Classificatory incorporation in Korean and the syntax-semantics interface

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1 Introduction

Broad research question:

Does syntactic argument projection always occur?

This project is embedded within a broader research agenda on the syntax-semantics mapping of internal arguments.

Today, I'll be focusing on what incorporation phenomena tells us about the syntax-semantics interface.

- Incorporation poses a challenge to theories of syntactic argument structure in that it requires an internal argument (IA) introducing predicate, but creates a syntactic structure where the internal argument is somehow "suppressed" or "deficient" in some way.

Main claim of today's talk:

Building on insights from van Geenhoven (1998), Chung & Ladusaw (2004), and Legate (2014), I will argue that:

- Syntactic argument projection, rather than being obligatory, is in fact one of two possible routes for argument saturation.
- The semantic profile of being an argument-introducing predicate opts one into two possible structural realities:
  1. **Direct saturation** of the argument slot via syntactic realization of the DP argument; or
  2. **Indirect saturation**, via restrictive modification and existential closure of the argument variable.

In opposition to Chung & Ladusaw (2004), I will argue that these two possibilities are in *complementary distribution*:

Direct saturation makes indirect saturation compositionally impossible; indirect saturation makes direct saturation compositionally impossible.

- I further suggest that indirect saturation, results in syntactic intransitivity (re: case and agreement markings).
- Even *classificatory incorporation*, which in Korean, gives the surface illusion of transitivity, is still ultimately a structure that lacks syntactic projection of the internal argument.

2 Background

Incorporation as a phenomenon first began receiving attention in the early '80s (Sadock 1980; Mithun 1984, 1986; Baker 1988):

- Proto-typical incorporation refers to a construction like (1) in contrast to a non-incorporated counterpart (2).

- In (1), a noun morpho-syntactically forms a compound predicate with a verbal stem (Borik & Gehrke 2015).
- The incorporee is almost always an internal argument of a verb.
- Usually (though, not always; Massam 2001; Dayal 2011), the incorporee is reported to be bare, lacking markers of number, case, and definiteness.

(1) *apo* ***maaso****-peu-te-n*
3SG deer-butcher-INTR-PST
"He was deer butchering."

(2) *aapo* ***maaso****-ta peu-ta-k*
3SG deer-ACC butcher-TRANS-PERF
"He butchered a deer."
(Borik & Gehrke 2015: 2; from Haugen 2008)

As can be seen in the example (1) from Hiaki (an Uto-Aztecan language), incorporation very often coincides with changes in marking on the verb or in case pattern alternations that suggest that the incorporated construction is syntactically *intransitive*, despite utilizing a predicate that, in non-incorporating constructions, is syntactically transitive.

For example, consider incorporating/non-incorporating constructions in West Greenlandic (W. G.), an ergative-absolutive aligned language (3).

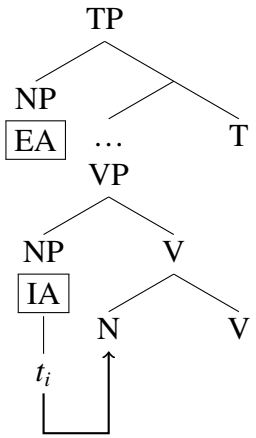
(3) a. ***Angunguu-p*** *aalisagaq neri-v-a-a*
Angunguaq-**ERG** fish.ABS eat-IND-[+tr]-3SG.3SG
"Angunguaq ate the/a particular fish."

b. ***Angunguaq*** *neri-v-u-q*
Angunguaq.**ABS** eat-IND-[-tr]-3SG
"Angunguaq ate/was eating (something)."

(4) ***Angunguaq*** *aalisagar-si-v-u-q*
Angunguaq.**ABS** fish-buy-IND-[-tr]-3SG
"Angunguaq bought fish."
(van Geenhoven 1998: 13–15)

Baker (1988) argues for a **head-movement** account of canonical cases of incorporation, as in (5).

(5)



This approach treats an "incorporated" structure as derivative of a "non-incorporated" structure.

Upshots of head movement account:

- Adheres to the Theta Criterion (Chomsky 1981/1993), such that a verb successfully discharges its internal argument Theta Role regardless of whether incorporation occurs.
- Derives the generalization that only internal arguments incorporate, since head movement must be strictly local.

One immediate challenge:

The account in (5) on its own cannot explain case/agreement marking facts— why should an NP whose head has moved into the verb no longer need Case/no longer be visible to case calculus?

2.1 Classificatory incorporation:

The head movement account also faces empirical challenges in extending to a sub-type of incorporation phenomena, termed by Mithun (1984, 1986) as "classificatory" incorporation (CI).

See an example from from Gunwinggu, an Aboriginal language, in (6).

(6) *bene-**dulg**-naŋ mangaralaljmayn*
they.two-**tree**-saw cashew.nut
"They saw a cashew tree."
(Borik & Gehrke 2015: 4; from Mithun 1984)

Borik & Gehrke (2015) characterize CI as a construction where a noun is incorporated, and an independent object is licensed in the structure, and somehow "semantically corresponds to the incorporated noun but has a more specific lexical meaning than the incorporated object" (Borik & Gehrke 2015: 3–4).

CI is particularly problematic for a head-movement account, since it is parasitic on incorporation (Rosen 1989; Borik & Gehrke 2015):

- A head-movement account that assumes the incorporated N is the head of the direct object of the verb cannot straightforwardly explain why a second apparent object is licensed *after* head movement has occurred, but not before.

2.2 The semantics of incorporation

The first account to seriously investigate the semantic/interpretive effects of incorporation comes from van Geenhoven (1998):

- W. G. incorporation shares the same semantic and semantic discourse restrictions reported for Germanic bare plurals.
- For example, obligatory narrow scope (7):

(7) *Arnajaraq aalisaga-si-**nngi**-l-a-q*
A.ABS fish-buy-NEG-IND-[-tr]-3SG

i. "it is not the case that A. bought fish." $\neg > \exists$
ii. # "There is/are (a) fish that A. didn't buy." $*\exists > \neg$
(van Geenhoven 1998: 31)

van Geenhoven (1998) juxtaposes (7) with the same observation made by Carlson (1977) for the English bare plural (8).

(8) John didn't see spots on the floor.

i. "It is not the case that J. saw spots on the floor." $\neg > \exists$
ii. # "There were spots on the floor that J. didn't see." $*\exists > \neg$
(van Geenhoven 1998: 32; from Carlson 1977)

She argues that all obligatorily narrow scope-taking indefinites (including incorporees) are: 1) predicative indefinites of type $\langle e, t\rangle$, inline with Heim (1982, 1984)'s semantic theory of indefinites.

- Building from (Carlson 1977), she argues that narrow scope indefinites receive their existential force from the verb.
- In (9–10), x is the internal argument variable of the predicate, y is the external argument variable of the predicate, and e is the event argument variable of the predicate.

(9) $[\![\text{inc. verb}]\!] = \lambda P_{\langle e,t\rangle}.\lambda y_e.\lambda e_s.[\exists x_e.[Verb'(e)(y)(x) \wedge P(x)]]$

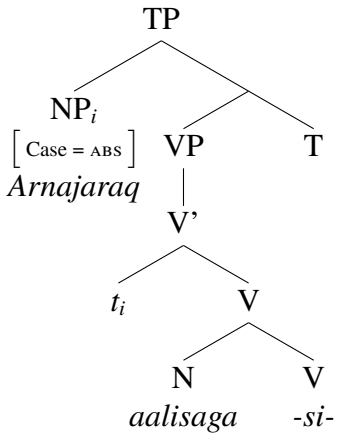
(10) $[\![\text{non-inc. verb}]\!] = \lambda x_e.\lambda y_e.\lambda e_s.[Verb'(e)(y)(x)]$

(9) effectively alters the denotation of an incorporating verb, so that the predicative indefinite can compose with the verbal head directly.

- This stood in departure from the approaches to indefinite semantics at the time (which required an indefinite to be type-shifted so that it could compose as with the verb as a semantic type e).
- van Geenhoven (1998) also argued that incorporation should be thought of as a case of syntactic word formation that was not derived via head movement, but was base generated.

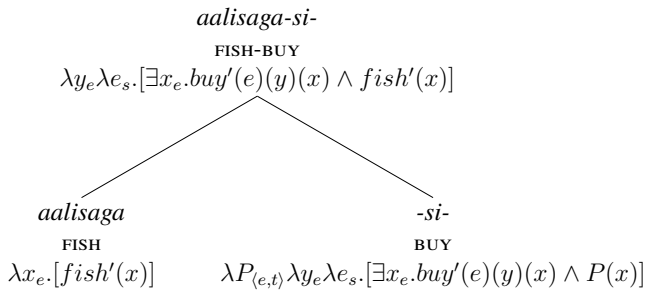
She proposes the following structure (11); corresponding semantic composition of the verb and the incorporee is given in (12).

(11)



(adapted from van Geenhoven 1998: 142)

(12)



(van Geenhoven 1998: 132)

For her, classificatory incorporation (CI) is an instance of external modification.

- Her commitment to the location of $\exists$, requires a formal account of external modification which allows adjuncts to modify an already existentially quantified variable.
- this is accomplished through a complicated type-shifting of the incorporee and the verb that I will not detail here.
- Type-shifting issues aside, van Geenhoven (1998)'s account is novel in its semantic mechanics in allowing a predicative nominal item ("N" or "NP") to combine directly with the main predicate.

Restriction and Saturation (R&S):

Building on the insights of van Geenhoven (1998), Chung & Ladusaw (2004) are interested in deriving the semantics of incorporation as a by-product of a more general theory of semantic composition modalities.

Chung & Ladusaw (2004) make explicit an idea that is implicated by the van Geenhoven (1998) account: the mode of semantic composition between a predicate and a nominal phrase need not *always* be one of Function Application.

- Chung & Ladusaw (2004) propose that both saturating (13–14) and non-saturating (15) modes of composition are possible between a predicate and a nominal argument phrase.
- Either can occur so long as the input criteria of the relevant semantic composition mode is met.

Chung & Ladusaw (2004)'s modes of composition:

(13) **Function Application (F. A.):** Given a function f of type $\langle e, \langle s, t \rangle \rangle$ and an individual a of type e,
$F.A.(f, a) \equiv [\lambda x_e \lambda e_s.f(x)(e)](a) \equiv [\lambda e_s.f(a)(e)]$

(14) **Existential Closure (E. C.):** Given a function f of type $\langle e, \langle s, t \rangle \rangle$, E. C. of an open e type variable of f yields:
$E.C.([\lambda x_e \lambda e_s.f(x)(e)]) \equiv [\lambda e_s.\exists x.f(x)(e)]$

(15) **Restrict:**
Given a function g and a function f, where:
a. $[\![g]\!] = [\lambda x_e \lambda y_e \lambda e_s.g(x)(y)(e)]$
b. $[\![f]\!] = [\lambda x_e.f(x)]$
Restricting g with f yields:
$Restrict(g, f) \equiv [\lambda y_e \underline{\lambda x_e} \lambda e_s.g(x)(y)(e) \wedge f(x)]$

Restrict is similar to Predicate Modification (16), in the sense that it is a conjoining operation where no λ-bound variables are removed, and

instead composes functions that are not of the same type, but share their outermost λ-bound variable in common.

(16) **Predicate Modification (P. M.):**
Given a function f of type $\langle e,t\rangle$ and a function g of type $\langle e,t\rangle$,
$P.M.(f,g) \equiv [\lambda x_e.f(x) \wedge g(x)]$

However, Restrict is *not* collapsible to Predicate Modification because of a crucial difference:

- In Restrict, the variable of g that becomes restricted is notationally "demoted" to just before the λ-bound event variable— as shown by the underline in (15).
- Chung & Ladusaw (2004) propose the adoption of the notational assumption that, when an argument is targeted by any (non-saturating) compositional operation, "it is possible to demote [the relevant λ-bound argument] from the top of the lambda prefix to a position just above the event argument".

Chung & Ladusaw (2004) are not internally consistent with requiring argument demotion throughout their text.

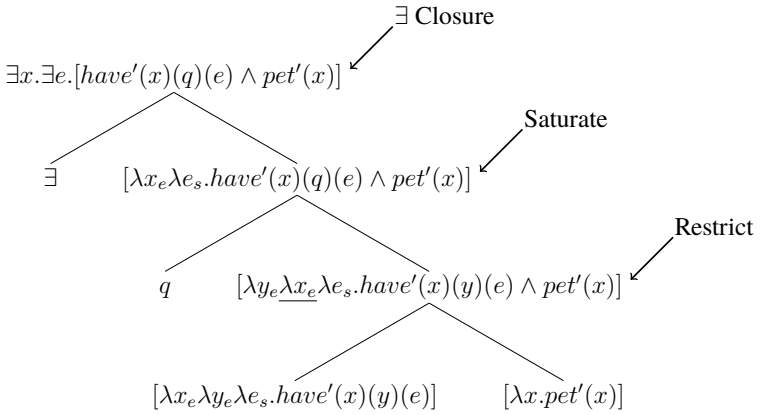
- Their analysis of Chamorro incorporation requires that sometimes, the internal argument variable is *not* demoted, so that it can be targeted twice.

For example, consider derivations of both simple incorporation (17) and classificatory incorporation (18).

(17) *Man-gäi-ga' häm*
AGR-have-pet 1P.PL.
"We have pets."

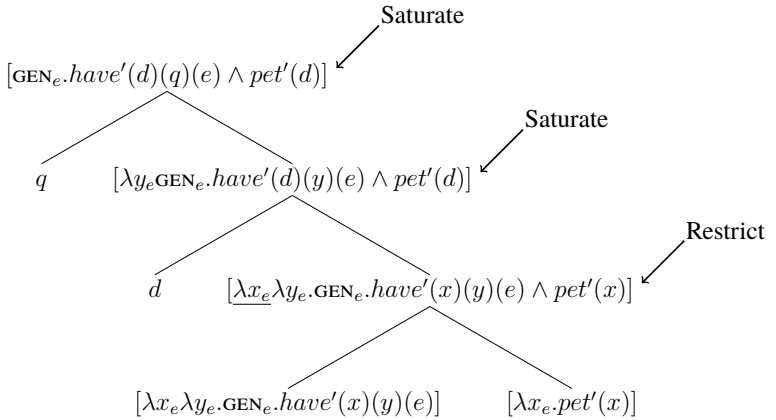
(18) *Gäi-ga' yu' kätu*
AGR.have-pet 1P.SG. cat
"I have a pet cat."

(19) Example LF composition of simple incorporation:



(adapted from Chung & Ladusaw 2004)

(20) Example LF composition of classificatory incorporation:



(adapted from Chung & Ladusaw 2004)

Upshots of R&S:

- Chung & Ladusaw (2004) present an alternative analysis to van Geenhoven (1998) that does not require type-shifting or the lexicalization of an existential quantifier.

- So long as we assume negation applies after existential closure of the event variable, the obligatory narrow scope facts are derived.

Issues/challenges:

The Chung & Ladusaw (2004) system has a number of technical issues that result in over-generation.

Issue 1: λ-demotion notation

- Their notational lambda ordering swap is not constrained, and makes unattested classificatory incorporation predictions.

The intuition behind the "λ-demotion" notation is to capture the empirical observation that, regardless of CI occurring or not, the EA variable is never targeted for saturation until after the IA has been targeted.

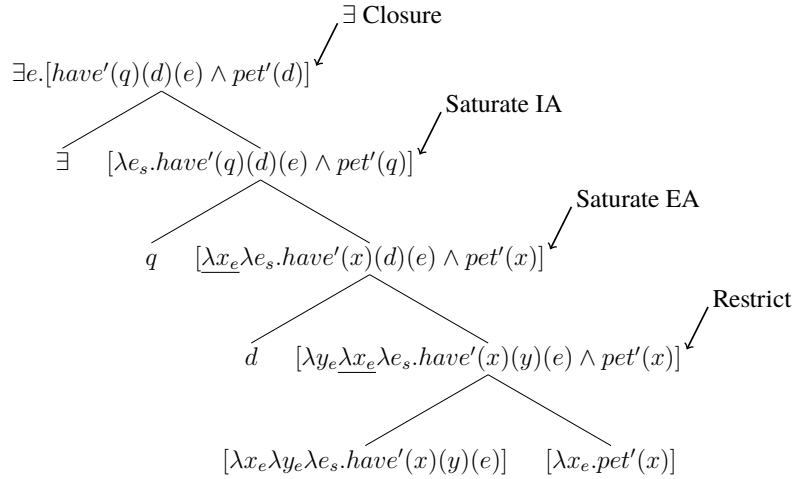
- If λ-demotion is an automatic and benign notational practice, then CI would never be possible, which means this notation needs to be intentionally switched on or off to correctly generate any CI at all.
- their commitment to λ-demotion placing the IA's lambda just before the lambda of the event variable, actually predicts that the internal argument can be directly saturated by Function Application *after* the saturation of the external argument (21).
- The LF structure generates a hierarchical structure where the syntactic position of the DP that saturates the IA is structurally higher than the syntactic position of the DP that saturates the EA.

Issue 2: unconstrained non-isomorphism between Syntax and LF

Their system loosens the relationship between syntax and semantics in a way that is both empirically and conceptually too costly for our theory of the relationship between structure and meaning.

- The "extra object" of a Chamorro CI construction is *syntactically* an adjunct (Chung & Ladusaw 2004).
- Chung & Ladusaw (2004) are therefore committed to a mismatch between syntactic argumenthood and semantic argumenthood:

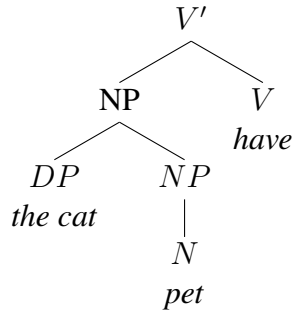
(21) Possible derivation, IA is saturated after EA:



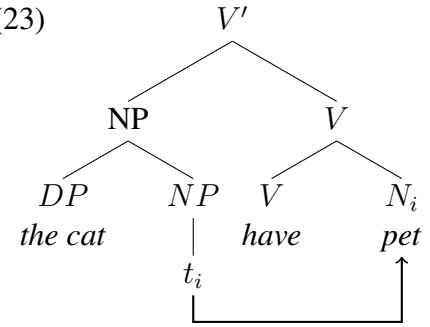
- The incorporee is a syntactic argument, but a semantic adjunct, and the "second object" is a syntactic adjunct but a semantic argument.

In their syntactic proposal, Chung & Ladusaw (2004) adopt a Baker (1988) head movement account of incorporation (22–23).

(22)



(23)



(adapted from Chung & Ladusaw 2004: 147–148)

Chung & Ladusaw (2004) do not make clear their assumptions about how the derivation in (22–23) is shipped to LF such that the semantic module interprets the incorporee in its surface position, and interprets the DP adjunct as the semantically saturating IA for the verbal predicate.

3 Korean classificatory incorporation

Prior work (Webster 2025, revise and resubmit) investigating complex predicate constructions in Korean notes a crucial difference between two classes of Roots.

Sino-Korean loanwords (SKLs[1]) pattern as verbal predicates (24) and as AS-Nominals (25) (nominals with argument structure; Grimshaw 1990).

- In this work, I take these empirical observations (among others) as indication that SKLs are argument-introducing Roots.

(24) a. *cikwen-i kongkum-ul **hoynglyeng-ha**-yss-eyo*
worker-NOM fund-ACC embezzle-do-PST-DECL
"The worker embezzled the funds."

b. *yenkwuwen-i tongkwul-ul **thamkwu-ha**-yss-eyo*
researcher-NOM cave-ACC explore-do-PST-DECL
"The researcher explored the cave."

(25) a. *cikwen-uy cac-un kongkum **hoynglyeng***
worker-GEN frequent-ADJ fund embezzle
"the worker's frequent embezzlement of funds"

b. *yenkwuwen-uy kkunhimeps-nun tongkwul **thamkwu***
researcher-GEN constant-ADJ cave explore
"the researcher's constant exploration of the cave"

However, there are other Roots which, despite also surfacing in what look like transitive constructions (26–27), do not have the same AS.

(26) *namcwuni-ka mwuncang-ul khu-key **mal**-ha-yss-eyo*
Namjoon-NOM sentence-ACC big-ADV word-do-PST-DECL
"Namjoon said (a/the) sentence loudly."

(27) *ku kaswu-ka cayen-uy alumtawum-ul cacwu*
that singer-NOM nature-GEN beauty-ACC frequently
***nolay**-ha-yss-eyo*
song-do-PST-DECL
"That singer often sang of nature's beauty."

Crucially, *mal* and *nolay* cannot create AS-Nominals (28). When used to build a nominal construction, these Roots have exclusively referential interpretation (29).

(28) * *namcwun-uy cac-un mwuncang(-uy) **mal***
Namjoon-GEN frequent-ADJ sentence(-GEN) word
Intended: "Namjoon's frequent saying of sentence(s)"

(29) *i mwuncang-un **mal**-i manh-ayo*
this sentence-TOP word-NOM be.many-PRS.DECL
"This sentence has a lot of words."

The apparent IA of 26) is *not* licensed in a nominal construction (29).

- Therefore, despite accusative case surfacing on something that looks IA-like in these constructions (26), we cannot treat these accusative-marked phrases (henceforth ACC-phrase) as being equivalent in their argument status to the IAs of SKL predicates.

3.1 Accusative-marked adjuncts

Claim: the ACC-phrases under scrutiny are adjuncts, *not* arguments.

- In particular, these ACC-phrases are instances of classificatory incorporation, and the hosts of these complex predicates, e.g. *mal* in (26), is itself an incorporated entity.

Case-marking on adjuncts:

Jou (2024) develops an analysis of case assignment in Korean utilizing Dependent Case Theory (Marantz 1991) and Cyclic Linearization (Fox

[1]There is a long history of work on these lexical items in Korean syntax literature: SKLs are typically referred to as "Verbal Nouns", or VNs (Ahn 1992; Chae 1997; Jun 2003, 2006; Manning 1993; Pak 2001; Sells 1995; Yoon & Park 2008).

& Pesetsky 2005), focused on deriving case marking on durative (30a) and multiplicative (30b) adjuncts in Korean.

(30) a. *mina-ka* ***han sikan****-ul* *chayk-ul* *ilk-ess-ta*
Mina-NOM one hour-ACC book-ACC read-PST-DECL
"Mina read a book for one hour."

b. *mina-ka* ***sey*** ***pen****-ul* *kyengchal-ul pwull-ess-ta*
Mina-NOM three times-ACC police-ACC call-PST-DECL
"Mina called the police three times."

(Jou 2024: 9)

Jou (2024) provides evidence confirming that, despite receiving accusative case, these phrases *must* be adjuncts, and locates their structural position somewhere above the introduction of the IA but below the EA.

I propose that the ACC-marked phrases in (26–27) are adjuncts as well.

- Tthese phrases have a semantic relationship with the Root at the center of the predicate, that is crucially not one of argumenthood, but one of predication.
- Consider the possible satellite phrases that can co-occur with *mal-ha-* ("to say" or "to speak"): the allowed ACC-phrases are extremely restricted: only things that directly restrict the set of possible words/uttered content are possible (31).

(31) a. *namcwuni-ka* *mwuncang-ul mal-ha-yss-eyo*
Namjoon-NOM sentence-ACC word-do-PST-DECL
"Namjoon said (the/a) sentence."

b. *sasil-ul* *mal-hay-cwu-sey-yo*
truth-ACC word-do-APPL-HONORIFIC-IMP
"(Please) tell (me) the truth."

An ACC-phrase providing information about the topic of discussion, or the language one is communicating in, are ungrammatical (32–33); these instead must be expressed as oblique arguments (34–35).

(32) * *ywunki-ka* *ecey-uy* *saken-lul* *mal-ha-yss-eyo*
Yoongi-NOM yesterday-GEN incident-ACC word-do-PST-DECL
Intended: "Yoongi spoke about yesterday's incident."

(33) * *na-nun* *hankwuke-lul cacwu* *mal-hay-eyo*
1P.SG-TOP Korean-ACC frequent.ADV word-do.PRS-DECL
Intended: "I often speak Korean."

(34) *ywunki-ka* *ecey-uy* *saken-ey* *tayhay*
Yoongi-NOM yesterday-GEN incident-OBL about
mal-ha-yss-eyo
word-do-PST-DECL
"Yoongi spoke about yesterday's incident."

(35) *na-nun* *hankwuke-lo cacwu* *mal-hay-eyo*
1P.SG-TOP Korean-INST frequent.ADV word-do.PRS-DECL
"I often speak (in) Korean."

Both of the oblique arguments in (34) can be reasonably construed as satellite event participants of the speaking event that the full predicate *mal-ha-* denotes, or at least modifiers that provide additional constraints on the event of "speaking".

- The grammatical ACC-phrases in (31), however, do not refer to event participants of the speaking events, nor do they even provide constraints on the event of "speaking" at all. They must directly describe the *content* of the actual words expressed.
- The relationship that these phrases have to the Root of the predicate is *not* one of a thematic argument, but one of predication.

The ACC-phrase *mwuncang-ul* ("sentence-ACC") modifies the variable x that is part of the denotation of *mal* ("word"). It is therefore necessary that *mal* denotes a property of type $\langle e, t\rangle$, such that this variable is present in the denotation of the denominal predicate.

(36) $[\![\textit{mal}]\!] = \lambda x_e.[word'(x)]$

(37) $[\![\textit{mal-ha-}]\!] = \lambda x_e \lambda e_s.[do'(e)(x) \wedge word'(x)]$

The ACC-phrase *mwuncang-ul* ("sentence-ACC") provides modification that, when composing with the complex predicate in (37) restricts the λ-bound x variable.

- Close parallelism between ACC-phrases in these constructions to the adjuncts described in Jou (2024), except that instead of describing the event argument, these adjuncts describe the Root at the core of the complex predicate.
- The Root must, then, be contributing a non-saturated x variable slot such that x is a word (36), so that there is an appropriate variable that an adjunct can restrict.

What should the denotation of the ACC-phrase adjunct be? It must be a property of x, so that it can compose via predicate modification.

- Drawing from prior analyses that treat "noun-complement" clauses as modifiers (Stowell 1981; Grimshaw 1990; Jenks 2014), I suggest a parallel treatment of apparent objects like *mwuncang-ul* in (31a).
- It is useful to note that the referential Roots that allow this type of adjunct to occur also allow noun-complement clauses, e.g. (38).

(38) *san-ey* *ywulyeng-i iss-ta-nun* *mal*
mountain-LOC ghost-NOM exist.PRS-DECL-ADN word
"the word/statement that there is a ghost on the mountain"

I draw on the syntax-semantics account of noun-complement clauses in Thai as modifiers from Jenks (2014).

For NC clausal modifiers, Jenks (2014) utilizes the predicativizing operation IDENT, which derives predicates from arguments (39).

(39) $\textsc{ident}(x) \equiv \lambda y.[y = x]$ (Jenks 2014: 322)

I suggest that the same operation can also turn a type e individual into a predicate as well. The Korean adjunct *mwuncang-ul*, for example, would be transformed as in (40).

(40) $\textsc{ident}([\iota y.sentence'(y)]) \equiv \lambda x.[x = \iota y.sentence'(y)]$

This modifier composes with the denominal predicate *mal-ha-* via Predicate Modification, shown in (41).

(41) $\lambda x_e \lambda e_s.[do'(e)(x) \wedge word'(x) \wedge x = \iota y.sentence'(y)]$

$\lambda x.[x = \iota y.sentence'(y)]$ $\lambda x_e \lambda e_s.[do'(e)(x) \wedge word'(x)]$

The suggested denotation for *mal-ha-* asserts that the semantic contribution of *mal* is a property, of type $\langle e, t \rangle$.

- This characterization is remarkably similar to the characterization of the semantic contribution of incorporated nouns (van Geenhoven 1998, 2002; Chung & Ladusaw 2004).
- I suggest that *mal* is exactly that, an incorporated noun, and that here we have an instance of classificatory incorporation.

4 New account of CI

The first update to the Chung & Ladusaw (2004) system is to adopt a Kratzerian (1996) view that an EA is introduced by a separate functional projection, Voice.

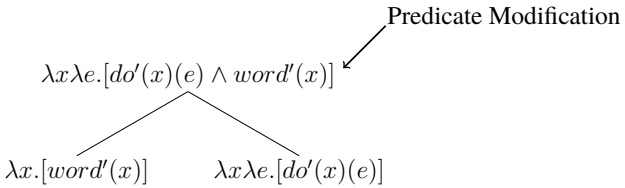
- This resolves the notational issue with λ-demotion.
- Without the stipulation of lambda-reordering, Chung & Ladusaw (2004)'s operation is functionally no different from Predicate Modification.
- To keep our number of composition modes to minimum, I assert that incorporees compose with the main predicate simply via Predicate Modification (42), as a sub-instance where an $\langle e, t \rangle$ predicate modifies an $\langle e, st \rangle$ predicate.

(42) **Predicate Modification (P. M.), (updated):**
Given a function f and a function g, where:
a. $[\![f]\!] = [\lambda x_e \lambda e_s . f(x)(e)]$
b. $[\![g]\!] = [\lambda x_e . g(x)]$
Modifying f with g yields:
$P.M.(f, g) \equiv [\lambda x_e \lambda e_s . f(x)(e) \wedge g(x)]$

For the simple case of non-classificatory incorporation, as in the sentence in (43), the first step of composition is represented in (44).

(43) *namcwuni-ka mal-ha-yss-eyo*
Namjoon-NOM word-do-PST-DECL
"Namjoon spoke."

(44) First step of LF composition for (43):



Even though we don't need to worry about ordering with respect to the external argument anymore, we still have an ordering issue with the lambda prefix of (44).

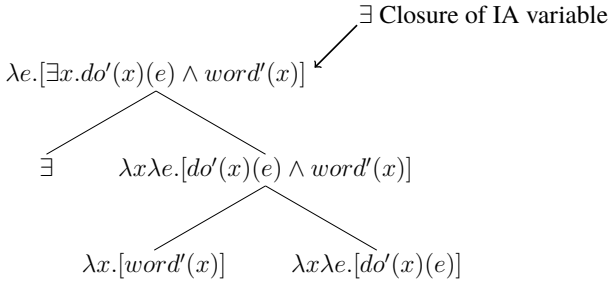
- The IA is still available for additional modification (which we want, for the classificatory instances), but, at some point, we will need to be able to move on, to target the event variable, since Voice composes with a predicate structure through Event Identification (45) (Kratzer 1996).

(45) **Event Identification:** Given a function f of type $\langle e, \langle s, t \rangle \rangle$ and a function g of type $\langle s, t \rangle$,
$\text{IDENT}_{\text{EVENT}}(f, g) \equiv [\lambda x_e \lambda e_s . f(x)(e) \wedge g(e)]$

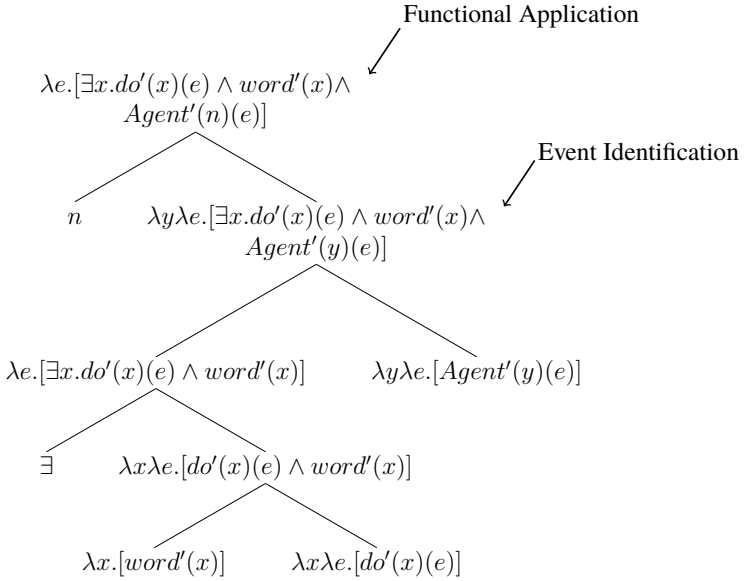
To capture this in a way that is constrained, I propose to scaffold existential closure, as something that applies to any variable of the main predicate that has been modified, once all modification is complete (46).

- This will take the relevant variable out of the lambda prefix, preventing any more composition operations from targeting it, and existential closure of the internal argument variable after modification will ensure obligatorily narrow scope with respect to any operators.

(46) Second step of LF composition for (43):

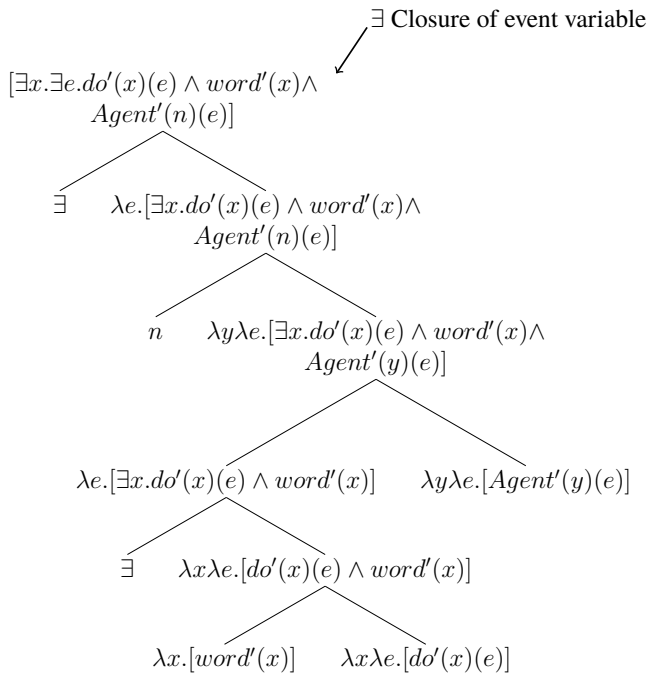


(47) Third step of LF composition for (43):



At this point, any additional modifications of the event variable could occur (such as manner adverbs). After all modifiers of the event are added, we existentially close the event variable, just as we did for the IA (48).

(48) Fourth step of LF composition for (43):

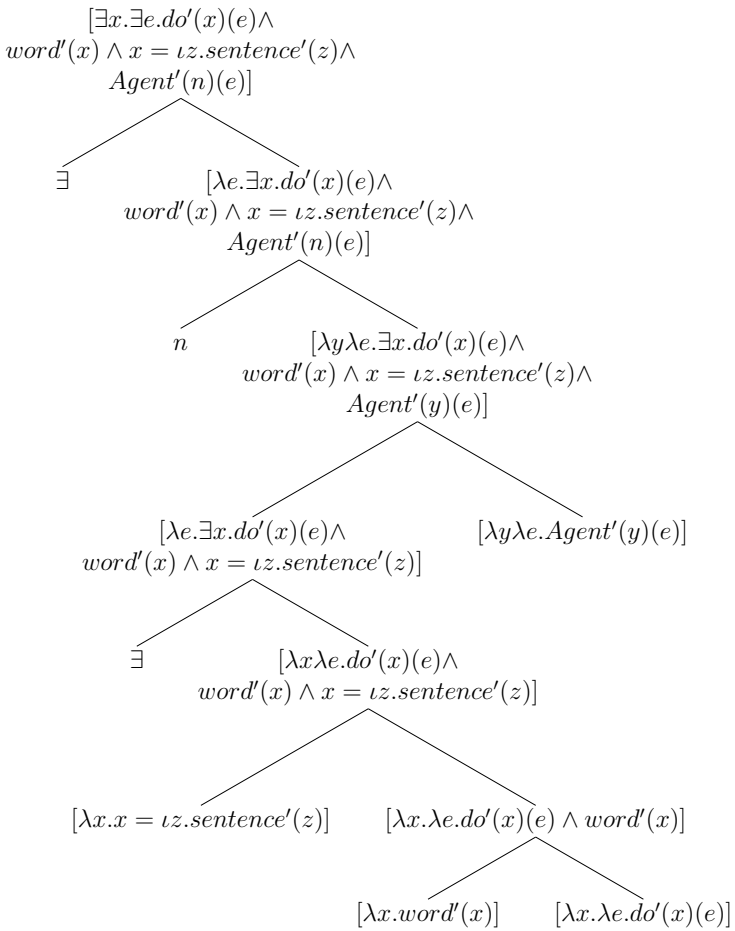


The LF composition of a classificatory incorporation construction, as in (49), would be almost identical, with the exception of a modifier that targets the IA variable, just before it is existentially quantified. A full derivation is given in (50).

(49) *namcwuni-ka mwuncang-ul mal-ha-yss-eyo*
Namjoon-NOM sentence-ACC **word**-do-PST-DECL
"Namjoon said (the) sentence."

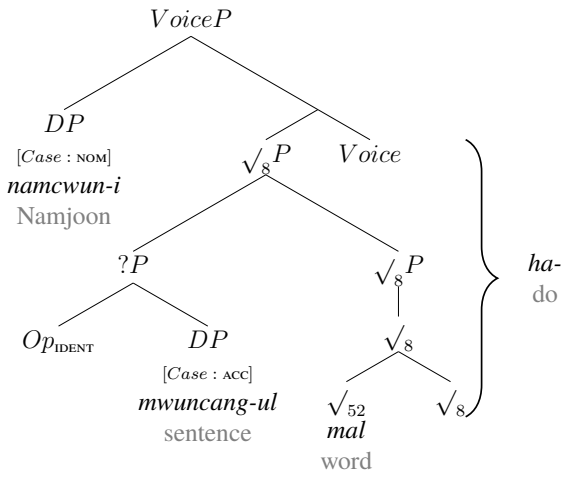
Like van Geenhoven (1998), I treat "sentence" as an external modifier, which merges with the main predicate structure, like any VP modifier would, but semantically targets the x variable denoted by the incorporee.

(50) Full LF composition for (49):



- The proposed corresponding base syntactic structure to this LF composition is given in (51). We maintain isomorphism between Syntax and LF structures.
- The adjunct *mwuncang*, is represented as an adjunct to the √P of the main predicate.
- There is some assumed structural complexity, involving the covert IDENT operator (Potts 2002; Jenks 2014), but I am uncertain of the correct label of the containing category.

(51)



The case marking for *mwuncang* falls straightforwardly out of Jou (2024)'s account of Korean case marking: the adjunct is assigned downward dependent case within the VP phase (I note here NOM case on the Agent, but of course that actually occurs later in the derivation).

5 Consequenses for argument projection

In my account, I have asserted a strict isomorphism between syntactic and semantic compositional structures.

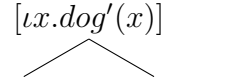
- This is in opposition to Chung & Ladusaw (2004), who call for a relaxation of the "isomorphism between syntax and semantics" such that the syntax-semantics interface will not require semantic saturation to parallel syntactic saturation (Chung & Ladusaw 2004).
- Beyond the lack of clarity in how this non-isomorphism is constrained, the further problem is that this is simply not true:
- It is not the case that adjuncts in the syntax can be freely interpreted as arguments in the semantics, nor is it the case that arguments in the syntax are freely interpreted as adjuncts in the semantics.

If we take a closer look at the possible *syntactic* places that DPs can be generated, they are not freely available as adjuncts whenever there is some unsaturated predicate. As a toy example, consider a simple DP, "the dog". The noun "dog" contributes a predicate of type $\langle e, t \rangle$.

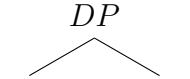
(52) $[\![dog]\!] = \lambda x_e.[dog'(x)]$

It has one λ-bound variable slot, of type e. Adopting a simplistic theory of definite determiners for the purposes of this demonstration, we can assume that the definite determiner "the" is a pronunciation of the iota operator, which, in the construction of the nominal phrase "the dog", will bind the e type variable of dog'. This straightforwardly corresponds to our assumed syntactic structure of the DP as well.

(53) a. LF composition



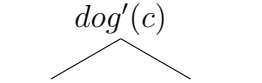
b. Syntax composition



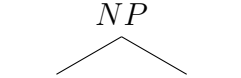
DPs do not denote truth values, they denote individuals. Purely computationally, however, it would be possible to compose the predicate dog' with an entity of type e, to yield a truth value ("Cricket is a dog").

- If we consider the natural language possibilities, we can quickly see that this is ungrammatical: it is, in fact, *not* possible to directly saturate the λx contributed by the denotation of N, dog'.

(54) a. LF composition



b. * Syntax composition



In other words, syntactically speaking, the noun "dog" is does not count as an argument-introducing predicate in natural language.

What this toy example shows us, is that a one-place predicate of type $\langle e, t\rangle$ in fact *cannot* be a syntactic argument introducer.

- It is simply not the case that indirect saturation (variable binding) and direct saturation (function application with an e or s type entity) occur freely in natural language.
- In order for direct saturation to occur in the syntax, it seems that a two-place predicate (minimally), is required.

Syntax-semantics interface predictions:

The predictions for the mapping between syntax and semantics that we arrive at is as follows:

1. DP argument introduction is restricted to two-place predicates, and composes via Function application.
2. Anything that composes via a non-saturating mode of composition is syntactically an adjunct.
3. There is a trade off between direct saturation and indirect saturation: Direct saturation makes indirect saturation compositionally impossible; indirect saturation makes direct saturation compositionally impossible.

What this picture of the syntax-semantics interface gets us:

- **Deriving the characteristics of incorporation phenomena:**
- This account treats an incorporee as a base generated modifier, a head adjoined to a head; even though there is an overt pronunciation of a modifier that is predicated of the internal argument, the IA variable itself is NOT actually projected syntactically.
- This provides a straightforward explanation for why Chamorro, W. G., and many other incorporating languages have reported intransitive paradigms for case and agreement, when it comes to incorporating constructions.

Bonus: there is a promising extension to Legate (2014)'s use of Restrict (Chung & Ladusaw 2004) to analyze the Acehnese passive.

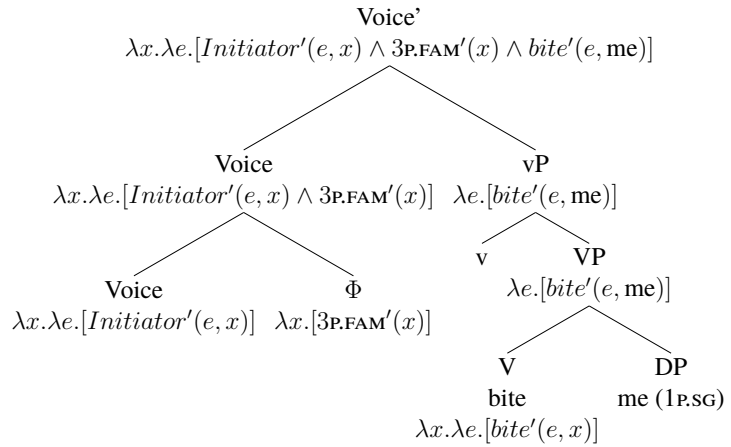
- Legate (2014) deals with the phenomenon in Achenese where there is apparent agreement with the Initiator, even in the passive construction (55).
- Abstracting away from details, Legate first confirms that (55b) must, indeed, be a passive, and then argues that the "agreement" morpheme is not true agreement, but instead an element that *restricts* the open variable *x* introduced by the Voice head.

(55) a. *uleue nyan di-kap lôn*
snake DEM 3P.FAM-bite 1P.SG
"The snake bit me"

b. *lôn di-kap (lé uleue nyan)*
1P.SG 3P.FAM-bite (by snake DEM)
"I was bitten by the snake." (Legate 2014: p. 9)

Legate provides the following structural account, in (56):

(56)



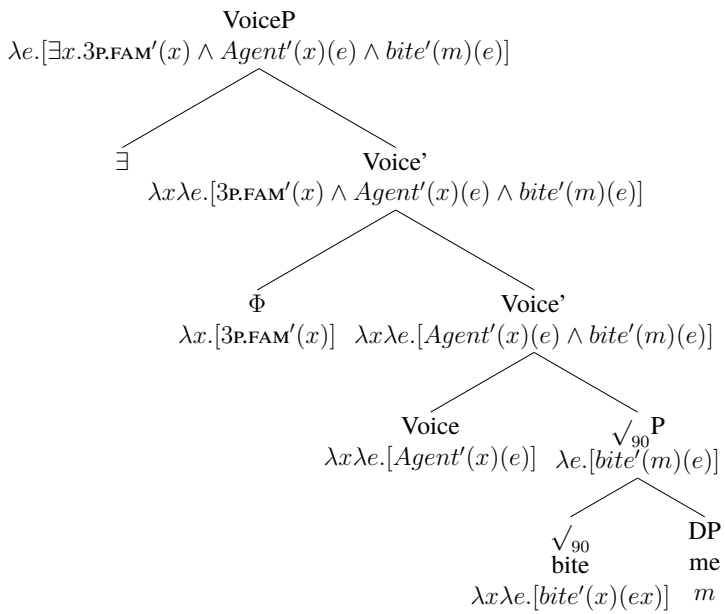
(Legate 2014: p. 41)

Here, *Restrict* derives a passive with an unsaturated EA.

Something Legate doesn't discuss explicitly, that falls out of this analysis, is the idea that restriction interferes with Voice's ability to introduce an EA in its specifier, hence the resulting passive construction.

Under my account, I would predict the following structure (57).

(57)



Predicate modification of the EA variable results in obligatory indirect saturation via existential closure.

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