Noun Incorporation and the Lexicalist Hypothesis

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Abstract: Many recent and not so recent debates on noun incorporation (NI) pit a syntactic analysis (Baker, 1988, 1996, Haugen, 2008, Sadock, 1980, 1986) against a lexical origin (Di Sciullo and Williams, 1987, Rosen, 1989) of NI constructions. Within the past 10 years or so, many researchers have abandoned any sort of generative lexicon in favour of the so-called single-engine hypothesis in which word formation is handled strictly in the syntax, with the possibility of some post-syntactic re-arrangements (Halle & Marantz, 1993; Julien, 2002; Marantz, 1997, 2001; inter alia). The goal of this paper is to examine how these discussions on NI bear on the Lexicalist Hypothesis. I show that a separate morphological module is not only unnecessary, but also unparsimonious in explaining NI.[*]

1 Introduction

Lexicalism has played a central role in many discussions on grammar for at least several decades (Ackema, 1999, Ackema and Neeleman, 2002, 2004, Aronoff, 1994, Baker, 1985, 1988, Chomsky, 1970, Di Sciullo and Williams, 1987, Hale and Keyser, 2003, Halle and Marantz, 1993, Harley, 2008, Julien, 2002, Kiparsky, 1997, Lees, 1960, Marantz, 1997, 2001, Pollock, 1989). The central question is this: Is there a separate morphological module that builds words, which are then manipulated by a separate syntactic module? I will examine this question in the context of noun incorporation (NI), a phenomenon found in numerous languages around the world. Building on previous work (Baker, 1988, 1996, 2009, Barrie, 2008a, Haugen, 2009, Mithun, 1984, Oxford, 2008, Rosen, 1989, Sadock, 1985) I will conclude that no separate word-building component of the grammar is, in fact, necessary to account for the properties of NI. In addition, I will discuss some criticisms of a syntactic approach to NI and present a preliminary analysis to address these concerns. The over-arching theme of this paper, however, is that a detailed understanding of NI leads to the conclusion that no separate pre-syntactic word-forming module is needed to account for NI.

Facts will be drawn from a variety of languages in this discussion; however, Onondaga, an Iroquoian language spoken by about 100 people in southern Ontario, Canada and in New York State, USA, will be the primary language of discussion. Much of the Onondaga data comes from my own field work in Six Nations. I also discuss data from Mohawk and Oneida, two other Iroquoian languages. The syntactic properties of Onondaga, Oneida and Mohawk (along with other Northern Iroquoian languages) are typically similar enough (and in some cases identical) that generalizations in one language can be shown to hold across the Northern Iroquoian branch. Thus, in the current discussion, I often make remarks about Onondaga which also hold for the other Northern Iroquoian languages. Any differences of importance are appropriately noted. Other languages with data taken from primary sources are noted as they arise in the forthcoming discussion.

The remainder of this paper is organized as follows. Section 2 contains a background discussion on the issues at the heart of the lexicalist/non-lexicalist debate. Section 3 introduces the core properties of NI, paying particularly close attention to those properties that impinge on the debate. Section 4 presents Baker's syntactic analysis of NI along with

[*] I would like to thank Gloria Williams and Nora Carrier for sharing their knowledge of the Onondaga language with me. I would also like to thank the audiences at Sogang University, Carleton University and Syracuse University as well as Martina Wiltschko, Eric Mathieu, Yosuke Sato, Elizabeth Cowper, and especially Audrey Li for helpful past discussions on this and related topics. Thanks also to Beatrice Bullshields and Daisy Elijah for earlier work on Blackfoot and Oneida, respectively (shown briefly here). This research was funded by the Sogang University Research Grant of 2011. All errors are mine.

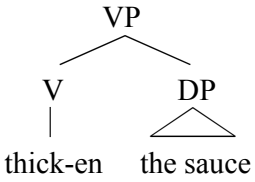
some problematic aspects which have been pointed out by those promulgating a lexicalist account of NI. Section 5 presents some suggestions that address these concerns. Section 6 is a brief conclusion.

2 The Lexicalist Hypothesis and the Single-Engine Hypothesis

This section introduces the key properties of the Lexicalist Hypothesis and the Single-Engine Hypothesis. The core difference between these two approaches is the relationship between morphology and syntax. The Lexicalist Hypothesis contends that the minimal units of syntax are (potentially) morphologically complex words whose internal structure is invisible to syntax. The Single-Engine Hypothesis rejects this approach and contends that words and phrases are formed by a uniform syntactic module. Although Distributed Morphology (Embick and Noyer, 2007, Halle and Marantz, 1993) is probably the most well-known instantiation of the Single-Engine Hypothesis, it is not the only one. It is not the point of this discussion to argue for one particular framework over another. Rather, I simply intend to show that NI offers additional evidence in favour of the Single-Engine Hypothesis.

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. Thus, in a phrase such as *thicken the sauce*, the 'word' *thicken* is formed in the Lexicon and is inserted into the syntax. Although it has morphological structure, it is functionally atomic for syntactic operations.

(1)

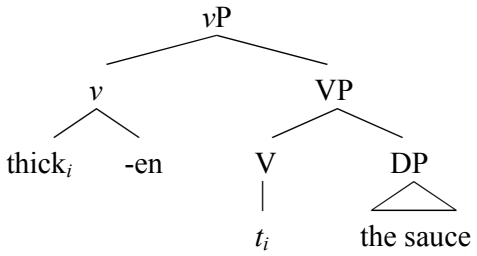


The Single-Engine Hypothesis rejects any kind of presyntactic lexical module (Arad, 2005, Julien, 2002, Marantz, 1997). Thus, the Single-Engine Hypothesis is a rejection of the Lexicalist Hypothesis. Under this approach, syntax manipulates individual morphemes rather than word-like elements (although once the syntax has formed a word-like element it can be manipulated as a whole).[1] The precise notion of "syntactic word" has consequently received less attention since it appears to be epiphenomenal.[2] Under this approach, we get the following derivation for *thicken the sauce* instead.

[1] As mentioned above, there are other approaches to the Single-Engine Hypothesis. Nanosyntax (Starke, 2003, 2009), for instance, holds that syntax manipulate features directly, and that morphemes map onto miniature sections of the syntactic tree.

[2] Julien (2002) suggests that wordhood is a psycholinguistic notion: "The correct question is not how words are formed, but how two or more morphemes come to be perceived as a word." (Julien, 2002, 36).

(2)



Advocates of the Lexicalist Hypothesis posit certain properties of syntactic words as evidence for a pre-syntactic word-formation module. I list here various properties that are argued to distinguish syntactic words (i.e., morphologically complex syntactic atoms) from syntactic phrases (Ackema and Neeleman, 2004, Williams, 2007). I list these below and discuss each one in turn.

- no delayed resolution
- no inheritance
- information encapsulation (modularity)
- intuitions on wordhood
- special meaning

2.1 Delayed resolution

Williams (2007) notes that anaphoric relations in syntax can be resolved across a large expanse of a clause. Specifically, an anaphoric element and its antecedent can be separated by several words.

(3) John[1] told stories about the destruction of himself[1].

In (3) the resolution of *self* is delayed until later in the sentence. By contrast, Williams offers the following example to show that word-internal *self* cannot seek delayed resolution.

(4) John told self-destruction stories.

In (4) *self* cannot be resolved outside the word *self-destruction*. Thus, *self* cannot refer to John in this sentence, but can only have arbitrary reference. This is assumedly due to the fact *self-destruction* is a word whose internal structure is invisible to the syntax. Consider, however, the following example.

(5) a. John's (unfortunate) self-destruction
b. John's expectation/tendency to self-destruct.

Here, *self* must refer to John and cannot take arbitrary reference. Thus, it is not clear that lack of coreference between *John* and *self* in (4) is related to any word-level domain. Consider also the following Onondaga example. Observe again that the reflexive marker takes its reference from outside the word.

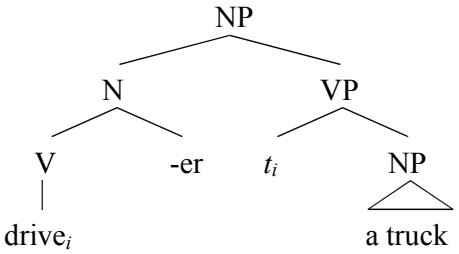
(6) John waʔhadadaehsę́thwaʔ [Onondaga]
John[1] waʔ- ha- **atat**[1]- aehsęthw- aʔ
John FACT- 3.SG.NOM- **REFL**- kick- PUNC
'John kicked himself.'

Although I have not shed any light on the unavailability of coreference in (4), the data here show that delayed resolution does not identify a category of 'syntactic word'.

2.2 Inheritance

A syntactic analysis of word formation predicts that the components of a syntactically formed word should have the same syntactic properties as when it appears as an independent word. Ackema & Neeleman (2004) discuss the derivation of the word *driver* in this regard. If *driver* is formed syntactically from the verb *drive* and the nominalizer *-er*, then the verb should retain its verbal properties and be able to take an object ultimately giving rise to the ungrammatical **driver a truck*. Here is the structure they suggest.

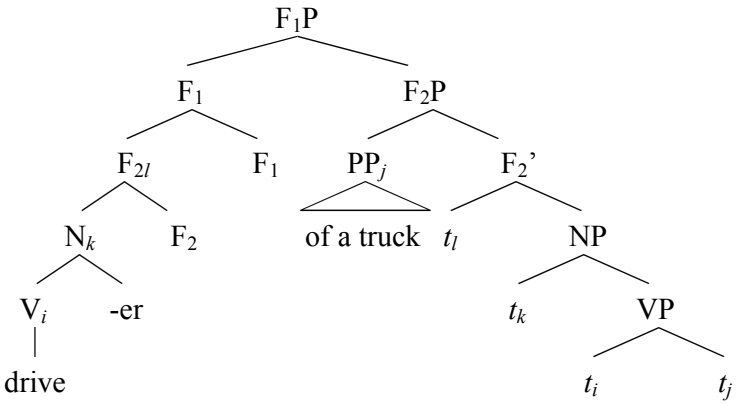
(7)



It is far from clear that the structure they propose converges, however. Since Burzio (1986) it has been known that a verb does not assign accusative Case without also assigning an external θ-role. It is also now standardly assumed that accusative Case is assigned by *v*, which is absent in the structure above. In fact, many of the properties of the verb are actually properties of higher functional projections, again which are absent in the structure above. I would put forth that the high degree of null allomorphy in English obscures the difference between *He is a driver* and *He drives*. In another language with more overt morphology, this discussion could very likely be moot. Thus, it seems that there's actually very little to inherit aside from the verb's thematic properties, which *are* present in the compound.

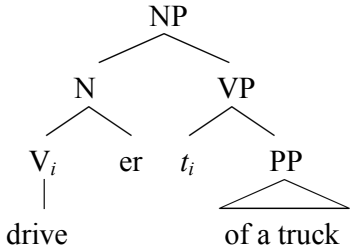
Ackema & Neeleman note this potential objection and suggest instead the following possible derivation (Ackema and Neeleman, 2004: 24).

(8)



In this derivation the PP raises to a licensing position in SpecF_2P, which Ackema & Neeleman themselves suggest could take place covertly. In fact, there is no evidence to suggest that PPs in English raise overtly to some licensing position. Thus, the derivation in (8) could be simplified to the following (Marantzian *v* and *n* notwithstanding).

(9)



This structure is isomorphic to the morphological structure they propose for the same construction, however. Given that the PP raising analysis is not needed, the syntactic analysis turns out to be no more complex than the morphological analysis. Even if it turns out that a more fine-grained or complex syntactic analysis is required, then excluding it because the morphological analysis is simpler is the result of a faulty comparison between two competing models. The derivation in (9) (or the morphological equivalent suggested by Ackema and Neeleman) is preferable to that in (8) in terms of complexity only to the extent that these two models otherwise stand on equal footing. They do not, however. The model in (9) requires two linguistic modules to work where the model in (8) requires only one. Thus, I conclude that their argument in terms of inheritance does not present a valid argument in support of an independent, pre-syntactic word-forming module.

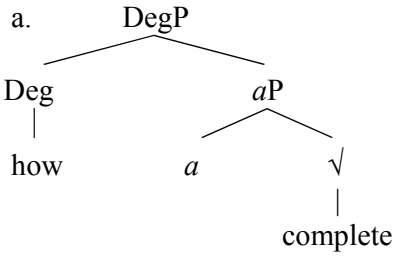
2.3 Information Encapsulation

Williams discusses the data in (10) under the label of 'information encapsulation' in adducing support for a separate word-forming module. This argument is quite similar to the discussion on inheritance above and has to do with the familiar notion of modularity. The word *complete* can merge with *how* to form *how complete* or with *-ness* to form *completeness*. It follows that **how completeness* should be able to be derived from the underlying adjectival form *how complete*. The surface forms should be able to appear in the sentences below.

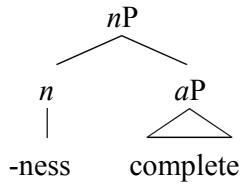
(10) a. how complete
b. completeness
c. *[how complete]-ness
d. How complete a record do you admire?
e. What degree of completeness do you admire?
f. * How completeness do you admire?

There is a fundamental problem with the argument, however. It assumes that *complete* in both (10)a and b are structurally identical. Following Abney (1987) the degree word *how* merges with an adjectival phrase (here *a*P) to form a DegP as shown in (11)a. I represent the adjective *complete* as a root that merges with a phonologically null *a* (Marantz, 2001), although nothing hinges on this. The form *completeness* in (11)b arises by the nominalizer *-ness* merging with the *a*P *complete* to form the *n*P *completeness*, assuming some kind of raising.

(11) a.

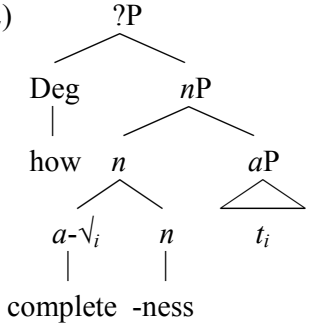


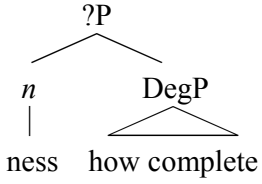
b.



Consider now the two possible derivations of **how completeness* in (12).[3] In neither case does the derivation converge. In the derivation on the left, Deg, merges with *n*P. The functional head, Deg, is part of the extended adjectival projection, however, so cannot merge with *n*P. In the derivation on the right, the nominalizer, *-ness*, merges with a DegP; however, once functional material along an extended projection has been merged into the structure, then it is reasonable to assume that the form cannot be recategorized. (For instance, once a noun is pluralized, it cannot be verbalized.) Thus, the form **how completeness* is not generable under standard assumptions.

(12)





To conclude, the argument of information encapsulation relies on a problematic analysis of **how completeness*. Rather, I have shown that this form is excluded on basic syntactic principles.

2.4 Special Meaning

The notion of special meaning is often attributed to the existence of word-sized categories. That is, words can have meanings that are not necessarily compositionally transparent based on their components. For example, words formed by *-ment* in English typically have meanings that are not predictable from the base.

(13) better → betterment
govern → government
depart → department

As Marantz (1997, 2001) has previously pointed out, however, idioms are no different in this regard. In fact, Marantz suggested that idioms go much beyond the prototypical 'cat is out of the bag' examples and argues that idiomatic meanings are rampant in natural language. The existence of idioms thwarts the correlation between words and special meaning by showing that units larger than a traditional word can carry special meaning.

[3] I have shown a derivation here that assumes head movement from √ to *a* to *n*. This is not vital to the argument here, so I have simply shown an abbreviated form of the derivation in which the *a*-√ complex moves as a unit.

(14) a. throw a party/fit/game
b. take a break/drink/leak/glimpse

Furthermore, Kiparsky (1983) argues that denominal verbs have unpredictable meanings based on 'canonical use', for which he coined the term Canonical Use Constraint (CUC). For instance, the verb *to butter* refers to a specific way of spreading butter on something. Because of this, Kiparsky argues that denominal verbs must be stored as such in the Lexicon and are not derived syntactically. The CUC, however is not restricted to putatively lexically stored words, but rather it is a property of bare nouns in general (Harley, 2008, see also Stvan, 2009), as the following English data show.[4]

(15)	a.	in bed	in the bed
	b.	* on bed	on the bed
	c.	at church	at the church

Expressions such as *in bed* and *at church* denote specific events in which the bed and the church are used for their canonical activities. Thus, if John is sweeping the floor in a church basement, he is 'at the church' but he is not 'at church'. Thus, canonical use cannot be used as a diagnostic to distinguish words from phrases.

2.5 Summary

I have discussed various purported properties that distinguish words from phrases and have argued that none of them presents a solid case for positing a word-building module distinct from syntax. In the next section I discuss the properties of NI in Onondaga (and some other languages), paying close attention to those properties of NI which have been presented as a challenge to the Single-Engine Hypothesis.

3 Properties of Noun Incorporation

This section introduces the fundamental properties of NI with particular emphasis on those properties that bear on the debate on lexicalism. The discussion focuses mainly on Northern Iroquoian, but properties of NI in other languages are introduced where appropriate. I begin with a basic description of the phenomenon followed by a discussion of the following properties.

- class of incorporable objects
- special/institutionalized meaning
- modifier stranding

[4] A referee points out that the expression *at church* can receive additional meanings. For instance, one can say *at church playing bingo*. Nevertheless, in the absence of this further specification, the phrase *at church* does have the canonical meaning as described above for English speakers. I believe the referee's observation has not been made before in the literature and requires further study. It appears that these special meanings are cancellable implicatures rather than assertions. The phrase *at church* carries the implicature that its subject is attending mass, while the phrase *at the church* carries no such implicature. Note also that bingo has become an institutionalized activity that people come to expect to happen at church, so this aspect may also play a role. Likewise, one can be 'in bed reading'. However, to be in bed reading, one must be in one's pajamas and be under the covers. One cannot be sitting on the edge of the bed. Again, being 'in bed' carries a very strong, albeit cancellable implicature that one is intending on going to sleep. Being 'on the bed' carries no such implicature.

3.1 Basic Structure of NI

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).

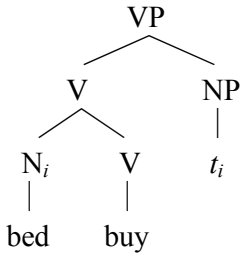
(16) waʔkhnínú: neʔ ganakdaʔ [Onondaga]
waʔ- k- hninu- ˊ: neʔ ka-**nakt**-aʔ
FACT- 1.SG- buy- PUNC NE NOM.PREF-**bed**-SUF
'I bought the/a bed.'

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).

(17) waʔgenakdahnínú: [Onondaga]
waʔ- k- **nakt**- hninu- ˊ:
FACT- 1.SG- **bed**- buy- PUNC
'I bought a bed.'

Baker (1988) proposes a syntactic analysis of NI based partly on the alternation between (16) and (17) in which the head of the object NP undergoes head movement to V.

(18)



Despite the attractiveness of this approach, there are various properties of NI which render a straightforward syntactic analysis difficult to implement. The rest of this section discusses these properties which have garnered considerable interest in the literature.

3.2 Incorporation of non-objects

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). Consider the following Onondaga example (Woodbury, 2003: 282). Here, a locative argument has been incorporated rather than a theme or direct object.

(19) honathahidákheʔ [Onondaga]
hon- at- hah- idakhe- ʔ
3.PL.M.AG- SRFL- path- run- PUNC
'They are walking on a path.'

The following example from Blackfoot (Algonquian, Beatrice Bullshields, speaker) gives an example of adverb incorporation.[5]

(20) tsa ááni anná Mary anní John omaanistsíkkamiyoowatahpi aniskayi apastaminam?
tsa aani ann-wa Mary ann-yi John
how say DET-PROX Mary DET-OBV John
om-**aanist**-**ikkam**-iy-oowat-a-hp-yi
3-**DEG**-**fast**-?-eat.VTA-EPEN-NZLR-INANIM.SG
ann-yi-ahk-ayi apastaminamm
DET-OBV-INVIS-3.SG apple
'How quickly did Mary say that John ate that apple?' (embedded scope on 'how')

Before discussing how this situation might arise, I draw attention to nearly identical facts in Mandarin Chinese. Mandarin possesses non-canonical object constructions in which paths, locations, instruments, but not goals, sources, or recipients can function as the direct object (Li, 2010). Note that there is no syntactic incorporation here. Li points out that the non-canonical objects have just as much syntactic freedom as their canonical counterpart. Consider the following examples.

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

b. ta xihuan **zai haohua canting** chi fan
he like at fancy restaurant eat meal
'He likes to eat at fancy restaurants.'

(22) a. ta xihuan zuo **baitian** - temporal
he like do daytime
'He likes to work in the daytime'

b. ta xihuan **zai** **baitian** zuo (shi)
he like at daytime do work
'He likes to work in the daytime'

(23) a. ta xihuan xie **zhe zhi maobi**. -instrumental
he like write this CL brush.pen
'He likes to write with this brush pen.'

b. ta xihuan **yong** **zhe zhi maobi** xie (zi)
he like use this CL brush.pen write word
'He likes to write with this brush pen.'

[5] This example illustrates the fallacy of delayed resolution again. Note that *tsa* ('how') can modify "word"-internal *annist-ikkam* (DEG-'fast') to make a matrix question.

As with NI, idiomatic or canonical uses appear in these constructions. Thus, *chi canting* ('eat restaurant') can mean 'eat at a restaurant' or 'eat restaurant food'. The difference between NI and non-canonical objects, of course, is that non-canonical objects are full DPs (as Li shows). They are clearly syntactically derived constructions. Li argues that the non-canonical object receives accusative Case, hence the unavailability of adverbs as non-canonical objects. Since incorporated nouns traditionally do not require Case, adverbs are free to be incorporated. Adverbs aside, then, the set of elements that can undergo NI and the set of elements that can appear as non-canonical objects in Chinese are identical. I take this as evidence that no separate word-forming module need be posited to account for NI.

I do not offer an analysis of these facts here (though see Barrie and Li, 2011, 2012); however, I do note that a Larsonian shell (Larson, 1988, 2004) may shed light on the analysis. Under this proposal, 'adjunct' PPs and adverbs actually appear in the specifier and complement positions of an articulated VP. Recipients and benefactives are introduced by a separate functional projection, ApplP (Pylkkänen, 2002, 2008) and are not direct arguments of the verb under her approach. I furthermore hasten to point out that restricting the NI facts to a morphological module denies an explanation of the syntactic facts in Mandarin. Thus, whatever the ultimate analysis, a more parsimonious approach is to assume a unified analysis for the NI and Mandarin facts. Given that Mandarin presents an undeniably syntactic analogue of the NI facts, a solution is to be found by implementing a syntactic approach.

3.3 Special Meaning

Recall from above that some authors have claimed that wordhood is distinguished by the property of special meaning. Recall also that I have shown various arguments against this position based on mismatches between putative words and domains of special meaning. 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 *v* and its sister. Such a proposal predicts that special meanings should arise only for those parts of the word that correspond to something smaller than a *v*P. 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'.

(24) waʔgǫyaʔdahdǫ́ʔdaʔ [Onondaga]
waʔ- kǫ- yaʔt- ahtǫ- ʔt- aʔ
FACT- I:you- body- disappear- CAUS- PUNC
'I lost you (e.g. in a crowd).'

As the translation indicates, there is an idiomatic reading for this portion of the word. However, no idiomatic reading possible if verb embedded under a causative contains an agent. Consider the following example (Gloria William, Nora Carrier, speakers).

(25) waʔkheyǫdyaʔdęʔ [Onondaga]
waʔ- khe- yǫdy- a- ʔt- ę- ʔ
FACT- 1.SG.NOM.3.ACC- 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.[6] 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 hypothesis that the domain of special meaning is rooted in syntactic structure rather than in the notion of a wordhood.

NI is also subject to the CUC (Kiparsky, 1997), in the same way discussed in the previous section. Consider the following Oneida (Northern Iroquoian) example (Michelson and Doxtator, 2002).

(26) wahathwistáshete?

wa?-	ha-	at-	hwist-	ashet-	e?
FACT-	3.SG.M.NOM-	SREFL-	money-	count-	PUNC

‘He counted money.’

This construction cannot refer to counting kinds of money or numbers of bill or coins, but can refer only to counting the sum value of a set of money. Again, I gave examples above that showed that bare nouns in general are subject to the CUC. Recall from just above that unincorporated nouns must bear extensive nominal morphology in Northern Iroquoian languages (unlike the *in church* vs. *in the church* examples in English). Thus, the absence of bare nouns outside of NI constructions predicts that instances of CUC should be restricted to NI in these languages (even though they are not in languages which allow bare nouns to appear as stand-alone phonological words).

Consider next the following Cantonese data (Barrie, 2008b, see also Matthews and Yip, 1994). Observe that idiomatic readings are found with bare object noun constructions, but not when the object contains higher functional material. Again, this mirrors the observations of NI in Northern Iroquoian where idiomatic readings hold only with bare nouns, which are syntactically incorporated in Northern Iroquoian.

(27) a.

caat3	haai4
polish	shoe

‘flatter’ / ‘polish shoes’

b.

caat3	ni1	deoi3	haai4
polish	this	CL	shoe

‘polish this pair of shoes’ * ‘engage in this instance of flattery’

(28) a.

jam2	ca4
drink	tea

‘have dim sum’ / ‘drink tea’

b.

jam2	ni1	di1	ca4
drink	this	cl	tea

‘drink this tea’ * ‘have this (bit of) dim sum’

The following cognate object noun constructions also show that the noun in object position is not necessarily a theme, but can also be a location or instrument. Again, this mirrors the observations with Mandarin non-canonical object constructions and NI in general.

[6] A full scale study of idioms in Onondaga awaits, but preliminary evidence suggests that idiomatic readings are available only to elements below *v*P.

(29) a. paau2 bou6
run path
'to run'

b. bong1 sau2
help hand
'to help'

c. lok6 gaai1
go.down street
'to go outside'

Finally, consider Dayal's (2011) discussion of semantic incorporation and Massam's (2001) discussion of pseudo noun incorporation. Both of these studies brought to the fore constructions that are clearly syntactic, but that nevertheless share many properties with NI. Dayal, in particular, discusses number neutrality, limited productivity and special or institutionalized meanings. It is highly unlikely that the similarity in the properties shared between NI and their syntactic analogues discussed above is accidental. What these discussions all show is that none of the properties typically taken to point to a morphological or lexical analysis of NI hold water given that the same properties are shown for syntactic constructions. It was mentioned above, though the point is worth repeating. Pursuing a lexical analysis of NI requires us to posit a second syntactic analysis for the Chinese facts (along with the properties discussed by Dayal and Massam), which are essentially the same set of facts. The difference is merely the amount of morphological glue holding the pieces together.

3.4 Incorporation: Stranding and Doubled Objects

The next property is doubling and stranding. In some languages with NI the incorporated noun can be doubled by a full (usually more specific) DP. In the following Onondaga example (Gloria William and Nora Carrier, speakers), the incorporated noun *naskw* ('animal') is doubled by the more specific *kwiskwis* ('pig').

(30) waʔg**nasgw**ahnínǫ́: gwísgwis [Onondaga]
waʔ- k- **naskw-** hninu- ˊ: kwiskwis
FACT- 1.SG- animal- buy- PUNC pig
'I bought a pig.'

In the following example, the incorporated noun is accompanied by a demonstrative. This phenomenon is sometimes referred to as stranding following Baker's analysis. Both doubling and stranding are widely attested in Onondaga (Gloria Williams and Nora Carrier, speakers) (and in Northern Iroquoian in general), as well as in numerous other languages with NI.

(31) waʔgenakdahnínú: nęgeʔ [Onondaga]
waʔ- k- nakt- hninu- ˊ: nękeʔ
FACT- 1.SG- bed- buy- PUNC that
'I bought that bed.'

Baker used the stranding examples as in (31) to argue for an N-to-V head movement analysis of NI, as shown in (18). The stranded material is adjoined to NP and so does not interfere

with head movement. Doubling, however, does not follow straightforwardly. Baker (1996) argued that DP doubles are adjoined to the clause and are not part of the NP, thus salvaging his syntactic approach; however, I return to this issue in more detail below.

As is well known, there are some languages with NI that do not allow doubling or nominal modifiers. Consider the following example from Mapudungun (an Araucanian language spoken in Chile and Argentina) (Baker et al., 2005). The stranded demonstrative renders this sentence ungrammatical.

(32) Pedro ngilla-waka-y (*tüfachi) [Mapudungun]
Pedro cow-buy-3.SG (this)
'Pedro bought a/*this cow.'

Doubling with NI has always been problematic for syntactic analysis of NI since the DP double assumedly occupies the original Merge position of the incorporated noun. I return to this issue in the discussion of Baker's analysis of NI below and in my own proposal in section 5.

To conclude, this section has echoed the results of the previous discussion in showing that the properties of NI constructions do not warrant a separate word-forming module. I have held in abeyance the discussion of stranding and doubling as these scrutinized in light of Baker's analysis, the topic of the next section.

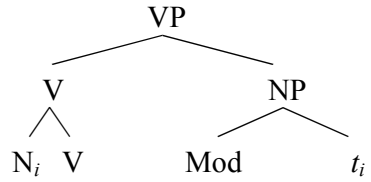
4 Baker: A Syntactic Analysis of NI

As mentioned, Baker (1996) proposed a syntactic analysis of NI based on the stranding facts discussed above. For the doubling examples, Baker argued that the overt double is a clausal adjunct that is coreferential with the incorporated noun, along the lines of left dislocation in the following English example.

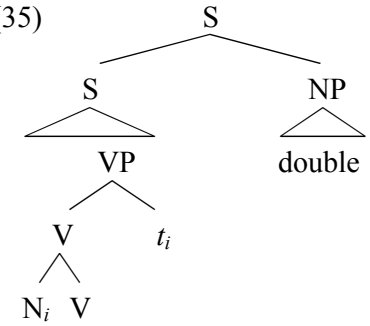
(33) Beans, I like them.

The following are the two structures that Baker proposed for modifier stranding and doubling, respectively.

(34) modifier stranding



(35) doubling



The evidence that Baker adduces for these two structures comes from idioms and *wh*-movement, which I discuss in turn. Briefly, idioms in Mohawk are found only with NI, not with full DP forms, which suggests that full DPs are adjuncts and not part of the VP. Baker also claims that *wh*-movement not possible with NI, further suggesting that the full DP double (the *wh*-phrase) is an adjunct.

Starting with idioms, Baker (1996:133) notes that pieces of idiom cannot appear as an adjunct. In the following sentence, the idiom *break the ice* (meaning 'start up a discussion after an initial period of awkward silence') contains an idiom chunk, *the ice*, which cannot be left-dislocated.

(36) a. Susan finally broke the ice.
b. # The ice, Susan finally managed to break it at 11:30.

Baker (1996) claims that idiomatic meanings restricted to NI in polysynthetic languages as his Morphological Visibility Requirement requires that all overt nominals be adjoined as in (35); however, the following Dëne Sųłiné (Dene-Yeniseian) example shows that this is not the case (Cook and Wilhelm, 1998). The idiomatic reading is available both the incorporated and non-incorporated forms.[7]

(37) na-jə́th-the-Ø-Ø-da
ITER-hook-M/A-3.SG-VCL-sit
'S/he is fishing again.' (lit: sitting with a hook)

jə́th	ghą	the-Ø-Ø-da
hook	with	M/A-3.SG-VCL-sit

'S/he is fishing again.' (lit: sitting with a hook)

Thus, it appears that non-incorporated nominals must be able to appear in argument position, at least in some polysynthetic languages. As a side note, this example illustrates again that the domain of special meaning cannot be correlated with the notion of a "word".

Baker adduces further evidence for the structures in (34) and (35) by examining *wh*-movement. The basis of his argument lies in the observation that *wh*-movement cannot take place from an adjoined position (Cinque, 1990, Rizzi, 1986).

(38) a. John read this book.
What did John read *t*?

b. This book, John read it.
* What *t*, did John read it?

Consider the following Mohawk data from Baker's (1996: 323) discussion.

(39) a. ?* Úhka t- ʌ- hse- wír- a- hkw -e'
who DUC- FUT- 2.SG- baby- EPEN- pick.up -PUNC
('Who are you going to pick up (a baby)?')

[7] In defense of the Morphological Visibility Condition, Baker would likely conclude that Dëne Sųłiné is not a true polysynthetic language and hence not bound by the constraint that all overt nominals appear in adjoined positions. Like most Athabaskan languages, however, Dëne Sųłiné is highly polysynthetic in the traditional sense.

b. Ka nikayʌ t- ʌ- hse- wír- a- hkw -e'
which DUC- FUT- 2.SG- baby- EPEN- pick.up -PUNC
'Which baby are you going to pick up?'

Baker shows that *úhka* ('who') is a full nominal while *ka nikayʌ* ('which') is a nominal modifier. As a full nominal *úhka* must appear in the clausal adjunct position shown in (35) when it doubles an incorporated noun (*wír* 'baby'), a position from which *wh*-movement cannot take place. In (39)b, however, *ka nikayʌ* modifies the NP *wír* ('baby'), as in (34). From this position, the modifier can undergo *wh*-movement.

Consider, however, the following Onondaga data. *Wh*-movement is clearly available with NI in Onondaga.[8] Here, *nwadęˀ* ('who') can accompany NI and undergo *wh*-movement. Furthermore, a full nominal phrase *gaęnigáeˀ gwísgwis* ('which pig') can do the same. Although Baker's (39)b can be explained by the structure in (34), this is not the case for the Onondaga example in (40)b since a lexical noun occupies what is supposed to be the extraction site for the incorporated noun.

(40) a. nwadęˀ waˀsnasgwahní:nǫˀ
nwadęˀ waˀ- s- nasgw- a- hninǫ- ˀ
what FACT- you- animal- EPEN- buy- PUNC
'What (kind of animal) did you buy?'

b. gaęnigáeˀ gwísgwis waˀsnasgwahní:nǫˀ
gaęnigáeˀ gwisgwis waˀ- s- nasgw- a- hninǫ- ˀ
which pig FACT- 2.SG- animal- EPEN- buy- PUNC
'Which pig did you buy?'

The Lexicalists' response to the stranding and doubling phenomena that Baker presents was to argue that Baker's analysis draws a false distinction between these two phenomena (Di Sciullo and Williams, 1987, Rosen, 1989). Indeed, Rosen notes that modifier stranding is available independently of NI, a fact which is replicated in the Onondaga data below.

(41) a. waˀgenakdahnínú: nęgeˀ
waˀ- k- nakt- hninu- ˊ: nękeˀ
FACT- 1.SG- bed- buy- PUNC that
'I bought that bed.'

b. waˀkhnínú: nęgeˀ
waˀ- k- hninu- ˊ: nękeˀ
FACT- 1.SG- buy- PUNC that
'I bought that one.'

[8] Baker (1996: 325) lists several examples of *wh*-movment similar in structure to (40)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, (40)b is still unexplained under Baker's proposal, and he fails to show the crucial evidence that such examples are ungrammatical in Mohawk.

Baker's analysis would require two analyses for stranded modifiers, not to mention the two distinct analyses for stranding and doubling shown above. I return to these facts below.

Despite these challenges to a syntactic analysis of NI, I maintain that it is not necessary to invoke a distinct lexical/morphological module to explain these facts. In the next section, I outline a preliminary analysis that addresses these concerns.

5 A New Proposal

The conclusions of the discussions above are that none of the purported arguments in favour of a lexical analysis of NI holds water. Specifically, many of these properties were shown to hold for unequivocal cases of syntactically derived constructions. Nevertheless, the previous section highlighted continuing problems with a syntactic approach to NI. I outline a preliminary analysis to account for these facts (see also Barrie, 2011).

I propose that the incorporated noun and the double are merged as a constituent as a sister to the verb. Note that similar proposals have been put forth for other related phenomena such as clitic doubling (Uriagereka, 1995), resumptive pronouns (Boeckx, 2003), and Principle B type pronouns (Kayne, 2002).

(42) V [N DP]

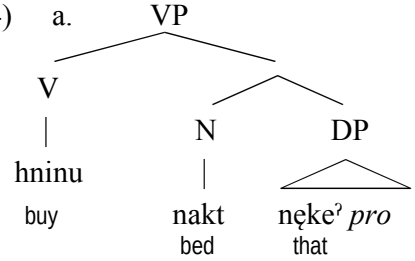
In this construction the N undergoes NI and the DP fulfils the role as the double. Recall that stranding is available independently of NI. This fact is easily captured under the model in (42) because the DP double functions independently of the incorporated noun, N. Consider the following stranding examples again.

(43) a. waʔgenakdahnínú: nęgeʔ
waʔ- k- nakt- hninu- ˊ: nękeʔ
FACT- 1.SG- bed- buy- PUNC that
'I bought that bed.'

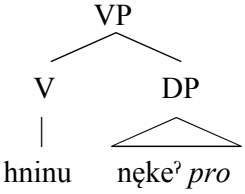
b. waʔkhnínú: nęgeʔ
waʔ- k- hninu- ˊ: nękeʔ
FACT- 1.SG- buy- PUNC that
'I bought that one.'

I propose the following structure for the VP in this sentence. Note that the DP *nęgeʔ pro* can appear as the object with or without the incorporated noun, N. Thus, the availability of stranding with or without NI does not require two distinct analyses.

(44) a.



b.



Furthermore, the DP in question can be a full DP, which again does not force us to posit two completely different structures for stranding and doubling constructions. This also allows us to account for the *wh*-movement facts presented above.[9]

Turning to Mapudungun and other languages that lack doubling and stranding, I propose that the verb in such languages selects only N as a complement, and not the complex [N [DP]] structure available in Northern Iroquoian.

6 Conclusions

This paper has reviewed various arguments for and against positing a separate, pre-syntactic word-forming module. The properties that were argued to distinguish words from phrases have been shown to correlate with other syntactically defined units. In particular, the domain of special meaning was shown to be larger than the word, and the CUC was shown to be a property of bare nouns. Other properties discussed were shown to have numerous systematic exceptions. Noun incorporation was discussed as an illustration of this debate. Again, the properties of NI were shown not to require any special word-building module. I concentrated on those properties of NI that have been challenging to a syntactic account of this phenomenon. First, the class of incorporable objects includes elements other than the direct object (the theme). Specifically, adverbs, paths, locations and instruments can also be incorporated. It was shown that Mandarin Chinese exhibits a construction known as non-canonical objects that is restricted to the same set of elements (save adverbs). The issue of special meaning was taken up again. Interestingly, it was suggested that the domain of special meaning can be smaller than a word in some cases if the word is larger than a *v*P. It was also shown that constructions that are clearly syntactic exhibit those properties of NI that were originally used to argue for a lexical analysis (Cantonese, plus the discussions in Dayal and Massam). Finally, stranding and doubling were discussed. These have previously been resistant to syntactic analysis, including Baker's head movement analysis. I put forth a preliminary syntactic analysis of NI that addresses the issues that Baker leaves unanswered, showing that the properties of NI are fully compatible with a syntactic approach (and in some cases, fare better than an approach assuming a distinct word-building module). Despite the unanswered questions regarding the doubling analysis proposed, this paper has shown that a separate pre-syntactic morphological or lexical module is not necessary to account for the facts surrounding NI. In fact, I have shown that the properties of NI have correlates in syntactic phenomena in numerous languages, thus rendering any lexical analysis redundant. To conclude, NI not only does not require a lexical analysis, a syntactic analysis is actually more parsimonious.

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[9] This structure, of course, begs many questions, as a reviewer points out. These are the topic of forthcoming research. Briefly, however, Case and theta-roles are not problematic. The larger structure contains a single DP for the purposes of Case assignment. Also, the elements within the big DP are coreferential, so they share a theta-role. The question of cross-linguistic variation is an important one. Baker boils the presence or absence of NI to an elegant macro-parameter, which is unavailable in the present framework. Following Borer (2005), among others, I assume cross-linguistic variation is restricted to the Lexicon. Note that the structure suggested here, in which N and DP are merged as a constituent, is assumedly mediated by some functor with the appropriate features. Thus, the presence or absence of NI in a language boils down to the presence or absence of an appropriate functional item in the Lexicon of the language in question. Again, space does not permit a more in depth discussion.

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