed Morphology is perhaps the most well-known instantiation of the Single-Engine Hypothesis, it is by no means the only logical possibility. As noted in the references, Starke has developed a Nanosyntactic derivational approach. The ideas developed here are independent of the precise implementation of the Single-Engine Hypothesis.

[ii] For other approaches along these lines to polysynthetic languages see Mathieu (2008) for Ojibwe, Johns (2007) and Compton & Pittman (2007) for Inuktitut, and Wojdak (2008) for Nuu-Chah-Nulth, among others.

[iii] Even this definition of NI is controversial. In fact, arguments going back to Kroeber (1910) and Sapir (1911) have questioned the nature of the IN. Building on Grimshaw (1990), Marantz (2001) argues that roots do not have a categorial status. Under the assumption that NI involves incorporation of a bare root, it is senseless to talk about *noun* incorporation. See also Johns (2007; 2009) on this matter. Recent research suggests that there is no cross-linguistically uniform size that the IN takes. Specifically, Inuktitut (Johns 2007; Johns 2009) and Halkomelem (Wiltschko 2009) permit a bare root in NI constructions, while Onondaga (Woodbury 1975) and Ojibwe (Mathieu 2008) allow more material to appear, such as nominalizers, and (in the case of Ojibwe) possessive markers.

[iv] The following abbreviations are used in this paper: A, B, C – object agreement markers in Southern Tiwa (see footnote xi), ACC – accusative, BEN – benefactive, CAUS – causative, CIS – cislocative, CL – classifier (a verbal form that accompanies measure phrases), DS – dative subject, EPEN – epenthetic, F – feminine, FACT – factive (a type of mood), IND – indicative, INV – inverse voice, NE – a nominal particle in Northern Iroquoian languages of unclear

function, NMS – non-masculine singular (i.e., either feminine singular, feminine plural, or masculine plural), NOM – nominative, NZLR – nominalizer, OBJ – object, SG – singular, STAT – stative (akin to perfect aspect), SUBJ – subject, PUNC – punctual (akin to perfective aspect).

[v] All Onondaga examples taken from other sources are cited as in the source document. The Onondaga data from the author's field work uses the orthography conventions of Six Nations. Morphological glosses from all sources have been made uniform and correspond to current practices. Note also that the data taken from Woodbury's work uses /u/ instead of /ǫ/. This reflects a minor dialectal difference between Syracuse Onondaga and Six Nations Onondaga.

[vi] The syntax of Northern Iroquoian languages is remarkably consistent. Differences, where they arise, are noted.

[vii] The nominal component is typically a root or a root+nominalizer. Larger elements can sometimes incorporate in Northern Iroquoian, but that is not the focus of this paper.

[viii] Michelson (1991) discusses Oneida data such as the following, which appear to be examples of possessor stranding of an alienably possessed item. She argues convincingly, however, that the possessor is actually a dependent of the verb and not of the noun.

i. wa-hi-nuhs-ahni:nú: John
FACT-1.SG.AG.3.SG.M.PAT-house-buy.PUNC John
'I bought John's house.'

[ix] Later in Baker *et al.* (2005), it is proposed that Mohawk (and assumedly other Northern Iroquoian languages) that there is a phonologically null agreement marker that agrees with the IN. I revisit this issue in section 3.

[x] Note that we cannot boil the availability of NI with unaccusatives down to a single parameter. Hirose (2003) shows that NI is unavailable for *static* unaccusatives in Plains Cree (such as adjectives), but is available for *dynamic* unaccusatives (such as *arrive*, *fall*, etc.). Note also that Baker *et al.* state that "Mapudungun *usually* does not (admit NI in unaccusatives)" [emphasis mine], suggesting that more research should be done on the syntax of NI with unaccusatives.

[xi] Agreement in Southern Tiwa is marked by a portmanteau morpheme that shows both subject and object agreement. The subject is referenced in the traditional way. The object is referenced by one of three markers, namely A, B or C, which indicate both number and gender. There are three genders or noun classes in Southern Tiwa (i, ii and iii). The markers indicate the following: A – i.SG or ii.SG; B – i.PL or iii.SG; C – ii.PL or iii.PL.

[xii] Note that this is the only example of doubling in Southern Tiwa that Baker *et al.* offer as ungrammatical, while an additional example is given in Baker (1996: 313, ex (66b)). There are no examples showing that NI with true hyponymous doubles is ungrammatical in either Baker *et al*. (2005) or Baker (1988; 1996).

[xiii] Gronemeyer herself takes the Hopi data from a then unpublished Hopi dictionary, which has since appeared in print (Sekaquaptewa et al. 1998). See also Haugen (2008) for corroborating discussion.

[xiv] I have used Rosen's glosses for the morphemes rather than McKay's original, although the data are taken directly from McKay.

[xv] The claim that Nahuatl lacks NI of themes in unaccusatives clearly must be tested with extensive field work focussed deeply on Nahuatl and closely related languages (Matthewson 2011). Indeed, one of the themes of this paper is that there is much work to be done yet in the description of the basic properties of NI for a large number of languages.

[xvi] Yet another variation is a kind of NI is found in Swedish, where doubling appears to be obligatory (Josefsson 1998).

(i) Bonden ving+klippte gässen
farmer.the wing-cut geese.the
'The farmer cut the geese's wings.'

Josefsson argues that such examples arise by direct Merge of the IN in the verbal complex, leaving the transitivity and the object position unaffected. Given Josefsson's analysis, it appears that the IN and the direct object do not form a constituent upon at any stage of the derivation. Nevertheless, if we were to push the analysis proposed here on the Swedish facts, we would have to say that the Swedish verb takes either a DP complement or an XP complement comprised of an *n*P + DP. The obligatory doubling would reduce to the fact pro-drop is not otherwise available in Swedish. I will leave to future research whether these brief remarks can be developed into a comprehensive analysis for Swedish NI.

[xvii] Baker (1996: 325) lists several examples of *wh*-movment similar in structure to (32)a, which is indicates are ungrammatical, in line with his proposal. My Onondaga consultants have consistently judged these examples grammatical, so I am at a loss to explain this disparity. Note that claiming this is a true point of variation would mean that Onondaga is not a polysynthetic language in Baker's sense. Since Mohawk and Onondaga are so closely

related and share so many other syntactic properties, this would be a strange conclusion. Nevertheless, (32)c and d are still unexplained under Baker's proposal, and he fails to show the crucial evidence that such examples are ungrammatical in Mohawk.

[xviii] Kayne (2009) offers a very similar analogy. He notes that different authors have debated the merits of a top-down versus bottom-up derivational syntax; however, no one has suggested that the choice between the two is paramterized.

[xix] Using the CP phase edge as the cycle assumes a particular instantiation of cyclicity, namely that of Chomsky (2000, et seq.). Any version of cyclicity would work for the discussion here.

[xx] I leave aside here the actual mechanism for NI. Baker (1988; 2009) maintains that NI proceeds via head movement. Head movement has been under considerable debate recently; however, Roberts (2010) offers a viable alternative. See Barrie and Mathieu (2012) for problems with Roberts' head movement approach to NI, and Barrie (2011) and Mathieu (to appear) for alternative approaches to NI.

[xxi] Note that for our purposes, it is not necessary that the EPP is a primitive of UG (in the sense of Chomsky 1981, where the EPP is related to the obligatory presence of a subject). The need to check some uninterpretable feature on T will do for the analysis proposed here (see McFadden 2003 for discussion).

[xxii] For reasons of space, I do not review the entire range of empirical facts concerning the alienable/inalienable distinction. The reader should consult the references mentioned for further details.

[xxiii] A reviewer correctly challenges this assumption. Some languages check genitive Case by means of a preposition or other such marker. This is not the case for Northern Iroquoian, however. The possessor agrees with the head noun, indicating that Case checking has taken place. Crucially, this case marking is absent on the IN.

[xxiv] This point requires some qualification. A reviewer astutely points out that there are many bare noun type constructions in Scandinavian and Slavic languages that do not possess a DP projection, but nevertheless are not incorporated. Bare arguments can typically bare plural marking suggesting that they are at least NumPs rather than *n*Ps. Since it is not the point of this paper to work out a theory of Case assignment to nominal expressions smaller than a DP, I leave this point open but continue with the assumption that a bare *n*P does not have Case.

[xxv] Recall that Baker *et al.*'s (2005) analysis fails to account for obligatory full agreement in NI with unaccusative subjects as in (36) above, thus an alternative must be sought, regardless.