

Incorporation: Morpho-Syntactic vs. Semantic Considerations

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I. The Morpho-syntax of Incorporation

The term *incorporation* canonically refers to cases of complementation in which a theme argument, lacking functional structure, is syntactically fused with the verb. In this pristine form incorporation appears to be a close kin of word-level compounding. Recently, however, the term has been extended to apply to structures in which the theme argument is realized as a full blown noun phrase and shows no signs of fusion with the verb. In this less pristine form incorporation seems to be akin to regular transitive structures. In this paper, I subscribe to this elastic notion of the term *incorporation* while maintaining its distinction from compounding on the one hand and regular complementation on the other. Establishing an independent grammatical status for incorporation requires navigating between morpho-syntactic identifiers of incorporation and subtle but robust semantic properties that are unique to it.

I begin by sketching in broad strokes the morpho-syntactic differences between canonical incorporation targeting N^0 and pseudo-incorporation targeting NP. In section 2, I review four semantic properties that have been variously taken to characterize incorporation. Against this background, I turn in sections 3 and 4 to two recent developments in the literature on incorporation, one extending the notion of pseudo-incorporation to include DPs, the other analyzing incorporation and compounding as parametric variants of each other. As would be obvious, the discussion in Borik and Gehrke (this volume) bears on all of the issues discussed here.

Let us start, then, with brief sketches of two crucial stages in the study of noun incorporation, characterized by the structural complexity of the nominal involved: N^0 vs. NP. Polysynthetic languages like Mohawk and Inuit, brought into the linguistic canon by Sadock (1980, 1986), Mithun (1984, 1986) and Baker (1988), are canonical examples of incorporation. In the following we can compare a standard transitive structure in Inuit (1a) with a noun incorporated version (1b):

- (1) a. Angunguu-p aalisagaq neri-v-a-a
A-ERG fish.ABS eat-IND-[+tr]-3SG.3SG
“Angunguaq ate the/a particular fish.” *Van Geenhoven (1998:13)*
- b. Arnajaraq eqalut-tur-p-u-q
A-ABS salmon-eat-IND-[-tr]-3SG
“Angunguaq ate salmon.” *Van Geenhoven (1998:15)*

There are clear morpho-syntactic differences between the two sentences. The verb in (1a) is marked [+transitive], while the one in (1b) is marked [-transitive]. This is reflected in case marking. The transitive structure in (1a) has an ergative subject while the incorporation structure in (1b) is like an intransitive in having an absolutive marked subject. That is, incorporation

involves a change in the valency of the verb. It can also be established that the incorporated nominal is a bare stem. Any modifiers must appear outside the verb complex:

- (2) a. Esta nutaa-mik aalisagar-si-v-u-q
 E-ABS fresh-INST.SG fish.-get-IND-[-tr]-3SG
 “Ester got (a) fresh fish.”
- b. Esta nutaa-nik aalisagar-si-v-u-q
 E-ABS fresh-INST.SG fish.-get-IND-[-tr]-3SG
 “Ester got (more than one) fresh fish.”

Van Geenhoven (1998:18)

Based on data such as the above, it is safe to conclude that the Inuit incorporated nominal is of the lexical category N^0 and that it occurs inside the verb complex. That is, it is compatible with analyses in which there is head movement of N out of DP into V or with a base-generated account which has N start out inside a V complex. The two options are presented schematically below:

- (3) a. [VP [DP t_{N-i}] [V N_i+V]]
 b. [VP [v N+V]]

A second less canonical form of incorporation involves some functional structure in the incorporated nominal and a weaker morphological connection with the verb. The following examples from Hindi show a difference between direct objects that name individuals or have determiners, as in (4), and direct objects that are determiner-less or bare, as in (5). The former must be case-marked while the latter need not be:¹

- (4) a. * anu har baccaa /umaa sambhaaltii hai
 Anu every child / Uma manages
 “Anu looks after every child/Uma”
- b. anu har bacce-ko /umaa-ko sambhaaltii hai
 Anu every child-ACC Uma-ACC manages
 “Anu looks after every child/Uma”
- (5) a. anu baccaa sambhaaltii hai
 Anu child manages
 “Anu looks after children”
- b. anu bacce-ko sambhaaltii hai
 Anu child-ACC manages
 “Anu looks after the child”

Under the view that the direct object position can be a target of incorporation, the data in (4) and (5) can be explained by positing that there is incorporation in Hindi and that incorporated objects

¹ Note that this diagnostic is not reliable with inanimate nouns, where even quantified noun phrases can appear without case. For such nominals, one has to depend on semantic diagnostics to identify incorporation.

are exempted from case-marking (Porterfield and Srivastav 1988, Dayal 1992, 1999, 2003a, 2011, Mohanan 1995, Wescoat 2002). The proper name/quantified noun phrases in (4) being DPs cannot be incorporated. They are therefore obligatorily case-marked. The bare nominals in (5) can be NPs which can be incorporated.

There are several respects in which Hindi incorporated nominals, however, deviate from standard incorporation. Consider the following:

- (6) a. anu bacce sambhaaltii hai
 Anu children manages
 “Anu looks after children”
- b. anu-ne bahut sundar laRkii cunii
 Anu very pretty girl chose-FEM
 “Anu chose a very pretty girl”
- c. baccaa anu bhii sambhaaltii hai
 child Anu also manages
 “Anu also looks after children.”

The first point to note is that the incorporated nominal can have functional structure, as evidenced by the incorporated plural in (6a). The second is that such nominals can also be modified, as shown in (6b), though there are restrictions in the nature of the modifier. Furthermore, incorporation structures display the same agreement patterns as standard transitive structures. A Hindi verb in its perfective form agrees with the highest non case-marked nominal. In (6b) the non case-marked direct object triggers feminine agreement on the verb. Had the sentence been about choosing a boy, the verb would have shown masculine agreement. Finally, (6c) shows that it is possible to scramble an incorporated nominal.^{2 3}

Based on data such as the above, we are led to the conclusion that Hindi incorporation involves no change in valency, the nominal can have functional structure up to, but not including the determiner, and can enjoy the same status as complements of transitive verbs with respect to syntactic processes such as agreement and scrambling. A plausible syntactic analysis for Hindi incorporation treats it as instantiating NP, rather than N⁰.⁴ Since categories larger than N⁰ are involved, Hindi instantiates *pseudo-incorporation*, a term due to Massam (2001). Niuean allows both VSO and VOS structures, but the latter is restricted to a smaller set of nominals than the former. Massam explains this pattern by positing two complementation structures, a normal

² Of course, scrambling has its own discourse requirements. Scrambling of incorporated nominals is facilitated by various factors, such as the presence of a presuppositional trigger like *bhii* “also” in (6c). For more discussion, see Dayal (2003b, 2011).

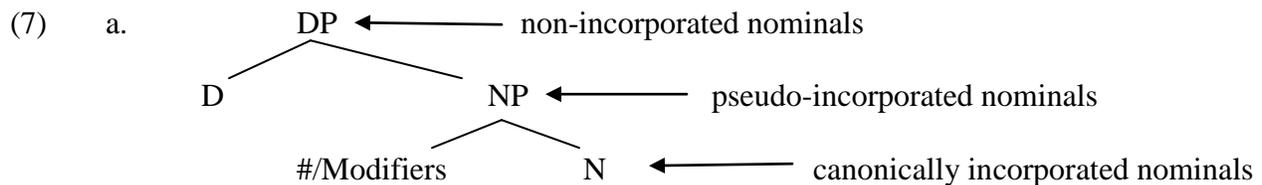
³ There are some obvious connections to be made here with the distinction between weak and strong case positions in de Hoop (1992), and also some differences. I refer the reader to Bhatt, Dayal and Kidwai (in prep) for relevant discussion and will settle for pointing out that the data in (6c) does not fit in with the specifics of de Hoop’s proposal. Setting aside many important details, the point to keep in mind is that incorporated bare nominals cannot be conflated with overt indefinites, weak or strong, as will become clear in section 2.

⁴ This marks a crucial difference between Mohanan (1995) who took Hindi incorporation to target N⁰. Another crucial difference has to do with distinctions between singular and plural incorporated nominals and their relation to kind terms, something that Mohanan’s study did not take into account. See Dayal (2011) for more specific discussion.

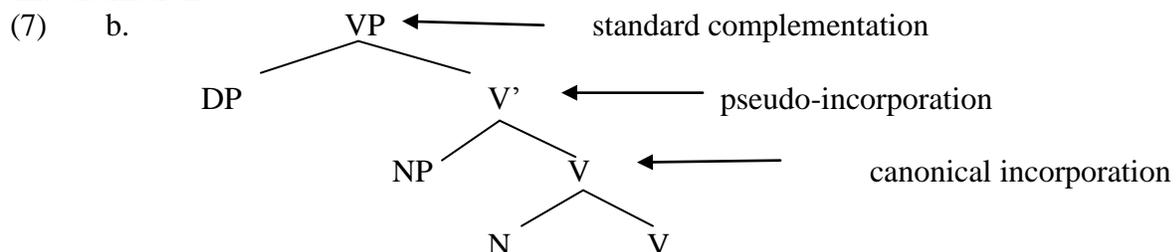
transitive structure: [_{VP} V DP], and a pseudo-incorporation structure: [_{V'} V NP]. The observed differences follow from a Niuean-specific rule of obligatory V' fronting. Like Hindi, Niuean is an example of a language in which incorporation targets a nominal with some functional structure and a looser syntactic connection between the incorporated nominal and the verb.

Hungarian is another language that instantiates pseudo-incorporation. As discussed by Farkas and de Swart (2003), there are two word order possibilities in the language, SOV and SVO. The preverbal position is restricted to nominals without determiners. Modification as well as number marking is permitted. There are two interesting points on which Hungarian departs from Hindi. Hindi allows bare singulars and bare plurals not only in incorporation structures but also in other argument positions. Hungarian only allows bare singulars in the preverbal position, which means that a sentence with a bare singular can reliably be taken to be a sentence with incorporation. Modified bare plurals are less restricted. Interestingly, however, preverbal direct objects are case-marked just like post-verbal direct objects. This can be ascribed to the Hungarian case-marking system that is not restricted to full DPs and need not challenge the claim that Hungarian has pseudo-incorporation.⁵ There are several other languages that have been shown to display pseudo-incorporation to various degrees of productivity: Danish (Asudeh and Mikkelsen 2000), Norwegian (Borthen 2003) and Albanian (Kallulli 1999), among others. Individual differences notwithstanding, all of them show evidence of a distinction between standard DP complements and a more restricted set of NP complements.

To sum up this section, we have seen a shift in the range of morpho-syntactic possibilities for incorporation. (7a) shows the shape that incorporated nominals may take across languages. Inuit gives evidence of the reduced structure, one that makes it plausible to think of incorporation as compound-like. Hindi, Hungarian, Niuean etc give evidence of a somewhat richer structure, one that brings it closer to but does not identify it with regular complementation:⁶



The other side of this schema has to do with the level of fusion between the nominal and the verb. I will take the following three-way schematic distinction as a reasonable way to express this distinction:



⁵ See Barrie and Li (this volume) on the role of the case system in incorporation.

⁶ I set aside the issue of whether bare nominals in non-incorporated argument positions are NPs that type-shift to argumental types $\langle e \rangle$ or $\langle \langle e, t \rangle, t \rangle$ or DPs with a null D. The discussion in section 2 may shed some light on this question, but see Dayal (2004) for more specific arguments related to this question.

The labels on the verbal spine are not to be taken too literally. I have followed Massam (2001) in placing pseudo-incorporation at V', which in current conceptions of syntactic structure would probably correspond to vP. The important point is that the three-way variation in the nominal complement is mirrored in a three-way distinction in its location in the verbal spine. There are two points worth highlighting here. Canonical incorporation is close to compounding, having N and V as sisters.⁷ This raises the question whether there is any difference between incorporation of this type and compounding, as originally debated by Mithun and Sadock. The second has to do with the position of pseudo-incorporated nominals. In this I depart somewhat from my earlier work. In Dayal (2011), I had remained neutral on the position of the pseudo-incorporated nominal, relying on the semantics of incorporation to interpret it in a lower scope position than regular complements. However, based on Bhatt, Dayal and Kidwai (in prep), I will assume a position intermediate between VP and V for Hindi as well, consistent with what Massam has claimed for Niuean.

II. Semantic Hallmarks of Incorporation

With the range of attested variation in the morpho-syntax of incorporation in place, we now turn to semantic issues in the study of incorporation. I will focus on four semantic properties that have been associated with incorporation: name-worthiness, obligatory narrow scope, number neutrality and discourse anaphora. The primary goal of this section is to establish that an independent semantics for incorporation is needed in the grammar of natural language. That is, I will present arguments against the alternative view that it is possible to give a single, unified semantics for incorporation and other phenomena that may display similar semantic characteristics as incorporation: namely kind denoting terms, generics, weak indefinites and/or compounding.

2.1. Name-worthiness

The earliest descriptions of incorporation make it clear that the alternation between transitive and incorporation structures is not semantically innocuous. Mithun (1984), for example, notes that noun incorporation involves something over and above the merging of a verb with a suitable complement. The quotations below are representative of the many comments collected in Carlson (2006), showing that the semantic contribution of the nominal+verb combination is greater than the sum of its parts. This is referred to variously in the literature as *institutionalization* or *enrichment*:

- (8) a. "All incorporating languages utilize the process to create basic unitary lexical items as needed to represent institutionalized, unitary concepts....Their [INs'] generic character usually results in their use for habitual activities, for those directed at an unspecified portion of a mass, for those that incompletely affect and individual patient, or for those that are simply part of a greater group effort." (Mithun 1984)

⁷ See Frey (this volume) on the relationship between incorporation and complex predicate formation in German.

b. "...the noun no longer refers to an individuated specific or unspecific participant, and thus the whole clause shows a lesser degree of transitivity."

(Mosel and Hovdhaugen 1992)

c. "Object-incorporated verbs mark activities in which the category of object is indicated but no specific or identifiable object is intended."

(Watters 1993)

Institutionalization/enrichment also holds for pseudo-incorporation, as exemplified by the following contrast in Danish, due to Line Mikkelsen (p.c.), discussed in Dayal (2011):

- (9) a. √gris-slagte
 pig-butcher
- b. ?struds-slagte
 ostrich-butcher

Since presumably there are no ostrich in Denmark, it is unlikely that the activity of butchering them can be part of the culture, in the way that butchering pigs would be. However, it is expected that *struds-slagte* would be considered acceptable in a community of Danish speaking people living in Africa where butchering ostrich could have institutional status. Thus, it may be possible to get the relevant enriched reading for some apparent gaps in the incorporation paradigm through coercion.

Let us now consider a case that illustrates the opposite problem. In languages like Hungarian and Danish, something akin to *to house-buy* is good in pseudo-incorporation but something corresponding to *to pencil-buy* is not, although presumably it is much more common for pencils to be bought than houses. If we take into account the fact that house-buying represents a type of activity that involves more than simply the exchange of goods for money, we can get some insight into the problem. In buying a house, there is a whole routine involved that includes working with a realtor, looking for houses, applying for mortgage, etc. Nothing so elaborate occurs in buying a pencil. Again, a context in which *to pencil-buy* can be construed as involving much more than simple buying can rescue the incorporation. For example, in the context of an office supply firm, one can talk of individuals who are in charge of such an activity. This shows that the requirement of enrichment is open to contextual manipulation.⁸

Institutionalization/enrichment goes hand in hand with restrictiveness. There are gaps in the paradigm that cannot be explained on the basis of *institutionalization/enrichment* alone. Thus, Hindi displays the following clear contrasts (Dayal 2011):

- | | | | | |
|------|----|---------------------------------------|------|--|
| (10) | a. | laRkii/laRkaa-dekhnaa
girl/boy-see | (a') | *aurat/aadmii dekhnaa
woman/man-see |
| | b. | biwii-cunnaa
wife-choose | (b') | *biwii-maarnaa
wife-beat |

⁸ As noted in Dayal (2011), there is some cross-linguistic variation in this regard. Hindi seems to allow *to pencil-buy* in pseudo-incorporation without contextual support.

The incorporated noun-verb combination in (10a) refers to a specific type of activity in which a prospective bride/groom is seen by potential in-laws. Even though the individuals involved are adults, the options in (10a') do not exist. Similarly, the noun-verb combination in (10b) is acceptable and has a transparent meaning but the one in (10b') is completely unacceptable. Note that such an activity, though reprehensible, would pass muster for an *institutionalized activity*, as witnessed by the compound term *wife-beating* in English.

It seems that we simply have to accept the possibility of gaps in the paradigm when discussing pseudo-incorporation. This is reminiscent of word formation processes, where a certain amount of institutionalization/enrichment forms the necessary conditions for naming but it is hard to posit sufficient conditions to rule out the unattested cases. I will refer to the cluster of properties discussed above, institutionalization/enrichment and gaps, under the cover term *name-worthiness*. Although intuitions about name-worthiness have been attested from the very beginning it remained unformalized till well into the late nineties. Intuitively, there are two analogies that suggest themselves as potential sources for explanation, one based on the connection between incorporation and compounding, the other based on the connection with kind terms. Here I will briefly mention one attempt in each direction, drawing on my own work to make things concrete.

To the extent that canonical incorporation can be equated with compounding, the problem ceases to be specific to incorporation. However, the earliest debates between Mithun (1984, 1986) and Sadock (1980, 1986) made it clear that the analogy between the two is less than perfect.⁹ With the entrance of pseudo-incorporation into the picture, the connection with compounding becomes even more tenuous and the need for an explanation more urgent. Dayal (2003a) seeks to relate pseudo-incorporation to lexical processes like compounding without actually treating it as a lexical process. This attempt at explanation draws inspiration from the discussion of *resultatives* in Dowty (1979). The following involve 'stereotyping' and gaps of the kind we have already seen. Dowty uses the notion of *appropriately classificatory* from Downing (1977) to derive the pattern of possible and available resultative constructions:

- (11) a. $\sqrt{\text{beautify}}$?uglify *walkify
 b. $\sqrt{\text{hammer-flat}}$?hammer-shiny *hammer-red

In (11a) we see possible, possible but unattested, and impossible cases of verb formation with the suffix *-ify*. In (11b) we see a similar range of possibilities for resultatives. In Dayal (2003a), I use the notion of *appropriately classificatory* to constrain pseudo-incorporation in the same way:

- (12) a. $\lambda P_{\langle e, t \rangle} \lambda y \lambda e [P-V(e) \wedge Ag(e) = y \wedge \text{Appropriately-Classificatory}(e)]$
 b. An event denoted by a predicate δ that incorporates a property γ is *appropriately classificatory* iff

$\diamond_{\text{probable}} (\exists e [\delta(e) \wedge \exists y [Ag(e) = y] \wedge \exists x [\gamma(x) \ \& \ Th(e) = x]])$ (*extensional verbs*)

$\diamond_{\text{probable}} (\exists e [\delta(e) \wedge \exists y [Ag(e) = y] \wedge Th(e) = \gamma])$ (*intensional verbs*)

In (12a) the incorporating verb looks for a property-denoting nominal for its first argument. This makes it technically a transitive verb but the difference lies in the role of the internal argument.

⁹ The major point of debate is whether incorporation supports discourse anaphora. We will discuss this in section 2.4.

Instead of representing a theme argument, it simply modifies the verb. Incorporation is restricted to those that are appropriately classificatory, that is, those that are name-worthy. (12b) delivers the distinction in existential commitments between intensional and extensional pseudo-incorporating verbs. Note that the very notion of appropriate classification is a generic concept, relying as it does, not on a particular instance of a verb and its complement but rather on the class of the verb and the class of its complement.

In Dayal (2011), I take a somewhat different tack, treating *name-worthiness* via a presupposition about genericity. In particular, I take an incorporating verb to be defined iff the property and the verb relate to a generic proposition in the following way, where the underlined portion represents presuppositional content:

(13)a. $\lambda V \lambda P$: P-V is a type of V-ing. $\lambda x \exists e [P-V(e) \ \& \ Ag(e) = x]$

b. $\lambda V \lambda P$: P's are V-ed. $\lambda x \exists e [P-V(e) \ \& \ Ag(e) = x]$ (Dayal 2011)

These two attempts at formalizing name-worthiness in terms of word-formation without actually equating incorporation with compounding have certain features in common. They recognize that the lexical variant of a transitive verb is restricted by certain necessary conditions attached to it but they leave open the possibility of gaps. Furthermore, while genericity is not directly involved in the semantics of incorporation, assumptions about the nature of the activity has generic overtones which these accounts recognize.

A second approach to explaining *name-worthiness* makes a more direct connection with genericity by exploring the status of the incorporated nominal as a kind term. The point of connection has to do with the fact that definite singular kind terms in English appear to be restricted to well-established kinds (Carlson 1977).¹⁰ Thus, (14a) is acceptable while (14b) is not. This restriction, however, is not absolute. With appropriate contextual manipulation, it becomes acceptable (14c):¹¹

- (14) a. The coke bottle has a narrow neck.
 b. #The green bottle has a narrow neck.
 c. We manufacture three types of bottles at this plant, green, blue and clear. The green bottle is our particular specialty. It has a long neck. (Dayal 1992)

In Dayal (2004) I analyze the definite singular generic as involving the standard meaning of the lexical determiner *the* taking as its argument a predicate of (sub)-kinds, a taxonomic reading of the phrase. The context-sensitivity arises from the fact that in order to make the relevant level of a taxonomic hierarchy salient, a contrasting sub-kind must be available. While the sub-type of coke bottle is readily characterized by properties distinct from those bottles that are not coke bottles, the sub-type of green bottle that differs in any significant characteristic beyond color

¹⁰ This is not the case for bare plurals. *Green bottles have narrow necks* is acceptable without any contextual support, a point emphasized in Carlson (1977).

¹¹ Carlson (1977) had noted the contrast between (i) and (ii) under the generic reading of *the airport*. Dayal (1992; 2004) shows that very general terms are also subject to contextual manipulation (cf. iii):

- i. #The airport is a busy place.
 ii. Airports are busy places.
 iii. Of all the places I spend time at during my commutes, the airport is the most tiresome.

from non-green bottles is not available in out-of-the-blue contexts. When the relevant contrast terms are provided, quantification can proceed normally.

There are complicating factors, however, in taking this analogy too far. For one thing, incorporation simply does not show the same need for contextual support as definite singular generics.

- (15) a. anu kitaab paRhtii hai
 Anu book reads
 ‘‘Anu reads (one or more) books.’’
- b. Anu reads the book.

To book-read is standard for pseudo-incorporation, as shown in (15a), not just in Hindi but also in Hungarian and Danish. *The book*, however, is not a standard kind term, as shown in (15b). The sentence is only acceptable as an ordinary definite, requiring there to be a unique book salient in the context. Similarly, *to stamp-collect* is standard for pseudo-incorporation but *the stamp* cannot be interpreted as a kind term except with contextual support.¹² This line of argument was entertained most explicitly in Dayal (1999) but was not pursued because acceptable definite singular generics in English and acceptable Hindi pseudo-incorporated nominals, as we see, do not align satisfactorily.

Furthermore, bare singulars and bare plurals are both possible in pseudo-incorporation and while differences between them have been noted (Dayal 1992, 2004, 2011, Farkas and de Swart 2003), they are not of the same type as differences between English bare plurals and English definite singular generics. As we will see, incorporated bare plurals lend themselves to discourse anaphora more readily than incorporated bare singulars and are also possible with a larger set of collective predicates than bare singulars. English bare plurals differ from English singular definite generics in other respects. For example, the former allow for indefinite readings in episodic sentences but the latter do not, a point we will discuss later in this paper. Finally, in many pseudo-incorporation languages, such as Hungarian, kind terms are definite in the singular as well as the plural, but incorporation targets only bare nominals. For these reasons, a consensus has emerged in the literature that pseudo-incorporated nominals denote properties, not kinds. However, it will be useful to keep this view of the English singular definite generic in mind as it will resurface when we discuss pseudo-incorporation of DPs in English.

To sum up, in spite of significant cross-linguistic variation, name-worthiness is generally acknowledged to be a characteristic of incorporation. Attempts at explanations have drawn on the connection with word formation processes as well as with kind denoting terms. However, neither attempt is fully successful since there remain significant points of divergence between them.

2.2. *Narrow Scope*

Let us now turn to the second hallmark of incorporation, namely the fact that incorporated nominals take obligatory narrow scope.¹³ This is a cross-linguistically stable

¹² Note that *book reading* and *stamp collecting* make perfectly good compounds in English.

¹³ See Serdobolskaya (this volume) for the situation in Mari where constructions very similar to pseudo-incorporation appear to have a wider range of readings.

property of such nominals and has been successfully captured in the literature. Let us start by demonstrating the inability of incorporated nominals to interact scopally with other operators, using examples from Inuit and Hindi:

- (16) a. Juuna Kaali-mit allagar-si-nngi-l-a-q
 J.ABS K.-ABL letter-get-NEG-IND-[-tr]-3SG
 “It is not the case that Juuna got a letter/letters from Kaali.”
 Not “There is a letter/letters from Kaali that Juuna didn’t get.”
Bittner (1994:118)
- b. anu-ne kitaab nahiiN paRhii
 A-ERG book not read
 “Anu did not read any book/books.”

There are two accounts of this phenomenon that we can use to illustrate the approaches that have been taken, Van Geenhoven (1998) for incorporation and Dayal (2011) for pseudo-incorporation. It should be noted, however, that Bittner (1994) was the first to note and explain the narrow scope property of incorporation in Inuit.¹⁴

- (17) a. $\lambda P_{\langle s, \langle e, t \rangle \rangle} \lambda w_s \lambda x_e \exists y [Verb_w(x, y) \wedge P_w(y)]$ *Van Geenhoven 1998:*
 132
- b. $\lambda P \lambda y \lambda e [P-V \wedge agent(e)=y]$ *Dayal 2011: 147*

Details aside, the two accounts agree on the fact that the internal argument of an incorporating verb must be property denoting. It is consistent with both accounts that the syntactic category of the property denoting argument can be an N^0 (in incorporation) or an NP (in pseudo-incorporation). Let us see how these rules capture the relevant scope effects. Since the existential force of the nominal in (17a) comes from the type-shift rule, its scope is fixed by the \exists whose immediate scope includes only the predicate and its complement. Any other operator that comes later consequently must take scope over the \exists .¹⁵ The obligatory narrow scope in (17b) follows from the fact that there is simply no existential in the logical representation at all. Any operator that takes scope over the verb automatically takes scope over its nominal modifier. Under either account, then, this property of (pseudo-)incorporation can be captured in a satisfactory manner.

However, incorporated nominals are not the only ones to display the narrow scope property and part of the theoretical challenge has been in determining whether a unified account is possible and/or desirable. The difference between the proposals in Van Geenhoven (1998) and Dayal (2011) lies not in the incorporation rule itself but in the reach of the incorporation rule. Van Geenhoven claims that the rule of semantic incorporation applies to cases of morpho-syntactic incorporation as well as to other cases where obligatory narrow scope is observed, such

¹⁴ Due to constraints of space I do not discuss the proposals in Bittner (1994), Farkas and de Swart (2003) or Chung and Ladusaw (2003). I refer the reader to Dayal (2011) for reasons why the data discussed in this section and the next are problematic for them.

¹⁵ Van Geenhoven treats the negative verbal affix on the verb as indicating an abstract NEG node higher in the tree (see Van Geenhoven 1998: 169-171 for discussion).

as compounding and bare plurals in English. The following from Carlson (1977) demonstrates the propensity of English bare plurals for narrow scope:

- (18) a. John didn't see spots on the floor. $*\exists > \neg; \neg > \exists$
 b. Dogs are not barking. $*\exists > \neg; \neg > \exists$

Van Geenhoven's semantics for incorporation, as she notes, draws on Carlson's idea that the predicate determines the quantificational force of the bare plural. It also draws on the Kamp-Heim view of indefinites as quantificationally inert and the application of this view to bare plurals in Wilkinson (1991), Gerstner and Krifka (1993), among others. Bare plurals, in this approach, are ambiguous between kind denoting terms and non-quantificational indefinites. As Van Geenhoven notes, her rule of semantic incorporation is intended to apply not only to cases like (18a) where we might posit syntactic incorporation, but also to bare plurals in subject position of stage level sentences like (18b). The kind level meaning of bare plurals is reserved for sentences with kind level predication (19a) or generic quantification (19b):

- (19) a. Dinosaurs are extinct.
 b. Dogs (don't) bark.

My claim about pseudo-incorporation, on the other hand, limits the rule to property denoting bare nominals in direct object position only. For bare plurals in other positions, including non property denoting bare nominals in direct object position, I adopt the neo-Carlsonian view, which has three crucial features. The first is that English bare plurals in argument position always denote kinds, the second is that predicates that are not about kinds trigger an operation that makes available the instantiations of the kind, the third is that this last option is only available to bare plural kind terms not to (definite) singular kind terms. To see the system at work, consider the examples below and their logical representations within the framework of Chierchia (1998):¹⁶

- (20) a. Dinosaurs are extinct. \Rightarrow extinct (n dinosaurs)
 b. Dogs bark. \Rightarrow Gen s, x [n dogs (s)(x)] [bark(s)(x)]
 c. Dogs are barking. \Rightarrow bark(s)(n dogs) =DKP $\Rightarrow \exists x$ [n dogs (s)(x) \wedge bark(s)(x)]

The bare plural in (20a) starts life as a property denoting expression but since it is in an argument position, it shifts to type e through the covert application of *nom* (n), and denotes the kind. It can

¹⁶ The relevant rules are the following:

(i) *nom*: For any property P and world/situation s, $^n P = \lambda s \iota P_s$, if $\lambda s \iota P_s$ is in K, undefined otherwise (where P_s is the extension of P in s

and K is the set of kinds.)

(ii) *pred*: $\lambda d_{\langle s, e \rangle} \{ \lambda x [x \leq d_s] \text{ if } d_s \text{ is defined, } \lambda x [\text{FALSE}] \text{ otherwise} \}$, where d_s is the plural individual that comprises all of the atomic

members of the kind.

(iii) *Derived Kind Predication*: If P applies to objects and k denotes a kind, then $P(k) = \exists x [^n k(x) \wedge P(x)]$

now combine with the predicate *be extinct* through simple functional application. In the case of generic quantification as well, the bare plural shifts to type *e* but since the predicate *bark* cannot be applied to the kind, *pred* (ν) repairs the sort mismatch and we get generic quantification over instantiations of the kind. The same happens in episodic contexts like (20c), through the application of the rule of *Derived Kind Predication*. Since a kind denoting argument is of type *e* it can be a direct argument of the verb, and since the sort adjustment rule applies to a verb and its argument, the existential it introduces necessarily takes narrow scope with respect to any other operators. Note that this holds as much for bare plurals in direct object position as for bare plurals in other argument positions so no relaxation of the incorporation rule is needed to derive the narrow scope readings of bare plurals in English or Hindi.

To sum up, then, there are two approaches for deriving narrow scope existential readings for bare nominals. One approach posits a single rule that covers incorporated bare nominals as well as bare plurals in other argument positions, the other approach derives narrow scope existential readings for incorporated nominals through an incorporation rule and narrow scope existential readings for bare plurals in other argument positions through the separate sort adjustment rule of *Derived Kind Predication*. Although the difference between the two approaches does not have to do with incorporated nominals *per se*, it has non-trivial consequences for a theory of incorporation. To see what is at stake, let us consider the difference between Hindi bare singulars in the following sentences:

- (21) a. anu-ne apne beTe ke liye laRkii cunii
 Anu-ERG self's son for girl chose
 "Anu chose a girl for her son."
 b. anu-ne laRkii-ko cunaa
 Anu-ERG girl-ACC chose
 "Anu chose the girl."
 c. baahar laRkii khaRii thii
 outside girl standing was
 "Outside, the girl was standing."

In (21a), the bare singular is a non case-marked direct object. It can denote a property so the incorporation rule applies and we get an indefinite reading. In (21b) we still have a bare nominal in direct object position but under the view that case marking in Hindi only applies to argumental types, the nominal has undergone type shift covertly via *iota*. We get the standard definite reading for the bare singular. We now come to the crucial case of a non-case marked singular in subject position. The fact that it only has the definite reading shows that the incorporation rule cannot apply to the subject position.

A comparison between bare plurals and bare singulars in non-incorporated positions is needed to complete the paradigm. The contrast between (22a) and (21c) and (22b) and (22c) is illustrative:

- (22) a. baahar laRkiyaaN khaRii thiiN
 outside girsl standing were
 "Outside, (some) girls were standing."

- b. maiN-ne baccoN-ko khilaunaa diyaa
 I-ERG children-DAT toy gave
 “I gave children toys.”
- c. maiN-ne bacce-ko khilaunaa diyaa
 I-ERG child-DAT toy gave
 “I gave the child a toy.”

These facts follow in a system where incorporation is kept separate from the interpretation of bare nominals generally: an incorporation rule targeting property denoting NPs in non case marked direct object position and a kind-based account for bare plurals in other positions. Thus, (22a) has an indefinite reading in much the same way as was demonstrated for the English (20c). Turning to the contrast between (22b) and (22c), the indefinite reading of the bare plural is as expected, as is the definite reading of the bare singular in (22c). The point is that neither in (21c) nor in (22c) is a kind based indefinite reading possible for the singular kind term since such terms do not lend themselves to indefinite readings via *Derived Kind Predication*. This is shown for English singular kind terms below:

- (23) a. The rat reached Australia in 1770.
 b. The lion is in the cage to the far right.
 c. The dog is barking.

As discussed by Krifka et al (1995), the definite singular generic can have the *avant garde* reading in (23a) or the representative object reading in (23b), where only a representative of the kind can be said to have the property in question. An example like (23c) simply does not lend itself to a reading where barking is predicated of some random instantiation of the kind *dog*. It has only the normal definite reading. For present purposes we will leave aside the reasons for this and simply take it as a fact about singular kind terms (see Krifka et al 1995 and Dayal 2004 for further discussion). The fact that the relevant indefinite reading for the bare singular is only possible in potential incorporation positions is therefore significant.

It is interesting to note that even in Inuit, non-incorporated bare nominals do not seem to have indefinite readings:¹⁷

- (24) a. Illu angi-v-u-q
 House.ABS big.be-IND-[-tr]-3SG
 “The house is big” (Van Geenhoven 1998, 15)
- b. Angut marlu-raar-p-u-q
 man.ABS two-catch-IND-[-tr]-3.SG
 “The man caught two.” (Sadock 1991; Van Geenhoven 1998)

¹⁷ Van Geenhoven (1998: 95) notes that typical incorporating verbs in Inuit are restricted to a small lexical class. It is unclear to me what the locus of variation across languages would be, such that semantic incorporation can extend generally to subjects of stage-level predicates in English but only to base-generated objects in Inuit. Regardless of this, the discussion in this sub-section and the next should make it clear that there are strong empirical grounds for keeping apart English bare plurals from pseudo-incorporated bare nominals. On this general issue, see also Dobrovie-Sorin and Giurgea (this volume). I leave it to further research to probe the implications for canonical incorporation.

I should hasten to add that this observation is purely impressionistic, since I am basing it on the translations of example sentences in Bittner (1994) and Van Geenhoven (1998). It is quite possible that more systematic fieldwork would show that indefinite readings are generally available. However, pending such investigation, I believe this is a point worth highlighting here as it bears directly on the reach of the incorporation rule suggested by Van Geenhoven. It would be predicted that if the rule could allow for indefinite readings of English bare plurals in subject position, the same should hold in Inuit but this does not seem to be the case.

To sum up, we have seen two versions of an incorporation rule targeting property denoting nominals that can capture their narrow scope property. We have also seen how the neo-Carlsonian approach to kind-denoting bare plurals captures the same property for plural kind terms generally. Finally, we have seen strong empirical arguments against conflating explanations for the narrow scope readings of incorporated nominals and for narrow readings of bare nominals in non-incorporated positions, at least for pseudo-incorporating languages like Hindi. As such, I will assume from here on that the scope of an incorporation rule is restricted to those nominals that fall within the morpho-syntactic spectrum shown in (7a)-(7b).

2.3. *Number Neutrality*

In this section we will take a close look at the third semantic property that characterizes incorporated nominals, namely the ability of singular terms to have number neutral interpretations. This is particularly relevant in pseudo-incorporation since they contrast with plural nominals in this respect and appear to align with compound nominals instead. We will see that appearances notwithstanding, incorporated bare singulars are distinct in this respect from compound nominals.

To get a sense of the contrast, consider the following:

- (25) a. anu apne beTe ke liye *laRkii/#laRkiyaaN* DhuunDh rahii hai
 Anu self's son for girl girls is-searching
 ‘Anu is searching for a bride/#brides for her son.’
- b. anu *botal/botaleN* ikaTThaa kartii hai
 Anu bottle/bottles collects
 ‘Anu collects bottles.’ (Dayal 2003a)

The awkwardness of (25a) shows that plural terms give rise to implicatures that are at odds with real world expectations about matrimony. This shows that plural terms must denote in the plural domain. (25a) also shows that singular terms do not give rise to similar implicatures, consistent with the possibility that singular terms can denote in the singular domain. The acceptability of the singular term in (25b), which has a predicate that typically does not take singular terms, suggests that it is capable of plural reference. Like the narrow scope property, number neutrality is also cross-linguistically stable and has been verified in depth for Hungarian by Farkas in de Swart (2003). The theoretical question of interest is the following. Do cases like (25b), where a singular term appears to be number neutral, involve incorporation of a category lacking the functional projection at which number is present or are they singular terms whose neutrality is illusory? In this section I will present two arguments from Dayal (2011), one from Hindi and

one from Hungarian, to show that the incorporated nominal includes number specification even in cases like (25b).

The argument from Hindi rests on the observation that incorporation in and of itself does not guarantee a number neutral interpretation for the bare singular. The role of aspect is crucial in doing so.¹⁸ Let us look at two paradigms, the first involving perfective morphology, the second involving imperfective morphology:

- (26) a. *anu-ne tiin ghanTe meN /tiin ghanTe tak kitaab paRhii*
 Anu-ERG 3 hours in 3 hours for book read
 ‘Anu read a book in three hours’ = exactly one book
 ‘Anu read a book for three hours’ = one or more books
- b. *anu-ne tiin ghanTe meN /*tiin ghanTe tak kitaab paRh Daalii*
 Anu-ERG 3 hours n 3 hours for book read COMPL
 ‘Anu read a book in three hours’ = exactly one book
- c. *anu-ne tiin ghanTee meN *kitaab ikaTTaa kar lii^{OK} kitaabeN ikaTThaa kar liiN*
 Anu-ERG 3 hours in book collected-COMPL/ books collect-COMPL
 ‘Anu got done collecting *a book / ^{OK}books in three hours.’

As (26a) shows, the Hindi perfective is compatible with both a telic and an atelic interpretation. Number neutrality only occurs with the latter. Adding a completive particle, as in (26b), makes the perfective unambiguously telic, and the incorporated nominal has a strictly singular reading. Predictably, a singular bare nominal is unacceptable with a collective predicate with the completive particle, as shown in (26c).

The imperfective is more liberal with the bare singular, but this is because it gives rise to a habitual interpretation. In fact, a number neutral interpretation for a bare singular is possible even with a completive particle if the aspect is imperfective, as shown in (27b):

- (27) a. *Anu botal ikaTTha kartii hai*
 Anu bottle collect does
 ‘Anu collects bottles.’
- b. (un dino) *anu do ghanTe meN kitaab paRh letii thii*
 those days Anu two hours in book read COMPL-IMPERF PAST
 ‘Those days Anu would book-read in two hours.’

The conclusion is that number neutrality is neither part of the meaning of the incorporated nominal, nor of the incorporation process *per se*. Rather, it is derivative on the interaction between incorporation and aspectual information.

To illustrate, I show how the interaction delivers number neutrality, based on the analysis of iterativity/pluractionality in Lasersohn (1995). The basic idea is that there is a pluractional operator very low on the verbal complex whose semantic effect is to create a set of non-overlapping sub-events of the type denoted by the verb. The adaptation of Lasersohn’s

¹⁸ See Mueller-Reichau (this volume) on the role of perfective and imperfective morphology in the number neutrality of Russian bare singulars.

analysis in Dayal (2011) to a pseudo-incorporation structure is given in (28). Omitting some details for expository purposes, we have a plural event, each of whose sub-events is a mouse-catching event. There is nothing in the representation to suggest that the same mouse would be involved in all sub-events, giving rise to the number neutral interpretation.¹⁹

- (28) a. $[_{VP} \text{ anu } [_{V'} \text{ mouse } [_{V} \text{ OP}_{\text{PLURACTIONALITY}} [\text{ caught}]]]]]$
 b. $\exists E [\text{Card}(E) \geq 2 \wedge \forall e \in E [\text{mouse-catch}(e) \wedge \text{Ag}(e) = \text{anu}]]$

The Lasersohn-based analysis, when combined with a view of bare plurals as kind terms captures differences between bare plurals and indefinites noted in Carlson (1977) in a straightforward way. The indefinite is unable to take differentiated scope even in the direct object position, while bare plurals can take such scope regardless of their syntactic position:

- (29) a. Miles killed a rabbit for an hour. $*Adv > \exists; \exists > Adv$
 b. Miles killed rabbits for an hour. $Adv > \exists; * \exists > Adv$
 c. Rabbits kept entering the room the whole day. $Adv > \exists; * \exists > Adv$

Because of its type, a plural kind term gets semantically lowered below the pluractional operator, allowing for a plausible differentiated scope reading regardless of its surface position. The same is not available to an indefinite, whether it is interpreted as an existential generalized quantifier or as a (weak) Heimian indefinite that is existentially bound at VP.

The distinction between bare plurals and indefinites also holds in Hindi, as expected. Let us see how pluractionality and incorporation combine to yield number neutrality for bare singulars:

- (30) a. *puure din kamre meN cuuhaa ghustaa rahaa*
 Whole day room in mouse kept entering
 “The whole day, the same mouse kept entering the room.”
 b. *anu puure din cuuhaa pakaRtii rahii*
 Anu whole day mouse kept catching
 “Anu kept catching mice (different ones) the whole day.”

Since Hindi does not have lexical determiners the bare singular is type-shifted from type $\langle e, t \rangle$ to type $\langle e \rangle$ via a covert application of *iota*. If the bare singular is interpreted as a predicate of individuals, we get the ordinary definite reading where reference is to a unique salient mouse. Even though the type allows it to be interpreted under pluractionality, the same unique mouse is implicated in all the sub-events. If the bare singular is interpreted as a predicate of sub-kinds, we get a singular kind term. This too can be interpreted below pluractionality, but singular kind terms are not subject to DKP, the operation that delivers instantiations of the kind, so the sort mismatch is not repaired and the derivation is ruled out. When we consider a bare singular in object position as in (30b) the same options are available. In addition, there is a third option that

¹⁹ Van Geenhoven (2004) also adapts Lasersohn’s account of pluractionality to incorporation in Inuit. There are obvious points of overlap here. The main difference, however, is that the Inuit nominal itself is number neutral while the Hindi nominal can be shown to be a singular term (cf. 26).

opens up because it can be incorporated. We get a set of sub-events of mouse-catching. Each sub-event has existential import, though no existential in the logical representation. Consequently, the same individual mouse does not have to be implicated in all the events. This gives rise to a number-neutral indefinite interpretation for a nominal that otherwise denotes in the singular domain.

The second argument for treating pseudo-incorporated bare singulars as being semantically singular comes from Hungarian. As mentioned earlier, Hungarian and Hindi pseudo-incorporation have a similar profile. Of current relevance is their behavior with collective predicates. We see in (31a) that they are fully compatible with predicates like *collect*. However, there are other collective predicates that they are not compatible with, such as *compare*. In Dayal (2011) I dub these two classes of verbs as semi-collective and pure-collective predicates. Only the former licenses the incorporation of singular terms:

- (31) a. Mari bélyeget/ bélyegeket gyűjt
 Mari stamp-ACC/ stamps-ACC collects
 ‘Mari collects stamps.’ (Farkas and de Swart 2003)
- b. Donka és én *jelöltet/ jelölteket hasonlítunk össze
 Donka and I candidates-ACC candidates-ACC compare together
 ‘Donka and I are comparing candidates.’ (Dayal 2011)

The explanation is that the core process involved in *collection* does not have a plurality requirement, while the core process involved in *comparison* does. Collection is compatible with acquiring one atomic item at a time, building up to a plurality of items. The plurality requirement we see in the case of such verbs comes from the fact that collection presupposes a plurality of sub-events of acquiring. An ordinary indefinite, because it cannot take scope under the pluractional operator only allows for the implausible reading where the same item was acquired multiple times, unlike the incorporated singular. The core process of comparison, on the other hand, requires a plurality of items to be evaluated simultaneously along some dimension in each sub-event. It is therefore undefined for an atomic entity. The sub-events of semi-collective predicates are variants of the events associated with the lexical verbs *collect* and *gather*, something like *acquire-as-part-of-a-collection* and *move-to-designated-location*.²⁰

We have seen how a plausible analysis of incorporated bare singulars as being truly singular terms is compatible with their number neutral behavior in certain contexts. We can end this discussion by making the obvious point that they are distinct from truly number neutral terms which do not show any sensitivity to the distinction between semi vs. plural collectivity. That is, pseudo-incorporated bare singulars are distinct from both ordinary indefinite complements of transitive verbs and nominals inside compounds:²¹

²⁰ See Dobrovie-Sorin (2010) for an alternative way of capturing this difference. It is not clear to me how her account would extend to the facts in Hindi where the nominal in telic sentences does seem to carry singularity implicatures discussed above or how it would draw a distinction with compound nominals to be discussed immediately below and in section 4.

²¹ An anonymous reviewer questions the use of the term *compound* to describe *stamp collector* in (32b) and *candidate comparison* in (33b) and suggests instead the locution *noun modification by nouns*. The importance of these cases for present purposes, whatever the appropriate term to refer to them may be, is that number on *stamp* or *candidate* is not interpreted in the same way as in pseudo-incorporated nominals. I assume that either such nominals

- (32) a. * Bill collects a stamp.
 b. Bill is an avid stamp collector.
- (33) a. *OT analyses require comparing a candidate.
 b. OT analyses require candidate comparison.

To sum up this discussion, pseudo-incorporation in languages like Hindi and Hungarian target NPs which have number specification as opposed to N^0 in languages like Inuit which may be number neutral. They are also distinct from truly neutral nominals inside compounds. In other words, we have shown the empirical bite behind the claim in (7) that pseudo-incorporation involves nominals with functional structure. The data in this section focused on cases where the semantic contribution of this functional structure is revealed.

2.4. Discourse Anaphora

The issue of discourse anaphora has long been connected with incorporation. Postal (1969) observed that compounds behave like anaphoric islands with respect to discourse anaphora. The following show the relevant effect:²²

- (34) a. Mary went apple-picking. #They/The apples were delicious.
 b. John was baby-sitting. #She/The child was misbehaving.

In spite of some initial discussion to the contrary, Sadock (1980) established that incorporated nominals in Inuit can support discourse anaphora:

- (35) Suulut timmisartu-liur-p-u-q. Suluusa-qar -p-u-q
 Soren.ABS airplane-made-IND-[-tr]-3SG. Wing-have-IND-[-tr]-3SG
 “Soren made an airplane. It has wings.” (Sadock 1980, 311)

This is a problem for Van Geenhoven who advocates a unified account of all nominals with obligatory narrow scope \exists force. She handles this problem by distinguishing between positing a static \exists in compounding and a dynamic \exists in incorporation. The term *static* \exists applies to quantifiers which can only bind anaphors within their syntactic c-command domains, the term *dynamic* \exists to quantifiers that can bind anaphors outside their syntactic c-command domains. I refer the reader to Van Geenhoven for specific discussion (Van Geenhoven 1998, 186-192) while noting that this is a description of the problem using theoretical terms rather than an explanation of it.

The idea that there is a static vs. dynamic distinction that separates incorporation from compounding receives an apparent challenge from pseudo-incorporation where plural

lack number projection altogether or the semantics of such constructions is substantively different, possibly along the lines of Pustejovsky (1991). See section 4 for further discussion.

²² See Modarresi (this volume) for relevant discussion of anaphora in Persian. See also Ward, Sproat and McCoon (1991) for some counterexamples.

incorporated nominals seem to antecede pronouns more readily than singular incorporated nominals.²³ The initial case for this was made by Porterfield and Srivastav (1988) and Dayal (1999) and was also shown to hold in Hungarian by Farkas and de Swart (2003). However, the generalization is not quite accurate, as discussed in Dayal (2003a, 2011). The relevant data for Hindi are given in (36). Examples from Yanovich (2007) for Hungarian and Asudeh and Mikkelsen (2000) for Danish in (37) show that anaphora to a singular incorporated nominal is also possible in those languages:

- (36) a. anu apne beTe ke-liye *laRkii*; / *laRkiyaaN*_i dekh rahii hai
 Anu self's son for girl girls is-looking-at
 'Anu is girl-looking (looking for prospective brides) for her son.'
 vo #us-kaa_i/√unkaa_i swabhaav jaanaa caah_{tii} hai
 she her their nature to-know wants
 'She wants to know #her (i.e. the girl's)/ their temperament.'
- b. anu-ne apne beTe ke-liye *laRkii*_i cun lii.
 Anu self's son for girl choose-COMPL
 'Anu has girl-chosen for her son.'
 us-ne us_i-ko ek sone-kaa cen diyaa hai
 she her one gold necklace give-PERF PRES
 'She has given her a gold necklace.'
- (37) a. A bátyám házat₁ vett a múlt héten. Egész vagyont adott érte₁.
 'The brother house₁-bought last week. He spent a fortune for it₁.'
- b. Vita købte hus sidste år. Det ligger i Hals.
 'Vita bought house last year. It lies in Hals.'

The possibility of anaphora to singular incorporated nominals seems aspectually sensitive, in the sense of the discussion in section 2.3, while the one to plural incorporated nominals does not. In the interests of space, however, I will simply note this fact without going into possible explanations and refer the reader to Dayal (2011) for relevant discussion.

2.5. Section Summary

I have presented above some of the considerations that have informed my view of the semantics of (pseudo-) incorporation and its relation to genericity/kind terms on the one hand and compounding on the other. I made a systematic comparison of the behavior of nominals in positions that can plausibly be taken to be targets of incorporation and their behavior in other argument positions with respect to the following semantic properties: name-worthiness, obligatory narrow scope and number neutrality. I also discussed the possibility of discourse anaphora and noted that nominals inside compounds resist singular or plural anaphora, while

²³ Van Geenhoven, as stated above, posits a dynamic \exists as part of the meaning of an incorporating verb. This predicts that both singular and plural incorporated nominals should be able to support discourse anaphora. A contrast based on the number specification on the incorporated nominal is unexpected from this perspective.

singular and plural anaphora in the case of incorporation differs depending on aspect. The discussion in the following sections will draw on the insights presented in this section in discussing the possibility of DP incorporation in English and the relation between compounding and incorporation more generally.

III. Pseudo-incorporation of DPs

We have seen that the leading proposals for (pseudo-)incorporation place restrictions on the syntax and semantics of the incorporated nominal. An incorporating verb looks for a property denoting nominal which is typically something smaller than a DP. The claim that DPs can incorporate is therefore in need of some justification, the goal of this section. In order to do so, let us step back and isolate three characteristics that can help us in making a determination about incorporation. One, the phenomenon should be restricted to a position that can be described coarsely as an internal argument position of the verb. Two, the reading of relevance should be a narrow scope existential reading in which a nominal without plural morphology is able to have a number neutral reading. Three, the combination of the verb and the argument should show some degree of name-worthiness. According to these criteria, we will see, there is some justification for using the term *incorporation* in relation to a class of definite DPs in English.

3.1. The Evidence for DP incorporation

The term *pseudo-incorporation* was extended to cover the possibility of incorporating full DPs by Carlson (2006) and Carlson and Sussman (2005), who draw attention to examples in which a definite DP complement does not seem to have the uniqueness standardly associated with definites, a fact that can be brought out in (39):

- (38) a. Mary went to the store.
b. I'll read the newspaper when I get home.
c. Mary took the train.
d. They took her nephew to the hospital.
- (39) a. Fred went to the store and Alice did too.
b. I read the newspaper and so did Bill.

For (39) to be true, it is not necessary that Alice go to the same store as Fred or that Bill read the same newspaper as me. It is important to note that such weak readings seem restricted to positions that incorporation can target. The examples in (40) have definites in subject position, and here the definites make their standard semantic contribution. These sentences are defined only in contexts in which a unique store/newspaper is salient:

- (40) a. The store opened at 8.
b. The newspaper was on the table.

The “indefinite definites” or “weak definites” in (38) can be compared with cases of bare singulars in (41), which can more readily be classified as pseudo-incorporated (see Stvan 1998 for more on English bare singulars):

- (41) a. They found him in *bed*.
b. The ship is at *sea*.
c. He is in jail/prison.

Talking of weak definites in terms of incorporation is a theoretically radical move. The sentences under discussion do not display any evidence of morpho-syntactic fusion with the verb (or preposition), unlike Inuit. And there are no tell-tale signs on the nominal, unlike what we have seen in Hindi and Hungarian. Recall that Hindi animate nominals can only occur without case marking in the direct object position and Hungarian bare singulars are only possible in preverbal position. In the absence of any morpho-syntactic cues, the claim of incorporation rests on the observation that there is a reading of definites, the weak reading, that only occurs in a position that may plausibly be argued to be a target for incorporation. Let us take a closer look at the reading in question.

The definites in question clearly differ from ordinary definites with respect to uniqueness presuppositions. These sentences are felicitous in contexts where there is no salient store, newspaper, hospital or train. That is, they seem to behave like indefinites, in particular, like narrow scope indefinites. Furthermore, they have the potential for a number neutral interpretation. As Carlson notes, (38c) is not falsified by Mary taking two trains to get from point A to point B. We noted in section 2, however, that English singular definites can also be kind denoting. It is worth taking a moment, therefore, to see why the weak reading of a definite cannot be imputed to its life as a kind denoting term.

While it is true that the definite singular generic allows for a plural construal, as shown by (42a), parallel to the bare plural in (42b), they are known not to allow for existential readings in episodic sentences, as shown by the sentences in (43):

- (42) a. The lion gathers near acacia trees when it is tired.
b. Lions gather near acacia trees when they are tired. *(Krifka et. al. 1995, 90)*
- (43) a. The hospital was established to help with the crisis.
b. Hospitals were established to help with the crisis.
c. The rat reached Australia in 1770.

Unlike the bare plural in (43b), there is no indefinite reading for the definite in (43a). As mentioned earlier, there are a few cases of episodic statements where a definite singular generic can be used felicitously, as in (43c), which Krifka et al (1995) label an *avant garde* reading, but in general this is not possible. Setting aside the reason for this (see Krifka et al 1995 and Dayal 2004 for discussion), we can conclude with Carlson that the special semantics of the definite in object position in the sentences in (38) is due to incorporation and does not come from its kind level meaning.

3.2. Analyses of DP Incorporation

There are three authors who have built further on Carlson's discussion of English weak definites, Bosch and Cieschinger (2010), Aguilar-Guevara and Zwarts (2010) and Schwarz (2012). One of the primary questions that these authors engage with is the property of *name-worthiness*. As noted in section 2, this is a property that characterizes incorporation generally but it is of particular significance to Carlson's characterization of English weak definites as pseudo-incorporation. It shows that if English has DP incorporation, its productivity is restricted by familiar and well-established criteria.

Bosch & Cieschinger (2010) argue for a pragmatic account of weak definites in English, as well as for contracted forms of prepositions and definite articles in German, which they show to have similar properties. Their claim is that the restrictions on N + V/P combination are not lexical and even those that appear unacceptable in out of the blue contexts can be made acceptable. One example they consider is the case of *go to the desk* which has only the standard definite reading where both Fred and Alice must go to the same desk:

(44) Fred went to the desk and Alice did, too.

They ask us to consider the sentence in the context of a game where competing teams of people carry out various problem solving tasks and deposit a written report of their result at a desk assigned to their group and note that this allows the weak definite reading to emerge. Such contexts, they argue, replace the default everyday conditions with new situation-specific identity conditions, making it possible to get the reading under discussion. That is, the apparent lexical restriction on weak definite readings is claimed to be a restriction on the ease with which the required concepts are available to the discourse participants. In a sense, this is the same strategy as for the restrictions on definite singular generics advocated by Dayal (2004). One way to think of this, then, is to treat the V+DP combination as denoting a concept in a taxonomy of concepts.

Aguilar-Guevara and Zwarts (2010) provide a different slant on the restrictiveness of DP incorporation. They take the weak definite to be a kind term and argue for a lexical rule operating on verbs that makes reference to instantiations of the kind:

- (45) a. *Kind Lifting Rule*: If V is a transitive verb (or verb-preposition combination) with interpretation $\lambda x_i \lambda e[V(e) \wedge \text{Th}(e)= x_i]$, then V also has the meaning $\lambda x_k \lambda e[V(e) \wedge R(\text{Th}(e), x_k) \wedge U(e, x_k)]$.
- b. \surd read the newspaper ?read the calendar \surd look up the calendar

The incorporation rule in (45a) is inspired by Espinal and McNally's (2011) account of bare singulars in Spanish and Catalan, which in turn draws on Dayal's (2003a) account of Hindi pseudo-incorporation. Aguilar-Guevara and Zwarts' crucial condition for restricting DP incorporation is the *Usage* condition related to the kind term. When the verb *read* is lifted to take the kind term *the newspaper* the combination meets the usage conditions associated with the latter. This does not happen when the kind term is *the calendar*, an acceptable usage for which would instead be *look-up*.

Finally, Schwarz (2012) also provides an elaboration that places certain requirements that can be classified as formalizing *name-worthiness*. He draws on the rule of pseudo-incorporation

in Dayal (2011) but makes some significant changes, adapting the neo-Carlsonian approach to events:

- (46) a. $\llbracket \text{read}_{\text{kind}} \rrbracket = \lambda P \lambda s \iota^* \{e \mid \text{read}(e) \wedge \exists x [P(x)(e) \wedge \text{Th}(e)=x] \wedge e \leq s\}$
 b. $\llbracket \text{read}_{\text{kind}} \text{ ident}(\text{the-newspaper}) \rrbracket = k_{\text{read-the-newspaper}} =$
 $\lambda s \iota^* \{e \mid \text{read}(e) \wedge \exists x [x = \iota[\text{newspaper}(e)] \wedge \text{Th}(e) = x] \wedge e \leq s\}$
 c. $\lambda x \lambda e [\text{Ag} ({}^{\text{U}^k}\text{read-the-newspaper})(x)(e)] =$
 $\lambda x \lambda e \exists e' [e' \leq \iota^* \{e'' \mid \text{read}(e'') \wedge \exists x [x = \iota[\text{newspaper}(e'')] \wedge \text{Th}(e'') = x] \wedge e'' \leq s_e\} \wedge e$
 $\leq e' \wedge \text{Ag}(e) = x]$

The incorporating version of a transitive verb like *read* takes a property and creates a set of kind terms at the level of events, as shown in (46a). When such a verb combines with a definite, the property is derived through an application of the IDENT type-shift.²⁴ The resulting kind term is a plural entity, which means that the uniqueness entailed by the definite is buried inside the sub-events that make up the plurality. The final stage involves the introduction of the agent argument. Details aside, what we have is an event *e* which is part of a plural event *e'* that is part of the kind of event described by the incorporating verb and the weak definite. In order to explain the distributional restrictions, Schwarz appeals to the role of kind reference and the restriction to established kinds. *Reading the book* and *sleeping in the hospital*, he argues, simply don't make the cut for counting as an established kind in the nominal domain. A point worth keeping in mind in this connection, however, is the distinction between the type of kind-formation that bare plurals undergo and the type that definite generics undergo. The operations that Schwarz adopts from Chierchia apply to the first type, but then we should not get any restriction to well-established kinds (cf. section 2.1). A closer analogy would be to the second type of kind formation, which makes reference to a taxonomy of sub-kinds.

To sum up, we can see that it is possible to provide an account of name-worthiness in DP incorporation that captures its essential features in terms of proposals regarding NP incorporation. However, these attempts also highlight the fact that while one can find ways of defining necessary conditions for incorporation, no attempt so far has been entirely successful in articulating sufficient conditions for it. This problem has proved recalcitrant for NP incorporation and is further exacerbated in the case of DP incorporation. The problem, in a nutshell, can be illustrated with two examples. Consider the combination of *wife* and *beat*. If *wife-beating* is name-worthy enough to merit compound formation, why should it not merit pseudo-incorporation in Hindi? Similarly, consider the combination of *book* and *read*. *Book-reading* is clearly a name-worthy concept, as evidenced by the existence of a compound form in English. It is also a standard pseudo-incorporated combination in the Hungarian-Hindi type of language. Why then should it not be available as DP incorporation in English if name-worthy concepts are the critical factor? Clearly, some form of competition between available options must play a role in determining which combinations can undergo DP incorporation. This is the thrust of recent work by de Swart and colleagues (see also de Swart, this volume), but to engage with that literature would take us too far afield. Instead, we will turn to other semantic markers

²⁴ It would be important to prevent this rule from applying to indefinites, under a view of indefinites as property denoting or under a view of indefinites as generalized quantifiers that can be shifted to property type meanings.

of incorporation discussed in section 2 to further justify the moniker of *pseudo-incorporation* for weak definites.

3.3. Number Neutrality in DP Incorporation

Let us now consider DP incorporation from the perspective of number and aspect to see if they fall in line with what we have discovered about pseudo-incorporation in languages like Hindi and Hungarian. The primary problem, of course, is the status of the definite determiner in a structure that is interpreted as indefinite. An obvious solution would be to treat the definite in such cases as an expletive, but that is clearly unsatisfactory. More to the point, Schwarz argues that the normal semantics associated with definites is not entirely lost in incorporation. According to him, (47a) has an existence presupposition that makes it infelicitous if uttered in a context where no hospital can be assumed to exist. This can be contrasted with pseudo-incorporation of NP in English (47b), where no such existence presupposition is detectable:

- (47) a. We must take him to the hospital.
 b. He must go to jail.

This is in line with the general claim in this paper that functional structure is interpreted in pseudo-incorporation. Schwarz also argues that the uniqueness associated with definites does not disappear and notes in a footnote that the aspect sensitivity that is evident in Hindi pseudo-incorporation may also be discernible in English DP incorporation. Schwarz does not pursue it further but this is the possibility we will now investigate.

The table in (48) lays out two diagnostics that separate pseudo-incorporation from compounding on the one hand and standard complementation on the other: the sensitivity to pure vs. semi collective predicates and the ability for the existential force to take scope under pluractionality:

(48)

Nominal Arguments – Sing/no Plural Marker	Argument of Pure Collective Predicate	Argument of Semi-Collective Predicate	Ability to have differentiated Scope
Complementation	X	X	X
Pseudo-Incorporation	X	√	√
Compounding	√	√	√

Let us take the distinction between semi and pure collective predicates first and see if it is possible for weak definites to occur with both semi and pure collective predicates:²⁵

- (49) a. I collect the newspaper for recycling.
 b. * I always compare the doctor before deciding on one.

While there may be some initial resistance to (49a), a context in which different people are responsible for collecting newspapers, cans, cardboard etc, redeems the sentence. Since the

²⁵ Many thanks to Matt Barros, Ben Bergmann, Natalie DelBusso and Karuna Srivastav for these judgments.

predicate is a collective predicate the acceptability of the DP in (49a) is only possible under a weak definite reading. No such contextual manipulation, however, can redeem (49b). The difference in the behavior of weak definites with respect to semi and pure collective predicates therefore provides support for the view that English has pseudo-incorporation of DPs. This is a diagnostic that does not separate direct objects from other arguments, but it does shed light on the number neutrality of direct objects. Note that there is no such contrast with bare plurals: *I collect newspapers for recycling* and *I always compare doctors* are equally acceptable.

We now consider the issue of number neutrality and aspect sensitivity. In order to do so, we need to first determine how definites relate to pluractionality, independently of incorporation. We can see from the following that singular definites in subject position do not allow for differentiated scope. That is, in this position they are interpreted as regular definites, leading to the implausible result that the same leaf has to fall repeatedly or that the same student kept coming by the office. This is not so for plural definites:²⁶

- (50) a. The leaves/ # The leaf kept falling all morning / fell twice last year.
 b. The students/ the student kept stopping by my office all morning.

However, singular definites in object position do allow for the relevant reading:

- (51) a. I kept going to the doctor for years but never got a straight answer.
 b. I have been to the doctor twice already.

In each of the above, it is possible to think of different doctors being involved in different visits. In fact, as noted by Natalie del Busso (p.c.) (51b) can be followed by *even different doctors*, making this explicit. Further evidence is provided by the following, where more than one newspaper can be implicated:

- (52) a. I have been reading the newspaper all morning.
 b. The students read the newspaper twice.

This does not happen when *the newspaper* or *the doctor* is not in the object position. The following are unacceptable under the intended number neutral reading, corroborating the conclusion based on (50):

- (53) a. #The newspaper has reported this incident twice already.
 b. #The doctor has checked on John twice this morning but no administrator has come by.

Thus it is clear with respect to this test as well that English weak definites fall in line with pseudo-incorporated nominals. There is, however, one respect in which the facts do not line up exactly as expected. Recall that in Hindi, incorporated bare singulars have singularity

²⁶ Note that *the leaves fell twice this morning* is not acceptable. This means that with the adverbial *twice* the existence presupposition has to be met for each sub-event. An interval large enough to make this plausible is needed. The contrast between singular and plural definites becomes evident when the time interval is appropriately controlled for.

implicatures in telic sentences. This seems to hold also for English weak definites, as shown by (54a):

- (54) a. John read the newspaper in an hour this morning.
b. He gets the *Wall Street Journal* and the *New York Times*.

While (54a) seems to refer to only one paper, as predicted by the analysis of number neutrality adopted here, it was pointed out to me by Natalie DelBusso (p.c.) that it can be followed up with the sentence in (54b). This wrinkle notwithstanding, it seems to me that the claim of pseudo-incorporation of DPs made by Carlson does hold up when the diagnostics from an aspect based account of pseudo-incorporation are applied to it.

3.4. Section Summary

The idea that the phenomenon of weak definites is an instance of incorporation has a lot of appeal. Most of the work so far has focused on the challenge of capturing the highly restricted nature of this process. Although none of the proposals are entirely successful in capturing the observed restrictiveness of DP incorporation, they have added significantly to our understanding of the phenomenon of name-worthiness more generally. In this section I also applied the tests based on number neutrality in NP incorporation and determined that DP incorporation behaves along familiar lines. We therefore can justifiably include DP incorporation in our discussion of the relationship between incorporation and compounding to come in the next section.

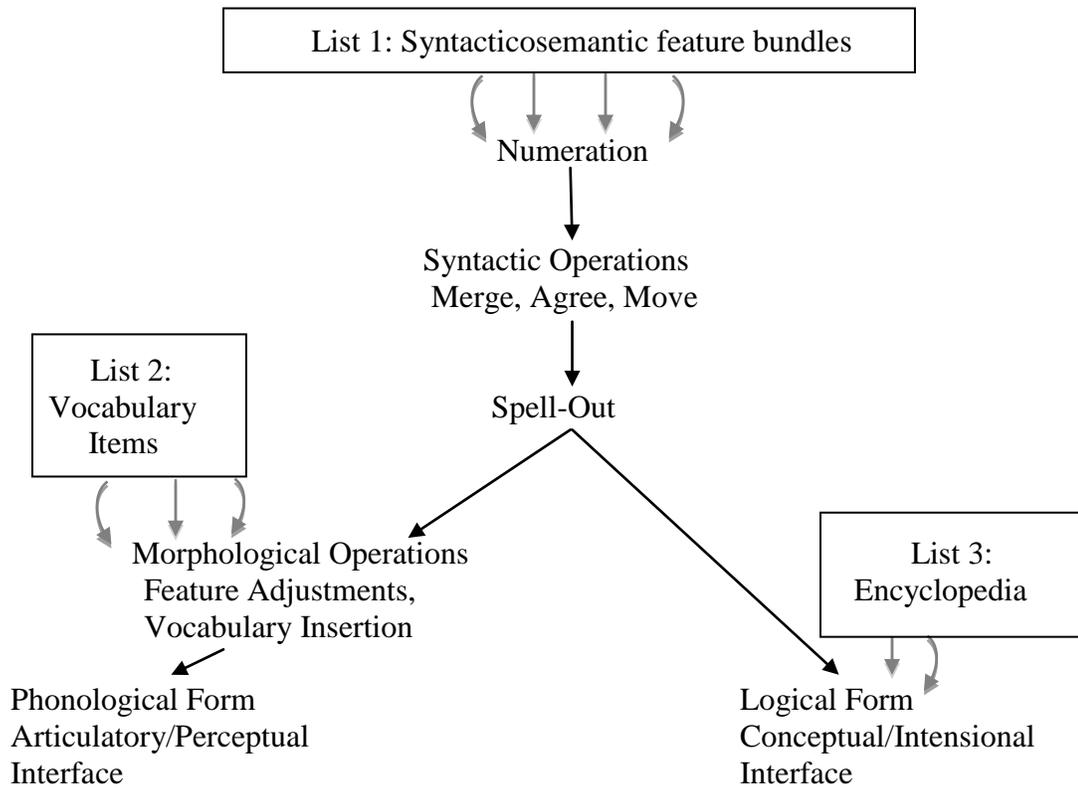
IV. Incorporation and Compounding in Distributed Morphology

The thrust of our discussion so far has been that incorporation, especially of NP and DP, has to be recognized as an independent phenomenon. It may overlap with other aspects of natural language grammar but should be identifiable as distinct from them. We have already shown that incorporated readings cannot be reduced to weak readings of indefinites or kind terms generally on the basis of their different profiles related to number neutrality. In this section we will consider a proposal that identifies incorporation and compounding and see to what extent it addresses the facts that have led to the view that incorporation is distinct from both regular complementation and compounding.

4.1. Identifying Incorporation and Compounding

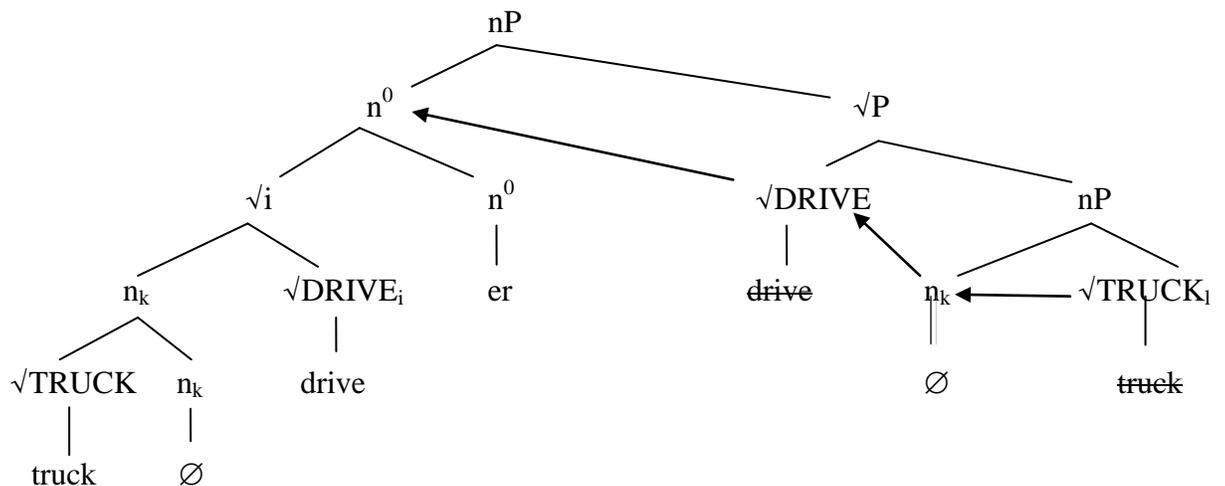
The relationship between canonical incorporation and compounding has not featured as prominently in the recent literature on incorporation. However, Harley (2009, 2012) does address this issue in a general discussion of the place of semantics in Distributed Morphology. The schema in (55) demarcates the points of intersection between semantics and morpho-syntax:

(55)



Although Distributive Morphology does not posit a formal distinction between morphology and syntax, it does draw an important dividing line between acategorial root forms denoted by $\sqrt{\quad}$ and the lexical forms that result when such roots merge with categorizing heads. The critical point, for present purposes, is that the former encode encyclopaedic information while the latter have the familiar denotations that enter into compositional semantics. Against this background, Harley proposes that compounding and incorporation are theoretically the same type of process. To see this, consider the derivation of a synthetic compound like *truck driver*:

(56)



Under this analysis, the complement of the Root $\sqrt{\text{DRIVE}}$ is first created by merging $\sqrt{\text{TRUCK}}$ and a nominalizing n^0 head, with head movement to n^0 . When this merges as the argument of $\sqrt{\text{DRIVE}}$, the whole complex incorporates into it. Finally, the complex head $[[[\sqrt{\text{TRUCK}}]_{\sqrt{}} n]_{nP} \sqrt{\text{DRIVE}}]_{\sqrt{P}}$ merges with the categorizing agent-flavored n^0 , and head moves into that, creating the complex head $[[[[\sqrt{\text{TRUCK}}]_{\sqrt{}} n]_{nP} \sqrt{\text{DRIVE}}]_{\sqrt{P}} n]_{nP}$. This is then realized by Vocabulary Insertion as *truck-driver*.

Harley proposes a parameter to disallow the verbal form *to truck-drive* by prohibiting v^0 categorizing heads from hosting incorporation in languages like English but allowing it in languages like Inuit and Mohawk. A second issue she addresses is the impossibility of incorporating structures larger than nP in English, specifically those with plural morphology *trucks* and/or determiners *the truck*. She notes that they would both be disallowed under the view that incorporation is driven by Case-related features. An nP that is merged with Num⁰ or D⁰ must have its case checked DP-internally, making the feature unavailable for checking via incorporation into a Root. In the next section we will try to reconcile this view of compounding with what we have determined about incorporation of DP, NP and N in previous sections.

4.2. Separating Incorporation from Compounding

As we have seen, Harley's proposal correctly derives paradigms like the following: *truck-driver/stamp-collector*, **to truck-drive/*to stamp-collect*, **trucks-driver/*stamps-collector*, **[the-truck]-driver/*[the-stamp]-collector*. It is silent, however, on the admittedly restricted range of pseudo-incorporation we considered in section 3. Note that neither NP pseudo-incorporation nor DP pseudo-incorporation instantiates the right-headed structures that are ruled out by Harley's analysis. At the same time, the existence of forms like *to be in prison* or *to take the train* does argue for an independent rule of incorporation that operates at the level of the verb or preposition and takes as its complement a nominal (or a prepositional expression) with more functional structure than one that merges a root with a categorizing head. The analyses discussed in section 3.2 are precisely of this order.

We come to the same conclusion when we consider languages like Hindi or Hungarian which have more productive forms of NP pseudo-incorporation. Let us take, for example, the interpretation of a nominal inside a compound. We can safely assume that a form like $[[\sqrt{\text{STAMP}}]_{\sqrt{}} n]_{nP}$ or $[[\sqrt{\text{CANDIDATE}}]_{\sqrt{}} n]_{nP}$ draws on the encyclopedic information that does not limit it to a property of singularities. As such, it can combine with a semi or a pure collective predicate to yield *stamp-collector* and *candidate-comparison*. The fact that Hungarian pseudo-incorporation which parametrically allows v^0 to host incorporation does not allow the equivalent of *to candidate-compare* establishes the need for a distinct semantics for pseudo-incorporation. Crucially, this semantics must take into account the denotation of a nominal that has more structure than $[[\sqrt{\text{CANDIDATE}}]_{\sqrt{}} n]_{nP}$. That is, we need a semantics for pseudo-incorporation that draws on number feature in the matrix, as in the analysis considered in section 2.

Finally, let us discuss the case of canonical incorporation which forms the core of Harley's comparison with compounding. As we saw in section 2, compounds are anaphoric islands but Inuit incorporation is not, which raises doubts about conflating the two. Additionally, there is another aspect of incorporation that bears further scrutiny. While the literature has many

examples of canonical incorporation involving semi-collective predicates like *gather* and *collect*, there do not seem to be cases involving pure collective predicates like *mix-together* or *compare*.²⁷ If this observation holds up under further investigation, we would have clear evidence of a difference between compounds and incorporation. If it does not, it would align nominals in canonical incorporation with those in compounds. This question, necessarily, must be left unanswered here but I hope to have highlighted the significance of the semantic properties we have isolated on the basis of pseudo-incorporation languages to the study of incorporation more generally.

4.3. Section Summary

In this section we looked at a proposal within the framework of Distributed Morphology for treating compounding and incorporation along parallel lines. While this account successfully accounts for certain patterns in English, we saw that it does not address the particulars of NP/DP pseudo-incorporation in English or of NP incorporation in languages like Hindi or Hungarian. In particular, differences between nominals inside compounds and those in pseudo-incorporation with respect to number specification and sensitivity to the nature of collective predication suggests that pseudo-incorporated nominals have more functional structure than nominals inside compounds. Finally, we ended by pointing to the need for testing canonical incorporation to see if there may be subtle indications of the presence of number-related functional structure there as well.

V. Conclusion

Studies of incorporation, and its kin pseudo-incorporation, have always involved both morpho-syntactic and semantic considerations but the balance between the two has not remained constant over the more than thirty years of research into the phenomenon. The earliest studies focused almost exclusively on morpho-syntactic issues, though meaning was commented upon. In contrast, current studies have focused almost exclusively on the semantics, though the possibility of some special syntax is recognized. In this paper I have looked at incorporation in relation to complementation and compounding, keeping the tension between structural and semantic considerations in mind. The basic point I have tried to argue for is that the structure of the nominals involved in the range of complementation types varies, with the most reduced structure instantiated in compounding, and successively larger structures attested in canonical incorporation, pseudo-incorporation of NP, and of DP and finally regular transitive structures. The evidence for this has come from the semantic diagnostics related to the interaction of different types of nominals with pluractional operators and semi vs. collective predicates, diagnostics that have emerged from the study of pseudo-incorporation languages where minimal pairs of singular and plural incorporated nominals allow for a targeted study of the number feature in nominals.

²⁷ Thanks to Mark Baker for discussion on this question.

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