Some notes on pseudo noun incorporation on Niuean*

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1 Background

Ball (2004) presents two alternative LFG analyses of pseudo noun incorporation (PNI) in Niuean: the PRED ARG analysis (PA) and the Lexical Sharing Analysis (LS). He notes a number of theoretical and empirical problems with each analysis. In these notes, I present a synthesis of the two analyses and show that it solves all of the problems noted. It should be mentioned that I am working exclusively from Ball's handout.

These notes build on fundamental insights that are already present in Ball (2004). The two key insights are:

1. The incorporated nominal is not a grammatical function of the incorporating verb (from the PA).

2. The Verb+Noun incorporation unit is syntactically inseparable (based on the LS, but without the assumption that Verb+Noun are a single *lexical* item).

The contribution of these notes is to cash these insights out as follows:

1. The incorporated noun is a non-projecting $\hat{\text{N}}$ (Toivonen 2003) that head-adjoins to the incorporating verb.

2. The incorporated noun is an argument of the incorporating verb at s(emantic)-structure, but not at f-structure.

Again, I want to stress that these new proposals simply permit a synthesis of what is already in Ball (2004) as the PRED ARG analysis and the Lexical Sharing analysis. In effect, they permit a version of the LS analysis that contains the crucial insight behind the PRED ARG analysis.

The first of these proposals is an adaptation of the crucial aspect of Ball's Lexical Sharing analysis. The second of these proposals is based on my analysis of relational nouns (Asudeh 2005). The basic

*These notes are based on the LFG 2004 presentation of Doug Ball and the subsequent paper, Ball (2004). They were originally circulated in 2004, but have been revised slightly. Work based on these notes and Ball (2004) was presented at the LSA in 2005 (Asudeh and Ball 2005). My thanks to Doug Ball for his stimulating original work and discussion of these issues and the subsequent collaborative work on this project, which presented at the LSA. My thanks also to Lachlan Duncan, Peter Sells and Ida Toivonen for helpful discussion and comments. Ball (2004), and these notes as a result, draw heavily on Massam (2001). My thanks to Diane Massam for subsequent email discussion of Asudeh and Ball (2005).

insight of the relation nouns analysis is that relational nouns have an argument at semantic structure that can participate in semantic binding (by a quantifier, for example). However, the argument is invisible to syntactic processes. In the relational noun case, the syntactic process in question is resumption. The basic idea, then, is to cash out the idea in Ball's PA proposal that the incorporated nominal is not a syntactic argument and to maintain the idea that it is nevertheless semantically related to the verb, but without the considerable innovative machinery and theoretical revisions that would result from the PA. The analysis of incorporation as a non-projecting semantic argument (the NPSA analysis) that I propose below assumes only that there is a level of semantic structure and that there are non-projecting words, both of which have been independently and extensively motivated in the LFG literature.

The rest of these notes are structured as follows. In the following section I present the analysis by looking at a basic example of pseudo-incorporation in Niuean based on Ball (2004). I show how both the syntax and semantics work, since the NPSA essentially hinges on aspects of both syntax and semantics. I address a number of different ways to handle various issues. I then show how modifiers work on the analysis, which is straightforward on Ball's assumption that there is a structural difference between modifiers that are allowed in incorporation (adjectives and prepositional phrases) and those that are not. I finish with a discussion of how the analysis resolves the empirical and theoretical problems noted by (Ball 2004).

2 Niuean pseudo noun incorporation as incorporation of a non-projecting semantic argument

As mentioned in the introduction, I'll refer to this as the non-projecting semantic argument analysis (NPSA).

I'll use the following sentence from Ball's handout to show the analysis:

(1) Ne inu kofe a Sione.
PAST drink coffee ABS S.
Sione drank coffee.
Lit. *Sione coffee-drank.*

Let's assume that there's some lexical process that takes a transitive verb and turns it into an incorporating verb. For example, the normal transitive verb *inu* ('drink') in (2a) becomes the incorporating verb in (2b).

(2) a. *inu*: V^0 $(\uparrow \textsc{pred}) = \text{‘drink}\langle(\uparrow \textsc{subj}),\ (\uparrow \textsc{obj})\rangle\text{’}$

$\lambda x \lambda y.drink(x,\ y)\ :\ (\uparrow\ \textsc{subj})_\sigma \multimap (\uparrow\ \textsc{obj})_\sigma \multimap \uparrow_\sigma$

b. *inu*: V^0 $(\uparrow \textsc{pred}) = \text{‘drink}\langle(\uparrow \textsc{subj})\rangle\text{’}$

$\lambda P \lambda x.\exists y[drink(x,\ y)\ \wedge\ P(y)]$:
$[(\uparrow_\sigma \text{ ARG VAR}) \multimap (\uparrow_\sigma \text{ ARG RESTR})] \multimap [(\uparrow\ \textsc{subj})_\sigma \multimap \uparrow_\sigma]$

Crucially, there is valence reduction involved. The incorporating verb is intransitive. This accounts for the absolutive case marking on the subject, assuming general case-marking principles of the usual kind. Alternatively, relevant f-descriptions could be added to the lexical entries in the usual manner. The Glue meaning constructor for (2a) is just a standard transitive verb meaning constructor. The Glue for the incorporating verb is more complex. I'll return to it below.

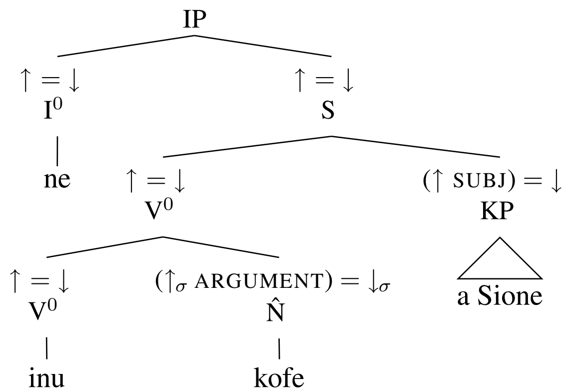
One of the key assumptions of this proposal is that the incorporated noun is a non-projecting word. Again, let's assume that there is some lexical process that takes common nouns of category N^0 and turns them into common nouns of category $\hat{N}$. Alternatively, nouns can be ambiguous between the two categories by having the category N (Toivonen 2003). It doesn't matter for present purposes which alternative is chosen. The c-structure rule for incorporation can then be stated as follows:

(3) $$V^0 \longrightarrow \begin{array}{cc} V^0 & \hat{N} \\ \uparrow = \downarrow & (\uparrow_\sigma \text{ ARGUMENT}) = \downarrow_\sigma \end{array}$$

We see that this rule brings a second assumption into play: the incorporated noun is an argument of the verb at semantic structure, but it does not bear a grammatical function.

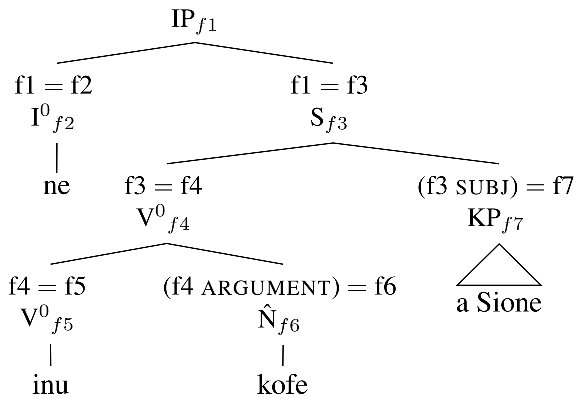
Assuming other standard c-structure rules, we get the c-structure in (4) for the Niuean example in (1) above:

(4)



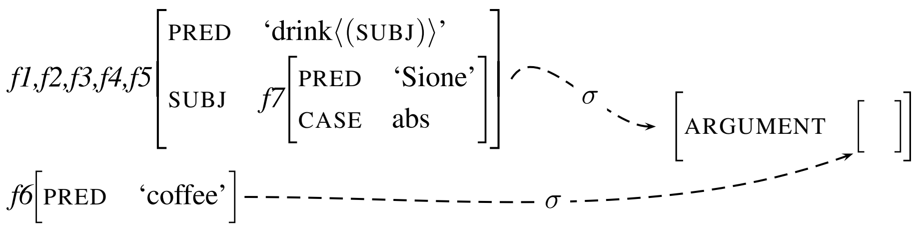
However, this c-structure is potentially problematic in the f-structure it constructs. Instantiating the up and down metavariables, the c-structure becomes:

(5)



This constructs the following f-structures:

(6)



The potential problem is that there is nothing connecting the f-structure *f6* to the larger f-structure. In fact, the semantics and so on would work out due to the connection at sem-structure. Such disconnected f-structures are not in principle ruled out by LFG theory, so there is no real problem.

However, should one desire the representational expedience of a connected f-structure, we can introduce a basically innocuous f-structure feature to perform the embedding. The incorporation c-structure rule is revised as follows:

(7)
$$\begin{array}{ccccc} V^0 & \longrightarrow & V^0 & & \hat{N} \\ & & \uparrow = \downarrow & & (\uparrow_\sigma \text{ ARGUMENT}) = \downarrow_\sigma \\ & & & & (\uparrow \text{ INCORPORATE}) = \downarrow \end{array}$$

Now we get a single f-structure:

(8)
$$f1,f2,f3,f4,f5\left[\begin{array}{ll} \text{PRED} & \text{‘drink}\langle(\text{SUBJ})\rangle\text{’} \\ \text{SUBJ} & f7\left[\begin{array}{ll} \text{PRED} & \text{‘Sione’} \\ \text{CASE} & \text{abs} \end{array}\right] \\ \text{INCORPORATE} & f6\left[\begin{array}{ll} \text{PRED} & \text{‘coffee’} \end{array}\right] \end{array}\right] \xrightarrow{\sigma} \left[\begin{array}{ll} \text{ARGUMENT} & [\;] \end{array}\right]$$

If we don’t treat INCORPORATE as a governable grammatical function, then there is no problem with Coherence. Think of it as a more specific, non-set-valued type of ADJUNCT. This would also go some way to capturing the essentially modificational (as opposed to saturating) nature of incorporated nominals. The semantic structure is unaffected by the change.

In fact, instead of using the feature INCORPORATE, we could just treat the incorporate as an ADJ. This has the advantage of using no new machinery. However, it also means the incorporate would not be distinguished in any way among the verb’s adjuncts. This may prove to be a disadvantage. On the incorporate-as-adjunct view, we would replace the c-structure rule in (3) with:

(9)
$$\begin{array}{ccccc} V^0 & \longrightarrow & V^0 & & \hat{N} \\ & & \uparrow = \downarrow & & (\uparrow_\sigma \text{ ARGUMENT}) = \downarrow_\sigma \\ & & & & \downarrow \in (\uparrow \text{ ADJ}) \end{array}$$

This would yield the following sort of f-structure:

(10)
$$\left[\begin{array}{ll} \text{PRED} & \text{‘drink}\langle(\text{SUBJ})\rangle\text{’} \\ \text{SUBJ} & \left[\begin{array}{ll} \text{PRED} & \text{‘Sione’} \\ \text{CASE} & \text{abs} \end{array}\right] \\ \text{ADJ} & \left\{\left[\begin{array}{ll} \text{PRED} & \text{‘coffee’} \end{array}\right]\right\} \end{array}\right] \xrightarrow{\sigma} \left[\begin{array}{ll} \text{ARGUMENT} & [\;] \end{array}\right]$$

Notice that the mapping to the semantics is unaffected. Although the incorporate is an ADJUNCT at f-structure, it is still a semantic argument at sem-structure.

The INCORPORATE approach has another potential advantage, though. Rather than stating that the incorporate is a semantic argument of the verb on the c-structure rule, if we simply identify the incorporate as in the revised rule in (11) below, then the verb can lexically state that its INCORPORATE is its sem-structure argument through the addition of the equation in (12).

(11)
$$\begin{array}{ccccc} V^0 & \longrightarrow & V^0 & & \hat{N} \\ & & \uparrow = \downarrow & & (\uparrow \text{ INCORPORATE}) = \downarrow \end{array}$$

(12) $(\uparrow \text{INCORPORATE})_\sigma = (\uparrow_\sigma \text{ ARGUMENT})$

As mentioned above, treating the incorporate as an ADJUNCT will make lexical identification of the semantic argument more difficult, since the ADJUNCT feature is set-valued and there is no easy way to tell which of the unlimited number of adjuncts is the incorporate. However, it would be possible to add a feature inside the incorporated adjunct that identifies it as an incorporate. Such a feature would also be necessary on the adjunct view to make sure that stranded modifiers map to the *same* adjunct (see the next section). Although none of the ADJUNCT issues seem insurmountable, on balance it seems that the INCORPORATE approach is simpler, so I'll use it in the rest of these notes. I'll also adopt the c-structure rule in (7), which puts the sem-structure annotation in the c-structure, simply because it makes the trees a little easier to draw. It might seem novel to have a sem-structure annotation in the c-structure (although see Dalrymple's (2001) treatment of relatives in English), so this might be a different presentational reason to adopt the lexical approach. These various choices need to be looked into more carefully.

The semantics work out as follows on this approach. The incorporating verb contributes two meaning constructors, as in (2b) above. The incorporated noun contributes a normal common noun meaning constructor (see Dalrymple 2001):

(13) $\lambda x.\mathit{coffee}(x) : (\uparrow_\sigma \text{ VAR}) \multimap (\uparrow_\sigma \text{ RESTR})$

The proper name also contributes its usual kind of meaning constructor. I'll leave aside the tense-aspect marker for simplicity's sake. It doesn't matter whether we instaniate the premises according the f-structure labels in (6) or (8) (it works out the same either way). However, it's easier to use mnemonic labels for the premises, so let's relabel the f-structure, picking (8) for no particular reason:

(14)
$$d\begin{bmatrix} \text{PRED} & \text{`drink}\langle(\text{SUBJ})\rangle\text{'} \\ \text{SUBJ} & s\begin{bmatrix}\text{PRED} & \text{`Sione'}\\ \text{CASE} & \text{abs}\end{bmatrix} \\ \text{INCORPORATE} & i\begin{bmatrix}\text{PRED} & \text{`coffee'}\end{bmatrix}\end{bmatrix} \xrightarrow{\sigma} \begin{bmatrix}\text{ARGUMENT} & \begin{bmatrix}\text{VAR} & [\,]\\ \text{RESTR} & [\,]\end{bmatrix}\end{bmatrix}$$

Using these labels, we get the following set of Glue premises, with the contributor indicated to the right:

(15)

1. $\lambda P \lambda x.\exists y[\mathit{drink}(x,\ y) \ \wedge\ P(y)] :$ $(v \multimap r) \multimap (s \multimap d)$	Lex. **inu**
2. $\lambda x.\mathit{coffee}(x) : v \multimap r$	Lex. **kofe**
3. $\mathit{sione} : s$	Lex. **a Sione**

Notice that I've abbreviated $(i_\sigma \text{ VAR})$ as v and $(i_\sigma \text{ RESTR})$ as r.

The premise for the incorporating verb uses Chung and Ladusaw's (2003) notion of restriction and builds in the semantics of their Restrict operator. The idea behind restriction is that the incorporated common noun further restricts the property denoted by the incorporating verb. Restriction on its own is especially appropriate for incorporation that allows subsequent saturation:

(16) I cat-fed Fluffy.

I don't know what the facts of Niuean are, but Ball's handout I think at least implies that it shouldn't be possible, since Niuean is contrasted with West Greenlandic, a language that does allow this kind of construction. Chung and Ladusaw (2003) discuss existential quantification as a way of closing off the incorporated argument to further saturation (existential closure), which is the option I've exercised here.

Note that this semantics commits us to there being some particular entity that is the second argument of the incorporating verb and restricts what this entity can be. For the sentence (1), it commits us to there being a particular coffee that Sione drank. This may not be appropriate. An alternative is suggested by Chierchia's (1984) nominalizing type shift (see also Partee 1987). This type shift takes a common noun denoting a property (type $\langle e, t\rangle$) and returns a nominalization of that property (type *e*). Application of the nominalization type shift to common nouns produces the kind of meaning that's appropriate for mass nouns or bare plurals in Chierchia's (1984) system. The following alternative lexical entry for the incorporating version of *inu* demonstrates this:

(17) *inu*: V^0 $(\uparrow \text{PRED}) = \text{‘drink}\langle(\uparrow \text{SUBJ})\rangle\text{’}$

$$\lambda x \lambda y.drink(x,\ y)\ :\ (\uparrow\ \text{SUBJ})_\sigma\ \multimap\ (\uparrow_\sigma\ \text{ARGUMENT})_\sigma\ \multimap\ \uparrow_\sigma$$

$$\lambda P.{}^\cap P\ :\ [(\uparrow_\sigma \text{ ARG VAR}) \multimap (\uparrow_\sigma \text{ ARG RESTR})] \multimap (\uparrow_\sigma\ \text{ARG})$$

The result of, e.g., composing the incorporating verb *inu* with *kofe* would be: $\lambda x.drink(x,\ {}^\cap coffee)$. Using the nominalization option allows identical composition of modifiers (see the next section), although the overall composition of the verb with its arguments would be slightly different. However, I'll continue with the restriction/existential closure option introduced above, since it's a little easier to understand.

Returning to the premises in (15), we get the following proof:

(18)

$$\dfrac{\dfrac{\dfrac{\begin{array}{l}\lambda P \lambda x.\exists y[drink(x,\ y)\ \wedge\ P(y)] :\\ (v \multimap r)\ \multimap\ (s\ \multimap\ d)\end{array}\qquad \lambda x.coffee(x) : v \multimap r}{\lambda x.\exists y[drink(x,\ y)\ \wedge\ (\lambda x.coffee(x))(y)] : (s\ \multimap\ d)}\multimap_{\mathcal{E}}}{\lambda x.\exists y[drink(x,\ y)\ \wedge\ coffee(y)] : (s\ \multimap\ d)}\Rightarrow_\beta \qquad sione : s}{\exists y[drink(sione,\ y)\ \wedge\ coffee(y)] : d}\multimap_{\mathcal{E}}$$

So the upshot of the analysis is that the incorporated noun gets properly integrated into the semantics, despite not being a syntactic argument. This is analogous to the treatment of the argument of a relational noun in Asudeh (2005).

3 Modifiers

Ball (2004) notes that certain modifiers — post-nominal adjectives and prepositional phrases — can occur with an incorporated noun. This is explained by his assumption that these modifiers adjoin to NP. The inability of relative clauses to occur with incorporated nominals is explained by their adjunction to the larger nominal category KP. Ball's basic idea is exemplified in his discussiion of the Lexical Sharing analysis, where an incorporated noun strands an NP containing its adjunct.

I will adopt this idea but adapt it to the non-projecting semantic argument (NPSA) analysis sketched in the previous section. The crucial change to Ball's proposal is that the stranded nominal does not have the core GF of OBJ. Rather, it is assigned the same f-structure feature as the incorporated noun: INCORPORATE or ADJ (I'll again go with the former for simplicity's sake). Nothing further needs to be said to handle adjuncts, then.

We will need a c-structure rule to introduce the incorporation remnant:

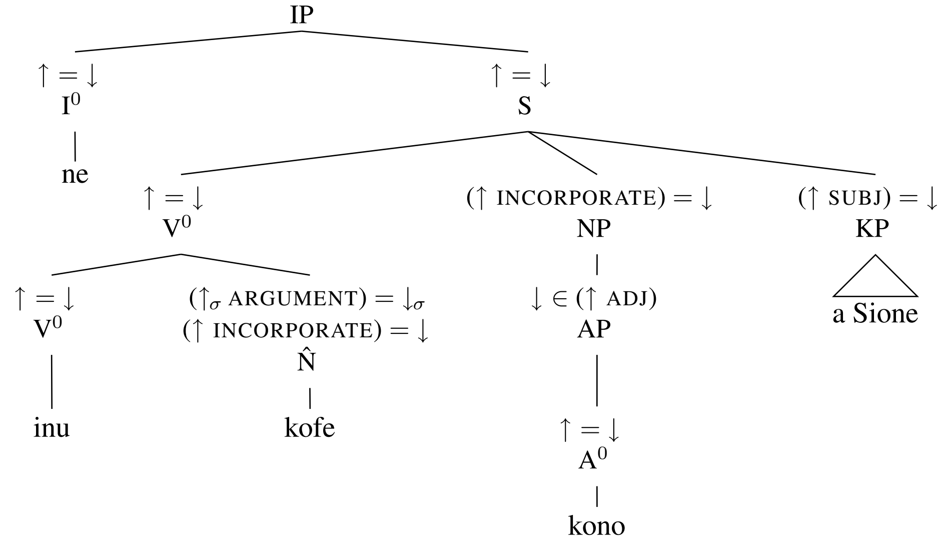
(19) $\begin{array}{cccc} \text{S} \longrightarrow & \text{V}^0 & \text{NP} & \text{KP}^+ \\ & \uparrow = \downarrow & (\uparrow \text{INCORPORATE}) = \downarrow & (\uparrow \text{GF}) = \downarrow \end{array}$

Let's make the usual assumption that all c-structure rule elements are optional. This saves me having to draw the parentheses in explicitly.

Taking the example (20) from Ball (2004) we get the c-structure in (21):

(20) Ne inu kofe kono a Sione.
PAST drink coffee bitter ABS S.
Sione drank bitter coffee.
Lit. *Sione bitter-coffee-drank.*

(21)



Note that Toivonen's (2003) X-bar theory allows the kind of vacuous adjunction that occurs in the NP-rooted sub-tree in (21).

The resulting f-structure is:

(22)
$$d\begin{bmatrix} \text{PRED} & \text{'drink}\langle(\text{SUBJ})\rangle\text{'} \\ \text{SUBJ} & s\begin{bmatrix} \text{PRED} & \text{'Sione'} \\ \text{CASE} & \text{abs} \end{bmatrix} \\ \text{INCORPORATE} & i\begin{bmatrix} \text{PRED} & \text{'coffee'} \\ \text{ADJ} & \left\{ b\begin{bmatrix} \text{PRED} & \text{'bitter'} \end{bmatrix} \right\} \end{bmatrix} \end{bmatrix} \xrightarrow{\sigma} \begin{bmatrix} \text{ARG} & \begin{bmatrix} \text{VAR} & [\,] \\ \text{RESTR} & [\,] \end{bmatrix} \end{bmatrix}$$

This is just the usual LFG solution for dealing with separated c-structure elements that map to the same f-structure (cf. Warlpiri in Joan's book, for example).

We assume the usual kind of meaning constructor for an intersective adjective (Dalrymple 2001):

(23)
$$\begin{array}{l} \lambda P \lambda x. P(x) \wedge bitter(x) : \\ [((\text{ADJ} \in \uparrow)_\sigma \ \text{VAR}) \multimap ((\text{ADJ} \in \uparrow)_\sigma \ \text{RESTR})] \ \multimap \\ \quad [((\text{ADJ} \in \uparrow)_\sigma \ \text{VAR}) \multimap ((\text{ADJ} \in \uparrow)_\sigma \ \text{RESTR})] \end{array}$$

The adjective is just an intersective modifier on its common noun. It consumes the common noun meaning to produce a new meaning for the common noun that has the adjective's contribution conjoined to it. In this case the result would be $\lambda x.\mathit{coffee}(x) \wedge \mathit{bitter}(x)$, the property of being coffee and bitter.

Assuming premises for the other words as in the previous section, we get the following set of premises for (20):

(24)

1. $\lambda P \lambda x.\exists y[\mathit{drink}(x,\ y)\ \wedge\ P(y)]$: $(v \multimap r)\ \multimap\ (s\ \multimap\ d)$	Lex. **inu**
2. $\lambda x.\mathit{coffee}(x) : v \multimap r$	Lex. **kofe**
3. $\lambda P \lambda z.P(z) \wedge \mathit{bitter}(z)$: $(v \multimap r)\ \multimap\ (v \multimap r)$	Lex. **kono**
4. $\mathit{sione} : s$	Lex. **a Sione**

These premises give the following proof:

(25)

$$\dfrac{\dfrac{\begin{array}{c}\lambda P \lambda x.\exists y[\mathit{drink}(x,\ y)\ \wedge\ P(y)] :\\ (v \multimap r)\ \multimap\ (s\ \multimap\ d)\end{array} \qquad \dfrac{\lambda x.\mathit{coffee}(x) : v \multimap r \qquad \begin{array}{c}\lambda P \lambda z.P(z) \wedge \mathit{bitter}(z) :\\ (v \multimap r)\ \multimap\ (v \multimap r)\end{array}}{\lambda z.\mathit{coffee}(z) \wedge \mathit{bitter}(z) : v \multimap r}\ {\multimap_{\mathcal{E}}}, \Rightarrow_\beta}{\lambda x.\exists y[\mathit{drink}(x,\ y)\ \wedge\ \mathit{coffee}(y)\ \wedge\ \mathit{bitter}(y)] : (s\ \multimap\ d)}\ {\multimap_{\mathcal{E}}}, \Rightarrow_\beta \qquad \mathit{sione} : s}{\exists y[\mathit{drink}(\mathit{sione},\ y)\ \wedge\ \mathit{coffee}(y)\ \wedge\ \mathit{bitter}(y)] : d}\ {\multimap_{\mathcal{E}}}$$

4 Benefits of the analysis

By way of discussing the benefits of the analysis, I'll look at benefits and problems (empirical and theoretical) identified by Ball (2004) for the PRED ARG analysis and the Lexical Sharing analysis. I'll show how this analysis captures the benefits of the two approaches and addresses the problems.

4.1 Comparison to the PRED ARG analysis

4.1.1 Shared benefits

1. This analysis shares the PA's insight that the incorporated expression is not a grammatical function of the incorporated verb.

2. The analysis also adopts the idea that "full nominals" (KPs) cannot be incorporated. If we adopt Ball's assumption that adjectives and prepositional phrases adjoin to NP but that relative clauses adjoin to KP, then the fact that only NPs modified by adjectives or prepositional phrases can incorporate likewise follows on this analysis.

3. The valency facts are accounted for, because the incorporated nominal is not a syntactic argument. Case marking, etc., follows.

4.1.2 Solutions to problems

1. **Problem** PA causes a re-formulation of constraints on valency and requires a rather major alteration to f-structure.

   Solution The present analysis uses independently motivated semantic structure and requires no modification of f-structure.

2. **Problem** The re-formulation of linking on the PA assumes that the mapping from argument structure to grammatical functions is highly syntacticized.

   Solution There is no re-formulation, so this problem does not occur.

3. **Problem** The PA requires phrasal adjunction to a head, violating Toivonen's (2003) X-bar theory.

   Solution No such adjunction is required on the present analysis.

4. **Problem** "Not totally clear that the incorporate isn't an argument."

   Solution I actually think it is pretty clear, but I likewise don't treat it as a (syntactic) argument. The present analysis could handle evidence for argumenthood providing the evidence was consistent with the incorporate being only a semantic argument.

5. **Problem** Verb-noun must be adjacent (cf. Tongan); doesn't follow easily on the PA.

   Solution The incorporate is a non-projecting word that must head-adjoin to V^0. Therefore, nothing can intervene between them.

4.2 Comparison with the Lexical Sharing analysis

4.2.1 Shared benefits

1. The LS analysis treats the Verb+Noun as a single lexical item, which accounts for why prenominal verbs cannot be incorporated. The present analysis accounts for this through the use of a non-projecting $\hat{\mathrm{N}}$.

2. The usual f-structure principles and c-structure mapping principles are retained on the LS analysis and this one. However, unlike the LS analysis, this analysis does not require a re-conception of licit tree structures.

4.2.2 Solutions to problems

1. **Problem** "Something additional needs to be said about how how the non-incorporated external argument gets absolutive case with an OBJ present.

   Solution The incorporation remainder is not an OBJ NP (it is either an INCORPORATE or an ADJ.

   Problem "Not immediately clear what GF the incorporate has", given incorporation of advanced instrumentals and adjuncts.

   Solution The incorporate always has the same GF (INCORPORATE or ADJ). This doesn't determine *what* can incorporate, but the restrictions on incorporation are not strictly syntactic (Mithun 1984). Some other part of the theory of incorporation must explain the fact that incorporates are direct objects, advanced instrumentals, and certain adjuncts that are tightly connected to the verb meaning (e.g., manner of motion adjunct with a motion verb).

   Problem It may be incorrect to assume that the incorporate is a syntactic argument.

   Solution The NPSA does not assume that it is a syntactic argument. Of course, it may be incorrect to assume that it's *not* a syntactic argument (have to look at extraction and raising, etc.).

Problem No clear phonological evidence for the Verb+Noun as a morphological unit.

Solution They're not a morphological unit on the NPSA, since they're not a single lexical item. The tight syntactic connection between the non-projecting word and its host does not assume phonological dependency (see Toivonen 2003 on clitics).

Problem Tongan evidence suggests that Verb+Noun cannot be nominalized together, therefore they're not a morphological unit.

Solution Assuming that nominalization applies to lexical items, this is explained by the fact that the verb and incorporate are distinct lexical items.

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