

Incorporation in Wubuy

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In Wubuy (Northern Australia), nouns can be productively incorporated into verbs and adjectives. A longstanding controversy in linguistics has revolved around the question of whether these constructions are syntactic (derived by movement) or lexical (formed in the lexicon). Here I show that the arguments which may be linked to incorporated nouns show rather more freedom than generally supposed, and in this respect display similarities to compounding. I propose an analysis using aspects of Construction Morphology (e.g. B. Baker, 2008; Booij, 2010a) but with the crucial difference that incorporation structures always admit a phrasal interpretation, rather than a lexical one.

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1. Introduction

Incorporation is the process whereby a morpheme which functions as a noun root under some circumstances can be found as part of a verb word under others, where the result is more-or-less compositionally interpreted.¹ In Wubuy (Gunwinyguan, SE Arnhem Land), many nouns can appear either independently, or within the word containing the verb, as in the following examples. In (1), the

¹ Here I follow, for example, Evans (1997; 2003), rather than Rosen (1989), or Mithun (2009). The latter does not make a clear distinction between incorporation and compounding (indeed, Mithun aims to obviate this distinction). I discuss the differences between incorporation and compounding in §3 of this paper.

noun *yarrga* ‘flipper’ optionally appears in the clause, representing the object of the verb ‘roast’. In (1)b, the same noun appears within the word containing this verb, preceded by the prefixal string realising (or agreeing with) the subject and object arguments. Since *yarrga* ‘flipper’ is Neuter class, the verb in both cases takes an object prefix of this class.

- (1) a. ba-wu-gambana (yarrga)
 2sg.IRR-3NEUT-roast.FUTCON flipper’
 ‘you roast the flipper (NEUT)!’
- b. ba-wu-yarrga-ambana
 2sg.IRR-3NEUT-flipper-roast.FUTCON
 ‘you roast the flipper (NEUT)!’

Such constructions are typical of languages with noun incorporation; see for example Mithun (1984), Baker (1988), Massam (2009), for surveys and discussions of the phenomenon. In the 80s and 90s, attention focussed on the question of whether constructions like that in (1)b were the product of movement in the syntax (e.g. M. Baker 1988; 1996), or of word-building in the lexicon (e.g. Di Sciullo & Williams, 1987; Rosen, 1989; Mohanan, 1995). Since the work of Van Geenhoven (1998a, b), and with changes in the dominant syntactic approaches, this question has become backgrounded to a large extent (see e.g. Massam, 2009). Attention has instead turned to the issue of the semantics of incorporated nouns with respect to the predicate and operators such as negation (see e.g. Bittner, 1994; Chung and Ladusaw, 2004; Farkas & De Swart, 2003; Van Geenhoven, 1998a).

In this paper, I aim to expand the empirical range of the phenomenon, by investigating in detail the constraints on incorporation in Wubuy. The constraints I will focus on are: (1) constraints on the argument functions of the incorporated noun (IN), and (more speculatively) (2) constraints on the discourse functions of the incorporated noun. Both of these issues have somewhat slipped from view in the current debate around incorporation (which mainly centres on the relationship between INs and quantifier scope). In addition, I discuss the differences, as well

as the similarities, between incorporation and compounding, and propose a model which can handle both, as word-building processes within the lexicon, using a broad Construction Grammar approach (following e.g. Baker, 2008; Booij, 2010a; 2010b; Jackendoff, 2002; 2010). I'll also look at the broader implications of the interpretations of incorporated structures for the nature of word-building cross-linguistically.

In what follows, I'll firstly discuss the basic facts of incorporation in Wubuy in §2, including a discussion of the argument functions which may be linked to the incorporated noun in §2.1. In §2.2, I briefly describe a model for the morphological and semantic form of incorporation in Wubuy, following Booij's (2010b) analysis of compounding in Dutch. In §2.3, I discuss the problematic issue of the incorporation of topics and agents, which appears to be restricted or impossible in many languages. In §3, I discuss the differences between compounding and incorporation, before concluding in §4.

2. Incorporation in Wubuy

Several aspects of the grammar of Wubuy make it ideal for studying incorporation. It has a number of genders or noun classes, which induce agreement morphology on all constituents of a nominal group as well as the verb. Unlike most other Gunwinyguan languages (and most other languages with incorporation) the agreement morphology on verbs is sufficiently rich so as to distinguish whether the verb is agreeing with an incorporated body part (as in (2)) or its possessor (as in (3)). In (2), the prefix marking object agreement reflects an object of NEUTER noun class, hence, it agrees with *yarrga* 'flipper', which is also NEUTER class. In (3), the verb takes object agreement for FEMININE class. It is therefore not agreeing with incorporated *yarrga* 'flipper', but (we understand from context) with the flipper's possessor *ngarrugalij* 'dugong', which is FEMININE class.²

² Two reviewers ask whether alienability (of the incorporated noun) is relevant to the verb agreement morphology or the possibility of external possession. It is generally only body parts and other closely associated 'parts' of a person (such as *yang* 'voice', *muun* 'foot, footprint', *malnguj* 'shadow') which may exhibit the possessor raising behaviour shown in (3), below, and hence bear this kind of relationship between the verb agreement morphology and the IN (Horrack, 2010).

- (2) ba-**wu**-yarrga-ambana
 2sg.IRR-3NEUT-flipper-roast.FUTCON
 ‘you roast the flipper (NEUT)!’
- (3) ba-**ngu**-yarrga-ambana
 2sg.IRR-3FEM-flipper-roast.FUTCON
 ‘you roast the flipper (NEUT)! (of e.g. the dugong (FEM) understood)’

These two examples also demonstrate that there are no apparent constraints on whether the verb agrees with body parts or their possessors. This is true regardless of whether the body part is incorporated, or not (see Baker, Horrck, Nordlinger & Sadler, 2010).

Unlike many other polysynthetic languages such as Mohawk (Mithun, 2009), Wubuy also has overt case-marking for non-direct arguments and obliques. The case-marking interacts in a systematic fashion with the verb agreement to indicate which of the possessor or the body part is being recognised as a direct argument of the verb (see Baker et al., 2010 for extensive discussion and exemplification of this point). If the verb agrees with the body part, then (whether it is incorporated or not) the possessor must be in the GENITIVE case, as shown in (4). Conversely, if the verb agrees with the possessor, as in (5) (where the possessor is 1st person), then the body part, if external, must be in an oblique case, here the LOCATIVE.

- (4) nga-wu-yarrga-nagiina yii-ngarrugali-j-*(inyung)
 1sg-NEUT-flipper-cook.PR FEM.OBL-dugong-GEN
 ‘I’m cooking the dugong’s flipper’
- (5) ngaya nga-laan-barrlhiyn yii-laan-duj
 1sg 1sg-knee-sore.REFL.PP MASC.OBL-knee-LOC
 ‘I have sore knee(s) (MASC)/I am sore in the knee(s)/my knee(s) are sore’

Example (5) also demonstrates that incorporated nouns may be ‘doubled’ externally by nouns with identical or overlapping reference. This is also shown by examples (6) and (7). In (6), the incorporated noun *warraga* ‘upper back’ is doubled by an external noun which, in this case, has a more general meaning of ‘back’. In (7), the incorporated noun *manjarr* ‘leaves, foliage’ is doubled by an external noun, a term for a plant species, specifying what kind of leaves were gathered.

- (6) ngu-warraga-wagiwayn ama-rulbu-rruj
 3fsg/3fsg-upper.back-hit.PP VEG.OBL-back-LOC
 ‘She hit her in the upper back, in the back.’ (Heath, 1980: Text 6.3)
- (7) niini-ma-manjarr-mangi mana-gadhuwa mana-wuluru
 1EX.DU.MASC-VEG-foliage-get.PC VEG.TOP-new VEG.TOP-*Melaleuca.sp*
 ‘We two (males) were getting leaves of *Melaleuca acacioides*.’

Wubuy thus appears to conform to the ‘classifier’ type of incorporation language, as proposed in Mithun’s (1984) typology: the ‘most nearly syntactic’ of the four types of incorporation that she proposes.³

2.1 *Argument functions of INs in Wubuy*

It is often observed that languages with incorporation place restrictions on the grammatical functions of the verb that may be linked to the incorporated noun (see e.g. Mithun, 1984: 865; M. Baker, 1988 for the clearest statements of this position). Baker (1988; 1996) is the most restrictive, arguing that the only positions which may be incorporated in ‘true’ polysynthetic languages are those which originate as a unique sister of the verb. The following tree diagram illustrates how the construction in 0 would be formed according to Baker’s (1988)

³ However, note that Wubuy (like other GN languages) regularly violates the restriction (Rosen, 1989) that the external, doubled noun must be at least as specific as the incorporated noun. Indeed, Wubuy speakers often produce utterances containing the same noun root in both incorporated and external positions (see e.g. Heath, 1984: 464). Since two occurrences of the same noun within an intonational phrase are not generally permitted in Wubuy (as in languages generally), the function of these incorporation constructions with external doubling deserves more attention than is possible here.

head movement model of incorporation. At Deep Structure, the noun *yarrga* ‘flipper’ occupies the head of the NP which is the only sister of the verb. It undergoes movement from this position to adjoin to the verb at Surface Structure (cf. Baker, 2009).

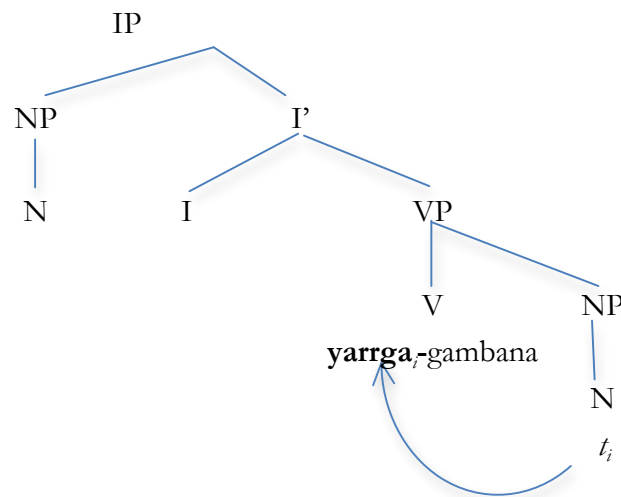


Figure 1. *Incorporation as Baker-movement, above.*

Crucially, incorporation is licensed by the Empty Category Principle (Chomsky, 1986; M. Baker, 1988), in that the trace of the noun’s movement is properly governed by the head of the VP. No other positions will be properly governed in the same way, ruling out incorporation from base-generated subject positions as well as complements of prepositions, and secondary objects.

Baker’s proposal provides a powerful explanation for the restriction to particular argument positions, but only to the extent that this restriction is in fact valid. Cross-linguistically, there is variation in the argument positions targetted by incorporation. Mithun (1984: 875) claims that “V-internally, IN’s bear a limited number of possible semantic relationships to their host V’s”. If a language incorporates nouns with only one kind of relationship to verbs, it will be patients of transitives (e.g. Mapudungun: M. Baker et al., 2005), if two types, then patients of both transitives and intransitives. Locations and instruments are also found as targets of incorporation, but agents are extremely rare. The only well-documented cases in the literature appear to be the Munda language Sora (Zide, 1976; where the facts and their interpretation are disputed, see e.g. Steever, 1986), and Turkish (Öztürk, 2009) where incorporation is of the juxtaposition, rather than morphological, kind. For Mithun (1984), the restriction to particular argument

positions is an important difference between true noun incorporation and compounding, where the relationship between two roots may be much looser, or ambiguous (as is well known in the literature on compounding; see e.g. Lieber, 2009 for discussion). However, in more recent work, Mithun (2009) appears to retreat from this position, arguing that there are no important differences between compounding and incorporation. These arguments are reviewed in §3.

In this light, there are several important properties of incorporation in Wubuy that are worth noting. The first is that the grammatical function of an argument does not necessarily predict whether or not it will be incorporated. Verbs subcategorised for both a theme and a location can apparently incorporate either argument, as shown in these examples. In (8), the verb meaning ‘put in’ incorporates the theme argument ‘bones’, while in (9), the same verb incorporates the location instead. These examples are found in Heath’s text collection (1980), as well as being checked with current speakers. Not all speakers accept both forms: some speakers reject (9) as ungrammatical.

- (8) wirri-**ngagara**-yabijgaa
 3pl/NEUT-**bones**-go.in.CAUS.PC
 ana-ngagara a-gara-wuy
 NEUT.TOP-bones NEUT.OBL-hole-ALLAT
 ‘They put the **bones** (NEUT) in the hole’
- (9) wirri-**wala**-jabijgaa
 3pl/NEUT- **log**-go.in.CAUS.PC
 ana-ngagara (a-walak-guy)
 NEUT.TOP-bones NEUT.OBL-hollow.log-ALLAT
 ‘They put the bones in the **hollow log** (NEUT)’

The unacceptability of (9) is not due to a general prohibition against incorporation of locations, as shown by examples such as (10), which all speakers consulted

about examples like (8) and (9) accept (and produce spontaneously).⁴ In this example, the noun *aban* ‘ground’ is incorporated into the verb for ‘sleep’. The only way to interpret the relationship of the referent of *aban*, I would propose, is as the location in which the activity ‘sleep’ took place.

- (10) ngurr-**aban**-jay
 12pl-ground-sleep.PP
 ‘we slept on the ground’

The second important property of incorporation in Wubuy is that the grammatical function of an incorporated noun is not uniquely determined by the construction in which it appears. In other words, realisation as an incorporated (rather than independent) noun does not unambiguously determine the grammatical function of the noun with respect to the verb. In example (11), the incorporated noun *muun* ‘foot’ can refer to the body part of the object, or the body part of the subject (an agent, in this case), or of both. Example (12), collected by K. Horrack from a different speaker, is similar. Example (13) demonstrates that doubling of the incorporated noun with an instrumental case suffix does not lead to complete unambiguity: the incorporated noun could still refer to either the agent’s or patient’s foot.

- (11) wa-**mun**-jarrdang
 1/2sg-**foot**-poke.FUT
 ‘I’ll push your foot’ or ‘I’ll push you with my foot’

- (12) numba-**mung**-gujugujang
 2sg/1-**hair**-tickles.PP
 ‘you tickled me in the hair’ or ‘you tickled me with your hair’

⁴ I have been carrying out regular fieldwork with Wubuy speakers since 2001, with a group of around 10 native speakers resident in Numbulwar and Darwin. This represents around 15% of the estimated total number of first language speakers of Wubuy in Numbulwar.

- (13) wa-**mun**-jarrdang muun-mirri
 1/2sg-**foot**-poke.FUT foot-INST
 ‘I’ll push you with my foot’ (or:
 ‘I’ll push your foot with my foot’)

Wubuy thus allows a very wide range of grammatical functions or semantic roles to be associated with incorporated nouns: themes, locations, instruments are all possible. Example (14) (from Heath, 1980: 152), where the associated entity is a Dreamtime (mythological) figure, and (15) provide further examples of body parts linked to agents:

- (14) araga wini-naynjiyn, nigaayung ni-**yina**-dabaliyn
 suddenly 3pl/3pl-see.REFL/RECIP.PP 3msg.CONTR 3msg-head-emerge.PP
 ‘suddenly they saw each other, as for him, his head came out’

- (15) ba-**marang**-gadhaaring
 2sgIRR-hand-refuse.FUT
 ‘Say ‘no’ with your hand’

INs with instrumental function have not been commonly reported in the incorporation literature to date. They are specifically ruled out in the related Ginwinyguan language Bininj Gun-wok (Evans, 2003), who cites the following example.

- (16) Makkakurr ba-rrang-danjbo-n djenj
 pelican 3/3-mouth-spear-PI fish
 ‘The pelican “speared” the fish in the mouth.’
 Not: ‘The pelican “speared” the fish with its beak.’

Similarly, the instrument function of a body part can only be expressed with a syntactic phrase, as in (17)b, not with an incorporated noun, as in (a), according to Evans.

- (17) a. a-bid-garmeng daluk
 1/3-hand-grasp.PP woman
 ‘I touched the woman **on the hand**’ (*with my hand)
- b. gun-bid-be nga-garmeng daluk
 NEUT-hand-ABL 1/3-grasp.PP woman
 ‘I touched the woman with my hand.’

The incorporated body part instrument examples in Wubuy are reminiscent of another set of Australian languages, e.g. Ngan’gityemerri and Murrinh-Patha (Southern Daly: Green, 2003), that build verbs with these meanings. In these languages, body parts can be incorporated into the verb, as in Wubuy. But it is not the incorporated body parts that give us instrumental functions, it’s the ‘classifier’ verbs as in (18) and (19) (from Nordlinger, to appear). In Murrinh-Patha, most verbs consist of two parts, a ‘classifier’, and a lexical verb stem. The classifier provides most of the inflection, as well as, in some cases, specifications of parts of the body involved in the event.

- (18) **mam-kurrk**
 1sg.S.DO.WITH.HANDS.NFUT-scratch
 ‘I scratched something (with hand, or stick).’
- (19) **ngunungam-kurrk**
 1sg.S.DO.WITH.FOOT.NFUT-scratch
 ‘I scratched (something) with my foot.’

In Murrinh-patha, as in many other incorporating languages, INs cannot take instrument roles (Forshaw, 2011). In Wubuy, as we have seen, this appears to be a possibility, however. In what follows I discuss the potential constraints on which arguments may be linked to the IN.

2.2 *Limits on argument linking*

The ambiguity of grammatical function of INs in Wubuy is reminiscent of what we find with compounds in English and other languages, e.g. Selkirk (1982: 22) observes that “the semantic relation obtaining between the head constituent and its sister nonhead constituent can vary considerably ... it would seem that virtually any relation between head and nonhead is possible—within pragmatic limits, of course”. Cf. also Lees (1963), Gleitman & Gleitman (1970), Levi (1978), Jackendoff (2011), and Lieber (2009) for similar observations.⁵

Apart from this, there is little (I would propose) that constrains the interpretation of INs beyond the necessity for the IN to link to some argument of the verb. This makes incorporation constructions sound more like compounds than is generally thought to be the case.

The relative freedom of argument interpretation of incorporated nouns makes the syntactic head-movement account less attractive as an analysis of incorporation. There are other reasons to doubt the usefulness of this analysis as well; see §3. My own view is that while incorporation cannot be regarded as movement, it is clearly rule-based (rather than listed), for the reasons discussed below. Among other things, the rule-to-rule hypothesis (Bach, 1976) requires the interpretation of a verb containing an incorporated noun to be mapped from a rule-governed operation of some kind. For compounding, Booij (2010) suggests the following general ‘schema’ as a way of capturing the relationship between a formal object (a construction) and its meaning.⁶ This schema describes a construction of syntactic category ‘Y’ consisting of two elements, of categories ‘X’ and ‘Y’, where the

⁵ A reviewer asks whether the grammatical function of INs is in fact non-specific, rather than ambiguous. Since I claim (along with Lieber, 2009 and many others) that there is some kind of necessary grammatical relation between the noun and verb, then the term ‘ambiguous’ is more apt here. Saying that the relation is ‘non-specific’ implies that there may be no actual grammatical relation between the two. This may indeed be the case with N-V compounds in Wubuy and other GN languages, as opposed to N-V incorporation. In a compound like Ngalakgan *jung-bu* ‘build a bough-shade’ (lit. ‘boughshade-hit’) there is no clear grammatical relation between the noun and verb (both of which may occur independently) because the combination is idiosyncratically interpreted, in common with compounds generally. This is not the case with incorporation structures. Although the noun may realise a number of different roles or grammatical relations with respect to the verb, it must take *some* well-defined role in any instance of use.

⁶ In common with the generalised construction grammar approach of Jackendoff (2002), the constructions discussed here have very general meanings, like those of syntactic phrase structure, rather than the very idiosyncratic meanings associated with constructions in earlier work in the framework such as Fillmore (1988) or Goldberg (1995).

meaning is characterised very broadly as one where the content of Y has some relation to the content of X.

- (20) $[X_i Y_j]Y_k \leftrightarrow [SEM_i \text{ with some relation } R \text{ to } SEM_i]_k$
 where ‘SEM’ is the semantic content of X, Y.

For incorporation in Wubuy, we might propose the following:

- (21) $[N_i V_j]V_k \leftrightarrow [V_j \text{ with some relation } R \text{ to } N_i]_k$

That is, a word of category ‘V’, consisting of two further elements of categories N and V, where the meaning of V bears some relation to the meaning of N, except that ‘V’ needs to include also ‘Adj’ (Baker and Nordlinger, 2008). What are the sets of relations ‘R’ that can be found or licensed in Wubuy? We can identify at least the following kinds. First, and perhaps pre-eminently, there is a locative schema for INs:

- (22) $[N_i V_j]Y_k \leftrightarrow [x \text{ moves/is located}_j \text{ with respect to } N_i]_k$

In this type of incorporation construction, some argument of V is located in the event structure by reference to the incorporated N. Examples (9) and (10) are of this type.

A related type is one where the IN is a part of an affected argument in the event:

- (23) $[N_i V_j]Y_k \leftrightarrow [x \text{ affects}_j y \text{ with respect to } N_i]_k$
and N is a part of y (or x)

This type of construction is extremely common in Wubuy, as in other incorporating languages. Examples include (2), (5), (6), and (7). Whether an incorporating construction is to be interpreted with reference to the ‘location’ schema (22) or the ‘affected part’ schema (23) can in some cases be inferred on the basis of the incorporated noun itself: incorporated nouns referring to parts of

the landscape such as *aban* ‘ground’ tend to belong to location schemas exclusively, incorporated nouns referring to body parts can be interpreted with reference to either schema, often ambiguously. Examples such as (6), for instance, as in English, can apparently be interpreted as situations where the incorporated noun names the affected part of the patient, or as situations where the incorporated noun locates the extent of the event realised by the verb.

2.3 *Incorporation of topics and agents*

Apart from the very general ‘schemas’ for general construals of incorporated constructions, there is very little, I propose, that constrains such interpretations. However, one function does appear to be ruled out from linking to the IN in Wubuy and other Gunwinyguan languages such as Ngalakgan, and that is topics. It is difficult to test this intuition directly, since incorporable nouns in Wubuy (as in other Gunwinyguan languages, with some exceptions) are limited to inanimates, and inanimates do not make good topics, in general. The subjects of generic statements are plausibly regarded as topics (Erteschik-Shir, 2007), and in some cases we can test whether these arguments can be incorporated. However, again the difficulty is with what may be incorporated. In general, names for natural kinds (species terms), and terms referring to humans, cannot be incorporated in any Gunwinyguan languages (see e.g. Baker & Nordlinger, 2008; Evans, 2003; Heath, 1984) but these are the prime topics for generic statements. I take this as indirect evidence that sentence-level topics (as opposed to discourse-level ones) are not incorporable, in general.⁷

⁷ I make a distinction here (following e.g. Gundel, 1985; Portner & Yabushita, 1998, among many others) between what I’ve called ‘discourse-level’ topics and ‘sentence’ topics. The former correspond to the usual discourse-structural sense of ‘topic’: those entities within a stretch of discourse which in cognitive terms are highly activated (see e.g. Gundel, Hedberg & Zacharski, 1993), and typically realised by attenuated forms such as pronouns or zero anaphora. ‘Sentence’ topics are those identified more with the philosophical, pragmatics and formal semantic literature (in e.g. Reinhart, 1982; Strawson, 1964). In Strawson (1964: 97-8) for example:

- a. The topic is what a statement is about
- b. The topic is used to invoke "knowledge in the possession of an audience".
- c. "The statement is assessed *as* putative information *about its topic*."

While discourse topics can be (and often are) also sentence topics, the reverse is not necessarily true. In particular, newly-introduced topics are sentence topics but not discourse topics.

There are some rare incorporable nouns that are also possible topics. One of these is the noun *lɪna* ~ *lɪba* ‘paperbark; paperbark tree’. When presented with example (24), with *lɪba* incorporated into the stance/copular verb, my consultant rejected it, but accepted (25). In the consultant’s alternative version, *lɪba* is external, but doubled by an incorporated noun *rangag*, the (lexically) generic term for ‘stick; tree’.

- (24) *wu-**lɪba**-lhara a-wurugu-rruj
 NEUT-paperbark-stand.PR NEUT.OBL-billabong-LOC
 ‘Paperbarks live (lit. ‘stand’) around billabongs’

- (25) ana-*lɪba* wu-**ranga**-dhara a-wurugu-rruj
 NEUT.TOP-paperbark NEUT-tree-stand.PR NEUT.OBL-billabong-LOC
 ‘Paperbarks live (lit. ‘stand’) around billabongs’

This is not because of a prohibition on incorporation of *lɪba*, nor because of a prohibition of incorporating into the verb ‘stand’ (as (25) demonstrates). The generic noun for ‘paperbark’ *lɪba* can be incorporated into verbs such as *waba* ‘wrap’, and *lhalhaya* ‘peel’, as in the following example.

- (26) ba-wu-*lɪba*-lhalhaya
 2sgIRR-NEUT-paperbark-peel.FUT
 ‘peel the paperbark!’

The problem with (24), I propose, is that topics cannot be incorporated into their predicates.⁸ Sentence-level topics are necessarily wide scope, since they form part

⁸ There is another problem with this example. The noun *lɪba* is ambiguous: it can refer either to species of *Melaleuca*, or to the useful bark obtained from these trees (see Baker 2007 for discussion). When incorporated, *lɪba* plausibly refers only to the usable substance, not the natural species. Terms for natural species cannot be incorporated in Gunwinyguan languages, as a general rule (see e.g. Heath 1984, Evans 2003, Baker and Nordlinger 2008 for explicit discussion of this point). What the consultant herself offered in translation of the English ‘Paperbarks live around the billabongs’ was this:

ana-*lɪba* wu-warragarra-lhara a-wurugu-rruj

of the common ground (Reinhart, 1982; Portner & Yabushita, 1998), but, cross-linguistically, INs appear to necessarily exhibit narrowest scope with respect to operators within the clause, such as negation (Bittner, 1994; Chung & Ladusaw, 2004; Farkas & De Swart, 2003; Van Geenhoven, 1998a). There are other indications from the literature that this restriction may be more general than just Gunwinyguan languages. For instance, in Southern Tiwa (Allen, Gardiner & Frantz, 1984: 310), a language where incorporation is otherwise obligatory for given classes of nouns in given grammatical functions ‘overlay relations such as “new topic” may sometimes block incorporation where it is otherwise necessary’.

Particular constructions in Wubuy are used as sentence- (and discourse-) level topic introducers (i.e. ‘new topics’ of the kind referred to by Allen et al., 1984). A prime example is the set of contrastive pronouns, glossed ‘as for X’ by Heath in his grammar (1984) and text volume (1980) descriptions of Wubuy (and see (14) for an example from the latter). In this kind of context, we should expect *not* to find incorporation of a noun corresponding to the referent of the contrastive pronoun.⁹

Consider the following example, from text 62 ‘Making the Northwest wind’ in Heath (1981) concerning a particular named wind *baarra*. Example (27) shows the beginning of this text. The named wind is introduced in the first line, using one of these topic changing pronouns—*nigaayung*, translated by Heath as ‘as for it (MASC) class’.¹⁰ In the fifth line, where the men of Manggurra clan are spoken of as being responsible for ‘sending’ the wind, we might otherwise expect a form *nini=dhanguyn-dharrgi-Ø* (they wind-send it) here, since *lhanguyn* ~ *dhanguyn* is an incorporable noun which can cross-reference any (named) wind, as it does in line 4, and consultants were happy to accept the incorporated form *nini=dhanguyn-dharrgi-Ø* out of context.

NEUT-p.bark NEUT-COLL-stand.PR NEUT.OBL-billabong-LOC

‘Paperbarks live at billabongs’

⁹ This is an important distinction, because body parts which are *linked* to the referent indicated by the contrastive pronoun can be incorporated, as (14) shows.

¹⁰ Translations are Heath’s, but glosses are my own, based on ongoing documentation work with Wubuy speakers. I gloss Heath’s ‘NA’ class (the masculine inanimate gender) as MASC.

- (27) nigaayung, nigaayung na-baarra,
 MASC.CONTR MASC.CONTR MASC-[wind.name]
 nigaayung na-baarra,
 MASC.CONTR MASC-[wind.name]
 ‘as for it (MASC) NW wind’
- yagi-majii, yagi-majii warra-manggurra,
 NEG-COND NEG-COND PL-[clan.name]
- warra-manggurra yagi-majii,
 PL-[clan.name] NEG-COND
 ‘if not men of (clan n.)’
- yagi-majii **wini=lhargi-Ø,**
 NEG-COND **3pl/MASC=send.PR**
- warra-manggurra yagi-maji: **wini=lhargi-Ø,**
 PL-[clan.name] NEG-COND **3pl/MASC=send.PR**
 ‘As for it, the NW wind. If the Manggura clan (most northerly of
 Nunggubuyu clans) do not send it ...’

There are three texts in Heath (1981) concerned with named winds. All of them make much use of the verb *jarba-* ~ *jarba-* listed in the dictionary as ‘to run along, to move briskly along’ and, in the form *lhanguyn=jarba-*, with the generic noun for ‘wind’ incorporated, as ‘(wind) to blow hard’ (and my consultants were happy to accept this form when it was offered to them). But the texts concerning winds have no incorporated examples of *lhanguyn*.

If (sentence-level) topics cannot be incorporated, as a general rule, this makes the incorporation of many subjects automatically problematic, given the typical alignment between subject and topic in most languages. In particular, agents should be ruled out most of the time given that (a) agents are typically animates and (b) animate subjects are usually highly topical and (c) nouns denoting

animates are not incorporable in Gunwinyguan languages. However, non-topical, inanimate subjects should be incorporable, in general. This allows us to predict several kinds of incorporable subjects:

- Thetic or ‘presentational’ subjects should be able to be INs;
- Subjects of weather predicates should be incorporable;
- The transitive subjects of passives (or passive-like contexts) should be incorporable

To the extent that these questions have been examined explicitly, we tend to find agreement with these predictions within the Gunwinyguan literature. The reason that thetic or presentational propositions should be able to incorporate their subjects is because crucially, these propositions involve only new information. Existential binding (as proposed by Van Geenhoven, 1998a; Farkas & De Swart 2003; Chung & Ladusaw, 2004, for INs) of the subject of a thetic proposition is compatible with an interpretation of this kind. In BGW, incorporation of body part nouns is obligatory when the body part has this kind of interpretation (Evans, 2003: 465), as in (28).

- (28) a. **ga-geb-di** (BGW Evans, 2003: 465)
 3-nose-stand
 ‘There is a nose!’ (i.e. there is an entrance to a native bee hive)
- b. **ka-ngey-di**
 3-name-stand
 ‘There is a name there.’ (e.g. written down on a list, or on a t-shirt)

Weather predicates should also be able to incorporate their subjects, because these entities are inanimate, pleonastic, non-topical referents. Weather predicates do not typically incorporate named subjects in Wubuy, but at least the following is fully acceptable, as mentioned above:

- (29) wu-lhanguyn-jarba
 NEUT-wind-run
 ‘The wind is blowing’

As to non-topical agents, these are quite rare in natural discourse (Du Bois, 1987). Even more rarely do they turn up in texts where the agent happens to be an incorporable noun (remember that the overwhelming majority of incorporable nouns are inanimates in Gunwinyguan languages). The Ngandi grammar (Heath, 1978, Text 4) includes a text discussing traditional fish-trapping practices, from which I repeat an excerpt here (presented in orthographic representation). The relevant segment, in part (b), is bolded.

- (30) a. malk-wiripu-yung ba-ga-bunganjini ba-ga-warnh-dhuni
 times-other-REF 3pl-SUB-rush-AUX.PR 3pl-SUB-look-AUX.PR
- a-ja-bir-thina a-ja-man-bir-thina
 RESID-now-many-INCH.PR RESID-now-group-INCH.PR
- agu-ga-geyk-dhani
 NEUT/RESID-SUB-throw-AUX.PR
- gu-jark-dhu-yung gu-wolo-thu-yung,
 NEUT-water-ERG-REF NEUT-that-ERG-REF
- gu-wolo-yung, gu-wolo-yung
 NEUT-that-REF NEUT-that-REF
- nyarra-butj-may
 1pl.ex/RESID-kill.NEG-PR.NEG
- ‘Other times they go running along, looking. There are many (fish) which that water has thrown. We do not kill that kind of thing.’

b. gu-jark gu-wolo gu-ga-work, gu-ga-bunganjini
 NEUT-water NEUT-that NP-SUB-be.outside NP-SUB-rush.PR

gu-wolo-thu gu-ja-bun-geyk-dhani
 NEUT-that-ERG NP-now-water-throw-AUX.PR

a-jeny-yung nitjjuh,
 RESID-fish-REF this.way

garakgardi-tj, nyarru-ga-balatdhani
 down-ALL 1pl.ex/NEUT-SUB-attach.PR

gu-wolo-yung gu-jarra,
 NEUT-that-REF NEUT-whatsit

gu-mulmu-yung natjjiny a-ga-rukbanjini,
 NEUT-grass-REF that.wayRESID-SUB-fall.PR

a-jeny-yung, gu-wolo-yung
 RESID-fish-REF NEUT-that-REF

nyarra-ja-mani-mani nakgi-ny gu-wolo-gi.
 1pl.ex/RESID-now-DIST-get.PR there NEUT-that-LOC

‘That water rushes along outside. **That (water) throws the fish this way, downward.** We attach that whatsit?, the grass, there where the fish are falling. Then we pick them up, there in that (grass).’

There is little doubt that ‘water’ here is a transitive subject: it is modified by an external demonstrative taking ergative case. The question is, is it a topic? The Ngandi text that this example is taken from is called ‘Fishing techniques’, in which the narrator discusses several methods for catching them. This is one of a number of clauses which refer to the interaction of water and fish (in traps, in rivers). It is

doubtful whether the ‘water’ referent here can be regarded as a topic.¹¹ Normally a topic needs to be either definite (and specific) (31)a, or generic (31)b. Indefinite, non-specific referents, as in (31)c are not licit topics (cf. Hedberg, 1990):

- (31) a. As for Jason, he’s a good guy.
 b. As far *Scaevola taccada*, it’s used for making pipes.
 c. #As for a plant, I would like one.

It is difficult to conceive of the various references to ‘water’ in this passage as being either definite or generic. Mass nouns like ‘water’ cannot have consistent reference unless they are bounded in some way (‘that glass of water has been sitting there all night’), which is not true in this example. This may, therefore, be an (admittedly very rare) example of an incorporated agent. Notably, it fits the unusual conditions that such an incorporated noun must satisfy: it is inanimate, non-specific, and non-topical. Such agents in natural discourse are quite unusual, and even in elicitation speakers may indeed find such constructions to be so unusual as to be borderline in acceptability. Nevertheless, the existence of examples such as discussed in this section suggests that there are few, truly syntactic, restrictions on the grammatical functions to which incorporated nouns may be linked in Gunwinyguan languages, and thus that their similarities to compounding more generally has perhaps been understated.

3. Differences between compounds and incorporation constructions

Despite the similarities between incorporation constructions and compounding in terms of the grammatical relations that may obtain between the IN and the verb, discussed in §2.1, there are nevertheless substantial differences between them (see also Evans, 2003, for similar arguments in the related language Bininj Gun-Wok).

¹¹ A common test of topic-hood is the ‘question test,’ (e.g. Gundel, 1974; Reinhart, 1982). "To determine the topic of a given utterance, one need simply determine the question that the utterance is used to answer in the context—the topical elements are those elements of the utterance which are also contained in the question" (Hedberg, 1990). It’s difficult to apply the question test in this case, since we cannot be sure that our intuitions as non-native speakers of what the relevant question might be are really valid.

Firstly, incorporated nouns are syntactically active in a way in which compound elements are not. Secondly, incorporation produces constructions which are interpreted phrasally, not lexically. I discuss each of these points in turn.

Incorporated nouns are syntactically active for a number of processes. They can be externally modified by numerals (32), demonstratives (33) and other modifiers.

- (32) nga-ni-lanarr-wawayuwaa (na-)wulawaa
 1sg-3MASC-toenail-cut.PC MASC.TOP-two
 ‘I cut two toenails.’

- (33) ngaya anaani nga-lanarr-wawayuwini, ngayajbaj anaani
 1sg NEUT.PROX 1sg-toenail-cut.REFL.PC me.myself NEUT.PROX
 ‘I cut this/these toenail(s).’

Modification of the elements of compounds, however, is completely impossible in Wubuy, as with compounds in English and other languages (see e.g. Lieber & Štekauer, 2009b). Evans (2003: 329) makes the same point with respect to Bininj Gun-Wok, providing these examples. In (34)a, we see an incorporated noun *yau* ‘child’ externally modified by the nominal form *daluk* ‘woman; female’, while in (34)b, we find that the noun *djol*, a constituent of the N+V compound *djol+ga+* ‘carry in pouch’ cannot be externally modified by an adjective such as *gimuk* ‘big’.¹²

- (34) a. al-daluk gabi-yau-garrm-e
 FEM-female 3/3-child-have-NP
 ‘She has a female child/a baby daughter.’
- b. *an-gimuk ga-yau-djol+ga-n
 MASC-big 3-child-pouch+take-NP
 ‘It is carrying a baby in its big pouch.’

¹² The noun *yau* ‘child’ is the one exception to the general rule that INs cannot be animates in Bininj Gun-Wok (Evans, 2003: 332).

Perhaps more surprisingly, incorporated nouns in Wubuy can be coordinated with external nouns, as discussed in Baker et al. (2010; see also Evans, 2003: 453 for examples in Bininj Gun-Wok). In (35), for example, the incorporated noun *wudu* ‘liver’ is coordinated overtly with a number of other body parts.

- (35) wirri-**wudu**-miyn, marri andhiri,
 3pl/NEUT-liver-get.PP and heart

marri bagalang wirri-ma-ngarrgiwayn
 and eye 3pl-VEG-cut.out.PP

‘They got the liver (NEUT), and heart (NEUT), and the eye (VEG) they cut out.’

In such constructions, as shown by Baker et al. (2010), all the coordinands must be at the same syntactic level. If the verb agrees with the IN, then all the external coordinated nouns must be in direct functions. If the verb agrees with the possessor of the IN, then all the coordinated nouns must be in the ‘relational’ noun class form, which Baker et al. (2010) argue is a kind of oblique marking. In short, it is clear that INs are ‘visible’ to syntax, in a way that bound morphemes are ordinarily expected not to be.

Coordination of INs with NPs is problematic for both the syntactic (movement) and the lexicalist accounts. In both cases, coordination of an IN with an NP as in (35) would involve a violation of Ross’s (1967: 161) Coordinate Structure Constraint (36), preventing extraction from a coordinate, as in (37):

- (36) *The Coordinate Structure Constraint*

In a coordinate structure, no conjunct may be moved, nor may any element contained in a conjunct be moved out of that conjunct (unless the same constituent is moved out of both conjuncts). (Ross, 1967: 161)

- (37) **What_i did Bill cook the spuds and _____i*

The strength of the CSC as a general constraint on coordination is a good reason to doubt the movement analysis (see e.g. Goodall, 1987 for more recent discussion of the syntax of coordination). However, coordination of INs also poses a challenge to standard lexicalist accounts of coordination. Firstly, only words, not parts of words, are standardly assumed to coordinate, since under a lexicalist analysis parts of words are not available to syntactic processes such as coordination (Chomsky, 1970). We would then be forced to claim that in such examples, an NP is coordinating with a verb. This violates the principle that only like categories (or “like” functions) can coordinate (Williams’ 1981 ‘Law of the Coordination of Likes; see also Goodall, 1987). The alternative is to argue (as in Baker et al., 2010) that the IN itself is coordinated in some level of syntax with the NP: f-structure, for instance. This would appear to be a violation of the principle that only words (i.e. syntactic leaves) can coordinate. In short, coordination of incorporated nouns with syntactic nouns is rather unexpected, on either model of syntactic theory discussed here.

There are other clear indications that incorporation structures differ from lexical compounds. Firstly, unlike true, lexicalised compounds, incorporation is ‘optional’ (in some sense) and incorporation constructions generally allow a syntactic paraphrase. Lexicalised compounds do not have this option (as discussed for the related language Bininj Gun-Wok by Evans, 2003: 338).¹³ Example (38), from Ngalakgan, is a lexicalised compound of the noun for ‘water’ plus a verb meaning ‘die’ which has the idiosyncratic interpretation ‘to be thirsty’. This compound cannot be expressed phrasally, as in the (b) form.

- (38) a. ngu-weh+nyarh-miny (Ngalakgan)
 1sg-water+die-PP
 ‘I’m thirsty’
- b. *weh ngu-nyarh-miny

¹³ However, there is some indication that certain verbs in Wubuy require a bodypart argument to be incorporated. This has also been found for Bininj Gun-Wok (Evans, 2003: 331) and Murrinh-Patha (Forshaw, 2011).

Apart from the syntactic evidence distinguishing compounding and incorporation, there are also significant semantic differences (although to my knowledge, these have not been explicitly discussed in the literature to date). Incorporation structures are generally interpreted not only in a fully compositional fashion, but they also have the same interpretations as phrases. They do not have the lexicalised, idiosyncratic interpretations of typical compounds (as in example (38)), but more generally, nor do they necessarily name ‘types’: institutionalised activities or entities, unlike typical compounds (see Downing, 1977 on this point). In essence, despite claims in the literature to the contrary (e.g. Mithun, 1984; 2009), incorporation does not appear to be generally used as a word-formation device in Australian languages which have it (see Baker, 2007). This is most clearly seen in the case of NI into adjectives (common to the other Gunwinyguan languages as well). As discussed in Baker & Nordlinger (2008), N-Adj incorporation structures are (with rare exceptions) interpreted as *phrases* in these languages. In this respect, N-Adj structures differ from otherwise analogous Adj+N compounds in languages such as English (examples from Heath, 1984: 471):

- (39) a. nuga-lharrdharrg ‘rough stone/stone to be rough’
stone-rough
b. magula-ngalngaluj ‘shiny skin/to have shiny skin’
skin-shiny
c. bagalang-dunggal ‘big eye/to have a big eye’
eye-big

Number words and certain other nominal modifiers can also incorporate their argument nouns, as in these examples (Heath, 1984: 471):

- (40) a. mun-ngaynjaabugij ‘one foot’
foot-one
b. ngal-aynbaj ‘another tree’
tree-another

It is difficult to imagine how these constructions could be construed in lexicalist terms: as predicates whose range is narrowed by the incorporated noun. They have exactly the kind of ‘relationship of a very temporary, fortuitous nature’ which Downing (1977: 822) argues is unlikely to favour lexicalisation as a compound in English.

Notably, N-Adj compounds (incorporations) in Gunwinyguan languages such as Wubuy never name ‘types’ or ‘kinds’, as they do in English and other languages. For example, Bloomfield’s (1949: 197) famous contrast between ‘black bird’ and ‘blackbird’ does not exist in Wubuy, Ngalakgan and other GN languages with incorporation. Rather, every combination of N and Adj is interpreted as an adjectival modification of the entity in the extension set of N. In formal semantic terms, we might say that English Adj-N or N-N compounds have the semantics of common nouns, $\langle e, t \rangle$, while N-Adj compounds in GN lges have the semantics typical of NPs with (intersective) Adjs: $\langle \langle e, t \rangle, \langle e, t \rangle \rangle$.

If we propose that speakers of GN languages such as Wubuy necessarily interpret N-Adj compounds phrasally, then we predict that N-Adj combinations in these languages should not have the lexicalised interpretations typical of compounds in English. This appears to be the case: some languages, like Ngalakgan, lack compounds of this kind altogether. Other languages, like Wubuy and Bininj Gunwok, possess only a handful of such compounds, but these are necessarily interpreted exocentrically, rather than endocentrically. In the 4000-odd word Nunggubuyu dictionary (Heath, 1982), there very few species terms that have the form of a compound, example (41) is one of them:

- (41) nguda-lharrdharrg
midriff-rough
‘king brown snake’

Notably, there are no endocentric compounds with the form ‘black bird’, ‘brown bear’, ‘white pine’ etc. which are so prevalent as species names in other languages (and see Baker, 2007, for further discussion of the characteristics of species names in Australian languages). I take this to be evidence that compound words are interpreted, by preference, as phrases, not as lexical items. Interpretations like

these force a model in which constituents of words can directly contribute to semantic interpretation, including construals of entities available for discourse, something which a strict lexicalist account will not permit.

The fact that Wubuy, Ngalakgan and other GN languages lack the most overwhelmingly common form of compounding in the world's languages—NN compounds with an endocentric interpretation (Guevara & Scalise, 2010: 116–119)—is evidence that the kind of word-formation process they do have is different in kind.

4. Conclusion

The Gunwinyguan languages provide important and otherwise unreported evidence about the kinds of grammatical relations that can be constructed between an incorporated noun and the hosting verb. Indeed, what we find is that the range of possible grammatical relations is quite large, and includes some grammatical relations and roles (such as Instrument, and subject of transitive) which have been previously claimed to be impossible. Moreover, the same combination of noun and verb can have a range of possible interpretations, suggesting a similar kind of ambiguity as has been claimed to be characteristic of compounds. Both of these pieces of evidence make a movement story (à la M. Baker, 1988; 1996) unlikely, for the reasons discussed. On the other hand, incorporated nouns are visible for syntax in a manner which makes them appear quite different to the constituents of typical compounds. In addition, the interpretation of incorporated nouns, particularly where the hosting head is an adjective or numeral, are in every case phrasal, rather than lexical in the sense of Downing (1977). I have proposed an intermediate account, where incorporated structures are 'constructions' formed relatively freely in the lexicon, like other phrasal and productive morphological constructions (following e.g. Baker, 2008; Booij, 2010a; Jackendoff, 2002). The advantage of this approach is that it captures the productivity and syntactic visibility of incorporation, without committing us to a lexicalised interpretation. However, the finer details of how to restrict the class of incorporable nouns (see Baker & Nordlinger, 2008), and how to distinguish the semantics of these constructions from other lexical constructions, remain as

problems to be addressed. A promising line of enquiry is the nature of the apparent restriction between incorporated nouns and sentence level topics, discussed in 2.3. Here, I have suggested that this restriction, which makes sense from the point of view of other formal semantic work on noun incorporation (e.g. Van Geenhoven, 1998a), may also enable us to account for some of the commonly observed constraints on the grammatical relations that incorporated nouns may enter into.

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