

Noun Incorporation¹

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Abstract – This chapter provides an overview of noun incorporation in broad terms, examining nominals found either within or strictly adjacent to predicates from numerous languages. Syntactic issues have shifted from an earlier debate about whether noun incorporation was an operation in the lexicon or syntax to more recent discussion about whether or not noun incorporation is a narrow syntax or PF operation. Other issues concern whether phrases or just heads can incorporate. If phrases incorporate, are they phrasal at the point of incorporation? AGREE analyses examine the trigger for incorporation. A number of analyses posit that there is no movement of the nominal at all (pseudo noun incorporation), and utilize an adjacency relation between the verb and incorporated nominal. It remains clear that languages show similar cross-linguistic properties in noun incorporation, even to the extent that language-internal differences are often similar, often relating to verb class. The expansion of the set of empirical data from semantic analyses and other work continues to lead towards refinements.

1 Introduction and Background

Noun incorporation can be defined in a number of ways. For the purposes of this paper, we will define noun incorporation as instances where a bare or reduced nominal displays a close linear linguistic relation with a verb, either through morphology or strict adjacency, and where the head of this unit is clearly verbal in its distribution or marking. This definition will exclude compounds such as English *pushcart* since there is no verb head. It will include standard cases of noun incorporation, as in (1a) from Mohawk (Mithun 1984, 870), but also encompass less canonical cases of noun incorporation such as obligatory nominal incorporation, sometimes referred to as denominal verbs (Gerdtz and Marlett 2008, 411), as in the Halkomelem example in (1b). It will also include examples of pseudo noun incorporation (Massam 2001, 157), where the nominal is not morphologically attached, yet appears to have a closer connection to the verb than a regular nominal does, as in the Niuean example in (1c), where the nominal is to the right of the fronted predicate.²

¹ I would like to thank Diane Massam, Elizabeth Cowper and especially an anonymous reviewer for comments and suggestions.

² Abbreviations mostly correspond to those in the original source. These are 1,2,3= first, second, third person; ABS= absolutive; AG=agent; AGR=agreement; APPL=applicative; ASP=aspect; AUX=auxiliary; AV=agent voice; DAT=dative; DEC=decessive; DEF=definite; DIM=diminutive; DTV=derived transitive verb; EMPH=emphatic; ERG=ergative; FACT=factual mood; GEN=genitive; HAB=habitual; IND=indicative mood; INDEF=indefinite; INTERR=interrogative mood; INTR=intransitive; LNK=linker; M=male; MOD=modalis case; N=neuter; N.FUT=near future; NEG=negative;

(1) a. Kanekwarúnyu wa'-k-akya'tawi'tsher-ú:ni.
 it.dotted. FACT-I-dress-make
 'I dress-made a polka-dotted one.' (I made a polka-dotted dress.)

b. ni? cən tx^w-səplil
 AUX 1SUB VBL-bread
 'I bought bread.'

c. Takafaga ika tūmau nī a ia
 hunt fish always EMPH ABS he
 'He is always fishing.'

The general nature of this definition underscores the range of phenomena which has been associated with the label noun incorporation. Sapir (1911, 257) recommends “setting up as broad a definition as possible,” although he does not extend it to obligatory noun incorporation or pseudo noun incorporation. For Sapir, obligatory noun incorporation involves an affix, and hence is not a (independent) verb, while examples such as (1c) lack morphological attachment. Even so, Sapir’s article demonstrates clearly that what we term noun incorporation can vary in properties both across and within languages. As he points out, while the incorporated noun is often the object, it can sometimes be an instrumental, locative or secondary predicate. He suggests that we pay attention to where the incorporated nominal is positioned with respect to the verb stem and which classes of morphemes also occur in that area.

Sapir also mentions the distinction between an incorporated noun construction, where the verb p. 259 “denotes a permanent or general activity,” as compared to constructions where the verb refers to a single specific event. Sapir p. 260 discusses this contrast as found in Nahuatl data where the construction with the non-incorporated noun is a specific event, as in (2a), while and the incorporated alternant is more general, as in (2b).

(2) a. ni-c-qua in nacatl
 I-it-eat the flesh
 'I eat the flesh.' (particular act)

b. ni-naca-qua³
 I-flesh-eat

NML=nominalizer; NOM=nominative; NONSPEC=non-specific determiner; OBJ=object; OV=object voice; OBL=oblique; P=plural; PART=participial mood; PEJ=pejorative; PERF=perfective; PERFECT=perfect aspect; POSS=possessive; PRED=predicative marker; PRES=present tense; PROG=progressive; PS=possessive mood; PUNCT=punctual; RED=reduplication; REV=reversive; S=singular; SUB=subject; SBJ=subjunctive; TR=transitive; VAI=verb animate intransitive; VBL=verbalizer

³ Sapir (1911) has *nica* for ‘flesh’ in (2b) but Merlan 1976, gives it as *naca*, stating in footnote 18 that the forms are in “the traditional Spanish orthography as cited by Sapir.”

‘I eat flesh, I am a flesh-eater.’

- c. \bar{o} -ki-ketš-kotōn-kè in itštekki
P-had.him-neck-cut-PERF the robber
‘(they) had him neck-cut the robber’

The example in (2c), however illustrates an incorporated nominal construction with slightly different properties within the same language; here we see that the event is not a general activity, as in (2b), but a specific one. In addition, the incorporated nominal *ketš* ‘neck’ is possibly not the direct object of the verb but a locative or a part of the external direct object *itštekki* ‘robber’.

Sapir contends that incorporated nouns are entirely distinct from the issue of pronominal affixes (clitics/agreement). Whereas an incorporated noun will be able to appear outside the incorporation construction, the pronominal element on a verb may not. This issue relates to body parts which in some languages, e.g. Southern Paiute, have a different form inside the verb from the form they have outside the verb (see Wiltschko 2009 for an analysis of bound nominals in Salish). This makes them ineligible as incorporation according to Sapir (p. 252-253). Sapir’s view of noun incorporation then is an operation of morphological composition involving independent forms; this composition involves a limited range of syntactic properties.

Mithun (1984) continues and refines the exploration of noun incorporation differences within and across languages. She lays out a well-regarded and careful typology of four main types I-IV, where the presence of any higher type within a language is claimed to entail the existence of all lower types in that language. Type I consists of basic compounding; it is associated with recurrent activities, and often involves lexicalization. This may involve either morphological attachment (see 2b above) or simple juxtaposition (rigid proximity) (see 1c. above). The resulting verb is intransitive and the incorporated nominal is non-referential or non-specific. Type II involves realignment of arguments as a result of incorporation. The incorporation of the theme in a ditransitive/applicative construction allows the goal or locative to be a direct argument of the resulting verb, i.e. the verb will maintain its transitive nature. Incorporated nominals in this construction are specific rather than general and incorporated body parts are common (see 2c). Mithun reports that in some of these languages, e.g. Blackfoot, the non-incorporation of a body part of an affected possessor is odd, even though body parts need not be incorporated in other contexts. Southern Tiwa generally requires incorporation of nominal themes in ditransitive constructions (Heck and Richards 2010, 687). Type III noun incorporation is discourse-based; an incorporated nominal is more backgrounded (given) than a non-incorporated one, as shown in (3) a Huastla Nahuatl example from Mithun (1984, 860-861) where a. and b. form a discourse sequence.

- (3) a. askeman ti-‘kwa **nakatl**
 never you-it-eat meat
 ‘You never eat meat’

- b. na’ ipanima ni-**naka**-kwa
 I always I-meat-eat

‘I eat it (meat) all the time.’

It is relevant here that the incorporated nominal in (3b) is contextually linked to the preceding utterance in (3a). This linking may be very productive; however, Mithun states that the process is often restricted to individual lexical items, either nouns or verbs. Finally Type IV noun incorporation is where the incorporated nominal is classificatory in that it will be lexically general in meaning. Either a more specific noun or a modifier can optionally be used to further specify the meaning of the incorporated, as in the Gunwinggu example cited in Mithun (1984, 867) shown in (4), where the external noun specifies the species.

(4)...bene-**dulg**-η mangaralaljmayn
 they.two-tree-saw cashew.nut
 ‘...They saw a cashew tree.’

Our starting point then is that the label noun incorporation encompasses a wide range of phenomena, even within the same language. Some basic theoretical questions arise. Is this the same syntactic operation in all instances? Are there language-specific properties or construction-specific properties that correlate with the different types? Many languages that have noun incorporation have bare nouns, i.e. lack determiners. This may allow nominals to incorporate more readily (Roberts 2010). On the other hand, groups of languages which lack determiners often have properties in common, yet do not have noun incorporation (e.g. Slavic languages – see Bošćović 2012). Finally, some languages discussed under noun incorporation have determiners, e.g. Salish (see Gerdtts 2003; Wiltschko 2009).

How does the noun come to appear to be part of the complex verb? Is it really attached to the verb or is it part of a larger syntactic object? Is it base-generated in that position? Does it move there? If it moves, what triggers the movement and why does it appear optional in some instances but obligatory in others? Where it seems to be optional, are there linguistic properties/contexts that explain when it occurs? Are affixal properties on lexical elements (be they nominals or verbs) necessary to account for noun incorporation in languages? Returning to the discussion of bound pronominals in Sapir (1911), we may revisit the relation between the operation of agreement and noun incorporation, asking could this be relevant, at least in at some instances? If there is more than one type of noun incorporation in any one language, are different operations involved?

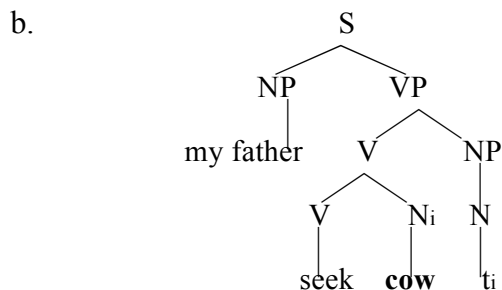
In discussing the syntax of noun incorporation, it is important to know that many linguists do not consider it to be a syntactic construction at all. Three important pieces of work, Mithun (1984), Di Sciullo and Williams (1987) and Rosen (1989) argue that it is a process confined to non-syntactic word formation, in part due to irregularities in many languages. Rosen argues that the morphology combines a noun root with a verb root where the noun root either a) satisfies the argument taking properties of the verb, producing what she labels Compound NI, or b) the noun root simply restricts the nature of the argument, producing Classifier NI. Rosen’s Compound NI is associated with reduced valency, and inability to allow external modifiers, while Classifier NI is associated with unreduced valency, stranding of modifiers (see 1a where the adjective is

stranded). It also allows doubling, where a more specific nominal is external to the more general incorporated nominal (example 4.). For recent overviews of the lexicalist vs. syntax issues, see Baker, Aranovich and Golluscio (2005) and Barrie (2012). Overall, syntactic approaches over the last two decades have been successful in explaining a large set of phenomena within a single module. Three general overviews of noun incorporation are Gerdts (2008), Massam (2009a) and Baker (2009). We will examine core issues among the syntactic proposals for noun incorporation, and include a brief discussion of some relevant contributions from semantic analyses of noun incorporation.

2 Noun Incorporation as Head Movement

The majority of syntactic analyses of morphological noun incorporation involve movement. The most widely known and utilized operation is Head Movement (Travis 1984). Baker (1988) uses Head Movement to explain not only the presence of nominals within verbs but also many other properties of complex predicates, including causatives, applicatives, etc. In noun incorporation, the noun head moves from complement position of a verb to adjoin directly to the verbal head. We see movement of the Mapudungun noun *waka* ‘cow’ in (5a) depicted in the structure in (5b), both from Baker (2009).

- (5) a. Ñi chao kintu-**waka**-le-y.
 my father seek-cow-PROG-IND.3SSUB
 ‘My father is looking for the cows.’



Head Movement requires locality between the moved element and the verb head to which it adjoins. Extra structure between the head and the NP will prohibit movement. Thus a nominal contained within a PP cannot directly incorporate to a verb head. Because Head Movement only affects the head of the NP, stranding of any additional elements within the NP is predicted to occur, e.g. determiners, adjectives, or possessors. Doubling requires more analysis (see Chung and Ladusaw 2004; Barrie 2012). The predictions regarding stranding are not always borne out. For example, noun incorporation in the Inuit language does not usually allow a stranded possessor outside of the word (leaving aside locative and motion verbs discussed in section 3.2). Stranded possessors appear in Kalaallisut (West Greenlandic) only if the possessor forms part of a lexicalized unit (Sadock 1980). A much cited Kalaallisut example from Sadock (1980, 309) is shown in (6).

- (6) Tuttu-p neqi-tor-punga.

reindeer-POSS meat-eat-INDIC-1S
'I ate reindeer meat.'

In this example the possessor *tuttu* 'reindeer' is external to the incorporated noun *neqi* 'meat' and the possessor is marked with possessor marking (relative/ergative case). Sadock p. 310 reports that Rischel (p.c. to Sadock) says such constructions have "serious restrictions," and Johns (2009) reports that they are not found in Canadian Inuit dialects.⁴ One might hypothesize that the reason for the absence of possessor stranding is that stranded possessors undergo Possessor Raising, whereby they form a direct object relation with the verb. Both Michelson (1991) and Van Geenhoven (2002), however, have made convincing arguments to show that in Oneida (Iroquoian) and Kalaallisut (West Greenlandic), what could possibly be construed as possessor raising involves not a possessor, but instead an independent goal/source argument. "Stranded possessors" in these languages are always ambiguous with an affected argument interpretation, as shown in the Oneida example from Michelson (1991, 757) in (7a).

- (7) a. Wa-hi-'sleht-ahni:nú: John
 MODE-1S/3MS-car-buy.ASP John
 'I bought John's car' OR 'I bought a car from John.'
- b. Wa'-k-hni:nú: John lao'slétkah
 MODE-1S.AG-buy.ASP John his.car.DEC
 'I bought the late John's car.' (not 'I bought a car from John (deceased)')

Michelson points out that the sentence in (7a), which can be translated into English where John is syntactically a possessor "John's car," is also translatable as a source "from John" in three-place predicate. In contrast, in (7b) where only the possessor interpretation is possible (since John is deceased) no incorporation appears, hence no stranding. While noun incorporation and possessor raising issues overlap, they are independent phenomena.

Baker (2009) acknowledges that many languages indeed lack possessor stranding (including Oneida and Kalaallisut⁵); nevertheless he maintains that genuine possessor stranding exists in Mapudungun, as in (8), from Baker, Aranovich and Golluscio (2005, 167).

- (8) Juan ngilla-waka-fi-y Pedro.
 Juan buy-cow-3OBJ-IND.3S.SUB Pedro
 'Juan bought Pedro's cow.'

⁴ Another view could be that (6) is a bracketing paradox, along the lines of *transformational grammarian*, where the syntax gives [[transformational grammar]-ian], but the phonology gives [transformational [grammar-ian]]. Under this view the possessor in (6) is not stranded, and the question moves to bracketing mismatches.

⁵ Baker (2009, footnote 14) suggests that overt genitive case assigned to the possessor in the Inuit language blocks Head Movement of the noun. A reviewer suggests that possessors are theta-marked in spec DP, even though there is no other evidence of a D head, and that D prevents Head Movement.

Baker, Aranovich and Golluscio argue that this example is indeed a case of possessor stranding. Part of their reasoning is that the verb in (8) cannot be a three-place verb construction (along the lines ‘Juan bought the cow from Pedro’) since it lacks applicative morphology, which exists independently in the language. This argument is not convincing, however, since low applicatives frequently lack overt morphology and contrast in this respect with high applicatives (benefactives). Low applicatives are also associated with transfer of possession meaning (Pylkkänen 2008; Carrier 2014), which conforms to the meaning of the verb in (8). Mapudungun noun incorporation does not allow stranding of any modifiers⁶ or other NP material, so seems reasonable to conclude that it does not allow possessor stranding as well.⁷

The existence of Head Movement as a syntactic operation has been brought into question. If it is indeed syntactic, what triggers it? Head Movement relies crucially on the distinction between moving a syntactic head X vs. a syntactic phrase XP. This distinction has become less clear in Minimalism (Chomsky 1995), where there is no longer a formal distinction between head and phrase. Chomsky (2001, 37) takes issue with one form of Head Movement, V-movement, suggesting it is post-syntactic involving PF (see also Matushansky 2006) and not an operation of the narrow syntax. Nevertheless Chomsky explicitly exempts “incorporation in the sense of Baker 1988” from the reevaluation of Head Movement. PF operations do not affect LF, so it is relevant whether or not noun incorporation shows evidence of affecting LF. Differences in scope (Bittner 1994; Van Geenhoven 1998) and indefiniteness/specificity (Mithun 1984) demonstrate that the incorporated nominal has different semantic properties from non-incorporated forms. Baker (1996, 287-291; 2009, 158-160) claims that Mohawk and Mapudungun incorporated and unincorporated nouns have equivalent sets of possible interpretations, with the exception that Mohawk incorporated nouns may not bear focal or contrastive stress.⁸

Baker (2009) argues that a Head Movement analysis is still needed, at least in some languages. He says that it easily accounts for languages where only the bare noun

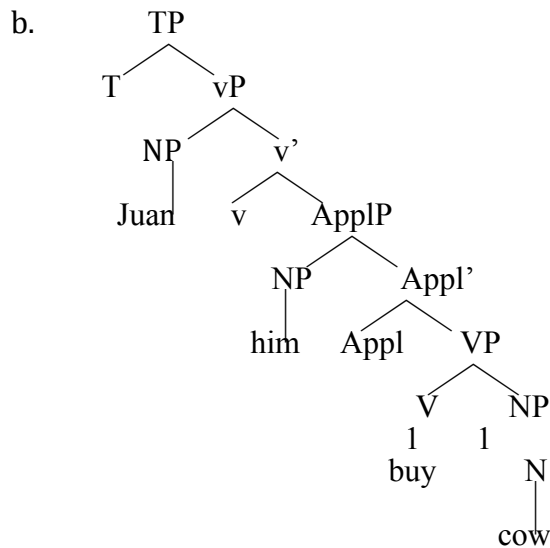
⁶ Baker, Aranovich and Golluscio (2005) explain Mapudungun’s lack of modifier stranding by an analysis where languages vary as to whether or not the trace of the incorporated noun retains phi-features. If yes, stranding and doubling are possible; otherwise no.

⁷ Baker, Aranovich and Golluscio (2005, 169) discuss the possibility that (8) could be a concealed applicative, rejecting this possibility on the grounds that incorporation is obligatory, i.e. the theme and source cannot both be outside the verb. In addition a reviewer informs me that in Mapudungun, the verb meaning ‘give’ does not require obligatory incorporation. Unlike ‘give’ the incorporating verb *ngilla-* ‘buy’ seems to select for a source argument, more like ‘procure’ in English. A goal with this verb seems to require an overt (high) applicative. More research is needed on ditransitives and (obligatory) incorporation (see Heck and Richards 2010 and Carrier 2014).

⁸A reviewer suggests that this lack of meaning restriction might relate to Mithun’s Type III (as opposed to Type I incorporation, where incorporated nominals are typically non-referential/non-specific/indefinite).

incorporates, as in Mapudungun and more importantly provides a ready explanation for the crosslinguistic property that it is only the theme which incorporates in ditransitives, as shown in (9a) containing an overt applicative from Baker (2009, 154).

- (9) a. Juan ngilla-waka-lel-fi-y
 Juan buy-cow-APPL-3OBJ-IND.3S.SUBJ
 ‘Juan bought a cow for him/her’
 NOT: ‘Juan bought it for the cow.’

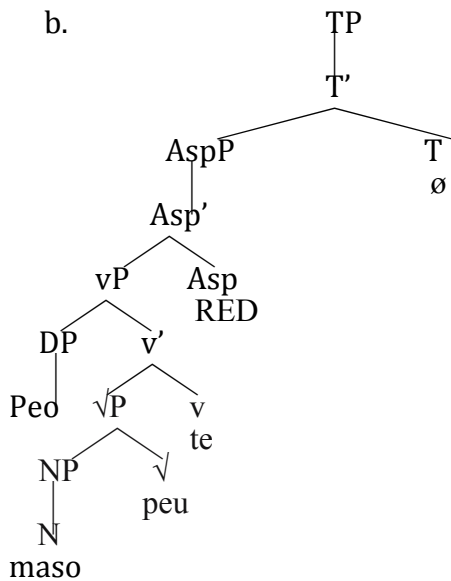


Head movement only allows the head to move up to the next highest head, so the only argument in position to move to the verb in (9b) is the theme argument ‘cow.’ The goal in spec APPL is not allowed to lower to the verb, thus ruling out an alternative interpretation for the example in (9a), where the incorporated *waka* ‘cow’ is the goal (and therefore would have originated in spec ApplP).

Haugen and Harley (2013) utilize Head Movement in their analysis of noun incorporation in Hiaki, but augment it with post-syntactic operations from Distributed Morphology (Halle and Marantz 1993; Harley and Noyer 1999; Embick and Noyer 2007). One such DM operation is Local Dislocation (Embick and Noyer 2007), which rearranges the linear order of morphemes after syntactic merger. Their concern in Hiaki is the reduplicating morpheme RED, which is analyzed as an aspectual morpheme. We see a Hiaki example in (10a) where the RED is reduplicating the verb root √.

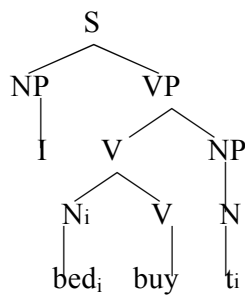
- (10) a. Peo maso-peu-peu-te (Haugen and Harley 2013, example 13)
 Peo deer-RED-butcher-INTR
 ‘Peo is always butchering deer.’

b. (Haugen and Harley, example 47)



Haugen and Harley assume that Hiaki is strictly right headed, as in (10b) where the higher heads are on the right, including the RED morpheme. Semantically the RED aspect has scope over the entire vP (including the object). Head movement will adjoin the head of the complement to the left of its head successively, predicting incorrectly that RED will end up on the right of the vP **maso-peu-te-RED*. Haugen and Harley propose a solution whereby Local Dislocation realigns RED linearly to the left of the root so that spell-out will produce the correct order seen in (10a), where the reduplication phonologically affects only the verb.⁹ Observe that, with the exception of the position of RED, the morpheme order in (10a) falls out directly from the right-branching structure, i.e. noun to the left of the verb (see also Compton and Pittman 2010, who derive morpheme order in a similar fashion). This contrasts with more typical movement accounts where the “inverse” or Mirror ordering (Baker 1985; Cinque 1999) results from base merger of left-headed structures, followed by movement of the head of a complement to the left of a higher head. This reverses the base order, as can be seen in the schematized example in (11) from Baker (1996, 281).

(11)



⁹ A reviewer considers this point to mainly pertain to the morphophonology of reduplication, rather than syntax.

The moved N here precedes the verb in contrast to Mapudungun in (5a). Baker (2014) discusses issues concerning these differences across languages.

2.1 Heads vs. Phrases

Head Movement holds a strict distinction between heads and phrases. This has raised a line of debate within the literature: is there evidence that word internal noun incorporation involves objects larger than X or N? Piggott and Travis (2013) defend the position that the maximum complexity of any word-internal object in a derivation is a head. They state “we maintain the standard position in linguistics, stated explicitly in Baker (1988: 72), that words cannot contain phrasal material.”

There are instances where an incorporated form appears to be larger than a head, as the complexity of the bracketed part in the Ojibwe example in (12) suggests.¹⁰ Here the incorporated nominal *ikwe* ‘woman’ is followed by both diminutive and pejorative affixes, giving the interpretation ‘naughty little girl’.

- (12) ni-gii-[ikwe-zhenz-ish]-iwi [Mathieu 2013, ex. 39a]
IS-past-woman-DIM-PEJ-VAI
‘I was a naughty little girl.’

Piggott and Travis propose that the sub-part of the derivation is assembled independently in another workspace and then merged into the main derivation as a single head. Thus for Piggott and Travis Piggott a word-internal complex head may result solely from either a) heads merging successively through head movement or b) external merge of two heads in an independent workspace followed by merge of that new object with another head in the main workspace. A number of linguists (Massam 2001; Barrie and Mathieu 2012; Mathieu 2013; Compton and Pittman 2010; Mathieu, Fry and Barrie 2013; Barrie and Mathieu to appear) do not believe that such restrictions hold in noun incorporation, and therefore do not accept that noun incorporation involves Head Movement. Mathieu (2013), for example, argues that *ikwe-zhenz-ish* in (12) is merged as a phrase, and gives further examples, such as (13), where prenominal modifiers are found word-internally.

- (13) [gichi-sabii]-ke-w [Mathieu 2013, ex. 43b]
big-net -VAI-3S.SUB
‘He/she is making big nets’

Incorporated nominals can be larger than a head N, but nevertheless are not fully inflected DPs. For the phrasal movement approaches, examples such as (12, 13) indicate that movement of objects larger than heads is required. For Piggott and Travis (2013), on

¹⁰ One might ask if there is independent empirical evidence that the complex object within the bracketed phrase is phrasal, and not a complex morphological head, i.e. is the phrasal analysis only a consequence of the theory, as in Distributed Morphology. Mathieu, Fry and Barrie (2013) claim to provide empirical evidence for the phrasal account. Their argument for empirical evidence is not as compelling as their theoretical argument.

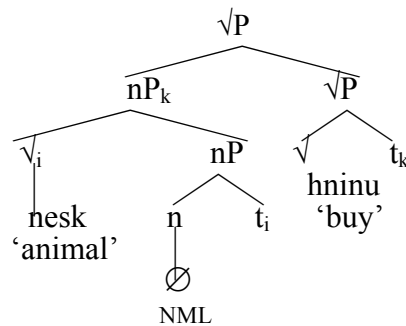
the other hand, the fact that DPs are complex, yet do not utilize all aspects of full phrases, can only be explained if head movement is the only syntactic movement involved in word formation.

3 Alternatives to Head Movement

Alternatives to Head Movement have been proposed to derive the complex words such as we have seen. Barrie (2010; 2011) uses Dynamic Antisymmetry, a PF linearization model based on the models of Kayne (1994) and Moro (2000), to derive noun incorporation structures. Under this view movement is triggered whenever merged elements c-command each other, i.e. symmetrical c-command. This is a violation because linearization can only take place on objects which display asymmetrical c-command. A complement (either X or XP) will move to the specifier position to create a legitimate object with asymmetrical c-command. An advantage to this analysis is that it does not distinguish between heads and phrases. As a result, complex phrases, such as those in (12, 13), are predicted to incorporate. A sample of the derivation of a verb is shown in (14b), from the Oneida example in (14a) from Barrie (2011, 115).¹¹

- (14) a. waʔ-k -neskw(a)-hni:nú: é:lhal
 FACT-1S.AG -animal -buy.PUNCT dog
 ‘I bought a dog’

b.



The structure in (14b) indicates that a $\sqrt{}$ (root) merges first with a nominalizing head n (see Marantz 1997). Because they symmetrically c-command each other, the $\sqrt{}$ moves to spec of NP, creating asymmetrical c-command. This complex nP is then merged with a root meaning ‘buy’. Again, to avoid symmetrical c-command, the nP moves to the spec of a $\sqrt{\text{P}}$ (VP). Asymmetrical c-command is achieved and linearization can take place. This operation resembles roll-up movement (see Rackowski and Travis 2000). The movement

¹¹ A Mohawk example with an overt nominalizer is seen in Baker et al. (2005, 156):

- i. Sak ra -[a]tya'tawi-tsher -a -nuhwe'-s.
 Sak M.S.SUB/(N.S.O)-dress -NML -Ø-like -HAB
 ‘Sak likes the dress.’

will end once a null head is merged (n in 14b alternates with phonological content so is not technically null). No c-command violation is created by the merging of a null head. Barrie (2010, 172-175) relies on this distinction to explain Mapudungun examples such (9a), where the nominal follows the verb. He posits that the Mapudungun nP has a general null nominalizer, so the nP does not move to the spec of \sqrt{P} . It remains in situ, even as the vP, etc. move to the specifiers of higher projections (but see Barrie 2012 for a slightly different account of Mapudungun).

Wojdak (2009) analyzes noun incorporation in Nuu-chah-nulth, a Wakashan language, as a post-syntactic linearization process. Nuu-chah-nulth is an obligatorily incorporating language. In these languages, the more general class of predicates never incorporates a nominal, as in (15a,b) with the verb *n̄i-* meaning ‘sew.’ The second set of predicates are a finite set which obligatorily incorporate, as in (15 c,d), where the verb *-siik-* cannot appear bare. Examples are from Wojdak (2009, 15-16; 44).

- (15) a. **n̄i**-č̄iλ-it-siš łučʔin-ʔak-qs
 sew-PERF-past-1s.IND dress-POSS-1s.PS
 ‘I sewed my dress.’
- b. * łučʔin-**n̄i**-č̄iλ-itsiš
 dress-sew- PERF-past-1s.IND
- c. łučʔin-**siik**-it-siš
 dress-make-past-1s.IND
 ‘I made a dress’
- d. ***siik**-itsiš łučʔin-ʔak-qs
 make-past-1s.IND dress-Poss-1s.PS
- e. haʔum-ʔic-ʔiš-ʔał ʔaapinis
 tasty-consume-3.IND.P apples
 ‘They are eating delicious apples.’

In this particular language, if an adjective precedes a nominal, it is the adjective which will incorporate, as in (15e) with the obligatorily incorporating verb *-ʔic-*, meaning ‘consume’.

Wojdak proposes that obligatorily incorporating predicates are inherently affixes, and that when merged with another item, local spell-out takes place. Local spell-out evaluates sister nodes, such that a sister with an affixal nature will suffix to a host. This focus on incorporating verbs as needing hosts, rather than nouns incorporating into verbs, captures the obligatory nature of this set of verbs in languages of this type, in particular where intervening adjectives participate in linearization, instead of nominals, as in (15e).

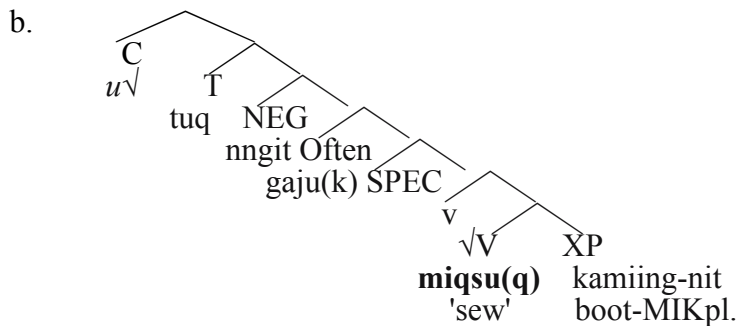
Local rearrangement as process of PF linearization resembles Distributed Morphology’s postsyntactic morphology, which we saw in (10). This is the least syntactic of current analyses, since the incorporation takes place after the narrow syntax (see also Sadock 1985, where morphological properties are satisfied independently, but still in relation to syntax). Whether or not incorporation is a syntactic or PF operation is

reminiscent of the lexicon/syntax debate, although there is less distance in theoretical perspective in the current debate. Barrie’s Dynamic Antisymmetry approach appears to be still within the boundaries of syntax, with familiar syntactic operations. Wojdak’s reliance on bound vs. not bound properties falls outside of syntax and ignores the question of whether such distinctions are entirely arbitrary in nature.

3.1 Noun Movement as AGREE

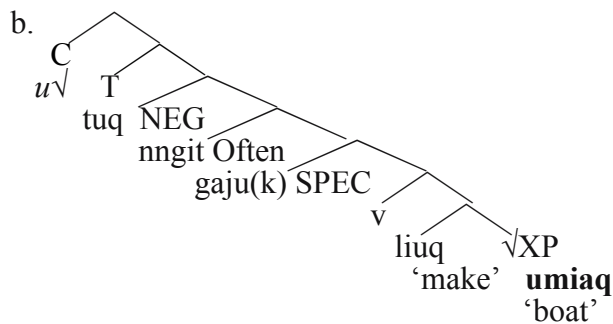
We have seen two analyses where the incorporation structure results from linearization requirements. Other analyses of noun incorporation propose that movement of the nominal is a result of the syntactic operation AGREE (Chomsky 2001), where a probe designating a specific feature will search for an item with a valuation of that feature. Johns (2007) argues that in obligatory noun incorporation in the Inuit languages, a probe feature (u) on C requires the valuation of a feature $\sqrt{\text{root}}$ (root). In the majority of instances it will be a verb root which is found and moved to the higher position of the probe, as in (16), where the root element is shown in bold.

- (16) a. **miqsu**-gaju-nngit-tuq kamiing-nit
 sew-often-NEG-PART.3S boot-MOD.P
 ‘She hardly ever sews boots.’



In constructions containing only light verbs, as in (17a) from Johns (2007, 558-559), the Root probe must continue the search down past the light verb. Light verbs are members of a finite set of functional elements with no root properties. As a result the probe will attract the nominal root as in (17b).

- (17) a. **umia**-liu-gaju-nngit-tuq
 boat-create-often-NEG-PART.3S
 ‘He doesn’t often make boats.’



The movement of the root to the higher probe position sets in motion inversion of the ordering of all of the intervening morphemes, a property common in languages with complex morphology, and one which has engendered a great deal of discussion (see Rackowski and Travis 2000 and especially Massam 2010). The derivation of inverse ordering contrasts with analyses which assume a base-generated right-headed structure (Compton and Pittman 2010). Root Movement captures the essential properties of obligatory noun incorporation, where a closed class of verbs requires that another element be morphologically attached. In the Inuit language, this class of verbs is based on variations of either existential or copula verbs, with aspect, negation, etc. contributing to differences, e.g. 'have' vs. 'get.' Typical of obligatory incorporating languages is the appearance of a dummy morpheme when a nominal is not incorporated. We see in (18), examples from Nuu-chah-nulth, another obligatorily incorporating language. In (18a) we see a standard example of obligatory incorporation, and in (18b) we see that the noun has not incorporated, but there is a dummy morpheme \varnothing - holding the place.

(18) a. **maht'a-ʔa-mit-ʔiš** čakup
 house-buy-past-3IND man
 'A man bought a house.'

b. **ʔu-ʔaa-mit-ʔiš** maht'ii čakup (Wojdak 2009, 29)
 ∅-buy-past-3.IND house man
 'A man bought a house.'

Similar examples with dummy roots are seen in the Inuit language, although a full picture of the distribution is far from clear (Johns 2009). One benefit to Root Movement is that it provides a basis of explanation for the distribution of incorporating verbs, as compared to non-incorporating verbs, which are roots. There is no need to label the incorporating verbs as affixes (see also Compton and Pittman (2010), since it is inherent lack of root material in the light verbs which triggers movement of the nominal.¹² It also explains

¹² A reviewer suggests that the root/non-root distinction is equivalent ("the exact inverse") to affix/non-affix; however the affixation approach would allow in principle any verb to be an affix, and we find in obligatorily incorporating languages that the meanings of these verbs is highly restricted and abstract. In fact using English translations for these verbs can be misleading, because often the verb has multiple

why obligatory noun incorporation so often involves the same verb meanings crosslinguistically (see Gerdts and Marlett 2008 and Wojdak 2009 for examples). These verb meanings are often fairly abstract, and in some languages, a single incorporating verb can encompass a wide range of meanings, as in Algonquian *ke* which can mean ‘make/look for/hunt/gather’ in English, depending on the associated nominal (Johns 2009; Mathieu 2013).

Roberts (2010) proposes to treat noun incorporation as a form of AGREE within a more general proposal to recast Head Movement as a legitimate operation of narrow syntax within Minimalism. Roberts focuses the majority of his discussion on showing that cliticization can be analyzed by this new form of Head Movement (AGREE)¹³. A clitic in this analysis consists of a defective goal (lacking nP) which moves to a probe v* which contains a set of features of which the goal is a subset. Verb Movement is also analyzed through AGREE. In a section entitled ‘A Note on Noun Incorporation,’ pp. 188-192, Roberts cites Baker (1988, 84), who compares noun incorporation with Romance cliticization, e.g. partitive *ne* cliticization in Italian. Roberts’ proposal is that noun incorporation also involves the movement of a deficient goal, in this case a nominal lacking D, to satisfy a probe.

Roberts assumes Chierchia’s (1998) Nominal Mapping Parameter, whereby languages may vary typologically as to whether bare N is +arg or not. A language which has the setting whereby N is +arg will not have the full set of nominal architecture (D) on nominals. As a result, there is no structure to block a bare N from moving to n and then directly to v*. Phi-features on v* resemble D, the absent component of the deficient nP. Roberts builds on the Morphological Visibility Condition of Baker (1996), which states that a noun can be made visible for theta assignment by a head only if it is coindexed with a morpheme within the word containing the head in question a) through agreement or b) movement. Only a true polysynthetic language allows both a) and b), and therefore may use either rich agreement or movement of N to V in order to make an X visible for theta assignment. Roberts, p. 189 lists the set of true polysynthetic languages according to Baker (1996 326-329). These include Iroquoian languages (Mohawk, Seneca, Tuscarora) Wichita (Caddoan), Kiowa (Tanoan), Southern Tiwa (Tanoan), Chukchi (Chukotko-Kamchatkan), Ainu (isolate), Nahuatl (Uto-Aztecan), and Gunwinjguan languages. Languages which have rich agreement, but are not true polysynthetic languages, will not have NI (at least not the AGREE variety).

Roberts’ proposal to analyze noun incorporation as a form of AGREE, resembling cliticization, is very interesting, although not presented in full detail (see Heck and Richards 2010 a somewhat similar approach in detail, and Sadock 1985 for an analysis which focusses on related issues in incorporation and cliticization). Roberts’ proposal might well suit languages where the incorporated nominal seems more like a pronominal (clitic-like), in that noun incorporation appears in the context of an antecedent. This is Type III noun incorporation in the typology of Mithun 1984, who discusses Merlan (1976) on Huahtla Nahuatl. Merlan demonstrates that quite a number of instances of noun

translations in English. One might explain the abstractness through some sort of semantic bleaching, but there is little evidence in support of such an account.

¹³ As Matushanksy (2011, 540) describes it, Roberts “reduces the problematic phenomenon of head adjunction to the unproblematic AGREE.”

incorporation in Huastla Nahuatl are anaphoric, as in (19) [morpheme boundaries only in gloss]. In more familiar languages, we usually find pronouns.

(19) A: Naʔ niʔneki nitlapowas wa·n aš niʔpiya **mo·šti**
 1S 1S-it-want 1S-INDEF-read-SUB but NEG 1S-it-have **book**
 ‘I want to read something but I don’t have a book’

B: Naʔ nimic**mo·št**imaka
 1S 1S-2S-**book**-give

‘I’ll give you one (a book). [Merlan 1976, 184]

We see in this discourse sequence (A/B) that *mo·šti* ‘book’ is independent when it is first mentioned in A, but incorporated on second mention in B, a context where in English speakers typically use a pronoun. Another example of this type of use comes Mohawk in Mithun (1984, 869), where (20) follows a sentence (not shown here) which has introduced the independent noun phrase *ne ó:nvhste* ‘the corn’.

(20) ó:nv yeyóhe n -a -ye-**nvhst**-ayvthó:-ko. Akwé:
 then there.it.set there-would-one-**corn**-plant-REV all
 tsi t-ka-**nvhst**-ayvth-u yvyákwe' tanu
 to there-it-**corn**-plant-ed will.we.go and

‘Then it was time to harvest it (the corn). We would all go to the cornfield and...’

We see again that in discourse contexts where in English we would likely find anaphors, Mohawk is repeating the nominal within the verb complex. The second sentence plausibly could be translated into English as ‘go to where it is planted...’. Another language which shows this pattern is Bininj Gun-wok (see Evans 2003, 475).

Barrie and Mathieu (2012) take issue with Roberts extension of AGREE (revised Head Movement) to NI based on two issues. The first is that incorporated nominals in Algonquian can include modifiers (see 12, 13), even though Roberts, p. 189 explicitly excludes Algonquian as a true polysynthetic language. The problem with modifiers is that this would entail that a nominal has material beyond what the v* probe would be looking for, so is not a subset. This problem could possibly be resolved if some sort of pied-piping were allowed.¹⁴ The second issue that Barrie and Mathieu consider a problem for Roberts is that languages with NI sometimes lack object agreement. Northern Iroquoian lacks agreement on the verbs for inanimate objects. They argue that some related features of the object must be on the probe; therefore inanimate object agreement should be present in the language. This complementarity, however, appears more support than a problem for a Roberts type analysis. That the rich agreement morphology of Iroquoian is

¹⁴ The same criticism has been made against the root movement analysis for the Inuit language (Compton and Pittman 2010), where certain nominal modifiers may appear inside the word along with incorporated nominal.

absent in the core context where nominal objects are allowed to move into the verb (animate objects rarely incorporate) suggests that movement IS a form of agreement.¹⁵ It would be useful if there were more in depth studies illustrating the patterning of optional noun incorporation, so we can better understand what properties trigger the construction (see for example Mithun and Corbett 1999; Evans 2003).

3.2 Pseudo noun incorporation: Nominal in situ

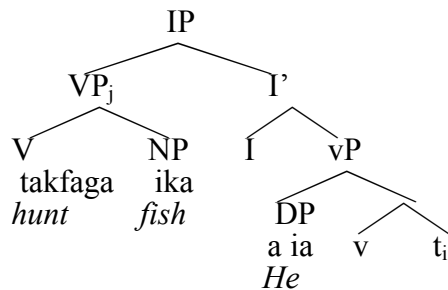
In the previous accounts we have seen that in each instance the nominal is the target of some form of movement, either because it is a head, or because it has features which satisfy AGREE. With Dynamic Antisymmetry either *n* or *nP* moves to a specifier position to satisfy antisymmetry. Pseudo noun incorporation (PNI) is an influential analysis which argues that the nominal elements only appear to be targets. In fact under this analysis nominals do not move independently. Any movement is part and parcel of a larger movement, e.g. predicate fronting of the *vP*. Head Movement does not take place. Pseudo noun incorporation was introduced and developed in Massam (2001; 2007) in an analysis of Niuean, an Oceanic language. VP fronting is standard in the language. Niuean has three classes of PNI. One class is an open class of general verbs which display classic properties of Mithun's Type I noun incorporation. These properties are non-specific non-referential nominal, reduced valency, and close proximity of the verb and noun and the noun in a non-canonical object position.

- (21) a. Ko e tele e Sione a Sefa [transitive]
 PRES kick ERG Sione ABS Sefa
 'Sione is kicking Sefa.' Massam 2001, 155
- b. Takafaga ika tūmau nī a ia [intransitive]
 hunt fish always EMPH ABS he
 'He is always fishing.' [repeated from 1c]

In (21a) we see that the canonical position for an object, here the name *Sefa* in absolutive case, is after the subject in ergative case *e Sione*. In (21b) we see that the non-specific object *ika* 'fish' is not marked for any case, appears to the immediate right of the fronted predicate, and that the subject is not ergative, but instead absolutive. Leaving out the adverb, Massam's analysis of pseudo noun incorporation is shown in (22). Crucially the nominal element which has fronted as part of VP fronting, is phrasal, i.e. NP.

¹⁵ Ditransitives are very relevant to this possibility. Recall from (9b) that Baker (2009) explains how only theme arguments in an applicative construction can incorporate. Object agreement in applicatives is associated with goal arguments. Wojdak (2008, 150-154) shows that Nuu-chah-nulth has two different ditransitive verbs, one where only themes incorporate, and other where only goals incorporate. It appears from the examples that the incorporated goals are always pronominal, and never nominal. Given (9b), we might posit that goal AGREE is related to *v* (ϕ -features), while theme AGREE involves categorial or root features (V).

(22)



This analysis explains the position of the object argument, and also the fact that adjectives or even complex modifiers may co-occur with it, as in (23).

(23) a. Ne inu [kofe kono] a Mele
Past drink coffee bitter ABS Mele
'Mary drank bitter coffee' (Massam 2001, 158)

b. ...ke kumi [motu ke nonofo ai]
SBJ seek island SBJ settle there
'...to see an island where they could settle.' (Massam 2001, 160)

In structures where incorporation appears not to have taken place, such as (21a), the DP moves to a higher case projection above VP, such that by the time the VP fronts, it has vacated the VP, giving the impression that only the V fronts.

Niuean also has a closed class of existential verbs, meaning 'have' or existential 'be' which obligatorily pseudo incorporate. The existential class allows the nominal to be referential, as in (24), where the last sentence refers back to the food which was introduced by the existential verb *fai*.

(24) Fai [men kai]_i a ia ia he fano, ko e [fua niu]_i.
Have [thing food] ABS she her at go, PRED ABS [fruit coconut]
'She had food with her when she went: (namely) a coconut.'
[Massam 2001, 174]

This class of verbs is similar in meaning and behavior to the Inuktitut light verbs we saw in section 3.1. The verbs are less specified in meaning, incorporation is obligatory and the nominal is often referential. Massam follows Van Geenhoven (1998) in attributing the referentiality of the nominal introduced by the existential verb to properties of the verb itself. The pseudo incorporated nominal in both the general and the existential pseudo incorporating verbs is NP.

Finally, Niuean also has a locative class which pseudo noun incorporates. The locative class of verbs is interesting in that it is sometimes associated with larger, more functionally complete nominal structure than other incorporating verbs (Massam 2009b, 180). Massam mentions that in Paiwan, an Austronesian Formosan language,

motion/location verbs show incorporation of oblique marked nominals. In (25b) we see a Paiwan example, where, in addition to oblique arguments, the possessor also appears incorporated (compare with the non-incorporated 25a).

(25) a. m-eke-kel-aken a pasa [tua tapaw ni camak]
 AV-run-RED-1S.NOM LNK go.to (AV) OBL hut GEN Camak
 ‘I am running to Camak’s hut.’

b. [pasa [-tua -tapaw-ni -camak]]-aken a m-eke-kel
 go.to (AV)-OBL -hut-GEN -Camak -1S.NOM LNK AV-run-RED
 ‘I am running to Camak’s hut.’

(Wu and Chang 2005)

While (25a) shows the verb *eke* meaning ‘run’ in main predicate position (V initial), (25b) shows a motion verb with no manner specification in main predicate position¹⁶, accompanied by an oblique marked nominal and its possessor.

As pointed out in Massam (2009b), in the Inuit language, motion/location incorporating verbs, as in (26), also allow more complex nominal structure than other classes of incorporating verbs (Sadock 1980; 2002; Johns 2007; Johns 2009).

(26) a. Kalaall-it nuna-a-liar-poq [from Sadock 1980, 314]
 Greenlander-P land-3POSS.P-go-INTR.INDIC3S
 ‘He went to Greenland (i.e. to the Greenlanders’ country).’ (Kalaallisut)

b. Piita-up illu-nga-niit-tugut. [from Johns 2009, 188]
 Peter-POSS house-3POSS.S-be.in-INTR.PART.1P
 ‘We are in Peter’s house.’ (Baffin)

Recall from section 2, that possessor stranding is normally prohibited in Canadian dialects of Inuktitut. The exception is when there is possessive inflection on the incorporated nominal, such as the *-nga* marking in (26b). Possessive inflection is optionally allowed only on nominals incorporated into motion/location verbs. We understand from these facts that cross-linguistically similar incorporating verb classes are associated with particular degrees of complexity regarding incorporated DPs.

Pseudo incorporation is associated with languages where there is no visible morphological attachment between the verb and nominal, but instead some form of adjacency, as in the Niuean examples we have seen. Pseudo incorporation is now

¹⁶ Wu and Chang (2005) do not consider (25b) to be a case of pseudo noun incorporation but instead label it syntactic noun incorporation. The main point here is that motion/location verbs are associated with more complex DPs.

discussed in a wide variety of languages (Borik and Gehrke 2015), including Indo-European, e.g. Dutch (Booij 2008).¹⁷

Massam points out that in Niuean the verb and noun are in the order we would expect from merge position, i.e. V N, as in (21). From a similar perspective, Bok-Bennema and Groos (1988) propose an analysis for Kalaallisut where the incorporating verb has both syntactic and morphological requirements (Sadock 1985). They argue that the language is head-final. The NP is base-generated to the left of the verb, with the N adjacent to V. This adjacency allows the head noun and verb to undergo reanalysis, resulting in a single word. More recently Baker (2014) proposes that Pseudo noun incorporation involves a special case of string vacuous Head Movement. The head of a noun-phrase forms a complex predicate with the verb, but because of an absence of factors to determine whether to delete the head or the tail of the moved element, the only solution for PF linearization is strict adjacency.¹⁸

Levin (to appear) discusses subject incorporation in the Object Voice construction in Balinese, where a post-verbal subject appears as a strictly adjacent indefinite argument, as seen in (27a).

(27) a. jaran-e gugut cicing
 horse-DEF OV.bite dog
 ‘A dog bit the horse’ [‘dog’ strictly adjacent]

 b. be-e daar Nyoman
 be-DEF OV.eat Nyoman [Nyoman strictly adjacent]
 ‘Nyoman ate the fish.’

Subjects are incorporated in other languages (see references in Massam 2009a, 1089), but they are usually non-agentive and/or inanimate. It is also interesting that Proper Names can incorporate, as in (27b). While in general incorporated nouns are said to be non-specific, there are languages such as the Inuit language (Johns 2007; 2009), where names can be incorporated.

¹⁷ An example from Dutch is shown in bold in i) where the N V construction is claimed neither to contain a true object, nor is the construction a compound.

i) Jan zou elke dag willen kunnen **les geven**
 Jan would every day want can lesson give
 ‘Jan would want to **teach** every day.’ [p.c. Martin Everaert and Henk van Riemsdijk]

As discussed in Booij (2008), while the NV construction is translated as ‘teach’ and the N is bare, the N can also be found separate from the V and precede verb clusters, a position forbidden to DPs.

Barrie and Spreng (2009) argue that the German progressive is noun incorporation, and use Dynamic Asymmetry to account for it (Barrie 2011).

¹⁸ Ball (2005, 12-13) demonstrates that strict adjacency of [V N] is obligatory in Tongan. Even though adjectives can move leftward with incorporated nouns, any adjective that normally appears to the left of nominals is prohibited from appearing as *[V A N], but instead requires a cognate post-nominal adjective [V N A].

Coon (2013, 75-77) points out that a construction, referred to as the “incorporation antipassive” in Chol (Mayan), resembles pseudo noun incorporation.

(28) Tyi k-cha'l-e wuts' pisil Coon 2013, 76
 PERF ERG.1-do-DTV wash clothes
 ‘I washed clothes.’

Like the general form of pseudo noun incorporation in Niuean, the object in this construction is not morphologically attached and must non-specific. It is possibly phrasal, in that some speakers allow adjectives (but never determiners). Coon says that N's in such constructions are not true syntactic verbal arguments (see Van Geenhoven 1998). Since only predicates with internal arguments take verbal inflection in Chol, the compound stem patterns as a nominal.

Noun incorporation and antipassive constructions have been previously linked in the literature. Bittner and Hale's 1996 analysis of antipassive utilizes an idea from Baker (1988, 138) that the antipassive construction is a subtype of noun incorporation, the antipassive morpheme consisting of a nominal element adjoined to the verb. Consider these examples from Chukchi.

(29) a. yemronə-na qərir-ərkən-in ekək
 Y.-ERG_i search-PRES-3S_i.3S_j son(NOM)_j
 ‘Yemron is searching for his son.’

b. yemron ine-lqərir-ərkən (akka-gtə)
 Y.(NOM) AP-search- PRES-3S_i (son-DAT)
 ‘Yemron is searching (for his son).’ [Bittner and Hale 1996, 36]

Chukchi is an ergative language and we see typical ergative marking on the subject and nominative/absolute on the object in (29a). In (29b), when the antipassive morpheme *ine* is prefixed to the verb, the construction loses its transitivity marking; the subject is nominative/absolute, and the external object (‘son’) is optional and marked with oblique case. In certain respects then, this pattern resembles Mithun's Type IV (classifier) incorporation, where an external nominal simply adds more information to supplement that of the more abstract and morphologically attached nominal.

4 Semantics contributions to our understanding of the syntax of NI

A rich and extensive literature has emerged on the semantics of noun incorporation starting with de Hoop (1992) through Bittner (1994), Van Geenhoven (1998), Farkas and de Swart (2003), Chung and Ladusaw (2004), Dayal (2011), etc. Of interest to semanticists are the properties of bare nominals, an important topic since Carlson's (1977) work on bare plurals. Bittner (1984), in a study of Kalaallisut (West Greenlandic), shows that incorporated nominals have narrow scope with respect to higher operators. Van Geenhoven (1998) discusses a wide range of related semantic properties associated

with these nominals, such as the fact that they cannot be anaphorically linked to a preceding noun, as in the Kalaallisut sequence in (30).¹⁹

(30) a. Ippassaq **kaage**-liur-pugut
 yesterday cake-make-INTR.IND.1P
 ‘Yesterday we make cake._i’

b. Ullumi **kaage**-rniaq-pugut
 Today cake-sell-INTR.IND.1P
 i. ‘Today we are selling cake’
 ii. #‘Today we are selling the cake._i’ [Van Geenhoven 1998, 37]

This contrasts with the well-known fact that an incorporated nominal in Kalaallisut can itself serve as an antecedent (Sadock 1980; 1986), as in (31) from Sadock (1986, 24).

(31)... **puisi**-k-kaangami-li,
 seal-catch-whenever.4S-but
 ‘... but whenever he caught a seal_i,’

orsu-**ata** ila-a neri-sar-paa.
 fat-ERG.POSS.3S part(of whole)-3POSS.S eat-HAB-TR.INDIC.3S.3S
 ‘he would eat some of its_i fat.’

Here the possessive inflection on *orsuq* ‘fat’ relates back to *puisi* ‘seal’ in the preceding line.

Van Geenhoven’s proposal is that an incorporated nominal in Kalaallisut is a predicate that is based generated with the verb and combines with the verb through semantic incorporation. The interpretation of the nominal predicate as an existential derives from properties of the incorporating verb.

Chung and Ladusaw (2004) argue for a semantic analysis of noun incorporation reminiscent of Rosen’s 1989 Compound/Classifier distinction, whereby there are two possible semantic operations on indefinite nominals, which are assumed to be properties (similar to Van Geenhoven 1988). The first is Specify, which allows the nominal to saturate the argument properties of the verb. The second mode of composition involves Restrict, which combines the property nominal with the verb without saturating the argument properties of the verb. As a result Restrict allows doubling of arguments, as illustrated by bolded elements in the Chamorro example in (32), from Chung and Ladusaw (2004,89).

(32) Gäi-**ga**’ **un ga**’lagu ennao na patgun
 AGR.have-pet dog that LNK child
 ‘That child has a pet dog.’

¹⁹ Recall that in Mithun’s Type III languages (Nahuatl, Mohawk), such constructions as (30b) are typical, since in these languages, the incorporated nouns appear similar to anaphors.

Chung and Ladusaw discuss the syntax of doubling in an appendix, where they conclude that the extra NP (the nominal which incorporates) is generated adjoined to its twin DP, and that it subsequently incorporates into the verb (see also Barrie 2012 who analyzes doubling as some sort of big D

Most semantic analyses of noun incorporation crucially rely on the incorporated nominal as being a property. This does not readily conform with the fact that incorporated nominals in the Inuit language may be names, as shown in (33).

- (33) a. **Fredi**-jojâ-vutit uKauti-niat-tagâ
 Freddy_i-look.like-INTR.INDIC.2S tell-N.FUT-TR.PART.1S/3S_i
 ‘You look like Freddy. I am going to tell him. [Labrador dialect; Johns 2007]
- b. Qallupilluq **Miali**-tu-niaq-pa? (South Baffin)
 Qallupilluq Mary-consume-N.FUT-INTR.INTERR.3S
 ‘Is Qallupilluq [a sea monster] going to eat Mary?’
 [South Baffin dialect; Johns 2009]

Incorporated names have not been reported very frequently in the literature. In general they are thought not to occur, although ungrammatical examples are sometimes lacking. Incorporated names are also found in Paiwan and Balinese pseudo noun incorporation, discussed in section 3.2.

Collins (to appear) shows that in Samoan pseudo noun incorporation, indefinite nominals which are marked by the determiner *se* are trapped under narrow scope if there is a higher negative operator *lē*. We see this in the Samoan example in (34a), where *foamea* ‘thief’ cannot be an antecedent to a following sentence. When no negative operator is present, as in (34b), the same indefinite nominal is free to have wide scope (see also the analysis in of Māori indefinite articles in Chung and Ladusaw 2004).

- (34) a. *sā lē fa’apāgotā se foamea_i e Ioane. #’Ua ia_i ita.*
 past not arrest NONSPEC thief ERG John PERFECT he angry
 ‘John didn’t arrest any thief. He became angry.’
- b. *sā fa’apāgotā se foamea_i e Ioane. ’Ua ia_i ita.*
 past arrest NONSPEC thief ERG John PERFECT he angry
 ‘John arrested a thief. He became angry.’
- c. *sā (lē) fa’apāgotā foamea_i Ioane. #’Ua ia_i ita.*
 past (not) arrest thief John PERFECT he angry
 ‘John arrested a thief. He became angry.’

When the nominal is bare, however, as in the example in (34c), the NP is trapped (“stubbornly trapped” as Collins terms it), even in the absence of a higher operator. Samoan shows that within pseudo noun incorporations, there can be indefinite determiners, with properties distinct from bare NP (notice all the sentences are VOS, not the normal VSO order).

5 Conclusion

Noun incorporation in its broadest definition has pushed the boundaries of our understanding of how morphology links to syntax. From earlier debates as to whether noun incorporation is lexical vs. syntactic, syntacticians now debate whether it is narrow syntax vs. PF linearization, and phrasal incorporation vs. head incorporation. We have seen since Sapir (1911) that noun incorporation construction types can vary even within a single language. These different types of noun incorporation appear to relate to verb classes to some degree. For example, we have seen that noun incorporation involving existential verbs share some properties in common across languages, and it is likely that ditransitive type noun incorporation is very similar cross-linguistically. Pseudo noun incorporation is providing a useful metric of comparison and analysis. Evans (2003, 451-452) suggests “we need to approach noun-incorporation as a family of related but distinct constructions, each with its own partially unique semantic and syntactic characterization.”

There are often facts we assume without ever seeing evidence that alternative constructions are ungrammatical in the language. An example of this is the Inuit language, where facts show that some Canadian dialects do not necessarily show intransitive verb agreement with noun incorporation. Many assume (c.f. Rosen 1989) that languages either detransitivize with noun incorporation, or stay transitive. In Canadian dialects of the Inuit language, the construction can be inflected for intransitive or transitive inflection, as shown in (35).

(35) a. **atigi-liuq-tuq**

jacket/shirt-make-INTR.PART.3S

‘She is making a shirt/jacket.’

b. **atigi-liuq-tangit**

jacket/shirt-make-TR.PART.3/3P

she is making all of these jackets/shirts.. [South Baffin dialect, fieldnotes]

The intriguing cline between incorporated nominals, classifiers, clitics and agreement is still not fully understood. The phenomenon of doubling, which is found in only some languages with noun incorporation, has not been fully explored; it resembles in some respects current discussion of objects clitics doubling with external DPs (see Kramer 2014). Pseudo noun incorporation has brought the issue of strict adjacency to the forefront. Formal semantics has provided a wider set of facts, many which bear on syntactic analyses, especially as LF differences support a syntactic rather than PF operation. Linguists are no longer looking for a single solution to noun incorporation, but instead are investigating particular issues, utilizing findings from analyses in other areas of syntax.

See Also: Applicative Construction; Double Object Construction; Existential Sentences and Expletive *There*; Grammatical and Light Verbs; Possessor Raising; VSO Word Order, Primarily in Austronesian Languages.

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