Noun Incorporation and Noun-Verb Compounding in the Aboriginal Languages of Australia

Henry Leslie-O'Neill *

1 Introduction

Noun incorporation (NI) has been discussed in the linguistic literature since the 1800s, beginning with documentation of highly polysynthetic Native American languages (e.g. Brinton, 1886). In the early 1900s, a seminal paper by Sapir, 1911 clarified confusion about the feature, distinguishing NI from other processes such as pronominal incorporation or noun-verb compounding (NVC), which laid the groundwork for the following century of research on NI. Most of this research focuses on analysing the morphosyntactic processes underlying NI (e.g. M. C. Baker, 1988; M. C. Baker et al., 2005; Caballero et al., 2008), as well as its semantics (e.g. Bonvillain, 1989; Tersis and Mahieu, 2006; Woodbury, 1975; see Massam, 2009 for a summary of NI literature). There is also much work on NVC (e.g. Bagasheva, 2011; Kim and Baldwin, 2006; Mellenius, 1996; Yoon, 2011; Zhang et al., 2010) and its differences from NI (e.g. M. C. Baker, 2014; Johns, 2007; Mellow, 1990; Mithun and Corbett, 1999).

Little attention, however, has been given to creating overarching typological comparisons of NI in the world's languages (Mithun, 1984 is a notable exception), especially outside of the Americas. NI is a prominent feature of many Australian Aboriginal languages, and while it is discussed within grammars of languages that have it (e.g. N. Evans, 2003; van Egmond, 2012), there exist only brief discussions of its distribution and variation across the continent (Nordlinger, 2014; Waters, 1989). In the present paper, I aim to contribute to the literature by providing a sketch typology of NI and NVC across Australia. In order to do this, I will first discuss two prominent works on NI that have greatly informed my typology.

2 Literature Review

Mithun's (1984) typology of NI and discussion of implicational universals relating to NI is one of the most influential works on the topic. She described four different types of NI, mainly distinguished based on functional discourse purposes, and ordered them in an implicational hierarchy such that if a language has Type-IV NI it also has Type-III, if it has Type-III it also has Type-II, and if it has Type-II it also has Type-I. I will briefly outline the four types here.

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Type-I: Incorporation to build a more complex meaning of the verb, usually only for actions that are "name-worthy": thus *mountain-climbing* is used but not *ladder-climbing* (Mithun, 1984, p. 848). The noun in this construction does not act as an argument to the verb, it simply modifies the meaning of the verb. Mithun seems to waver about whether English has NI or not, stating in the introduction that it does not, but continuing to use English examples as examples of NI.

Type-II: Incorporation to manipulate the argument structure of a sentence. In this process, an oblique argument is promoted to the position vacated by the noun that has been incorporated. Take the following example of Type-II NI from Yucatec Mayan (Bricker, 1978, in Mithun, 1984, p. 858):

(1) a. *k-in-č'ak-∅-k* *če'* *ičil* *in-kool*
INCOMP-I-chop-it-IMPF tree in my-cornfield
'I chop the tree in my cornfield.'

b. *k-in-č'ak-če'-t-ik* *in-kool*
INCOMP-I-chop-tree-TR-IMPF my-cornfield
'I clear my cornfield'

The oblique argument *inkool* 'my cornfield' in (1a) becomes a core argument in (1b), replacing *če* 'tree' which is now incorporated into the verb.

Type-III: Incorporation to reduce the saliency of a referent. When a referent is unimportant or previously mentioned, referring to it with a full noun phrase might draw attention away from the newer, more important referents. If that noun phrase is instead incorporated into the verb, it becomes less obstructive.

Type-IV: Incorporation of a noun classifier or a general noun to co-refer with a specific noun in the same sentence. This is exemplified in the following utterance in Bininj Kunwok (Oates, 1964, in Mithun, 1984, p. 867):

(2) ... *bene-dulg-naŋ* *mangaralaljmayn*
they.two-tree-saw cashew.nut
'... They saw a cashew tree.'

Here, the incorporated noun *dulg* 'tree' does not by itself indicate a particular tree; that only happens in conjunction with *mangaralaljmayn* 'cashew nut'.

These different types of NI provide a good sense of the uses of NI. However, the framework differs slightly from the present typology, in that Type-I NI is not considered to be true NI. Instead, Type-I is an example of NVC, which is discussed and defined below.

M. C. Baker (1988) provides a thorough analysis of NI from a formal generativist perspective. What is most interesting for us, however, is his outline of the difference between NI and noun-verb compounding (NVC). Both NI and NVC are processes which combine a noun and a verb into one complex unit, but Baker presents two significant differences between them: deverbalisation and specificity of reference. He argues that English only has NVC. When nouns and verbs are compounded in English, the new word is deverbalised and cannot act as the main verb of a clause (M. C. Baker, 1988, p. 78).

(3) a. *I picked berries yesterday.*
b. *Berry-picking is fun.*
c. *I went berry-picking yesterday.*
d. **I berry-picked yesterday.*

These examples show that when the noun *berry* is compounded with *pick*, the combination can only be a noun (3b) or a participle (3c) and is ungrammatical if used as the main verb (3d). A more recent paper, Feist (2013), contradicts this and shows many attested examples of constructions similar to (3d), such as *I probably would never have mountain climbed or skied without it* (Feist, 2013, p. 166). My own intuitions are that this kind of construction is something I would definitely say, but it does not seem wholly grammatical. Perhaps this is a relatively new construction, then, which may not have been used in the 80s. Thus, Baker's claim about English may be incorrect, however the deverbalisation distinction between NI and NVC is important and it is held in the present paper.

The second feature of NI that is not present in NVC is the possibility of retaining a specific referent (M. C. Baker, 1988). With NVC, such as in English, the noun is necessarily generic; with NI, the noun can be specific. Take the following pairs of utterances:

Nahuatl (F. Merlan, 1976, p. 185):

(4) A: *Ne tlakatl kontlamionik noa·*
That man 3SG-it-PV-finish-drank 1SG-water
'That man just drank up my water.'
B: *Ke·na, ne? kontlamia·onik, niyon ači*
Yes, 3SG 3SG-it-PV-finish-water-drank, not even a little
'Yes, he just finished it (the water) off; there's not even a little bit.'

English:

(5) A: *That man just drank up my water.*
B: *Yes, he is a water-drinker.*

In the Nahuatl example, the incorporated noun *a·* 'water' in B refers specifically to person A's water (F. Merlan, 1976). In the English example, the noun *water* in B cannot be understood to specifically refer to person A's water; it only entails that it is typical of *the man* to drink water, thus this is an example of NVC. This distinction between NI and NVC is also important, however it is harder to apply in typology since grammars are not likely to include enough examples to see a distinction. More generally this is a part of the fact that an incorporated noun remains part of the syntax of a sentence: it still refers to a distinct entity, it still acts as an argument of the verb, and so on. Compounded nouns, on the other hand, are removed from the syntax of a sentence, so their only function is a lexical influence on the meaning of the verb.

Definitions of NI, and distinctions between NI and NVC, are further discussed by many other authors. Theory driven analyses of NI come from many frameworks including LFG (B. Baker et al., 2010; Nordlinger and Sadler, 2008), formal lexicalist (Rosen, 1989), Construction

Morphology (B. Baker, 2014), Systemic Functional Grammar (Feist, 2013), and from a discourse perspective (F. Merlan, 1976). NI is also given a detailed treatment in many descriptive grammars (such as N. Evans, 2003; F. Merlan, 1988; Reid, 1990; Wilson, 2013). Seiss (2013) discusses the applicability of computationally analysing the morphology of Murrinh-Patha, including its NI. These perspectives have also been considered.

3 Method

Following from the works described above, I defined both NI and NVC to be processes whereby a noun is fixed to a verb. Instances of NI must also meet the following criteria:

- The noun-verb construction must continue to be a verb;
- The incorporated noun must continue to have a syntactic role within the clause, rather than only changing the meaning of the verb; and
- The process must be productive. There may be restrictions on which nouns or verbs can be used, but with those nouns and verbs the process must be productive.

NVC, on the other hand, fails to meet this criterion by:

- Resulting in a deverbalised word;
- Removing the noun from the syntax of a sentence; or
- Being unproductive.

English only has NVC, not NI, according to these criteria because the incorporated noun, such as those listed by Feist (2013), cannot remain part of the syntax of a sentence. The noun only modifies the meaning of the verb.

Other similar constructions that were not included in either of these sets were derivational affixes such as inchoatives, factitives, proprietives, and others which convert a noun into a verb, because in these cases there is no verb, only a verbalising affix. Compounds between verbs and preverbs, such as occurs in Warlpiri (Nash, 1986), were also not included, because there is no noun. The simplicity of my definitions here reflects my goal to use criteria that could be easily compared cross-linguistically rather than relying too heavily on a single theoretical framework that a) may not be equally applicable across different languages, and b) would be difficult to apply using the few examples included in most grammars.

Languages were chosen first to get a wide distribution across Australia, and then to narrow in on regions where NI exists in order to delineate potential linguistic areas. Some languages were chosen because they were mentioned in the literature as having NI, and the sample has not been controlled for factors such as genetic relations, topography, or culture. As this typology involved a small sample and has little precedence, my main goal was to produce a preliminary sketch of the geographical distribution of NI in Australia and some of the ways that it varies language to language, rather than developing robust conclusions as to the exact percentage of languages with NI. A total of 24 languages were included in this typology: 8 Pama-Nyungan

(PN) languages and 16 non-Pama-Nyungan (nPN) languages. Information on each language was mainly collected from grammars, but also from articles focusing specifically on NI (such as B. Baker, 2014; or Nordlinger, 2014).

I coded each language for a number of attributes. First I noted whether the language was PN or nPN, as well as its (sub-)family, and the area where it is predominantly spoken. If a grammar did not mention NI or NVC but had a detailed description of the language's morphology, I assumed these processes did not exist and marked that section as 'U' for 'unmentioned' (An author could not, after all, mention every feature that does *not* exist in the language). If a grammar did not mention them but did not have such a detailed description, another resource was found or that language was not included. Some grammars specifically denied the existence of NI or NVC in that language, in which case that was marked as 'N' and the rest of the grammar was examined to ensure there was not just a difference in definition between me and the author.

If the language had NI or NVC, I then noted if these processes were productive. NI is necessarily productive according to my criteria, so this section is more informative for languages with only NVC. If the language had NI, I also noted whether there appeared to be a restricted category of nouns that could be incorporated or verbs that could have nouns incorporated into them. I also ranked languages on Mithun's scale, where evident. Finally, I noted whether the language had NI according to my own criteria laid out above. Because of my clearly laid out criteria for NI and NVC, classifying each language was fairly straightforward. The fact that the assessment of the existence of NI according to my criteria consistently agreed with the authors' is evidence that these criteria accurately represent the understanding of NI in the literature. This agreement could also be due to confirmation bias on my part, which I did my best to suppress, or due to the fact that if the author thinks NI exists they will mention it and provide examples, whereas if they think it does not exist (even when it might) they will not mention it nor give examples of it.

4 Results and Discussion

Table 1 summarises the existence of NI in the sampled languages:

	Body parts <	**General nouns <**	**Non-'natural kind' nouns <**	**'Natural kind' nouns**
NI	Murrinh-Patha	Anindilyakwa	Dalabon	?
	Ngan'gityemerri	Bininj Kunwok	Ngalakan	?
		Tiwi	Wubuy	?
NVC	Kuuk Thaayorre	?	Ritharr'ngu	?

Table 1: A tentative hierarchy of incorporable noun sets in Aboriginal languages

No PN languages had NI, and half the nPN languages had NI. Controlling for genetic biases by comparing language families (sub-families for PN languages) rather than languages, NI appears to exist in around a third of nPN language families (Table 3). As has been stated, the small and barely controlled sample in this study means that these results are very tentative. All languages with NI also had restrictions on what sets of nouns could be incorporated, as

	NI Exists (My Criteria)	
	Y	**N**
PN	0	8
nPN	8	8
Total	8	16

Table 2: NI in PN and nPN languages

	NI Exists (My Criteria)	
	Y	**N**
PN	0	8
nPN	3	7
Total	3	15

Table 3: NI in PN and nPN languages

did some languages with only NVC. Body parts were always incorporable in these languages. Some languages also incorporate general nouns (e.g. Bininj Kunwok (N. Evans, 2003)) or some other small set of nouns (e.g. Ngalakan (F. Merlan, 1988)). In Dalabon and Wubuy, all nouns are incorporable except those from the 'natural kind' class; in fact no Gunwingguan languages allow incorporation of 'natural kind' words (B. Baker, 2014; Ponsonnet, 2015). Thus we can construct an implicational hierarchy, where each level subsumes all the levels to its left:

More research would have to be done a) to find if there are any Australian languages that incorporate 'natural kind' nouns (i.e. no restrictions), b) to delineate the third level so that a language like Ngalakan, which only incorporates a few nouns that are not body parts or general, is distinct from a language like Dalabon, which incorporates *all* nouns except 'natural kind', c) to see if the same hierarchy holds for languages elsewhere in the world, and d) to determine why such a hierarchy exists. A partial explanation may lie in Van Egmond's (2012) argument that incorporable generic nouns have largely developed by semantic extension from body part incorporables, thus entailing that if a language has generic incorporables it must already have body part incorporables.

Mithun (1984) discusses two reasons explaining the prevalence of body part incorporation. First, body parts are closely related to many actions expressed by verbs, both as part of the agent and part of the patient (when those agents and patients are humans or animals), so having ways to easily specify body parts is useful. For example, if one person hits another, body parts are necessarily involved and NI allows speakers to specify what body part is used in the hitting (e.g. *hand-hit, foot-hit*) or what body part is being hit (e.g. *face-hit* 'to hit in the face'). Second, when a body part is incorporated, the possessor of that body part can be promoted from an oblique to a core argument (Mithun's Type-II NI), which is symbolic of the possessor's role in the action. For example, a sentence like *the man's hand hit the wall* can become *the man hand-hit (punched)* the wall, which focuses more on the agentive role of the man rather than the hand.

No languages with NI had restricted sets of verbs that could be used. Two languages with productive NVC did: Kayardild could only productively compound with the verbs *marutha* 'put' and *barrwaaja* 'block off' (N. D. Evans, 1995, p. 291); and Yankunytjatjara with verbs of stance (e.g. 'lying', 'sitting', 'standing'), *tju-n* 'put', *pu-ng* 'hit', and several others (Goddard, 1985, pp. 120–121).

Attempting to code for where a language lies on Mithun's scale was not successful. The only values that could be reliably entered were Type-I and Type-IV. Because Mithun's Type-I

NI corresponds to my definition of NVC, if a language had NVC but not NI it was clearly Type-I. Ngan'gityemerri, Tiwi, and Wubuy could all be shown to be Type-IV because the author either explicitly discussed Mithun's types and showed that it was Type-IV (for Wubuy: B. Baker, 2014; and for Tiwi: Wilson, 2013), or they gave example sentences where Type-IV NI was clearly happening (Ngan'gityemerri: Reid, 1990). I found no evidence that a language was Type-II or III but not IV. The definition of Type-III is based on intent of the speaker, which is hard to extract from the sentences given in a grammar; Type-II is theoretically easier to find evidence for, as it is a clear structural process, but I found none.

All languages with NI also had NVC. This implication aligns with Mithun's (1984) findings: using her terms, all languages with Type-II, III or IV NI also have Type-I. This is not a trivial finding, because, although NVC seems like an undeveloped version of NI, they are separate processes according to my definitions and it would be theoretically possible for a language to have NI and not NVC.

Figure 1 shows the results of the NI typology laid out on a map, with the approximate area where each language is spoken as given by AIATSIS ("AIATSIS map of Indigenous Australia," 2015), and the line between PN and nPN languages taken from Harvey (2011). NI appears to only occur in the north of the NT and only in nPN languages. Figure 2 shows a detail of this area.

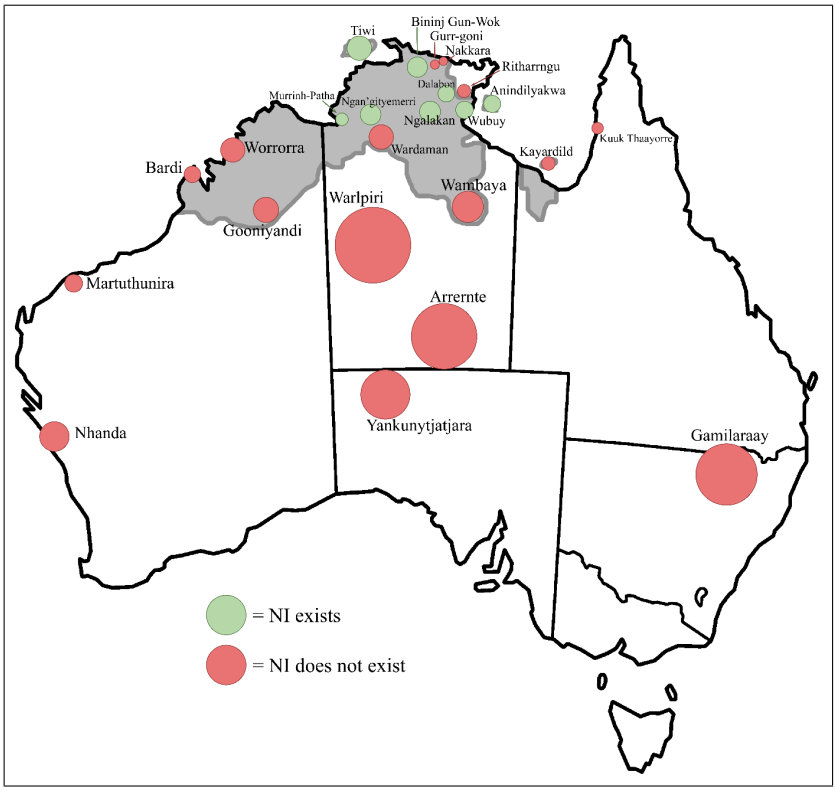

Figure 1: Map of NI in 24 Aboriginal languages across Australia

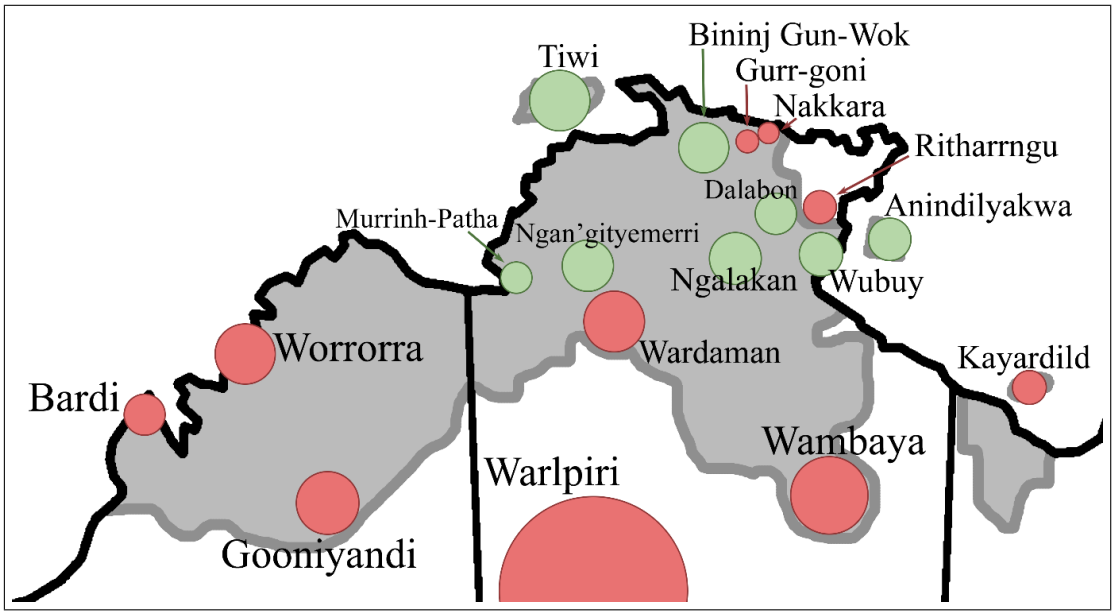

Figure 2: Detail of NI in nPN areas of northern Australia

Thus there is some evidence that NI is an areally diffused feature, since languages in this contiguous area that are not genetically related share NI and languages outside of it do not have NI, such as the nPN languages of northern WA, central NT, or western QLD. However, the sample is small, especially if counting by language family, therefore these conclusions are tentative. Historical reconstructions could further clarify whether this area of NI is due to areal influence or merely coincidence. Bininj Kunwok, Dalabon, Ngalakan and Wubuy are all Gunwingguan languages and therefore NI is shared among these languages due to genetic relations rather than areal diffusion. I. Green (2003) also shows that Murrinh-Patha and Ngan'gityemerri are genetically related, with their similar verbal auxiliary systems as evidence.

It would be interesting to see, in the future, whether the languages on the border of the NI area (such as Wardaman, and the Maningridan and Yolngu languages) begin to develop NI. Indeed, there is some evidence that this is happening if we look at the map of NVC in Australia (Figure 3).

Gurr-goni has non-productive NVC, and Ritharr'ngu, Kayardild, and Kuuk Thaayorre to the east all have productive NVC. Given that having NVC appears to be a pre-requisite for having NI, perhaps this is evidence that NI is spreading. Contradictory to this theory, however, is van Egmond's (2012) statement that use of NI is declining in Anindilyakwa. Perhaps some of these languages with NVC only are like Anindilyakwa, they historically had NI but are now only using the more general NVC. This especially makes sense for languages with non-productive NVC: those compound verbs might be fossils from a time of productive NI. The NVC across the rest of the country, furthermore, such as in Yankunytjatjara, Arrernte and Nhanda, cannot be explained by this spreading theory (Blevins, 2001).

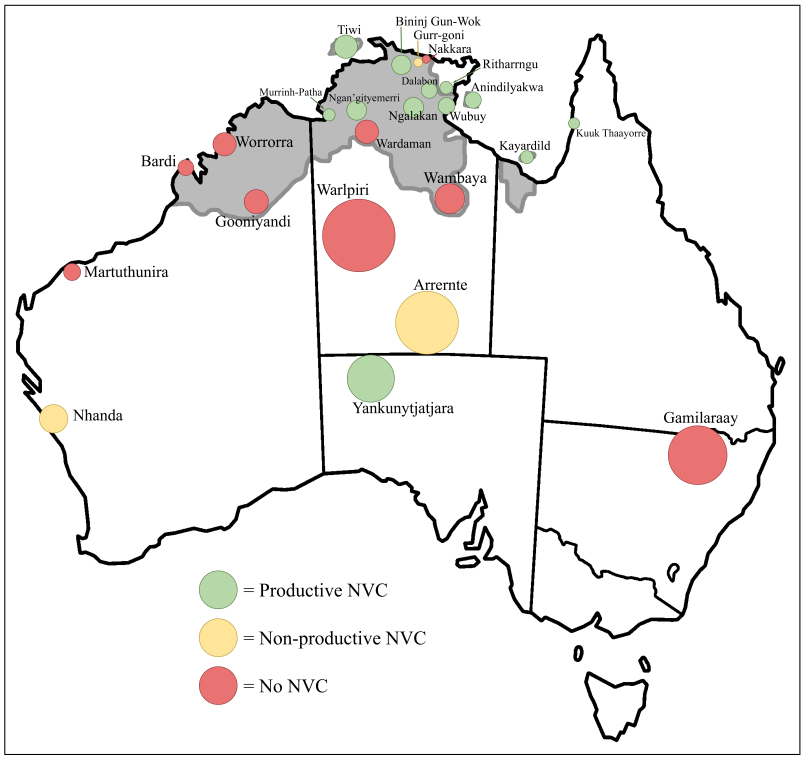

Figure 3: Map of NVC across Australia

5 Conclusion

This typology has provided the beginnings of an overarching cross-linguistic understanding of noun incorporation and noun-verb compounding in Australian Aboriginal languages. It has shown that NI is a fairly common feature of the non-Pama-Nyungan languages in a contiguous region in the north of the NT, but is non-existent elsewhere. NVC exists in all languages with NI as well as some others, especially on the border of the NI region. An implicational hierarchy of incorporable noun sets was found, with representative languages for each level except the hypothetical maximum level, which would include languages that can incorporate any and all types of nouns. The possibility that NI is spreading or diminishing was also discussed.

There are many topics where future research could build on our understanding of the similarities and differences of NI across Australia: comparing which grammatical or semantic roles can be incorporated (B. Baker, 2014; Mithun, 1984), whether incorporation is the marked or unmarked construction compared to its unincorporated paraphrase (N. Evans, 2003), diachronic accounts of NI and its potential development from or contraction towards NVC (Singer, 2011). Further refining and finding evidence for or against the hierarchy of incorporable noun sets would be another interesting topic, as well as comparing whether languages from the same level actually incorporate the exact same nouns or if there is variation, e.g. what counts as a body part (N. Evans, 2003).

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