언어 현상과 언어학적 분석

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신승용 · 황화상 · 정한데로 · 전재연
박종언 · M. Barrie · 이정훈 · 강병규

역락

간행사

언어는 자연물로 존재하는 동시에 역사성과 사회성도 띤다. 따라서 언어의 정체를 온전히 밝히려면 자연물로서의 언어를 탐구하는 과학적 자세와 더불어 역사적, 사회적 존재로서의 언어를 이해하기 위한 인문학적, 사회학적 자세도 필요하다. 이러한 관점에서 서강대학교 언어정보연구소는 다양한 활동을 기획, 실행해 오고 있는바, "『언어와 정보사회』 학술총서"는 학술지 『언어와 정보사회』와 상호보완적이며, 특히 짧은 논문에 담기 어려운 긴 호흡과 깊은 통찰을 필요로 하는 연구에 초점을 둔다. 이 총서를 통해 지금까지의 연구가 노정하고 있는 한계를 넘어선 새로운 이해의 지평이 개척되길 기원한다.

서강대학교 언어정보연구소

책머리에

차례

Generative Approaches to Noun Incorporation*

Michael Barrie

This article outlines the history of generative approaches to noun incorporation, giving a current state-of-the-art description of the phenomenon and its analysis. I also discuss the future outlook of this phenomenon and why it is important to linguistic theory in general.

1. Overview

This article gives an overview of noun incorporation (NI), including both an empirical description of the phenomenon and a history of generative analyses. I show that an understanding of NI impinges on

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many aspects of interest to generative grammarians, thus underscoring the importance of an understanding of this phenomenon. In particular, NI impacts on our understanding of lexicalism, distributed morphology, complementation, idiomaticization, specificity and definiteness, head movement, and doubling phenomena.

Descriptions and analyses of NI abound in the literature. See Gerdts (1998) and Massam (2009) for recent descriptions. For the earliest descriptions of NI see Sapir (1911), Kroeber (1909) and Cuoq (1866). In this paper, we will consider only canonical cases of NI and unfortunately will not have the opportunity to consider closely related phenomena such as noun stripping (Miner, 1986), denominal verbs (de Reuse, 2008, Gerdts and Hukari, 2008, Haugen, 2008a, Marlett, 2008, Mathieu, 2013), or pseudo noun incorporation (Dayal, 2011, Massam, 2001), except in passing.

The remainder of this paper is structured as follows. Section 2 presents an empirical description of NI. Section 3 discusses the role of NI in the lexicalist debate. Section 4 presents Baker's first generative account of NI, assuming head movement. Section 5 presents some of the replies to Baker's analysis, pointing out problems with this analysis. Section 6 presents Baker's updated analysis of NI within the framework of his Polysynthesis Parameter. Section 7 presents additional data from other languages that are similar to NI, but which present additional challenges to the traditional head movement analysis. Section 8 discusses NI and doubling. Section 9 discusses head movement and noun

incorporation, presenting the novel analysis by Barrie and Mathieu (to appear). Finally, Section 10 presents future directions in the analysis of NI.

2. Description of Noun Incorporation

This section introduces the phenomenon of noun incorporation (NI), giving a description of the basic facts. A key aspect to keep in mind is that while the properties of NI are somewhat constant from one language to the next, they are not, of course, identical. There are variations from one language to the next. The majority of the data I present are from Onondaga and Cayuga, the two languages I have done the most field work on. These are both Northern Iroquoian languages, closely related to Mohawk, the language which is most commonly associated with generative syntactic approaches to NI, thanks to Baker (1988). Data from numerous other languages are presented, however to highlight specific points of variation.

NI constructions are prototypically formed from a verbal root and a nominal root or base that thematically stands in a verb-direct object relation (Baker 1988; Lounsbury 1949; Mithun 1984), although incorporation of adjuncts is also available as I will discuss below (Mithun 2004). Consider first the following Onondaga example with a non-incorporated DP (Gloria Williams and Nora Carrier speakers).[1)]

(1) waʔkhníʌ́ú: neʔ ganakdaʔ [Onondaga]

waʔ-	k-	hninu-	ː́	neʔ	ka-**nakt**-aʔ
fact-	1.sg-	buy-	punc	ne	np-**bed**-suf

'I bought the/a bed.'

Notice that the free-standing object DP contains functional morphology that is absent when the nominal root meaning bed undergoes NI, as shown in the following example. The absence of nominal morphology on the incorporated root is a hallmark of NI (Gerdts 1998; Massam 2009).

(2) waʔgenakdahníʌ́ú: [Onondaga]

waʔ-	k-	nakt-	hninu-	ː
fact-	1.sg.ag-	bed-	buy-	punc

'I bought a bed.'

1) The following abbreviations are used : 1a=first person agent, abs=absolutive, adv=adverbial, ag=agent, all=allative, an=animate, approx=approximative, aux=auxiliary caus=causative, com=commitative, cond=conditional, dat=dative, decl=declarative, deg=degree, det=determiner, dim=diminutive, dist=distributive, ds=different subject, dur=durative, emph=emphatic, epen=epenthetic, f=feminine, fact=factual, fut=future, gen=gender, imp=imperfective, hab=habitual, in=inanimate, ind=indicative, instr=instrumental, invis=invisible, join=joiner vowel (an epenthetic vowel in Northern Iroquoian NI constructions), lv=light verb, m=masculine, md=mood, n=neuter, ne=a nominal particle related to definiteness and specificity in Iroquoian languages, nfs=noun forming suffix, nfut=non future, nom=nominative, npref=nominal prefix, num=number, nzlr=nominalizer, o=object, obl=oblique, obv=obviative, pat=patient, pej=pejorative, pl=plural, poss=possessive, pres=present, pro=pronoun, prox=proximate, pst=past, punc=punctual, q=interrogative, ref=referential, rel=relativizer, rev=reversative, s=subject, srfl=semireflexive, sg=singular, ss=same subject, tr=transitive, vai=Verb Animate Intransitive, vbl=verbalizer, vii=Verb Inanimate Intransitive, vta=Verb Transitive Animate, vti=Verb Transitive Inanimate.

Note, however, that the IN is not necessarily a bare root. In some languages, including Onondaga, a nominalizer is found in instances where a deverbal root is incorporated. Consider the following Onondaga examples (Woodbury 2003 : 278, 139, respectively).

(3) a. agatgų̀ʔtshé:hwih
ak- [atkų- *(ʔtshR)]- ohw -ih
1s.pat- [be.poisonous- nzlr]- put.in.water -stat
'I have poisoned it with liquid poison.'

b. agadęnaʔtshähninų́h
ak- [atęnaʔt- *(shR)]- hninų -´h
1.sg.pat- [take.provisions- nzlr]- buy -stat
'I have bought groceries.'

While NI is typically characterized as incorporating either a bare root (as Wiltschko, 2009 shows for Halkomelem) or root + nominalizer (numerous Iroquoian examples shown here), there are some cases of incorporation of a larger nominal element. Consider the following Ojibwe (Algonquian) example below (Barrie and Mathieu, to appear). The IN, in square brackets, contains additional derivational morphology and a possessive marker.

(4) gii-ikwezhenzhishimi [Ojibwe]

(5) gii- [ikwe -zhenzh -ish -im] -i -w
pst- [girl -dim -pej -poss] -have.vai-3
'He/she has a naughty little girl.'

Doubling and stranding are available with NI in some languages, and both properties have played a major role in the generative analysis of NI. Doubling refers to the possibility of a full noun phrase appearing in object position along with an incorporated noun. The two nominal expressions have the same semantic relationship with the verb, and the IN is usually less specific than the full noun. Consider the following Onondaga example (N.C, G.W, speakers).

(6) waˀgnasgwahníːnǫˀ neˀ gwíhsgwihs neˀ kwihskwihs
waˀ-k-naskw-a-hninǫ-ˀ ne pig
fact- 1.sg.ag- animal- epen- buy- punc
'I bought a pig.'

Here, the IN *naskw* refers to a domesticated animal. It is doubled by the full DP neˀ gwíhsgwihs, ('a pig'). Note that this is distinct from the phenomenon in (11), where NI allows for a different nominal (with a different semantic relationship to the verb) to appear in object position. Related to doubling is stranding. Stranding involves the appearance of material that modifies the IN; however, the IN itself is not doubled by another free-standing noun. Consider the following Onondaga examples (N.C, G.W, speakers).

(7) a. waˀgnakdahníːnǫˀ nęgeˀ
waˀ-k-nakt-a-hninǫ-ˀ nękeˀ
fact-1.sg.ag-bed-epen-buy-punc dem
'I bought that bed.'

b. John wahanakdahní:nǫ́: ahsę́h niyǫ́h
John wa'-ha-nakt-a-hninǫ-'
John fact-3.sg.m.ag-bed-epen-buy-punc
ahsę́h niyǫ́h
three cl
'John bought three beds.'

In these two examples, the IN is modified by a demonstrative and a number phrase, respectively.

The next property we consider is agreement. In his *Polysynthesis Parameter*, Baker (1996) famously argues that NI and agreement are in complementary distribution in Mohawk.[2] (Lateron, Baker *et al*. 2005 propose that Mohawk actually has phonologically null agreement with the IN. We will take this up below.) Consider the following examples (Mohawk, Baker 1996 : 21).

(8) a. *Ra-nuhwe'-s ne owira'a.
3.sg.m.ag-like-hab ne baby
'He likes babies.'
b. Shako-nuhwe'-s (ne owira'a).
3.sg.m.ag:3.f/i.pat-like-hab ne baby
'He likes them (babies).'
c. Ra-wir-a-nuhwe'-s.
3.sg.m.ag-baby-join-like-hab
'He likes babies.'

2) Note that Koenig and Michelson (2008) challenge this observation based on data from Oneida. Their examples, however, involve additional probes such as benefactives or other applicatives.

Observe that when the object is a full DP as in (7)a-b agreement with the direct object is obligatory; however, when the noun is incorporated as in (7)c, agreement is absent.

Southern Tiwa exhibits an extremely complex system on NI (Allen, Gardiner and Frantz 1984), the details of which we explore below. Unlike Mohawk and Mapudungun, Southern Tiwa does exhibit agreement with NI. Consider the following examples (Allen et al. 1984 : 295).

(9) a. Yede seuanide a-mũ-ban.
that man 2.sg:A-see-pst
'You saw that man.'
b. Yede a-seuan-mũ-ban.
that 2.sg:A-man-see-pst
'You saw that man.'

Finally, we note that NI is restricted to direct objects and obliques such as locatives and instruments. Subjects and indirect objects cannot undergo NI (though see Öztürk 2009 for a possible exception). Baker (1988 : 207) offers the following example showing that the IN cannot be interpreted as the indirect object.

(10) *t-a'-ke-wir-u-' ne athvno
cis-fact-1sS-baby-give-punc ne ball
('I gave the ball to the baby.') [ok as, 'I gave the baby to the ball.']

To summarize, we have examined the following properties of NI and briefly considered how they can vary. The first property was the size of the IN. Typically, the IN is reduced in size, stripped of most of the functional morphology that accompanies full DPs. The next two properties were stranding and doubling. Some languages with NI have these two properties and some do not. Barrie (to appear) argues that these two properties go hand-in-hand—languages either have both or lack both. We will take this up below, however. Next, we examined the possibility of agreement with the IN, noting that some languages such as Mapudungun lack agreement with the IN, while other languages such as Southern Tiwa have agreement with the IN. Mohawk (and Northern Iroquoian in general) are traditionally described as lacking agreement with the IN; however, we will come back to this point below. Finally, we noted that NI is restricted to direct objects and obliques.

2.1. Mithun's Classification

Since the earliest studies on NI, a plethora of descriptions on 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. Consider the following example (Harrison 1979, as cited in Mithun 1984).

(11) a. Ngoah kohkoa oaring-kai.
I grind coconut-these
'I am grinding these coconuts.'
b. Ngoah ko oaring.
I grind coconut
'I am coconut-grinding.'

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.

(12) 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 (11)a, the direct object če' ('tree') is a free-standing nominal expression, assumedly a full DP. The sentence is accompanied by a locative expression, in which the nominal receives Case from the preposition. In (11)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.

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 and 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. argue that NI in Mapudungun is of this type. The following example shows that doubling and stranding are not available in Mapudungun (Baker, Aranovich and Golluscio, 2005 adapted from ex (9)).

(13) 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 (G.W., N.C., speakers). Here, the IN *naskw* ('animal') is doubled by the full DP *neˀ gwíhsgwihs* ('pig').

(14) waˀgnasgwahní:nǫˀneˀgwíhsgwihs

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. 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. Compounding and Classifier Incorporation

The distinction between compounding and classifier incorporation was introduced above, but we go over some more of the differences here. These two types of NI were proposed and analyzed by Rosen (1989) as a lexical operation (rather than syntactic as proposed by Baker 1988). We will present the empirical facts here and consider Rosen's analysis later.

In classifier NI, the IN can be doubled by a full DP that is typically more specific than the IN. In some languages, the full DP can be as specific as the IN. An example is given in (13). In Northern Iroquoian languages, Rosen (1989) claims that the full DP double must give more information than the IN; however, in Rembarnga, a Macro-Gunwinyguan language spoken in Northern Australia, exact DP doubles are found. Here is an example (McKay 1975 : 296).

(15) kaʈaʔ-Ø par-kaʈaʔ-ta-ŋiɲ.
paperbark-nom 2:3.pl.tr-paperbark-stand-(caus)-pst.cont
'They would spread paperbark (on the ground.)'

Stranding is similar to doubling, except that the full DP does not contain a lexical N. The following Caddo (Caddoan) examples illustrate this phenomenon (Mithun 1984 : 865-6). The INs are *italicized* and the

stranded modifiers are underlined.

(16) a. ná: *kan*-núh-ʔaʔ
that water-run.out-will
'That water will run out.'
b. wayah hák-*kʔuht*-ʔíʔ-saʔ
a.lot prog-grass-be.grow-prog
'There's a lot of grass.'

Finally, recall that we mentioned above that the presence or absence of agreement is a property along which NI can vary. Rosen proposes that the presence or absence of agreement corresponds to the distinction between classifier and compound incorporation. With classifier NI, Rosen argues there is no loss of transitivity. Thus, a transitive verb that has undergone NI remains transitive. The Rembarnga example in (14) shows this clearly since transitive marking is found on the verbal complex, and both subject and object agreement is found. This was also shown for the Southern Tiwa data in example (8). Rosen also argues that Northern Iroquoian languages also do not show any reduction in transitivity, but the data in example (7) clearly show that this is not the case. We will come back to this discrepancy later, but for now just cover the basic properties of classifier and compound NI.

Compound NI is distinguished from classifier NI by having the opposite properties as described above. Thus, with compound NI neither doubling nor stranding are available, and compound NI results in a loss

of transitivity. Examples typically come from Austronesian languages. Consider the following Tongan example (Chung 1978, as cited in Rosen, 1989).

(17) a. naʔe haka ʔe he sianá ʔa e ika
pst cook erg the man abs the fish
'The man cooked a fish.'

b. naʔe haka-ika ʔa e siana
pst cook-fish abs the man
'The man cooked fish.'

c. *naʔe haka-ika ʔe he sianá
pst cook-fish erg the man
('The man cooked fish.')

Crucially, once NI has taken place, the subject is marked with absolutive Case (as expected with intransitive verbs) rather than with ergative Case (as expected with transitive verbs). Rosen also gives examples showing that doubling and stranding are not possible in these languages; however, the reader is left to consult the references above to see the relevant examples.

2.3. Summary

I have identified several key properties of NI in the world's languages and discussed how they vary. We noted that the size of the IN cross-linguistically is morphologically reduced with respect to the

stand-alone noun. Much of the functional suprastructure that accompanies a full DP cannot appear on an IN, although there is variation. Languages vary in whether verbs agree with the IN or not. Finally, some languages allow the IN to be accompanied by a DP double or by stranded material.

We also covered Mithun's four-way typology and Rosen's two-way classification. Mithun's four-way typology is an implicational hierarchy that is meant to capture the historical development of NI. Rosen's two-way classification is meant to tie together three of the properties listed above. Namely, with classifier NI there is no loss in transitivity either in terms of the ability of the verb to still appear with a direct object or in terms of agreement (although we have pointed out that this doesn't quite hold for Northern Iroquoian languages). With classifier NI, doubling and stranding are also possible. With compound NI, on the other hand, transitivity is reduced, and neither doubling nor stranding is available.

3. Background : Noun Incorporation and Lexicalism

The Lexicalist Hypothesis aligns closely with a traditional view of grammar in that it contains a Lexicon with a word-formation module (Ackema 1999; Ackema and Neeleman 2004; Anderson 1982; Aronoff 1994; Chomsky 1970; Di Sciullo and Williams 1987; Williams 1981).

The output of this word-formation module is the syntactic word, which is functionally atomic for all syntactic operations. That is, no syntactic operation can depend on the internal morphological structure of a word.

The Single-Engine Hypothesis rejects any kind of presyntactic lexical module (Arad 2005; Julien 2002; Marantz 1997). Thus, the Single-Engine Hypothesis is a rejection of the Lexicalist Hypothesis. Under this approach, syntax manipulates individual morphemes rather than word-like elements (although once the syntax has formed a word-like element it can be manipulated as a whole). The precise notion of "syntactic word" has consequently received less attention since it appears to be epiphenomenal.

Barrie (2012) argues that NI does not make the strong argument for lexicalism that it was claimed to have. I do not repeat the entire argumentation here, but I do cover some facts as they pertain to the current discussion. The points I cover are the following: (1) NI of non-objects and (2) special meaning. Other properties of NI that have arisen under the rubric of lexicalism will be dealt with separately.

In addition to direct objects, other elements including paths, locations, and instruments can also undergo NI, as mentioned above (Mithun 1984; Muro 2009; Spencer; 1995). In Blackfoot (Algonquian) and Greek, adverbs can also undergo NI (Alexiadou 1997). Recipients and benefactives, however, cannot undergo NI. This seemingly disparate set of elements (direct objects, paths, locations, instruments and adverbs) was originally an argument against a syntactic analysis for NI (Di

Sciullo and Williams 1987; Spencer 1995). Here are some examples from Onondaga (Woodbury 2003:282, 928, respectively), (17); Chukchi (Spencer 1995, ex (58a)), (18); and Southern Nahuatl (Merlan 1976, ex (10)), (19).

(18) a. Honathahidákheˀ.
hon- at- hah- idakhe -ˀ
3.pl.m.ag-srfl- path- run -punc
'They are walking on a path.'
b. Waˀhageˀnhyayęhdaˀ.
waˀ- hak- ˀnhya- a- yęht -aˀ
fact- 3:1 stick- join- hit -punc
'He hit me with a stick.'

(19) gətg=əlqət-gʔe walwəŋən
lake=go-3.sg.subj raven.abs.sg
'Raven went to the lake.'

(20) yaʔ kikočillotetеʔki panci
3.sg 3.sg-it-knife-cut bread
'He cut the bread with the knife.'

Barrie and Li (2013, 2015) compare these facts with non-canonical objects in Chinese, which show exactly the same range of possibilities. Non-canonical objects in Chinese can include locations, paths, and instruments as well, but exclude benefactives and recipients, just as for NI. Here is an example for illustration.

(21) ta xihuan chi **haohua canting**
he like eat fancy restaurant
'He likes to eat at fancy restaurants.'

The Chinese non-canonical objects are clearly syntactic as there is no morphological cohesion between the object and the verb as in the case of NI, but crucially, the non-canonical object interacts with the Case system of Chinese, highlighting the syntactic nature of this construction (Li 2010). Barrie and Li argued that the common properties between NI and Chinese non-canonical objects beckoned a common syntactic analysis. See the references cited for such an analysis. The gist of this discussion is that thematic range of objects that can under NI is not an impediment to a syntactic analysis of the phenomenon.

Second, many authors advancing the Lexicalist Hypothesis have claimed that wordhood is distinguished by the property of special meaning. Marantz (1997) has shown several mismatches between the domain of the word and the domain of special meaning (though see Marantz 2013 for a more refined account of special meaning and polysemy). Polysynthetic languages offer an additional testing ground for special meaning due to their tendency to pack an entire clause into a phonological word. Marantz (1997) proposes that the domain of special interpretation is the sister of v. Such a proposal predicts that special meanings should arise only for those parts of the word that correspond to something smaller than a vP. Consider the following example

(Woodbury 2003:225). The verb embedded under the causative morpheme is an unaccusative, whose argument is part of the VP. Thus, an idiomatic reading is possible for 'someone's body disappeared', namely, 'become lost'.

(22) waˀgǫyaˀdahdǫ́ˀdaˀ [Onondaga]
waˀ- kǫ- yaˀt- ahtǫ -ˀt -aˀ
fact- I:you- body- disappear -caus -punc
'I lost you (e.g. in a crowd).'

However, no idiomatic reading possible if the verb embedded under a causative contains an agent. Consider the following example (G.W, N.C., speakers).[3)]

(23) waˀkheyǫdyaˀdęˀ [Onondaga]
waˀ- khe- yǫdy -a -ˀt -ę -ˀ
fact- 1:3- laugh -epen -caus -ben -punc
'I made them/her laugh.'

Yǫdy ('laugh') is an unergative with a single external argument. No idiomatic reading is possible here. Thus, what we observe here is portions of words that are not capable of idiomatic readings. These facts are not predicted by the Lexicalist Hypothesis, but receive a principled explanation under the hypothesis that the domain of special meaning is

3) A full scale study of idioms in Onondaga awaits, but preliminary evidence suggests that idiomatic readings are available only to elements below vP.

rooted in syntactic structure rather than in the notion of wordhood.

To conclude, the typical arguments raised against a syntactic analysis of NI in favour of a lexicalist analysis simply do not hold water under closer scrutiny. Although we have only touched on a few of the arguments here, the literature cited above contains further arguments in favour of a syntactic approach to NI, the history of which we describe in the next section.

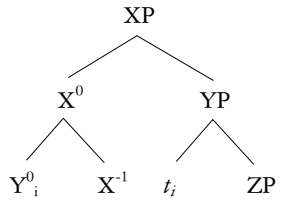
4. The Early Analysis : NI in Northern Iroquoian

Baker (1988) represents the first syntactic analysis of NI within a generative framework, which arose at the same time as Pollock's (1989) syntactic analysis of verbal morphology. Baker and Pollock were the catalyst for a range of studies in which many phenomena, which were previously thought to be morphological, were re-analyzed as syntactic.

Baker develops a general theory of incorporation largely grounded in Government and Binding Theory, which has all but been abandoned. Thus, we do not cover the intricacies in great detail here, but concentrate on the main ideas. The bulk of the theoretical machinery he covers concerns the Head Movement Constraint, which he seeks to derive from the Empty Category Principle and the notion of Barriers. The conclusion he draws in his discussion is that head movement is restricted to moving a head to an immediately c-commanding head

position. On the morphological side, Baker restricts word formation to head movement. In fact, he largely discusses morphology as being the grammar of complex head formation. In the following hypothetical example, X^0 is a word derived by head movement as shown, and whose internal properties are regulated by language-specific morphological rules.

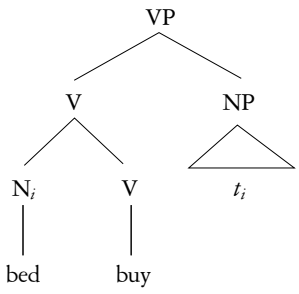
(24)



In short, Baker (1988) argues that incorporation is derived by head movement, which is constrained by the Head Movement Constraint. The maximal X^0, be it complex or simplex, forms a morphological word.

Let's consider the first example of NI given at the very beginning of this chapter. An analysis along the lines of Baker (1988) runs as follows.

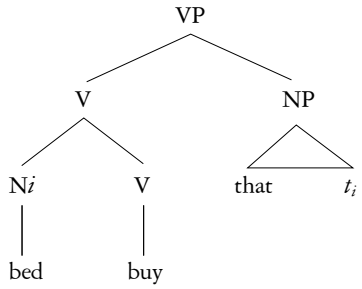
(25)



Baker's idea is quite simple. The head N of the NP undergoes head movement to V, thus forming a morphological word. Under this analysis, stranding falls out naturally as described next.

Baker (1988, inter alia) has argued that stranding neatly falls out from the head movement analysis he proposes. Consider example (6)a from above. Under the head movement analysis, the demonstrative is adjoined to the NP and does not interfere with head movement from N to V.

(26)



5. The Lexicalist Reaction

As noted above, Rosen (1989) proposes two fundamentally different kinds of NI: classifier NI and compound NI, the analysis for which we cover here. Rosen departs from Baker's syntactic approach, arguing for a lexicalist approach to NI. That is, Rosen assumes a pre-syntactic morphological component where word-building processes take place. The

process itself is quite simple. Rosen argues that there are two fundamentally different kinds of NI that are derived lexically as follows. In compound NI, a noun and a verb are combined for form a complex predicate such that the noun takes up an argument position. In classifier NI when the noun and verb are combined, the noun does not take up an argument position but is semantically linked to the direct object. In the following paragraphs, we take up Rosen's arguments against Baker's syntactic analysis of NI. Specifically, we discuss stranding and doubling. Rosen argues that stranding is available independently of NI, thus it does not constitute a strong argument for NI. Rosen also argues that doubling presents a major challenge for a syntactic analysis of NI since the IN and the double apparently originate in the same position.

First we examine classifier NI. Baker had originally used stranding as evidence in favour of his head movement account of NI. However, Rosen counters that NI is available regardless of stranding. She offers the following Caddo data, citing Mithun (1984 : 865-5).

(27) a. ná: kan-núh-ʔaʔ
that water-run.out-will
'That water will run out.'
b. ná: ʔíyúhʔaʔ
that run.out.will
'That will run out.'

Rosen argues that Baker's syntactic account of NI requires two

different mechanisms for the data in (26), whereas her lexical analysis does not. Furthermore, under the lexical analysis she proposes, doubling does not present any challenge. Since the IN is lexically combined with the verb, a full DP can appear in object position. Doubling, as mentioned above, is problematic for Baker's head movement analysis.

Rosen argues that transitivity is not affected in Classifier NI, a point made clear from the following quote (Rosen 1989 : 302) : "*There is no indication in the literature that incorporation ever affects the transitivity of the verb in these languages*." In support of this claim she offers the following Rembarnga example (McKay 1975 : 79).

(28) … piri-ɽut-maɳinʔ-miɲ munaŋa-yiʔ
3.sg.obj.3.pl.trans.s.rel-road-build-pst.punc white.man-erg
'…where the white men build a road.'

Observe that the subject appears with ergative Case and that transitive morphology and object agreement are found inside the verbal complex.

6. The Polysynthesis Parameter

Baker (1996) proposes an overarching macroparameter that distinguishes polysynthetic languages from non-polysynthetic ones.

Languages make a parametric choice as to whether they are polysynthetic or not. The parameter is stated informally below, followed by Baker's formal definition.

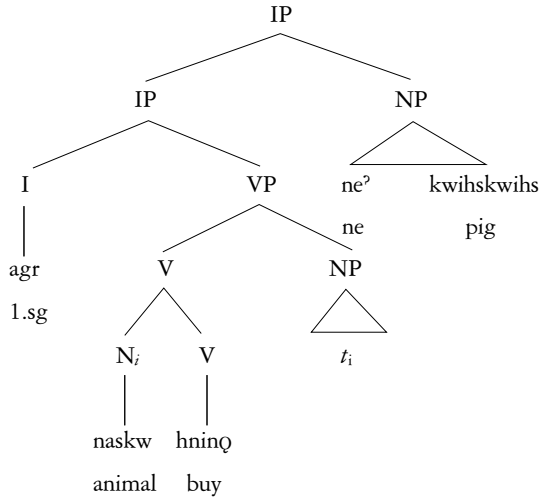
(29) Every argument of a head element must be related to a morpheme in the word containing that head. (Baker 1996 : 14)

For our purposes, we can take 'head element' to mean verbs. Below is the formal version, called the Morphological Visibility Condition (MVC). Thus, a language such as Mohawk obeys the MVC, while a language such as English does not.

(30) A phrase, X, is visible for theta-role assignment from a head, Y, only if it is coindexed with a morpheme in the word containing Y via :
a. an agreement relationship, or
b. a movement relationship.

Let's consider how this works for one of the examples above. Consider example (14) above. The subject is first person singular and the object is third person singular—a pig. Here is Baker's analysis (English words underneath for clarity).

(31)



The verb *hninǫ* ('buy') assigns two theta roles, <agent> and <theme>, both of which are assigned to word-internal morphemes, thereby satisfying the MVC.[4)]

This condition explains the complementarity between agreement and NI observed in Mohawk. Mohawk makes the economical choice between hosting either an agreement morpheme or an IN. Recall the Southern Tiwa facts above in which NI and agreement are not in complementary distribution. Baker contends that there is no prohibition against the appearance of two word-internal morphemes for a given argument. He does give evidence that NI in Southern Tiwa is indeed syntactic, but in

4) Note that under more contemporary theories syntactic structure the external argument is not assigned by the verb, but by a higher functional projection (Chomsky 1995; Kratzer 1996). This is not problematic for Baker's analysis presented here since all the relevant morphemes are still word-internal.

the interests of space we gloss over his arguments.

7. Widening the Empirical Domain of NI

Since Baker's ground breaking study on NI in Mohawk, the same phenomenon has been studied in other languages with the unsurprising result that NI is not a uniform phenomenon cross-linguistically. This fact, of course, was underscored much earlier in Mithun's (1984) cross-linguistic typology of NI as described above. In light of the increasing awareness in the variation in NI by generative linguists Baker et al. (2005) analyze NI in three unrelated languages, which exhibit disparate properties of NI. In the same vein, Barrie and Mathieu (to appear) analyze variation in the structure of the IN itself. In this section we discuss some of the variation found in NI constructions around the world and some of the generative analyses that have been proposed to account for them.

7.1. Variable Phi-Feature Deletion

Baker *et al* (2005) discuss NI in detail in three unrelated languages: Mohawk, Mapudungun and Southern Tiwa. Many relevant details have been supplied above; however, we review these here and provide additional details on the variation in NI among these three languages.

Baker *et al.*'s analysis rests on the assumption that the deletion of phi-features is parameterized across languages. We begin with a review of the relevant properties of NI in Northern Iroquoian pertinent to Baker *et al*.s analysis. Note that many of the examples use Onondaga rather than Mohawk, although, as made clear above, the properties regarding NI are virtually the same in both languages.

Recall that in Northern Iroquoian the IN can 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.

(32) 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.'

Recall that modifier stranding involves an adjectival phrase, relative clause or the like modifies an IN. This was shown above with Onondaga, and additional examples from Mohawk are shown here (Baker 1996 : 308, ex (52c,d)).

(33) 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).

(34) a. ohahaná:wę̣h
o- ahah- a- nawę̣- h
3.sg.nt.pat- road- join- wet- stat
'The road is wet.'

b. waˀgaihwí:nyų̨ˀ
waˀ- ka- Rihw- inyų̨ -ˀ
fact- 3.sg.nt.ag- matter- arrive -punc
'The news arrived.'

c. ę̣gaę̣dyenę́ˀnhaˀ
ę̣-ka-Rę̣t-yenę̣-ˀ-nhaˀ
fut-3.sg.nt.ag-log-fall-inch-punc
'The will log fall over.'

d. gojyasgwiyänų́hwaks
go- tyaskwiR- nų́hwak -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 (N.C., G.W., speakers). Agreement with the

possessor is obligatory, as (35)b shows. This construction is available only with inalienably possessed nouns, regardless of the presence or absence of agreement, (35)c-d.[5)]

(35) a. waʔkhenętshohaeʔ neʔ Mary

waʔ-khe-nętsh-ohae-ʔ	neʔ	Mary			
fact-1:3-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-	1:3-	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.')

Finally, recall that Baker (1996) describes Mohawk as not having agreement with the IN as per his MVC. In Baker *et al*. (2005),

5) 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.'

however, he changes his stance and argues, along with his co-authors, that the IN in Mohawk exhibits default agreement, which happens to be phonologically null. The distinction between complete lack of agreement and phonologically null agreement is integral to the analysis presented below. The following Onondaga examples illustrate the same property (N.C., G.W., speakers).

(36) a. gwiyänǫ́hweˀs
k- wiR- nǫ́hweˀ- s
1.sg.ag- baby- like punc
'I like the baby.'

b. khenǫ́hweˀs neˀ owiyäˀ.
khe- nǫ́hweˀ- s neˀ o-wiR-aˀ
1:3- 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 and Michelson (2008) offer the following Oneida data, where agreement is obligatory.

(37) a. waʔ- shakoti- ksaʔt- áks(ʌ)- a- ht- eʔ
fact- 3:3.f- child- be.bad- epen- caus- punc
'They spoiled her, the child.'

b. waʔ- khey- atʌloʔsl- úny- ʌ- ʔ
fact- 1:3- friend- make- ben- punc
'I made friends with her'

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.

7.2. 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). 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).

(38) 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 constructions, as the following examples illustrate (Baker et al. 2005 adapted from ex.(9)).

(39) 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)).[6)]

(40) 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.'

6) 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.

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.

7.3. Southern Tiwa[7)]

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 obligatory 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)).

7) 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.

(41) 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)).[8)]

(42) 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 (42)b is attributed to the presence of doubling. Rosen (1989) suggests that the ungrammaticality of (42)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

8) 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).

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.

(43) #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.

(44) 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 Mapudungun as described above. Consider the following example. The agreement marker, A, references the noun class and number of the object (see footnote 7).

(45) 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. argue 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.

Unfortunately, space does not allow us to present Baker *et al.*'s entire analysis, so we just cover the core of it here. They propose that upon movement of a nominal, the ϕ-features that remain in the base position are subject to parametric deletion of reduction as follows. The ϕ-features can either remain (as they propose for Southern Tiwa), be reduced (to 3rd person, singular, neuter as they suggest for Mohawk) or be deleted (as they suggest for Mapudungun).

Their analysis of NI runs as follows. They assume, following Baker (1988) that NI arises by head movement. Once the noun incorporates, it is no longer visible for agreement; however, the trace is. This is where

the parametric ϕ-deletion comes in to play. In Southern Tiwa, the ϕ -features remain in full and can trigger full object agreement. In Mohawk, the ϕ-features are reduced to 3rd person singular, neuter, which triggers null agreement. Finally, in Mapudungun, the ϕ-features are deleted and no object agreement is found at all. The reader is invited to consult Baker *et al*. to read the rest of the analysis and how it captures the facts concerning NI and unaccusatives. Although there are problematic issues with their analysis (see Barrie, to appear), it represents one of the first attempts at capturing the cross-linguistic variation in NI constructions from a generative perspective.

8. NI and Doubling

As Rosen (1989) points out, doubling presents one of the most difficult challenges to a purely syntactic account of NI. Simply put, how can the IN and the double originate in the same place? In this section, we will review some of the ways this challenge has been taken up. We start with Baker's analysis and point out some problems, then go on to present solutions proposed by Barrie (to appear) and Haugen (2008b, 2009).

As we saw above, Baker (1996) proposes that the double is adjoined in a clause-peripheral position. 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 Baker's model. Consider, however, the following Onondaga data that clearly contradict this prediction (G.W., N.C., speakers).

(46) a. Gaęnigaeˀ waˀenasgwahní:nǫ ˀ?
kaęnikáeˀ waˀ- s- naskw- a- hninǫ -ˀ
which fact- 2.sg- animal- join- buy -punc
'Which animal did you buy?'

b. nwadęˀ waˀsnasgwahní:nǫˀ
nwadęˀ waˀ- s- naskw- a- hninǫ- ˀ
what fact- you- animal- join- buy- punc
'What did you buy?' (kind of animal presupposed)

c. gaęnigáeˀ gwíhsgwihs waˀsnasgwahní:nǫˀ
kaęnikáeˀ kwihskwihs waˀ-s-naskw-a-hninǫ-ˀ
which pig fact-2.sg-animal-join-buy-punc
'Which pig did you buy?

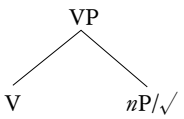
d. Gaęnigaeˀ gwíhsgwis shé:heˀ Mary waˀenasgwahní:nǫ ˀ?
which pig you.think Mary she.animal-bought.it
'Which pig do you think Mary bought?'

Given these data, we must conclude that the double cannot appear in a position adjoined outside the clause, but rather must originate in an argument position, at least when *wh*-movement is found. Thus, a solution must be found that allows both the IN and the double to

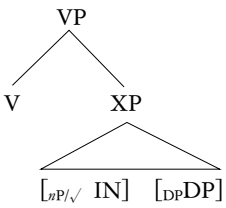
originate in the same location. We will cover two solutions that have been proposed in the literature here. The first is Barrie's (2011, to appear) proposal that the IN and the double together form a "big DP". The other is Haugen's (2008, 2009) proposal that both the head and the tail of head movement are spelled out, but they are instantiated by different (but compatible) lexical roots.

We begin with the big DP approach. Following an idea by Sportiche (1996), Barrie (2011, to appear) proposes that the IN and the DP double form a complex "big DP", labelled XP in (47)b. Recall that languages such Mapudungun and Chukchi do not permit doubling or stranding. NI in these languages, Barrie argues, (relatively) uncontroversially assumes that the verb selects a bare root or nP. The interesting case is (47)b, which we now discuss.

(47) a.



b.



One of Rosen's objections to Baker's syntactic approach to NI is that stranding is available independently of NI. Thus, if the IN undergoing head movement is responsible for stranding in the examples Baker discusses, what gives rise to stranding in non-NI constructions? Rosen argues that two different mechanisms would be required for what is

essentially the same phenomenon. The solution Barrie proposes easily accounts for the independence of stranding and NI. The full DP inside XP can contain a lexical N or not depending on what the language allows. Consider the following schematic for the possibilities in Northern Iroquoian (English words used).

(48)	[$_{nP}$ fruit][DP this apple]	I fruit-ate this apple.	doubling
	[$_{nP}$ fruit][DP this]	I fruit-ate this.	stranding
	[$_{DP}$ this apple]	I ate this apple.	full DP, no NI
	[$_{DP}$ this]	I ate this.	stranding with no NI

The strength of this analysis is that it can account for the co-existence of doubling and stranding in a number of languages, including the fact that doubling is available only with unaccusatives in Mapudungun (see Barrie, to appear for details). This strength, however, could be the proposal's undoing if it turns out that Southern Tiwa does indeed allow stranding only and no doubling.

We end this section with a brief discussion of Haugen's (2008, 2009) proposal for doubling in Uto-Aztecan languages. Haugen starts with the observation that doubling often, but now always, involves a cognate object as in the English *sleep the sleep of the dead*. Haugen proposes that both the head and the tail of the chain can be spelled out under a Distributed Morphology framework. He further suggests that in the case of hyponymous objects as in (45)c the head, the IN, can be spelled out by a different root that has compatible features. He goes so far as to

propose a feature geometry of the relevant semantic features to ensure that only a semantically compatible root is inserted at PF. Unfortunately, space does not allow us to present a full description of Haugen's in depth analysis.

9. NI as Phrasal Movement

One hold-over from the Government and Binding era is the distinction between HM and phrasal movement, which persists to this day (Aboh 2004; Baker 2009; Roberts 2010). However, with the demise of any formal distinction between X0 and XP and the introduction of Bare Phrase Structure (Chomsky 1995), the concept of HM has been called in to question (Fanselow 2003, Koopman and Szabolcsi 2000, Mahajan 2003). Chomsky (2001, 2000) has suggested relegating HM to PF, but leaves open the possibility that incorporation phenomena may still be part of the overt syntax (Chomsky 2001 : 37). NI certainly cannot be a purely PF phenomenon given its semantic effects, such as frozen scope (van Geenhoven 1998), and syntactic properties, such as changes in argument structure (Baker 1996, Sadock 1986). In response to the growing scepticism regarding the existence of HM, Baker (2009) re-affirms that HM indeed is still needed for NI, but does not address how NI can be implemented in a Bare Phrase Structure framework.

Roberts (2011), in fact, proposes a novel analysis of HM that is

consistent with BPS. Additionally, he outlines an approach to a HM analysis of NI within his new framework. Barrie and Mathieu (2012), however, outline numerous problems with Roberts' analysis, instead suggesting that a phrasal movement approach is better able to capture the cross-linguistic properties of NI. Such an analysis is given in detail in Barrie and Mathieu (to appear).

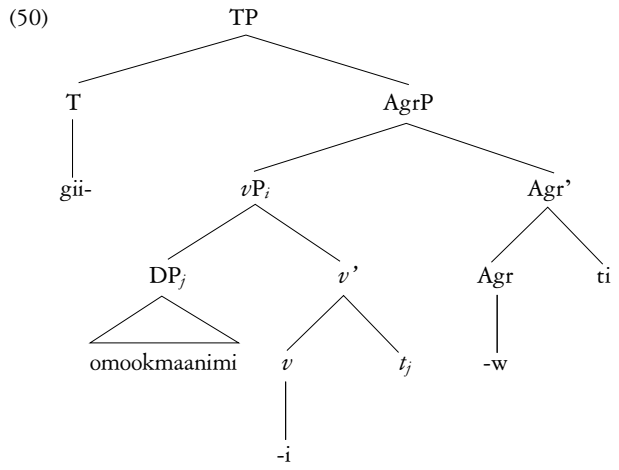
Since space is short we will consider the derivation of one example of NI. Consider the following Ojibwe example (Barrie and Mathieu, to appear, ex (43)). Following Déchaine (1999), Barrie and Mathieu argue that the IN in (48), shown in square brackets, is itself formed by phrasal movement. Their derivation directly mirrors Déchaine's proposed structure for the equivalent in Cree, a closely related language.

(49) mookmaanimi [Ojibwe]

[o-	mookomaan	-im]	-i	-w
[3-	knife	-poss]	-have.vai	-3s

'He/she has a knife.'

This DP, the IN, merges with vP, then participates in roll-up movement to form the incorporated construction as follows (example (46) from Barrie and Mathieu).



We do not have space to discuss the ramifications for this proposal for NI or word formation in general.

10. Future Directions

Although this chapter focuses on the syntactic properties of NI, the semantic properties have played a role in directing the analysis of NI. Although semantic properties of NI have been described in detail previously (Bonvillain 1989, Mithun 1979, 1984), van Geenhoven (1998) first tied together the syntactic and semantic properties of NI. Massam (2001) described a phenomenon in Niuean similar to NI in terms of its semantics, but not its syntax, and Dayal (2011) explicitly described the properties of semantic incorporation in Hindi. Since then, constructions

whose syntax is unlike NI, but whose semantics do correspond to those of NI have been brought into the general discussion of NI (Barrie and Li 2013, 2015, Chi 1992, Sato 2010).

To summarize, then, we have seen that an understanding of NI involves an understanding of the morphological, syntactic and semantic properties of this phenomenon. It was suggested that many of these properties are all tied together by the hypothesis that NI involves a verb selecting a reduced nominal phrase, although many details remain to be worked out. One tentative suggestive linked the semantic properties of NI to the availability of differentiated Case. Again, though, the precise details are far from clear. What is clear, however, is that a full understanding of NI and its associated properties will come only by broadening the empirical base of this phenomenon by including those languages not traditionally thought of as having NI. Barrie and Li (2013, 2015), for instance compared Mandarin Chinese data to that of Northern Iroquoian. Sato (2010) examined Japanese data in which idiomatic readings arise only when the direct object lacks Case marking, suggesting a link between Case (or reduced structure) and idiomaticity, a hallmark semantic property of NI. Thus, in addition to laying out the history and current state of research into NI, it is hoped that this discussion serves as a springboard for further research on this topic.

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